



PCI adapter





PCI adapter

Note

Before using this information and the product it supports, be sure to read the information in "Notices," on page 357 and the manual *IBM eServer Safety Information*, G229-9054.

Fifth Edition (February 2005)

Chapter 1. PCI adapter

The following procedures describe the installation and removal of Peripheral Component Interconnect (PCI or PCI-X) features, and the removal and replacement of the following parts:

- PCI adapter cassettes
- PCI adapter dividers
- PCI adapters

Replacing these features is a customer task. You can perform these tasks yourself, or contact your service provider to perform the task for you. You might be charged a fee by the service provider for these services.

Select the appropriate instructions from this list:

Instructions for system units or expansion units without PCI adapter cassettes

- "Model 520, or attached expansion unit, PCI adapters and dividers": Includes instructions for attached expansion units 0595, 5095, 5790, 5791, 5794, D11, D10, and D20.
- "Model 550and OpenPower 720, or attached expansion unit, PCI adapters and dividers" on page 72: Includes instructions for attached expansion units 0595, 5095, 5790, 5791, 5794, D11, D10, and D20.
- "Model OpenPower 710 or 9110-510 PCI adapters" on page 143

Instructions for system units or expansion units with PCI adapter cassettes

These instructions include, but are not limited to, the following models: 570, 590, 595, 5790, D11 and 7040-61D.

• "PCI adapters and cassettes" on page 169

Related information

- "PCI placement in the system unit or expansion unit" on page 243
- "PCI adapter information by feature" on page 246
- Installing Integrated xSeries[®] Adapter
- "Handling Static-Sensitive Devices" on page 244

Model 520, or attached expansion unit, PCI adapters and dividers

To remove, replace, or install Model 520 PCI or PCI-X adapters and PCI adapter dividers, use the following procedures.

Select the appropriate instructions from this list:

Model 520 PCI adapters

- "Install a Model 520, or attached expansion unit, PCI adapter" on page 2
- "Remove a Model 520, or attached expansion unit, PCI adapter" on page 29
- "Replace a Model 520, or attached expansion unit, PCI adapter" on page 52

Model 520 PCI adapter dividers

- "Remove a Model 520 PCI adapter divider" on page 158
- "Replace a Model 520 PCI adapter divider" on page 160

Install a Model 520, or attached expansion unit, PCI adapter

Select the appropriate instructions from this list:

- "Install a Model 520, or attached expansion unit, PCI adapter with system power on in AIX" on page 3
- "Install a Model 520, or attached expansion unit, PCI adapter with system power on in i5/OS" on page 8
- "Install a Model 520, or attached expansion unit, PCI adapter with system power on in Linux" on page 15
- "Install a Model 520, or attached expansion unit, PCI adapter with the system power off" on page 22

Install a Model 520, or attached expansion unit, PCI adapter with system power on in AIX

The following procedure describes the installation of a Model 520, or attached expansion unit, PCI adapter with the system power on in AIX.

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 "Install a feature using the Hardware Management Console" on page 355.

Note: If the system is multi-partitioned, see Partitioning for AIX to learn more about working in partitions, then return here to continue the procedure.

To install a 520 PCI adapter with the system power on in AIX, do the following:

- _____1. Determine in which slot to place the PCI adapter by doing the following:
 - Refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for adapters used in this system.
 - Determine if the adapter will be placed in the base system unit or an expansion unit.
 - If the adapter is to be placed into the base system unit, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that does not contain PCI adapter cassettes, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that contains PCI adapter cassettes, go to the procedures for adapters in adapter cassettes. See "PCI adapters and cassettes" on page 169.
- **2**. Perform the prerequisite tasks described in "Before you begin" on page 311.

Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

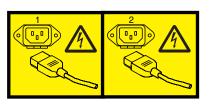
3. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

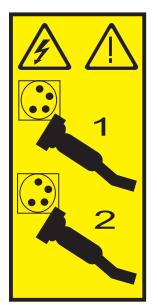
- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 520 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:

- a. Open the back rack door.
- b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____4. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- _ 5. If necessary, remove the adapter expansion slot shield. 🔁 View video.
- ____ 6. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)



or



____ 7. If necessary, remove the adapter from the antistatic package.

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

- **8**. Place the adapter, component-side up, on a flat, antistatic surface.
- 9. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
- ____10. Refer to "PCI Hot-Plug Manager Access for AIX" on page 244, and follow the steps in the access procedure to select **PCI Hot Plug Manager**. Then return here to continue.

- ____ 11. From the PCI Hot-Plug Manager menu, select Add a PCI Hot-Plug Adapter and press Enter. The Add a Hot-Plug Adapter window displays.
- ____12. Select the appropriate empty PCI slot from the ones listed on the screen, and press Enter.
- **13.** Rotate the adapter locking latch **A** counterclockwise as shown in figure Figure 1 or Figure 2 on page 6.
- **14**. Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- _____15. If you are installing a short adapter, continue to the next step.

If you are installing a long adapter, do the following:

- a. Unlatch and open the PCI adapter light-pipe plate C that is attached to the fan tray as shown in figure Figure 1 or Figure 2 on page 6. Tel View video.
- b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.
- **16.** Remove the adapter filler plate if one is present. If an adapter is present in the slot you want to use, see the instruction in "Remove a Model 520, or attached expansion unit, PCI adapter" on page 29 and then return here.

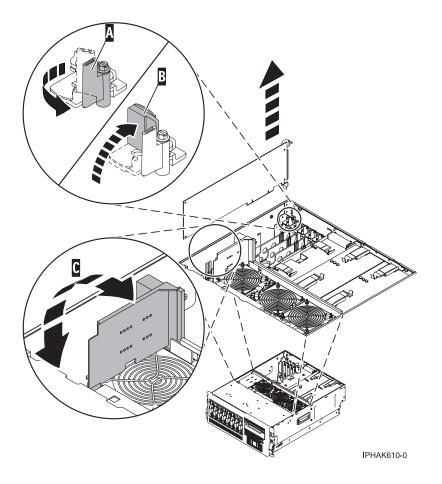


Figure 1. Model 520 PCI adapter or filler plate removed from the rack-mounted system unit

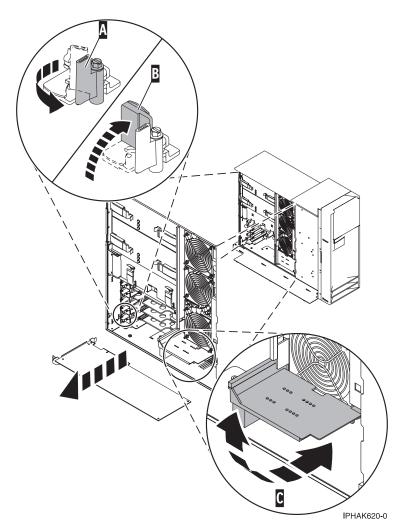


Figure 2. Model 520 PCI adapter or filler plate removed from the stand-alone system unit

- ____17. 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 246.
- 18. When you are instructed to install the adapter in the adapter slot, carefully grasp the adapter by the edges and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full-length adapter, ensure that both ends of the adapter engage the card guides.
- ____ 19. Press the adapter firmly into its connector.

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

____ 20. If you are installing a short adapter, continue to the next step.

If you are replacing or installing a long adapter, close and latch the PCI adapter light-pipe plate **C** attached to the fan tray as shown in figure Figure 3 on page 7 or Figure 4 on page 8.

- **Note:** The light pipes below the light-pipe plate must fit through the holes in the plate for it to latch correctly.
- ____21. Lower the tab A onto the PCI adapter faceplate as shown in figure Figure 3 on page 7 or Figure 4 on page 8. Rotate the adapter locking latch B clockwise until it covers the tab at approximately a 45-degree angle. Wiew video.

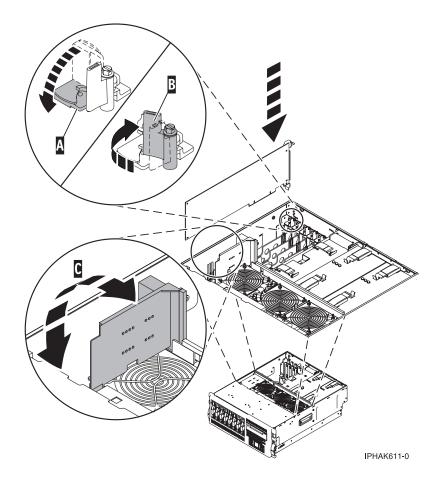


Figure 3. Model 520 PCI adapter replaced in the rack-mounted system unit

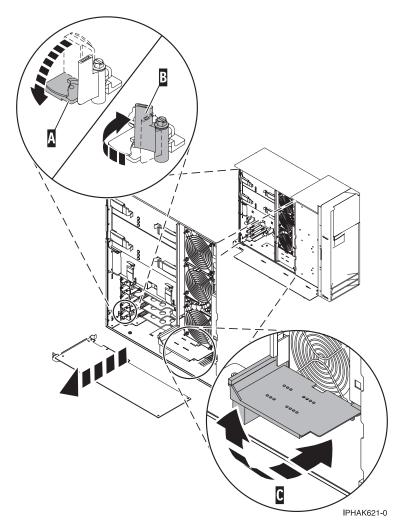


Figure 4. Model 520 PCI adapter replaced in the stand-alone system unit

____22. Connect any adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- **____23**. Replace or close the covers.
- ____24. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____25. On a rack-mounted system, close the rear rack door.
- ____26. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Install a Model 520, or attached expansion unit, PCI adapter with system power on in i5/OS

The following procedure describes the installation of a Model 520, or attached expansion unit, PCI adapter with the system power on in i5/OS. 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 "Install a feature using the Hardware Management Console" on page 355.

Note: If the system is multi-partitioned, see Installing new hardware for i5/OS logical partitions before installing a new PCI adapter and then return here to continue the procedure.

To install an 520 PCI adapter with the system power on in i5/OS, do the following:

- _ 1. Determine in which slot to place the PCI adapter by doing the following:
 - Refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for adapters used in this system.
 - Determine if the adapter will be placed in the base system unit or an expansion unit.
 - If the adapter is to be placed into the base system unit, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that does not contain PCI adapter cassettes, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that contains PCI adapter cassettes, go to the procedures for adapters in adapter cassettes. See "PCI adapters and cassettes" on page 169.

____ 2. Perform the prerequisite tasks described in "Before you begin" on page 311.

Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

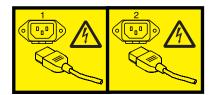
If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.

3. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 520 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.

- "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____ 4. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
 - 5. If necessary, remove the adapter expansion slot shield. 🔁 View video.
- ____ 6. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.
 (L003)



or



____ 7. If necessary, remove the adapter from the antistatic package.

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

- **8**. Place the adapter, component-side up, on a flat, antistatic surface.
- 9. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
- ____10. Type **strsst** on the command line of the Main Menu and then press Enter.
- 11. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.
- ____12. Select Start a service tool from the System Service Tools (SST) display and press Enter.
- ____13. Select Hardware service manager from the Start a Service Tool display and press Enter.
- ____14. Select **Packaging hardware resources (system, frames, cards...)** from the Hardware Service Manager display. Press Enter.
- **15**. Type **9** (Hardware contained within package) in the *System Unit* or *Expansion Unit* field of the unit where you are replacing the card. Press Enter.
- ____ 16. Select the option to **Include empty positions**.

- ____ 17. Select Concurrent Maintenance on the card position where you want to replace the card and then press Enter.
- **18.** Select the option to **Toggle LED blink off/on**. A light-emitting diode (LED) blinks identifying the position you chose. Physically verify that this is the slot where you want to install the adapter.
- ____19. Select the option to **Toggle LED blink off/on** to stop the blinking LED.
- **20**. Rotate the adapter locking latch **A** counterclockwise as shown in figure Figure 5 or Figure 6 on page 12.
- **____21.** Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- **22**. If you are installing a short adapter, continue to the next step.

If you are installing a long adapter, do the following:

- a. Unlatch and open the PCI adapter light-pipe plate C that is attached to the fan tray as shown in figure Figure 5 or Figure 6 on page 12. The View video.
- b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.
- **23**. Remove the adapter filler plate if one is present. If an adapter is present in the slot you want to use, see the instruction in "Remove a Model 520, or attached expansion unit, PCI adapter" on page 29 and then return here.

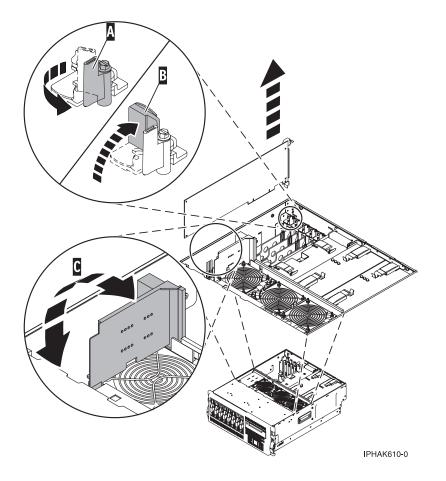


Figure 5. Model 520 PCI adapter or filler plate removed from the rack-mounted system unit

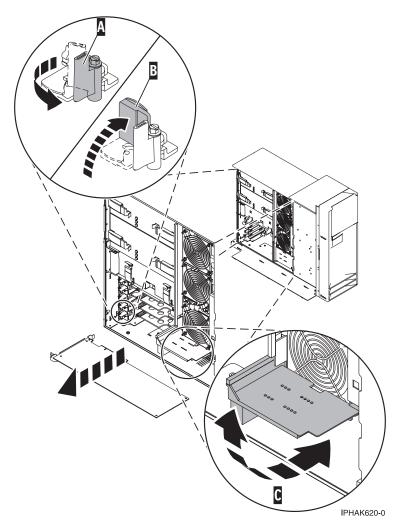


Figure 6. Model 520 PCI adapter or filler plate removed from the stand-alone system unit

- **____24.** Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
- ____25. Press the adapter firmly into its connector.

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

____26. If you are installing a short adapter, continue to the next step.

If you are replacing or installing a long adapter, close and latch the PCI adapter light-pipe plate **C** attached to the fan tray as shown in figure Figure 7 on page 13 or Figure 8 on page 14.

Note: The light pipes below the light-pipe plate must fit through the holes in the plate for it to latch correctly.

____27. Lower the tab A onto the PCI adapter faceplate as shown in figure Figure 7 on page 13 or Figure 8 on page 14. Rotate the adapter locking latch B clockwise until it covers the tab at approximately a 45-degree angle. The View video.

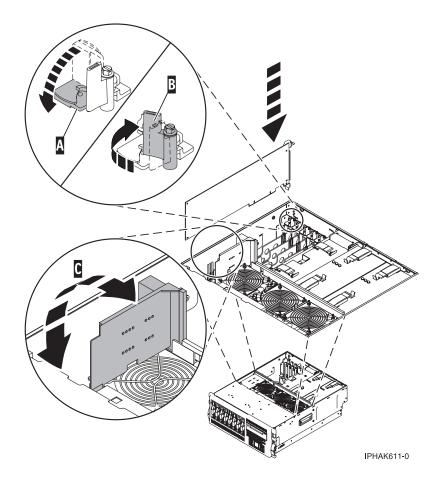


Figure 7. Model 520 PCI adapter replaced in the rack-mounted system unit

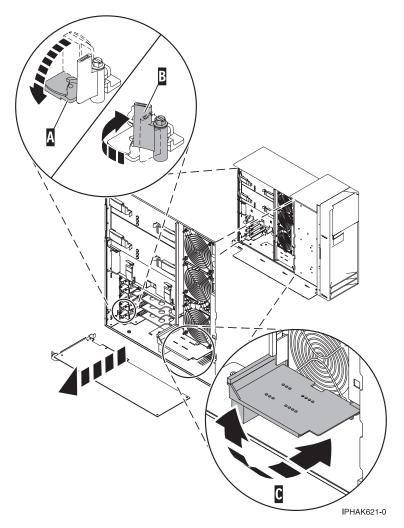


Figure 8. Model 520 PCI adapter replaced in the stand-alone system unit

____28. Connect any adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- **____29.** Select **Power on domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
- ____30. Select Assign to on the resource that has an asterisk (*) on the Work with Controlling Resource display. Press Enter.
- ____31. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: Power on complete
- ____ **32**. Replace or close the covers.
- **33**. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____ 34. On a rack-mounted system, close the rear rack door.
- ___35. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Install a Model 520, or attached expansion unit, PCI adapter with system power on in Linux

This procedure provides the steps you must take to install a PCI adapter in a server, expansion unit, or partition that is running the Linux.

If the system is multi-partitioned, see Partitioning for Linux to learn more about working in partitions, then return here to continue the procedure.

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 "Install a feature using the Hardware Management Console" on page 355.

To install an 520 PCI adapter with the system power on in Linux, do the following:

- 1. Before attempting to perform the PCI hot-plug procedure, ensure that the server or partition in which the adapter is intended is at the correct level of the Linux operating system (Linux 2.6 or greater). Also, to ensure that the necessary tools are available on your server, do the following:
 - ____a. 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.

____b. Use the following command to ensure that the **rpaphp** driver is loaded:

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

The directory should not be empty. 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 0001:00:02.0

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 0001:00:02.4

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 0002:00:02.2
```

- ____ c. Ensure the following tools are available in the /usr/sbin directory.
 - lsslot
 - drslot_chrp_pci
- 2. Determine in which slot to place the PCI adapter by doing the following:
 - Refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for adapters used in this system.
 - Determine if the adapter will be placed in the base system unit or an expansion unit.
 - If the adapter is to be placed into the base system unit, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that does not contain PCI adapter cassettes, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that contains PCI adapter cassettes, go to the procedures for adapters in adapter cassettes. See "PCI adapters and cassettes" on page 169.
- **3**. Perform the prerequisite tasks described in "Before you begin" on page 311.

Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

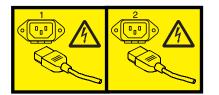
When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

_____ 4. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 520 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____ 5. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- ____ 6. If necessary, remove the adapter expansion slot shield. 🔁 View video.
- ____ 7. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.
 (L003)



or



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

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

- _____9. Place the adapter, component-side up, on a flat, antistatic surface.
- ___ 10. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in the 520 server, you must remove the blue handle or support bracket from the card.
- _ 11. Log in to the system console as the **root** user.
- _____12. 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 lsslot -c pci -a command.

- **13.** Rotate the adapter locking latch **A** counterclockwise as shown in figure Figure 9 on page 18 or Figure 10 on page 19.
- ____14. Lift the black tab B attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- ____ 15. If you are installing a short adapter, continue to the next step. If you are installing a long adapter, do the following:
 - a. Unlatch and open the PCI adapter light-pipe plate C that is attached to the fan tray as shown in figure Figure 9 on page 18 or Figure 10 on page 19. The View video.
 - b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.
- ____16. Remove the adapter filler plate if one is present. If an adapter is present in the slot you want to use, see the instruction in "Remove a Model 520, or attached expansion unit, PCI adapter" on page 29 and then return here.

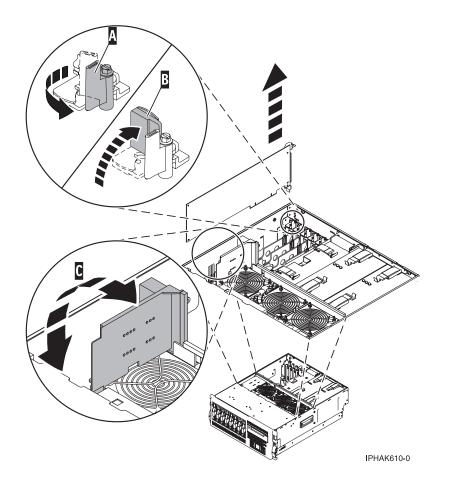


Figure 9. Model 520 PCI adapter or filler plate removed from the rack-mounted system unit

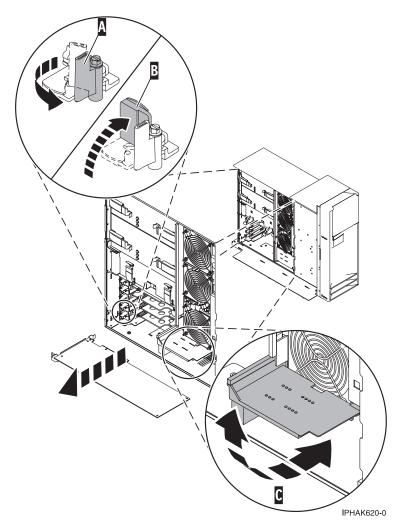


Figure 10. Model 520 PCI adapter or filler plate removed from the stand-alone system unit

- ____ 17. To hot plug an adapter into PCI slot U7879.001.DQD014E-P1-C3, enter the following command: drslot_chrp_pci -a -s U7879.001.DQD014E-P1-C3
 - **a**. The following displays:

The visual indicator for the specified PCI slot has been set to the identify state. Press Enter to continue or enter \boldsymbol{x} to exit.

b. 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.

- **c.** When you are instructed to install the adapter in the adapter slot, carefully grasp the adapter by the edges and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full-length adapter, ensure that both ends of the adapter engage the card guides.
- d. Press the adapter firmly into its connector.

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

e. If you are installing a short adapter, continue to the next step.

If you are replacing or installing a long adapter, close and latch the PCI adapter light-pipe plate **C** attached to the fan tray as shown in figure Figure 11 or Figure 12 on page 21.

- **Note:** The light pipes below the light-pipe plate must fit through the holes in the plate for it to latch correctly.
- f. Lower the tab A onto the PCI adapter faceplate as shown in figure Figure 11 or Figure 12 on page 21. Rotate the adapter locking latch B clockwise until it covers the tab at approximately a 45-degree angle. View video.

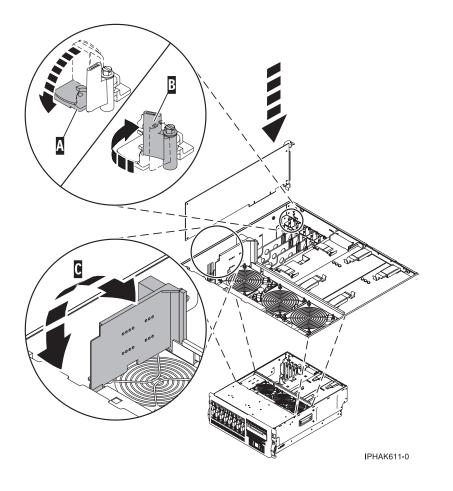


Figure 11. Model 520 PCI adapter replaced in the rack-mounted system unit

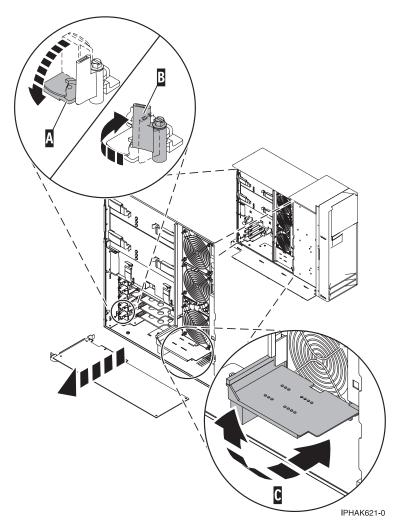


Figure 12. Model 520 PCI adapter replaced in the stand-alone system unit

g. Connect any adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

____18. 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

- ____19. Replace or close the covers.
- **____20.** "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted server. If you are servicing a stand-alone server, continue to the next step.
- ____21. On a rack-mounted server, close the rear rack door.
- ____22. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Install a Model 520, or attached expansion unit, PCI adapter with the system power off

The following procedure describes the installation of Model 520, or attached expansion unit, PCI adapters with the system power off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a PCI adapter. For instructions, see "Install a feature using the Hardware Management Console" on page 355.

- **Note:** If the system is multi-partitioned, select the appropriate information from the following list to learn more about working in a partitioned environment, then return here:
 - Partitioning for AIX
 - Installing new hardware for i5/OS logical partitions
 - Partitioning for Linux

To install a 520 PCI adapter with the system power off, do the following:

- _____1. Determine in which slot to place the PCI adapter by doing the following:
 - Refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for adapters used in this system.
 - Determine if the adapter will be placed in the base system unit or an expansion unit.
 - If the adapter is to be placed into the base system unit, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that does not contain PCI adapter cassettes, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that contains PCI adapter cassettes, go to the procedures for adapters in adapter cassettes. See "PCI adapters and cassettes" on page 169.
- ____ 2. Perform the prerequisite tasks described in "Before you begin" on page 311.

Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

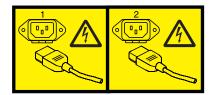
When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

- ____ **3**. "Stop the system" on page 341.
- _____4. Disconnect the power source from the system by unplugging the system.

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

____ 5. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.
 (L003)



or



6. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 520 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____7. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- _ 8. If necessary, remove the adapter expansion slot shield. 📷 View video.

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

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

- ____10. Place the adapter, component-side up, on a flat, antistatic surface.
- ____ 11. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
- ____12. If you are installing a short adapter, continue to the next step.

If you are installing a long adapter, do the following:

- a. Unlatch and open the PCI adapter light-pipe plate C that is attached to the fan tray as shown in figure Figure 13 on page 25 or Figure 14 on page 26. The View video.
- b. Note the guide grooves located toward the front of the system in the disk drive backplane when aligning the adapter.
- **13**. Rotate the adapter locking latch A counterclockwise as shown in figure Figure 13 on page 25 or Figure 14 on page 26. Wiew video.
- ____14. Lift the black tab B attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- 15. Remove the adapter filler plate if one is present. If an adapter is present in the slot you want to use, see the instructions in "Remove a Model 520, or attached expansion unit, PCI adapter" on page 29 and then return here.

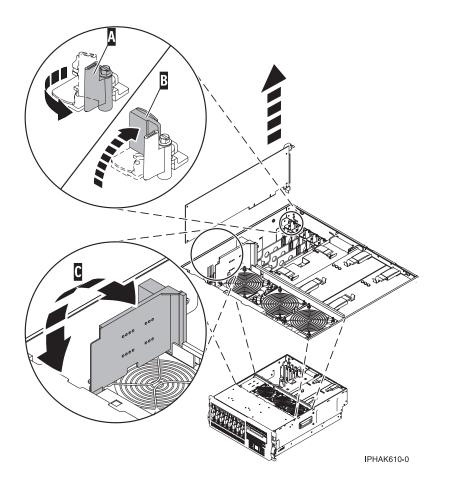


Figure 13. Model 520 PCI adapter or filler plate removed from the rack-mounted system unit

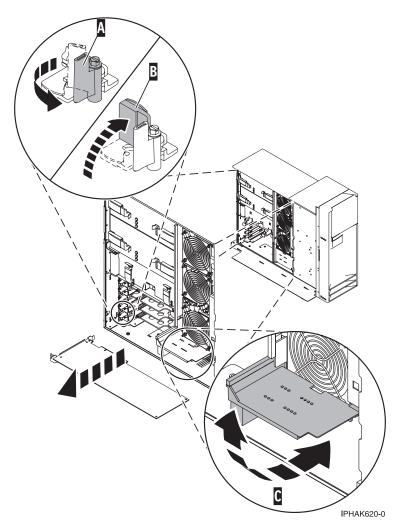


Figure 14. Model 520 PCI adapter or filler plate removed from the stand-alone system unit

- **_____16.** Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
- ____ 17. Press the adapter firmly into its connector.

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

18. If you are installing a short adapter, continue to the next step.

If you are installing a long adapter, close and latch the PCI adapter light-pipe plate **C** attached to the fan tray as shown in figure Figure 15 on page 27 or Figure 16 on page 28.

Note: The light pipes below the light-pipe plate must fit through the holes in the plate for it to latch correctly.

19. Lower the tab A onto the PCI adapter faceplate as shown in figure Figure 15 on page 27 or Figure 16 on page 28. Rotate the adapter locking latch B clockwise until it covers the tab at approximately a 45-degree angle.

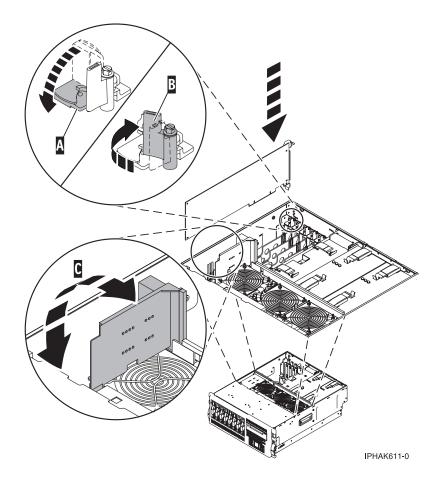


Figure 15. Model 520 PCI adapter replaced in the rack-mounted system unit

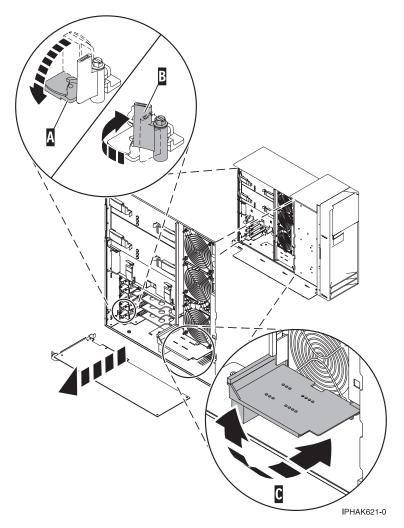


Figure 16. Model 520 PCI adapter replaced in the stand-alone system unit

___ 20. Connect any adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- ____21. If you are servicing a rack-mounted system, route the cables through the cable-management arm.
- ____22. Replace or close the covers.
- ____23. On a rack-mounted system, close the rear rack door.
- **____24.** "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____25. Reconnect the power source to the system.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.
 - To Disconnect:
 - a. Turn everything OFF (unless instructed otherwise).
 - **b.** Remove power cords from the outlet.
 - c. Remove signal cables from connectors.
 - d. Remove all cables from devices.
 - To Connect:
 - a. Turn everything OFF (unless instructed otherwise)
 - **b.** Attach all cables to devices.
 - c. Attach signal cables to connectors.
 - **d.** Attach power cords to outlet.
 - e. Turn device ON.
 - (D005)

___ 26. "Start the system" on page 340.

____27. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Remove a Model 520, or attached expansion unit, PCI adapter

The following procedure describes the removal of a Model 520, or attached expansion unit, PCI adapter.

Select the appropriate instructions from this list:

- "Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in AIX" on page 30 (Use this procedure to remove an adapter and leave an empty slot.)
- "Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in i5/OS" on page 36
- "Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in Linux" on page 40
- "Remove a Model 520, or attached expansion unit, PCI adapter with the system power off" on page 47

Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in AIX

The following procedure describes the removal of a Model 520, or attached expansion unit, PCI adapter with the system on in AIX. Read the following notes to determine if this is the correct procedure for the task to be performed.

Notes:

- 1. 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 "Remove a part using the Hardware Management Console" on page 355.
- 2. Use this procedure to remove a PCI adapter and leave the slot in the system unit empty. To remove a failed adapter and replace it with the same adapter, see "Remove and replace a Model 520, or attached expansion unit, PCI adapter with the system power on in AIX" on page 53.
- **3**. 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 "Install a Model 520, or attached expansion unit, PCI adapter with system power on in AIX" on page 3.
- 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.

To remove a 520 PCI adapter with the system power on in AIX, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- **2**. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 520 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____ 3. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:

- "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
- "Remove the back door and cover from the 5095 expansion unit" on page 318
- 4. Determine which adapters you plan to remove.
- ____ 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, then press enter.
- ____ 10. At the Task Selection list, select **PCI Hot Plug Manager**.
- ____ 11. Select **Unconfigure a Device**, 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 N0 to **Keep Definition**. Use the Tab key again to answer YES to **Unconfigure Child Devices**, then press Enter.
- ____15. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfiguration is indicated by the 0K message displayed next to the Command field at the top of the screen.
- _____16. Press F4 or ESC 4 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 remove.

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 disconnect all cables attached to the adapter you plan to remove.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

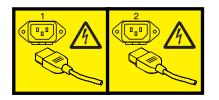
- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.

To Connect:

- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- **d.** Attach power cords to outlet.
- e. Turn device ON.

(D005)

22. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)



or



____23. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

____24. If you are removing a short adapter, continue to the next step.

If you are removing a long adapter, unlatch and open the PCI adapter light-pipe plate **C** attached to the fan tray as shown in figure Figure 17 on page 34 or Figure 18 on page 35. View video.

- ____ 25. Rotate the adapter locking latch 🛕 counterclockwise. 🔁 View video.
- **____26.** Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- **27.** Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.

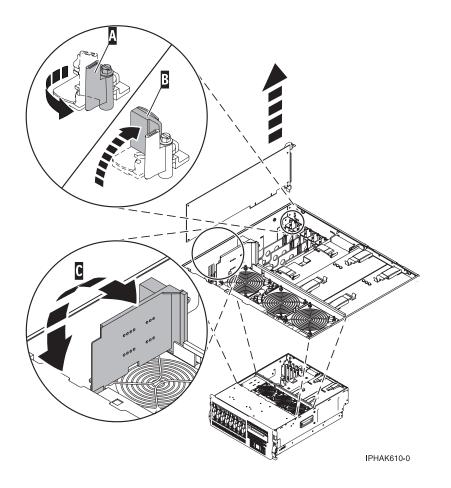


Figure 17. Model 520 PCI adapter removed from the rack-mounted system unit

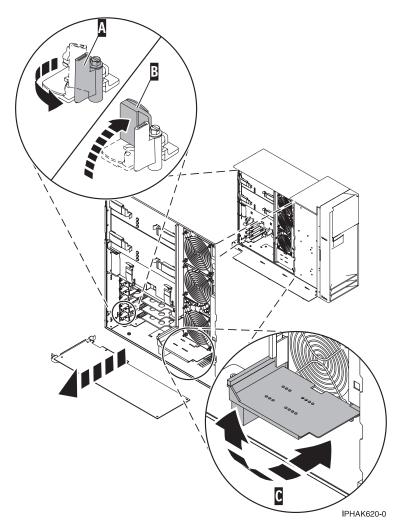


Figure 18. Model 520 PCI adapter removed from the stand-alone system unit

- **____28.** If you plan to install another adapter into the vacated slot, go to "Install a Model 520, or attached expansion unit, PCI adapter with system power on in AIX" on page 3; otherwise, continue with the next step.
- **_____29.** Seal the expansion slot using an expansion-slot cover.
- ____ **30**. Lower the plastic retainer seat over the PCI adapter faceplate.
- ____31. Rotate the locking latch clockwise until it clicks into the locked position.
- ____32. Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the 0K message displayed next to the Command field at the top of the screen.
- ___ 33. 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 on page 31. OR

If you do not have other adapters to remove, continue with the next step.

- ___ **34**. Press F10 to exit the Hot-Plug Manager.
- ____35. Run the **diag** -a command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
- **_ 36**. Replace or close the covers.
- ____ **37**. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system.

____ **38**. On a rack-mounted system, close the back rack door.

Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in i5/OS

The following procedure describes the removal of a Model 520, or attached expansion unit, PCI adapter with the system on in i5/OS.

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 "Remove a part using the Hardware Management Console" on page 355.

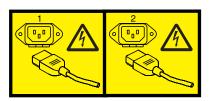
To remove a 520 PCI adapter with the system power on in i5/OS, do the following:

- _ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- **2**. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.
- **3.** If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

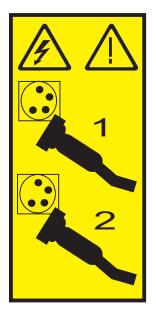
Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 520 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - **b**. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____4. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- ____ 5. Type **strsst** on the command line of the Main Menu and press Enter.
- ____ 6. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.
 - 7. Select Start a service tool from the System Service Tools (SST) display. Press Enter.
- ____ 8. Select Hardware service manager from the Start a Service Tool display and press Enter.
- 36 PCI adapter

- 9. Select **Packaging hardware resources (system, frames, cards...)** from the Hardware Service Manager display. Press Enter.
- **10.** Type **9** (Hardware contained within package) in the *System Unit* or *Expansion Unit* field of the unit where you are removing the card, then press Enter.
- _____11. Select the option to **Include empty positions**.
- **12**. Select **Concurrent Maintenance** on the card position where you want to remove the card and then press Enter.
- **13**. Select the option to **Toggle LED blink off/on**. A light-emitting diode (LED) blinks identifying the position you chose. Physically verify that this is the slot where you want to remove the adapter.
- _____14. Select the option to **Toggle LED blink off/on** to stop the blinking LED.
- ____ 15. Select the option to Power off domain on the Hardware Resource Concurrent Maintenance display and press Enter.
- ____16. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: Power off complete
- ____ 17. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)



or



____18. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

____19. Label and disconnect all cables attached to the adapter you plan to remove.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- **c.** Remove signal cables from connectors.
- d. Remove all cables from devices.

To Connect:

- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)

____20. Record the slot number and location of each adapter being removed.

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

____21. If you are removing a short adapter, continue to the next step.

If you are removing a long adapter, unlatch and open the PCI adapter light-pipe plate **C** attached to the fan tray as shown in figure Figure 19 on page 39 or Figure 20 on page 40. Wiew video.

- **22**. Rotate the adapter locking latch **A** counterclockwise. **The video**.
- **23**. Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- **24**. Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.

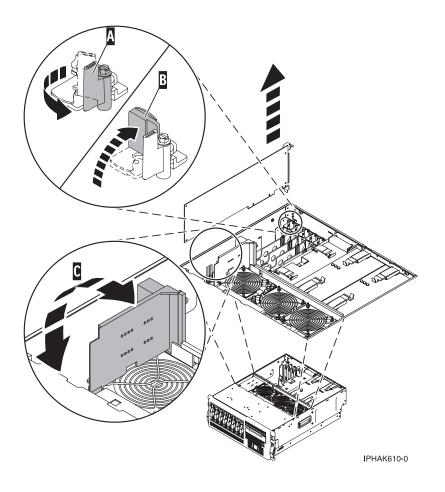


Figure 19. Model 520 PCI adapter removed from the rack-mounted system unit

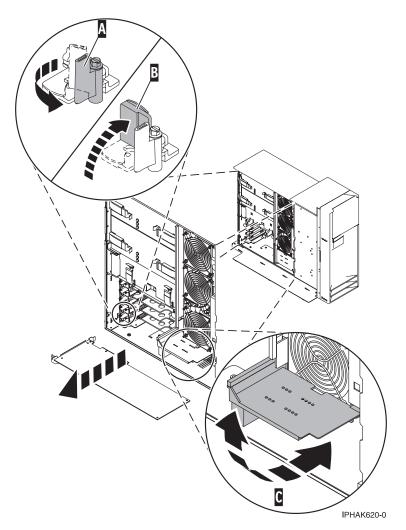


Figure 20. Model 520 PCI adapter removed from the stand-alone system unit

- **____25.** If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
- **____26.** If you plan to install another adapter into the vacated slot, go to "Install a Model 520, or attached expansion unit, PCI adapter with system power on in i5/OS" on page 8; otherwise, continue with the next step.
- ____27. Seal the expansion slot using an expansion-slot cover.
- **____28.** Replace or close the covers.
- ____ 29. On a rack-mounted system, close the rear rack door.
- ____30. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____31. To replace the PCI adapter, see "Replace a Model 520, or attached expansion unit, PCI adapter" on page 52.

Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in Linux

The following procedure describes the removal of a Model 520, or attached expansion unit, PCI adapter with the system power on in a server or partition running Linux.

Note: Procedures performed on a PCI adapter with the system power on in Linux, 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 removing a PCI adapter. For instructions, see "Remove a part using the Hardware Management Console" on page 355.

Before attempting to perform the PCI hot-plug procedure, ensure that the server or partition in which the adapter is intended is at the correct level of the Linux operating system (Linux 2.6 or greater). Also, ensure that the necessary tools are available on your server by doing the following:

Installing Linux Service Aids

It is highly recommended that you 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 greater, you can install the Service Aids that gives you access to more capabilities, which can help you diagnose problems on your system.

This software is available at the Linux on POWER Service aids for hardware diagnostics web site.

____1. Enter the following command to verify that the hot-plug PCI tools are installed:

rpm -aq | grep rpa-pci-hotplugIf the command does not list any rpa-pci-hotplug packages, the PCI Hot Plug tools are not installed.

____2. Use the following command to ensure that the **rpaphp** driver is loaded:

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

The directory should not be empty. 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 0001:00:02.0

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 0001:00:02.2

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 0001:00:02.4

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 0002:00:02.2

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

If the directory does not exist, run the following command:

mount -t sysfs sysfs /sys

Note: The mount -t sysfs sysfs /sys command will mount the filesystem.

- ____3. Ensure the following tools are available in /usr/sbin.
 - lsslot
 - drslot_chrp_pci
- _____4. Use the following command to list the occupied PCI Hotplug slots in your server or partition: lsslot -c pci -o

The following is an example of the information displayed by this command: (Slot Number) (Description) (Devices) U7879.001.DQD014E-P1-C2 PCI-X capable, 64 bit, 133MHz slot 0002:58:01.0 U7879.001.DQD014E-P1-C3 PCI-X capable, 64 bit, 133MHz slot 0001:40:01.0 U7879.001.DQD014E-P1-C4 PCI-X capable, 64 bit, 133MHz slot 0001:48:01.0 0001:48:01.1 U7879.001.DQD014E-P1-C6 PCI-X capable, 64 bit, 133MHz slot 0001:58:01.0 0001:58:01.1

To remove a 520 PCI adapter with the system power on in Linux, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- **2.** If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

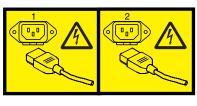
Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 520 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____ **3**. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- _____ 4. Determine which adapters you plan to remove.
- ____ 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. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)



or



____ 8. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

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

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- b. Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)

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

____10. To remove the PCI adapter in U7879.001.DQD014E-P1-C3 with the power on, run the following command to enable the adapter to be removed:

drslot_chrp_pci -r -s U7879.001.DQD014E-P1-C3Following the instructions on the screen to complete the task.

- ____ 11. If you are removing a short adapter, continue to the next step.
 ____ If you are removing a long adapter, unlatch and open the PCI adapter light-pipe plate C
 ____ attached to the fan tray as shown in figure Figure 21 on page 45 or Figure 22 on page 46.
 _____ View video.
- **12**. Rotate the adapter locking latch **A** counterclockwise. **B** View video.
- **13**. Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- 14. Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.

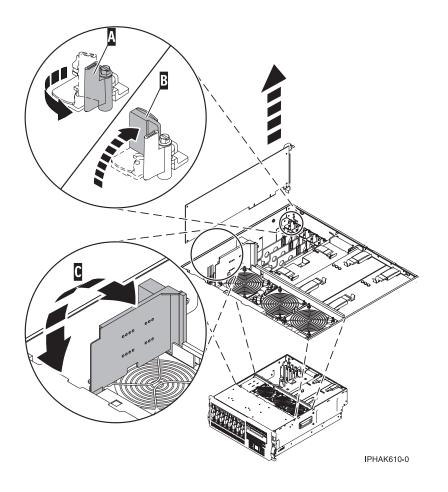


Figure 21. Model 520 PCI adapter removed from the rack-mounted system unit

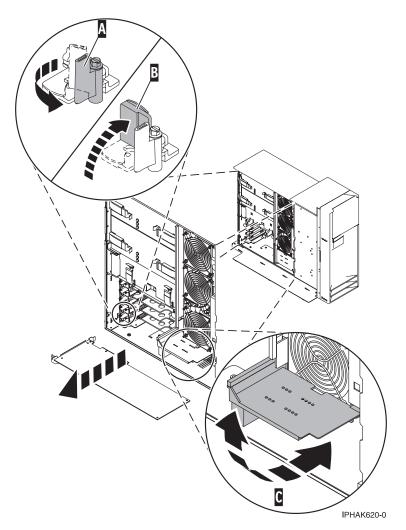


Figure 22. Model 520 PCI adapter removed from the stand-alone system unit

- ____15. If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
- ____16. If you plan to install another adapter into the vacated slot, go to "Install a Model 520, or attached expansion unit, PCI adapter with system power on in Linux" on page 15; otherwise, continue with the next step.
- ____ 17. Seal the expansion slot using an expansion-slot cover.
- ____18. Lower the plastic retainer seat over the PCI adapter faceplate.
- ____19. Rotate the locking latch clockwise until it clicks into the locked position.
- ____20. If you do not have other adapters to remove, continue with the next step. OR

If you have other adapters to remove, return to step 9 on page 43.

- ____21. Replace or close the covers.
- ___22. On a rack-mounted system, close the rear rack door.
- **23**. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____24. To replace the PCI adapter, see "Replace a Model 520, or attached expansion unit, PCI adapter" on page 52.

Remove a Model 520, or attached expansion unit, PCI adapter with the system power off

The following procedure describes the removal of a Model 520, or attached expansion unit, PCI adapter with the system power off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing a PCI adapter. For instructions, see "Remove a part using the Hardware Management Console" on page 355.

To remove a 520 PCI adapter, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- ____ 2. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.
- ____ **3**. "Stop the system" on page 341.
- _____ 4. Disconnect the power source from the system by unplugging the system.

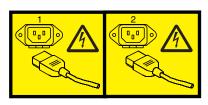
Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

____ 5. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 520 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - **b**. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____ 6. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- ____ 7. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)



or



____ 8. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

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

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)

____10. Record the slot number and location of each adapter being removed.

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

_____11. If you are removing a short adapter, continue to the next step.

If you are removing a long adapter, unlatch and open the PCI adapter light-pipe plate **C** attached to the fan tray as shown in figure Figure 23 on page 50 or Figure 24 on page 51. Wiew video.

- **12**. Rotate the adapter locking latch A counterclockwise as shown in figure Figure 23 on page 50 or Figure 24 on page 51. The View video.
- **13.** Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- 14. Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.

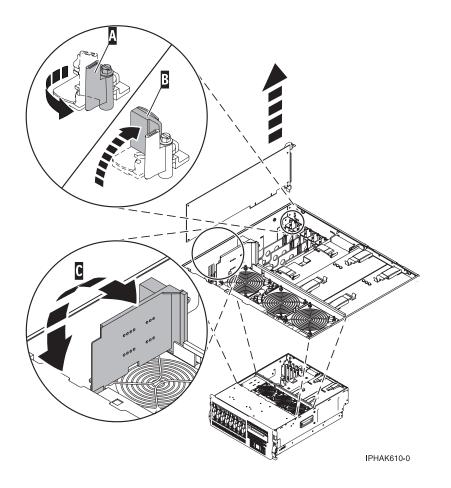


Figure 23. Model 520 PCI adapter removed from the rack-mounted system unit

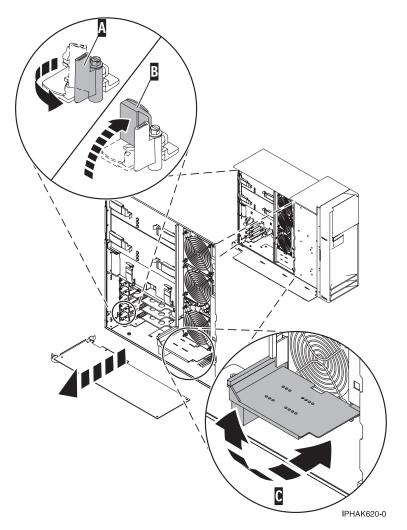


Figure 24. Model 520 PCI adapter removed from the stand-alone system unit

- ____15. If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
- ____16. If you plan to install another adapter into the vacated slot, go to "Replace a Model 520, or attached expansion unit, PCI adapter with the system power off" on page 69; otherwise, continue with the next step.
- ____ 17. Seal the expansion slot using an expansion-slot cover.
- **____18**. Replace or close the covers.
- ____19. Reconnect the power source to the system.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.
 - To Disconnect:
 - a. Turn everything OFF (unless instructed otherwise).
 - **b.** Remove power cords from the outlet.
 - c. Remove signal cables from connectors.
 - d. Remove all cables from devices.
 - To Connect:
 - a. Turn everything OFF (unless instructed otherwise)
 - **b.** Attach all cables to devices.
 - c. Attach signal cables to connectors.
 - **d.** Attach power cords to outlet.
 - e. Turn device ON.
 - (D005)
- ____20. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____21. On a rack-mounted system, close the rear rack door.
- **____22.** "Start the system" on page 340.
- ____23. To replace the PCI adapter, see "Replace a Model 520, or attached expansion unit, PCI adapter."

Replace a Model 520, or attached expansion unit, PCI adapter

The following procedures describe the replacement of a Model 520, or attached expansion unit, PCI adapters.

Select the appropriate instructions from this list:

- "Remove and replace a Model 520, or attached expansion unit, PCI adapter with the system power on in AIX" on page 53 (Use this procedure to remove a failing adapter and replace it with the same adapter in the same slot.)
- "Replace a Model 520, or attached expansion unit, PCI adapter with the system power on in i5/OS" on page 61

- "Replace a Model 520, or attached expansion unit, PCI adapter with the system power on in Linux" on page 65
- "Replace a Model 520, or attached expansion unit, PCI adapter with the system power off" on page 69

Remove and replace a Model 520, or attached expansion unit, PCI adapter with the system power on in AIX

The following procedure describes the removal and replacement of a Model 520, or attached expansion unit, PCI adapter with the system power on in AIX. Read the following notes to determine if this is the correct procedure for the task to be performed.

Notes:

- 1. Use this procedure if you intend to remove a failed 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 "Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in AIX" on page 30.
- **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 "Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in AIX" on page 30, then install the new adapter as described in "Install a Model 520, or attached expansion unit, PCI adapter with system power on in AIX" on page 3.
- 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.

To replace a failed PCI adapter in the model520 with the system power on in AIX, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- **2**. If you are replacing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 520 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.

- "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
- "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____ 3. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- _____ 4. Determine which adapter you plan to remove.
- ____ 5. Adapter slots are numbered on the rear of the system unit, record the slot number and location of each adapter being removed.
- ____ 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, then press enter.
- ____ 10. At the Task Selection list, select PCI Hot Plug Manager.
- ____ 11. Select Unconfigure a Device, 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. 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.
- ____ 15. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfiguration is indicated by the 0K message displayed next to the Command field at the top of the screen.
- ____16. Press F4 or ESC 4 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 remove.

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 disconnect all cables attached to the adapter you plan to remove.

DANGER

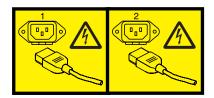
Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)
- __22. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)





____23. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

____24. If you are removing a short adapter, continue to the next step.

If you are removing a long adapter, unlatch and open the PCI adapter light-pipe plate **C** attached to the fan tray as shown in figure Figure 25 on page 57 or Figure 26 on page 58. Wiew video.

- ____ 25. Rotate the adapter locking latch 🛕 counterclockwise. 🔁 View video.
- **____26.** Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- **27**. Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.

or

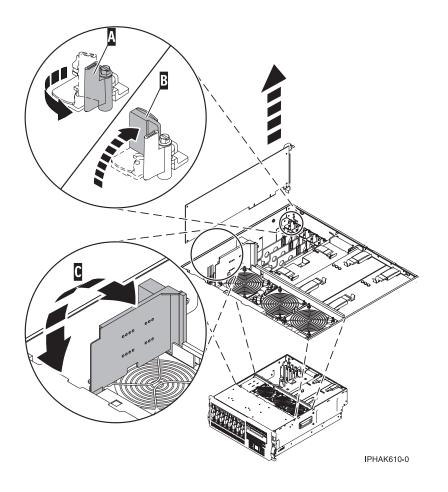


Figure 25. Model 520 PCI adapter removed from the rack-mounted system unit

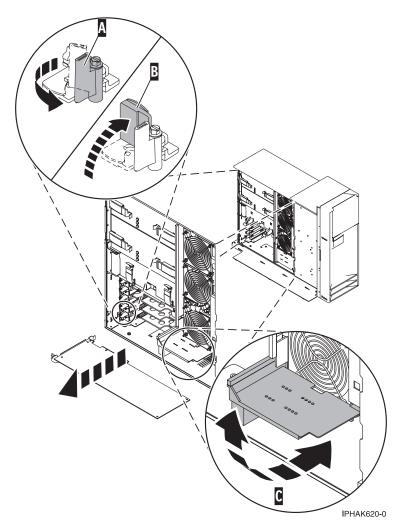


Figure 26. Model 520 PCI adapter removed from the stand-alone system unit

____28. If necessary, remove the replacement adapter from the antistatic package.

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

- **___29.** Carefully grasp the replacement adapter by its top edge, and align it with the expansion slot and its connector on the system backplane. **_____** View video.
- ____ **30**. Press the adapter firmly into its connector.

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

____31. If you are replacing a short adapter, continue to the next step.

If you are replacing a long adapter, do the following:

a. Close and latch the PCI adapter light-pipe plate C attached to the fan tray as shown in figure Figure 27 on page 59 or Figure 28 on page 60.

Note: The light pipes below the light-pipe plate must fit through the holes in the plate for it to latch correctly.

View video.

b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.

___32. Lower the tab **A** onto the PCI adapter faceplate as shown in figure Figure 27 or Figure 28 on page 60. Rotate the adapter locking latch **B** clockwise until it covers the tab at approximately a 45-degree angle. View video.

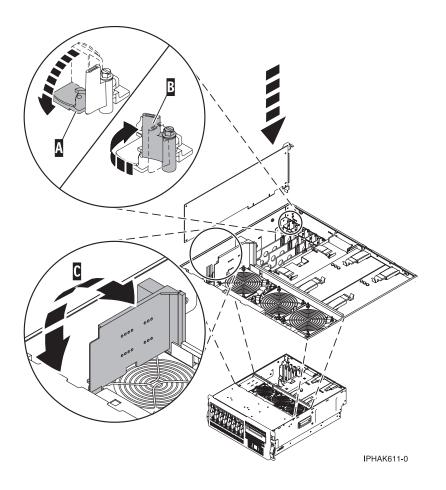


Figure 27. Model 520 PCI adapter replaced in the rack-mounted system unit

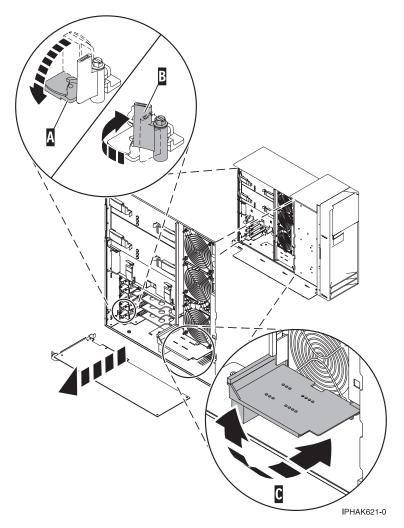


Figure 28. Model 520 PCI adapter replaced in the stand-alone system unit

____33. Connect the adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- ____34. 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 0K message displayed next to the **Command** field at the top of the screen.
- ____35. Press the F3 or ESC 3 key to return to the PCI Hot-Plug Manager menu.
- ____ 36. Press the F3 or ESC 3 key to return to the TASK selection list.
- ___ 37. Select Log Repair Action.
- ____38. Select the resource just replaced, press Enter, press Commit (F7 or ESC 7), then press Enter.
- ____ **39**. Press F3 or ESC 3 to return to **TASK Selection List**.
- ____40. Select Hot Plug Task, press enter.
- ____41. Select **PCI Hot Plug Manager**, then select **Configure a defined device**, then press Enter.
- ____42. Select the device just replaced from the list, then press Enter. The device is now configured.
- ____ **43**. Press the F10 key to exit the diagnostic program.

Note: If you are running the standalone diagnostics, do not exit the program completely.

- _____44. 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, login as root or CELOGIN, then enter the **diag** command.
 - If AIX is not available, boot the standalone diagnostics
 - b. Type the diag command if you are not already displaying the diagnostic menus
 - c. Select Advance Diagnostic Routines, then select Problem Determination.
 - d. Select the name of the resource just replaced from the menu. If the resource just replaced is not shown, choose the resource associated with it. Press Enter, then press **Commit** (F7 or ESC7).
 - e. Did the Problem Determination identify any problems?
 - No: Continue to the next step. (RETURN TO PROCEDURE THAT SENT YOU HERE)
 - Yes: A problem is identified
 - If you are a customer, record the error information, then contact your service provider.
 - If you are an authorized service provider, return to map 210-5.
- ____ 45. Press the F10 key to exit the diagnostic program.
- ____46. On a rack-mounted system, close the rear rack door.
- ____47. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____ **48**. Replace or close the covers.

____ 49. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Replace a Model 520, or attached expansion unit, PCI adapter with the system power on in i5/OS

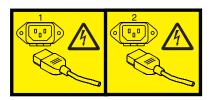
The following procedure describes the replacement of a Model 520, or attached expansion unit, PCI adapter with the system power on in i5/OS.

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 "Replace a part using the Hardware Management Console" on page 355.

Attention: You must have already completed the procedure "Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in i5/OS" on page 36 in order to have the slot powered off.

To replace an 520 PCI adapter with the system power on in i5/OS, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- 2. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)





_____ 3. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

_____ 4. If necessary, remove the adapter from the antistatic package.

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

- ____ 5. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
- ____ 6. Press the adapter firmly into its connector.

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

____ 7. If you are replacing a short adapter, continue to the next step.

If you are replacing a long adapter, do the following:

a. Close and latch the PCI adapter light-pipe plate C attached to the fan tray as shown in figure Figure 29 on page 63 or Figure 30 on page 64.

Note: The light pipes below the light-pipe plate must fit through the holes in the plate for it to latch correctly.

Tiew video.

- b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.
- 8. Lower the tab A onto the PCI adapter faceplate as shown in figure Figure 29 on page 63 or Figure 30 on page 64. Rotate the adapter locking latch B clockwise until it covers the tab at approximately a 45-degree angle. Wiew video.

or

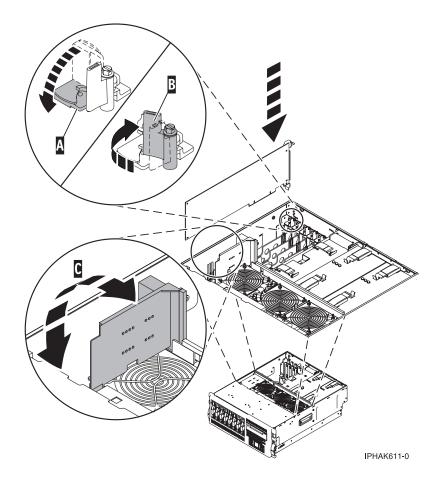


Figure 29. Model 520 PCI adapter replaced in the rack-mounted system unit

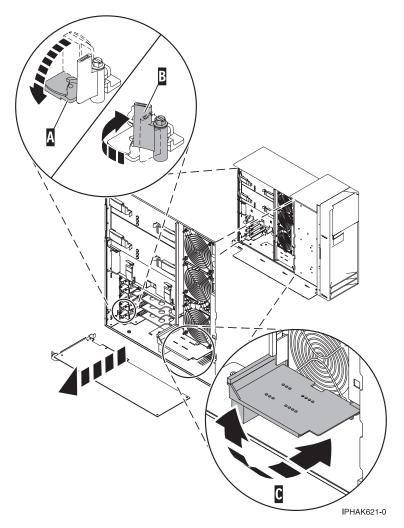


Figure 30. Model 520 PCI adapter replaced in the stand-alone system unit

____ 9. Connect the adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- ____10. Select **Power on domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
- 11. Select Assign to on the resource that has an asterisk (*) on the Work with Controlling Resource display. Press Enter.
- ____12. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: Power on complete
- ____13. Replace or close the covers.
- _____14. On a rack-mounted system, close the rear rack door.
- ____15. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____16. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Replace a Model 520, or attached expansion unit, PCI adapter with the system power on in Linux

The following procedure describes the replacement of a Model 520, or attached expansion unit, PCI adapter with the system power on in Linux.

Attention: To start this procedure you must have completed the "Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in Linux" on page 40 and the server is still powered on in order to have the slot powered off.

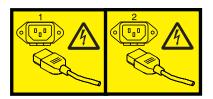
Notes:

- 1. Before performing a PCI hot-plug removal of storage devices, ensure file systems on those devices are unmounted.
- 2. Procedures performed on a PCI adapter with the system power on in Linux, 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.
- **3.** 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 "Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in Linux" on page 40 and "Install a Model 520, or attached expansion unit, PCI adapter with system power on in Linux" on page 15.

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 "Replace a part using the Hardware Management Console" on page 355.

To replace an 520 PCI adapter with the system power on in Linux, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- 2. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)





____ 3. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

_____ 4. If necessary, remove the adapter from the antistatic package.

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

- _ 5. Place the adapter, component-side up, on a flat, antistatic surface.
- 6. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in the 520 server, you must remove the blue handle or support bracket from the card.
- ____ 7. To replace an adapter into PCI slot U7879.001.DQD014E-P1-C3, enter the following command: drslot_chrp_pci -R -s U7879.001.DQD014E-P1-C3Follow the instructions on the screen to complete the task.

When you are instructed to insert the adapter in the adapter slot, carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.

8. Press the adapter firmly into its connector.

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

_____ 9. If you are replacing a short adapter, continue to the next step.

If you are replacing a long adapter, do the following:

a. Close and latch the PCI adapter light-pipe plate **C** attached to the fan tray as shown in figure Figure 31 on page 67 or Figure 32 on page 68.

or

Note: The light pipes below the light-pipe plate must fit through the holes in the plate for it to latch correctly.

View video.

- b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.
- 10. Lower the tab A onto the PCI adapter faceplate as shown in figure Figure 31 or Figure 32 on page 68. Rotate the adapter locking latch B clockwise until it covers the tab at approximately a 45-degree angle. Wiew video.

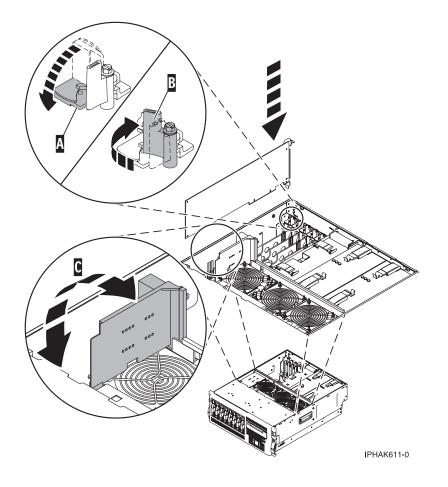


Figure 31. Model 520 PCI adapter replaced in the rack-mounted system unit

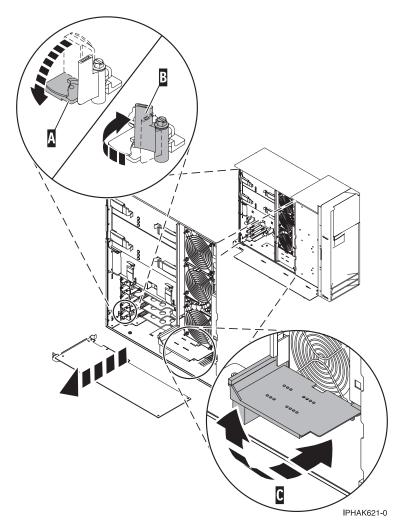


Figure 32. Model 520 PCI adapter replaced in the stand-alone system unit

____11. Connect any adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

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

Note: After performing a PCI hot-plug install of storage devices, ensure file systems on those devices are remounted.

- ____13. Replace or close the covers.
- ____ 14. On a rack-mounted server, close the rear rack door.
- ____15. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted server. If you are servicing a stand-alone server, continue to the next step.

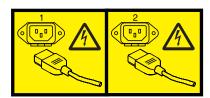
Replace a Model 520, or attached expansion unit, PCI adapter with the system power off

The following procedure describes the replacement of a Model 520, or attached expansion unit, PCI adapter with the system power off. You must have already completed the procedure "Remove a Model 520, or attached expansion unit, PCI adapter with the system power off" on page 47.

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 "Replace a part using the Hardware Management Console" on page 355.

To replace a 520 PCI adapter with the system power off, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- 2. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)



or



3. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

_____ 4. If necessary, remove the adapter from the antistatic package.

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

- ____ 5. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane. The View video.
- ____ 6. Press the adapter firmly into its connector.

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

____ 7. If you are replacing a short adapter, continue to the next step.

If you are replacing a long adapter, do the following:

a. Close and latch the PCI adapter light-pipe plate C attached to the fan tray as shown in figure Figure 33 or Figure 34 on page 71.

Note: The light pipes below the light-pipe plate must fit through the holes in the plate for it to latch correctly.

View video.

- b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.
- 8. Lower the tab A onto the PCI adapter faceplate as shown in figure Figure 33 or Figure 34 on page 71. Rotate the adapter locking latch B clockwise until it covers the tab at approximately a 45-degree angle. View video.

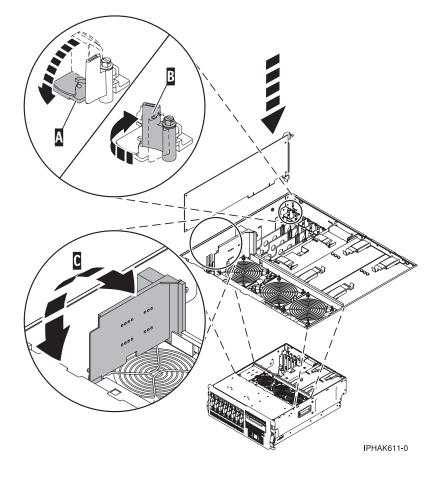


Figure 33. Model 520 PCI adapter replaced in the rack-mounted system unit

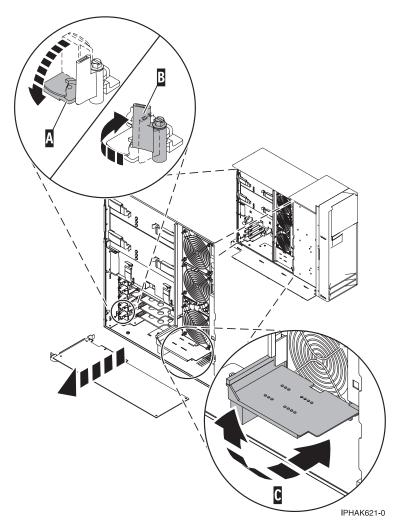


Figure 34. Model 520 PCI adapter replaced in the stand-alone system unit

____ 9. Connect the adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- ____10. If you are servicing a rack-mounted system unit, route the cables through the cable-management arm.
- ____ 11. Replace or close the covers.
- ____12. Reconnect the power source to the system.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.
 - To Disconnect:
 - a. Turn everything OFF (unless instructed otherwise).
 - **b.** Remove power cords from the outlet.
 - c. Remove signal cables from connectors.
 - d. Remove all cables from devices.
 - To Connect:
 - a. Turn everything OFF (unless instructed otherwise)
 - **b.** Attach all cables to devices.
 - c. Attach signal cables to connectors.
 - **d.** Attach power cords to outlet.
 - e. Turn device ON.
 - (D005)
- ____13. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- _____14. On a rack-mounted system, close the rear rack door.
- ___ 15. "Start the system" on page 340.
- ____16. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Model 550and OpenPower 720, or attached expansion unit, PCI adapters and dividers

The following procedures describe the removal, replacement, and installation of Model 550 and OpenPower 720, or attached expansion unit, PCI or PCI-X adapters, PCI adapter dividers, and PCI-adapter-divider light pipes.

Select the appropriate instructions from this list:

Model 550 and OpenPower 720 PCI adapters

• "Install a Model 550and OpenPower 720, or attached expansion unit, PCI adapter" on page 73

- "Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter" on page 98
- "Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter" on page 122

Model 550 and OpenPower 720 PCI adapter dividers

- "Remove a model 550 and OpenPower 720 PCI adapter divider" on page 163
- "Replace a Model 550 and OpenPower 720 PCI adapter divider" on page 165

Install a Model 550and OpenPower 720, or attached expansion unit, PCI adapter

Select the appropriate instructions from this list:

- "Install a Model 550, or attached expansion unit, PCI adapter with system power on in AIX"
- "Install a Model 550, or attached expansion unit, PCI adapter with system power on in i5/OS" on page 80
- "Install a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with system power on in Linux" on page 86
- "Install a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power off" on page 92

Install a Model 550, or attached expansion unit, PCI adapter with system power on in AIX

The following procedure describes the installation of a Model 550 and OpenPower 720, or attached expansion unit, PCI adapter with the system power on in AIX.

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 "Install a feature using the Hardware Management Console" on page 355.

Note: If the system is multi-partitioned, see Partitioning for AIX to learn more about working in partitions, then return here to continue the procedure.

To install an 550 PCI adapter with the system power on in AIX, do the following:

- _____1. Determine in which slot to place the PCI adapter by doing the following:
 - Refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for adapters used in this system.
 - Determine if the adapter will be placed in the base system unit or an expansion unit.
 - If the adapter is to be placed into the base system unit, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that does not contain PCI adapter cassettes, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that contains PCI adapter cassettes, go to the procedures for adapters in adapter cassettes. See "PCI adapters and cassettes" on page 169.
 - 2. Perform the prerequisite tasks described in "Before you begin" on page 311.

Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

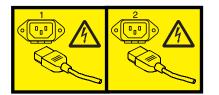
When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

3. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 550 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____ 4. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- ____ 5. If necessary, remove the adapter expansion slot shield. 🔁 View video.
- ____ 6. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.
 (L003)



or



____ 7. If necessary, remove the adapter from the antistatic package.

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

- **8**. Place the adapter, component-side up, on a flat, antistatic surface.
- 9. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
- ____10. Refer to "PCI Hot-Plug Manager Access for AIX" on page 244, and follow the steps in the access procedure to select **PCI Hot Plug Manager**. Then return here to continue.
- ____ 11. From the PCI Hot-Plug Manager menu, select **Add a PCI Hot-Plug Adapter** and press Enter. The Add a Hot-Plug Adapter window displays.
- ____12. Select the appropriate empty PCI slot from the ones listed on the screen, and press Enter.
- 13. Rotate the adapter locking latches counterclockwise as shown in figure Figure 35 on page 76 or Figure 36 on page 77.
- 14. Lift the black tab attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- _____15. Remove the adapter filler plate if one is present. If an adapter is present in the slot you want to use, see the instruction in "Remove a Model 520, or attached expansion unit, PCI adapter" on page 29 and then return here.

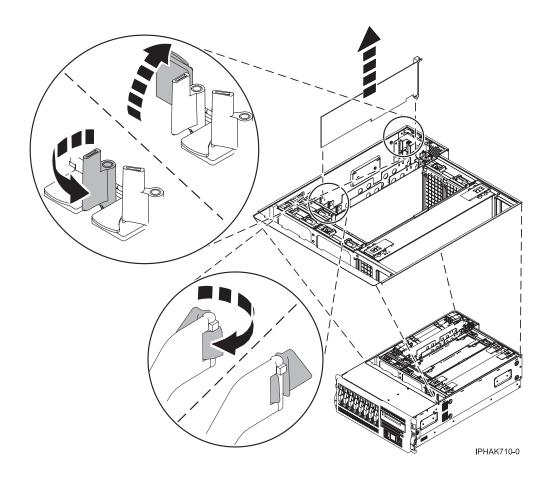


Figure 35. Model 550 PCI adapter or filler plate removed from the rack-mounted system unit

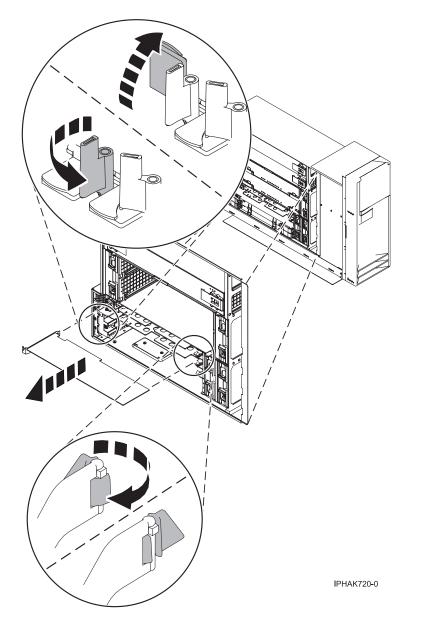


Figure 36. Model 550 PCI adapter or filler plate removed from the stand-alone system unit

- ____16. 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 246.
- ____ 17. When you are instructed to install the adapter in the adapter slot, carefully grasp the adapter by the edges and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full-length adapter, ensure that both ends of the adapter engage the card guides.
- ____ 18. Press the adapter firmly into its connector.

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

19. Lower the tab onto the PCI adapter faceplate. Rotate the adapter locking latches clockwise as shown in figure Figure 37 on page 78 or Figure 38 on page 79. approximately a 45-degree angle.
View video.

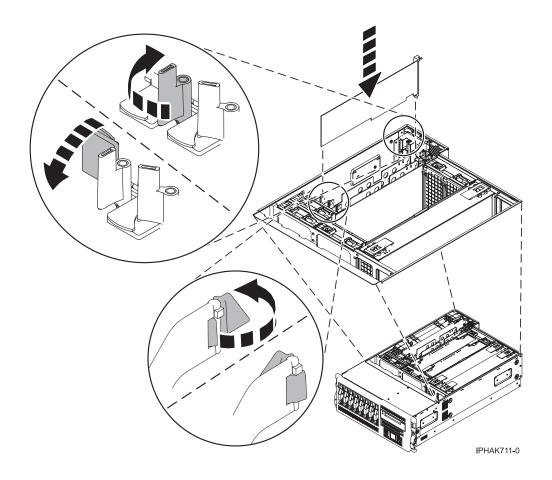


Figure 37. Model 550 PCI adapter replaced in the rack-mounted system unit

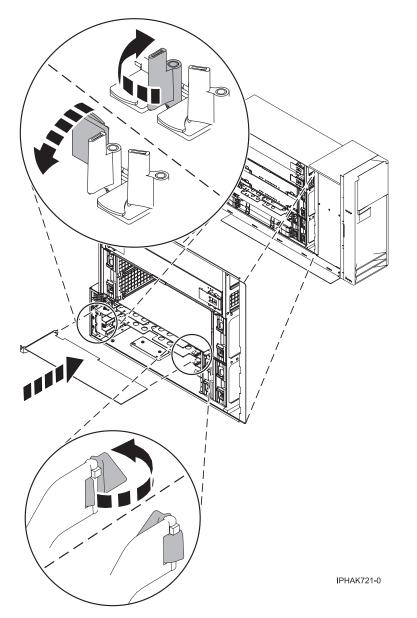


Figure 38. Model 550 PCI adapter replaced in the stand-alone system unit

___ 20. Connect any adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- ____21. Replace or close the covers.
- ____22. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- **23**. On a rack-mounted system, close the rear rack door.
- ____24. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Install a Model 550, or attached expansion unit, PCI adapter with system power on in i5/OS

The following procedure describes the installation of a Model 550, or attached expansion unit, PCI adapter with the system power on in i5/OS.

Note: If the system is multi-partitioned, see Installing new hardware for OS/400 logical partitions before installing a new PCI adapter and then return here to continue the procedure.

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 "Install a feature using the Hardware Management Console" on page 355.

To install an 550 PCI adapter with the system power on in i5/OS, do the following:

- _____1. Determine in which slot to place the PCI adapter by doing the following:
 - Refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for adapters used in this system.
 - Determine if the adapter will be placed in the base system unit or an expansion unit.
 - If the adapter is to be placed into the base system unit, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that does not contain PCI adapter cassettes, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that contains PCI adapter cassettes, go to the procedures for adapters in adapter cassettes. See "PCI adapters and cassettes" on page 169.
- ____ 2. Perform the prerequisite tasks described in "Before you begin" on page 311.
 - Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

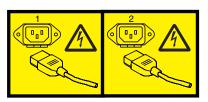
If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.

3. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

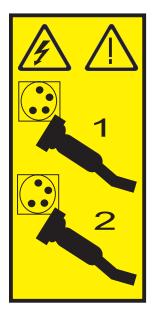
Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 550 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:

- a. Open the back rack door.
- b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____4. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- ____ 5. If necessary, remove the adapter expansion slot shield. 🔁 View video.
- ____ 6. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.
 (L003)



or



____ 7. If necessary, remove the adapter from the antistatic package.

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

- **8**. Place the adapter, component-side up, on a flat, antistatic surface.
- 9. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
- ____10. Type strsst on the command line of the Main Menu and then press Enter.

- 11. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.
- ____12. Select Start a service tool from the System Service Tools (SST) display and press Enter.
- ____13. Select Hardware service manager from the Start a Service Tool display and press Enter.
- **14**. Select **Packaging hardware resources (system, frames, cards...)** from the Hardware Service Manager display. Press Enter.
- **15.** Type **9** (Hardware contained within package) in the *System Unit* or *Expansion Unit* field of the unit where you are replacing the card. Press Enter.
- ____ 16. Select the option to **Include empty positions**.
- ____ 17. Select Concurrent Maintenance on the card position where you want to replace the card and then press Enter.
- **18**. Select the option to **Toggle LED blink off/on**. A light-emitting diode (LED) blinks identifying the position you chose. Physically verify that this is the slot where you want to install the adapter.
- ____19. Select the option to **Toggle LED blink off/on** to stop the blinking LED.
- **20.** Rotate the adapter locking latch A counterclockwise as shown in figure Figure 39 or Figure 40 on page 83.
- **____21.** Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- **___22.** Remove the adapter filler plate if one is present. If an adapter is present in the slot you want to use, see the instruction in "Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter" on page 98 and then return here.

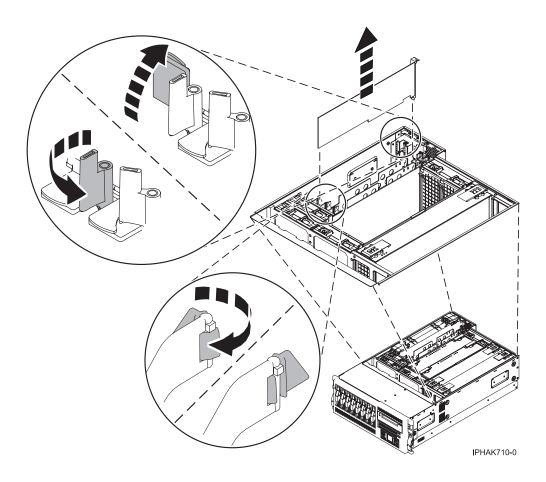


Figure 39. Model 550 PCI adapter or filler plate removed from the rack-mounted system unit

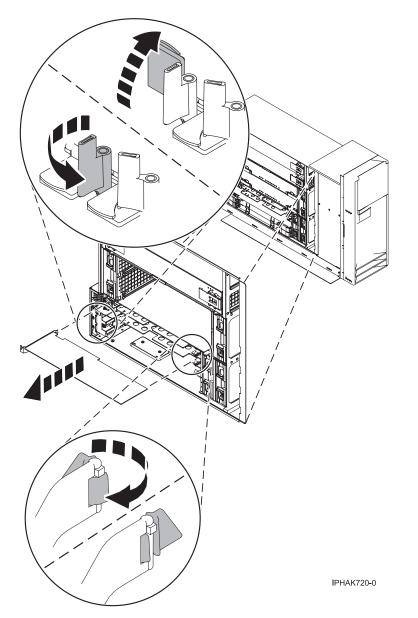


Figure 40. Model 550 PCI adapter or filler plate removed from the stand-alone system unit

- **23.** Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
- ____24. Press the adapter firmly into its connector.

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

____25. Lower the tab onto the PCI adapter faceplate. Rotate the adapter locking latches clockwise as shown in figure Figure 41 on page 84 or Figure 42 on page 85.

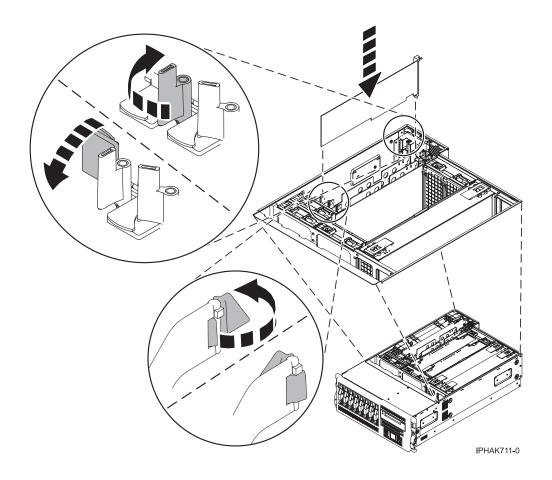


Figure 41. Model 550 PCI adapter replaced in the rack-mounted system unit

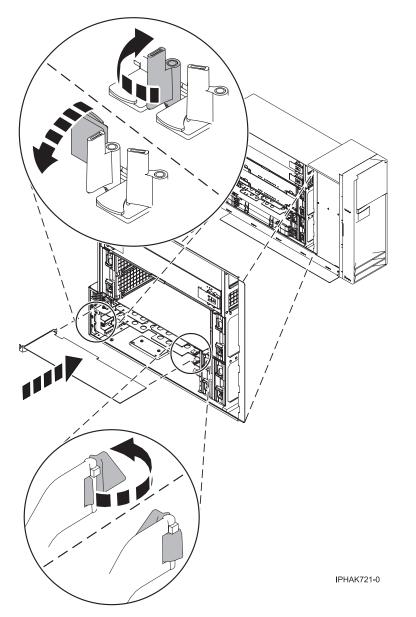


Figure 42. Model 550 PCI adapter replaced in the stand-alone system unit

___ 26. Connect any adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- **27**. Select **Power on domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
- **28**. Select **Assign to** on the resource that has an asterisk (*) on the Work with Controlling Resource display. Press Enter.
- **____29.** Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: Power on complete
- ____ **30**. Replace or close the covers.

- ____31. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____ 32. On a rack-mounted system, close the rear rack door.
- ____33. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Install a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with system power on in Linux

The following procedure describes the installation of Model 550 and OpenPower 720, or attached expansion unit, PCI adapters with the system power on in Linux.

If the system is multi-partitioned, see Partitioning for Linux to learn more about working in partitions, then return here to continue the procedure.

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 "Install a feature using the Hardware Management Console" on page 355.

This procedure provides the steps you must take to install a model 550 and OpenPower 720 PCI adapter in a server or partition that is running the Linux.

To install an 550 and OpenPower 720 PCI adapter with the system power on in Linux, do the following:

- 1. Before attempting to perform the PCI hot-plug procedure, ensure that the server or partition in which the adapter is intended is at the correct level of the Linux operating system (Linux 2.6 or greater). Also, ensure that the necessary tools are available on your server, do the following:
 - ____a. 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.

____b. Use the following command to ensure that the **rpaphp** driver is loaded:

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

The directory should not be empty. 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 0001:00:02.0

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 0001:00:02.4

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 0002:00:02.2

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

- ____ c. Ensure the following tools are available in /usr/sbin.
 - lsslot
 - drslot_chrp_pci
- **2**. Determine in which slot to place the PCI adapter by doing the following:
 - Refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for adapters used in this system.
 - Determine if the adapter will be placed in the base system unit or an expansion unit.

- If the adapter is to be placed into the base system unit, continue with this procedure by going to the next numbered step.
- If the adapter is to be placed into an expansion unit that does not contain PCI adapter cassettes, continue with this procedure by going to the next numbered step.
- If the adapter is to be placed into an expansion unit that contains PCI adapter cassettes, go to the procedures for adapters in adapter cassettes. See "PCI adapters and cassettes" on page 169.
- **3**. Perform the prerequisite tasks described in "Before you begin" on page 311.

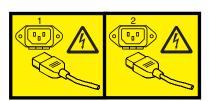
Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

____ 4. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.
 (L003)



or



5. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.

- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 550 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____ 6. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- ____ 7. If necessary, remove the adapter expansion slot shield. 🔁 View video.
- **8**. If necessary, remove the adapter from the antistatic package.

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

- 9. Place the adapter, component-side up, on a flat, antistatic surface.
- ____10. Log in to the system console as the **root** user.
- ____11. 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 lsslot -c pci -a command.

- ____12. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
- **13.** Rotate the adapter locking latch A counterclockwise as shown in figure Figure 43 on page 89 or Figure 44 on page 89. The View video.
- ____14. Lift the black tab B attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- ____ 15. Remove the adapter filler plate if one is present. If an adapter is present in the slot you want to use, see the instructions in "Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter" on page 98 and then return here.

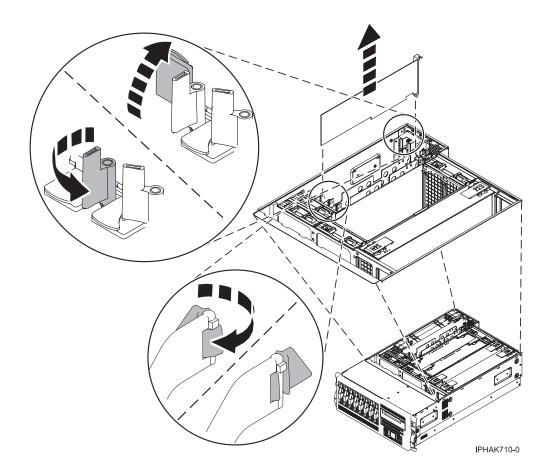
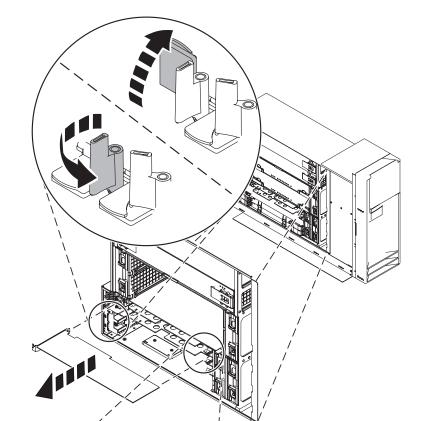


Figure 43. Model 550 and OpenPower 720 PCI adapter or filler plate removed from the rack-mounted system unit

Figure 44. Model 550 and OpenPower 720 PCI adapter or filler plate removed from the stand-alone system unit



- ____ 16. To hot plug an adapter into PCI slot U7879.001.DQD014E-P1-C3, enter the following command: drslot_chrp_pci -a -s U7879.001.DQD014E-P1-C3
- ____ **17**. 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.

____18. 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.

- ____ 19. When you are instructed to install the adapter in the adapter slot, carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
- ____ 20. Press the adapter firmly into its connector.

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

____21. Lower the tab onto the PCI adapter faceplate. Rotate the adapter locking latches clockwise as shown in figure Figure 45 or Figure 46 on page 91.

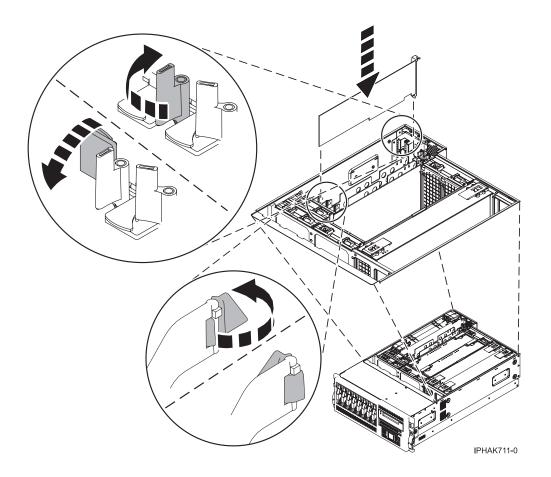
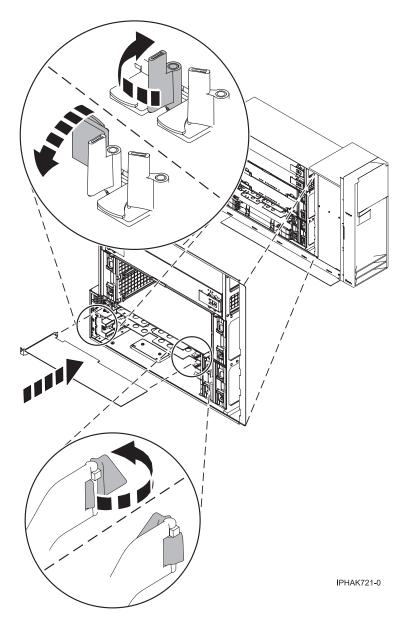


Figure 45. Model 550 and OpenPower 720 PCI adapter replaced in the rack-mounted system unit

Figure 46. Model 550 and OpenPower 720 PCI adapter replaced in the stand-alone system unit



____22. Connect any adapter cables.

DANGER

Slot

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

23. 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:

```
Description Device(s)
```

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

- ____24. If you are servicing a rack-mounted system, route the cables through the cable-management arm.
- ____25. Replace or close the covers.

- ____26. On a rack-mounted system, close the rear rack door.
- ____27. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.

Install a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power off

The following procedure describes the installation of Model 550 and OpenPower 720, or attached expansion unit, PCI adapters with the system power off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a PCI adapter. For instructions, see "Install a feature using the Hardware Management Console" on page 355.

Note: If the system is multi-partitioned, select the appropriate information from the following list to learn more about working in a partitioned environment, then return here:

- Partitioning for AIX
- Installing new hardware for i5/OS logical partitions
- Partitioning for Linux

To install a 550 and OpenPower 720 PCI adapter with the system power off, do the following:

- _____1. Determine in which slot to place the PCI adapter by doing the following:
 - Refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for adapters used in this system.
 - Determine if the adapter will be placed in the base system unit or an expansion unit.
 - If the adapter is to be placed into the base system unit, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that does not contain PCI adapter cassettes, continue with this procedure by going to the next numbered step.
 - If the adapter is to be placed into an expansion unit that contains PCI adapter cassettes, go to the procedures for adapters in adapter cassettes. See "PCI adapters and cassettes" on page 169.
- ____ 2. Perform the prerequisite tasks described in "Before you begin" on page 311.

Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

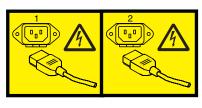
If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.

- **__ 3**. "Stop the system" on page 341.
- _____ 4. Disconnect the power source from the system by unplugging the system.

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

____ 5. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)



or



6. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 550 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - **b**. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.

- "Open the model 0595, 5095, orD20 service access cover" on page 243
- ____ 7. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
 - 8. If necessary, remove the adapter expansion slot shield. The video.
- ____ 9. If necessary, remove the adapter from the antistatic package.

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

- ____10. Place the adapter, component-side up, on a flat, antistatic surface.
- ____ 11. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
- ____12. Rotate the adapter locking latch A counterclockwise as shown in figure Figure 47 or Figure 48 on page 95.
- **13**. Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- 14. Remove the adapter filler plate if one is present. If an adapter is present in the slot you want to use, see the instructions in "Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter" on page 98 and then return here.

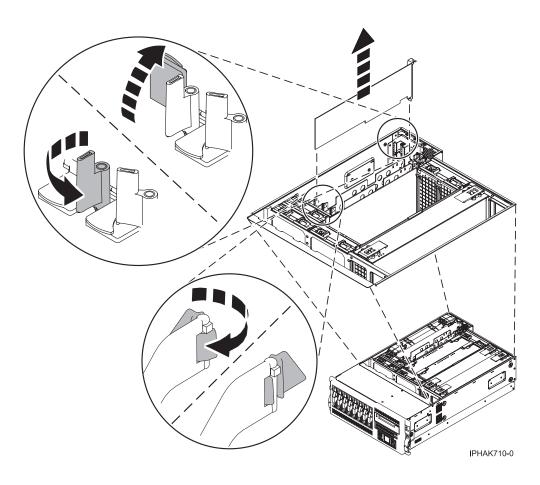
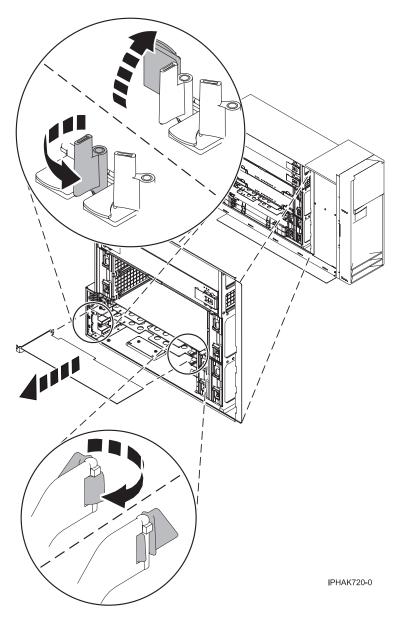


Figure 47. Model 550 and OpenPower 720 PCI adapter or filler plate removed from the rack-mounted system unit

Figure 48. Model 550 and OpenPower 720 PCI adapter or filler plate removed from the stand-alone system unit



- ____15. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
- ____ 16. Press the adapter firmly into its connector.

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

____ 17. Lower the tab onto the PCI adapter faceplate. Rotate the adapter locking latches clockwise as shown in figure Figure 49 on page 96 or Figure 50 on page 96.

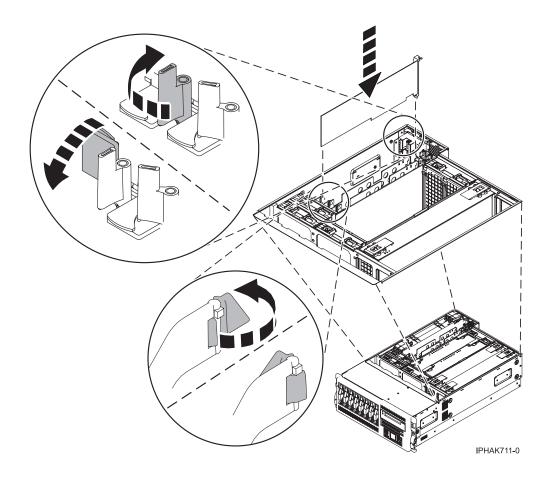
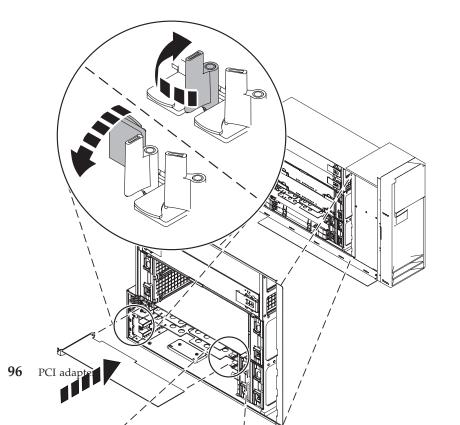


Figure 49. Model 550 and OpenPower 720 PCI adapter replaced in the rack-mounted system unit

Figure 50. Model 550 and OpenPower 720 PCI adapter replaced in the stand-alone system unit



____18. Connect any adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- ____19. If you are servicing a rack-mounted system, route the cables through the cable-management arm.
- ____ 20. Replace or close the covers.
- ____21. On a rack-mounted system, close the rear rack door.
- **22.** "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- **____23.** Reconnect the power source to the system.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- **c.** Attach signal cables to connectors.
- **d.** Attach power cords to outlet.
- e. Turn device ON.

(D005)

- ___ 24. "Start the system" on page 340.
- ____25. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter

Select the appropriate instructions from this list:

- "Remove a Model 550, or attached expansion unit, PCI adapter with the system power on in AIX"
- "Remove a Model 550, or attached expansion unit, PCI adapter with the system power on in i5/OS" on page 104
- "Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power on in Linux" on page 109
- "Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power off" on page 116

Remove a Model 550, or attached expansion unit, PCI adapter with the system power on in AIX

The following procedure describes the removal of a Model 550, or attached expansion unit, PCI adapter with the system on in AIX. Read the following notes to determine if this is the correct procedure for the task to be performed.

Notes:

- 1. 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 "Remove a part using the Hardware Management Console" on page 355.
- 2. Use this procedure to remove a PCI adapter and leave the slot in the system unit empty. To remove a failed adapter and replace it with the same adapter, see "Remove and replace a Model 550, or attached expansion unit, PCI adapter with the system power on in AIX" on page 123.
- **3**. 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 "Install a Model 550, or attached expansion unit, PCI adapter with system power on in AIX" on page 73.
- 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.

To remove a 550 PCI adapter with the system power on in AIX, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- ____ 2. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.
- **3**. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 550 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:

- "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
- "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____ 4. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- ____ 5. Determine which adapters you plan to remove.
- ____ 6. Record the slot number and location of each adapter being removed.

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

- ____ 7. Ensure that any processes or applications that might use the adapter are stopped.
- **8**. Enter the system diagnostics by logging in as root user or as the celogin user, type **diag** at AIX command line.
- ____ 9. When the **DIAGNOSTIC OPERATING INSTRUCTIONS** menu displays, press Enter.
- _____10. At the FUNCTION SELECTION menu, select Task Selection, then press enter.
- _____11. At the Task Selection list, select **PCI Hot Plug Manager**.
- ____ 12. Select Unconfigure a Device, then press Enter.
- ____ 13. Press F4 or ESC 4 to display the **Device Names** menu.
- _____14. Select the adapter you are removing in the **Device Names** menu.
- ____ 15. Use the Tab key to answer N0 to Keep Definition. Use the Tab key again to answer YES to Unconfigure Child Devices, then press Enter.
- ____16. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfiguration is indicated by the 0K message displayed next to the Command field at the top of the screen.
- ___ 17. Press F4 or ESC 4 twice to return to the Hot Plug Manager menu.
- ____ 18. Select replace/remove PCI Hot Plug adapter.
- ____19. Select the slot that has the device to be removed from the system.
- ____20. Select remove.

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

- ___21. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.
- **22**. Label and disconnect all cables attached to the adapter you plan to remove.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

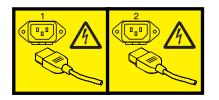
- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.

To Connect:

- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- **d.** Attach power cords to outlet.
- e. Turn device ON.

(D005)

23. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)



or



____24. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

- ____ 25. Rotate the adapter locking latch 🛕 counterclockwise. 🔁 View video.
- **____26.** Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- **27**. Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.

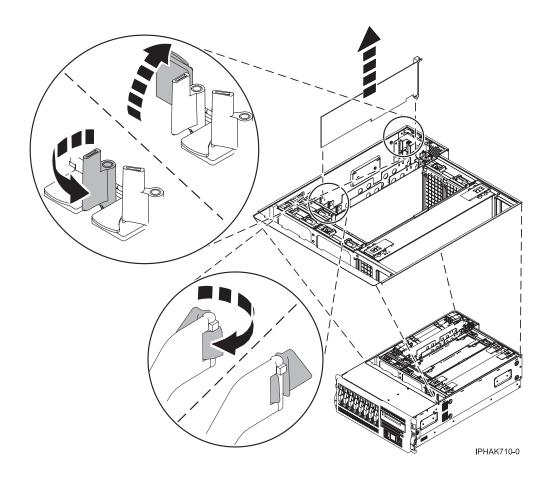


Figure 51. Model 550 PCI adapter removed from the rack-mounted system unit

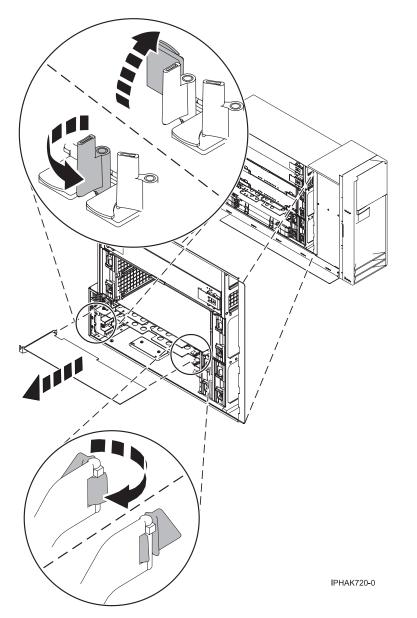


Figure 52. Model 550 PCI adapter removed from the stand-alone system unit

- **28.** If you plan to install another adapter into the vacated slot, go to "Install a Model 520, or attached expansion unit, PCI adapter with system power on in AIX" on page 3; otherwise, continue with the next step.
- ____ 29. Seal the expansion slot using an expansion-slot cover.
- ____ **30**. Lower the plastic retainer seat over the PCI adapter faceplate.
- ____31. Rotate the locking latch clockwise until it clicks into the locked position.
- ____32. Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the 0K message displayed next to the Command field at the top of the screen.
- ___ 33. 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 22 on page 99. OR

If you do not have other adapters to remove, continue with the next step.

____ **34**. Press F10 to exit the Hot-Plug Manager.

- ____35. Run the **diag** -a command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
- ____ **36**. Replace or close the covers.
- ____ 37. On a rack-mounted system, close the rear rack door.
- **___38**. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____ **39.** To replace the PCI adapter, see "Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter" on page 122.

Remove a Model 550, or attached expansion unit, PCI adapter with the system power on in i5/OS

The following procedure describes the removal of a Model 550, or attached expansion unit, PCI adapter with the system on in i5/OS.

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 "Remove a part using the Hardware Management Console" on page 355.

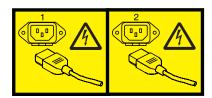
To remove a 550 PCI adapter with the system power on in i5/OS, do the following:

- _____1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- **2.** If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.
- **3**. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

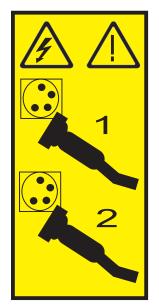
Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 550 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____4. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:

- "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
- "Remove the back door and cover from the 5095 expansion unit" on page 318
- _ 5. Type strsst on the command line of the Main Menu and press Enter.
- G. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.
- ____ 7. Select **Start a service tool** from the System Service Tools (SST) display. Press Enter.
- ____ 8. Select Hardware service manager from the Start a Service Tool display and press Enter.
- 9. Select **Packaging hardware resources (system, frames, cards...)** from the Hardware Service Manager display. Press Enter.
- **10.** Type **9** (Hardware contained within package) in the *System Unit* or *Expansion Unit* field of the unit where you are removing the card, then press Enter.
- ____ 11. Select the option to **Include empty positions**.
- **12**. Select **Concurrent Maintenance** on the card position where you want to remove the card and then press Enter.
- ____13. Select the option to **Toggle LED blink off/on**. A light-emitting diode (LED) blinks identifying the position you chose. Physically verify that this is the slot where you want to remove the adapter.
- _____14. Select the option to **Toggle LED blink off/on** to stop the blinking LED.
- ____ 15. Select the option to **Power off domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
- ____16. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: Power off complete
- __ 17. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.
 (L003)



or



____18. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

____19. Label and disconnect all cables attached to the adapter you plan to remove.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- **c.** Remove signal cables from connectors.
- d. Remove all cables from devices.

To Connect:

- **a.** Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)

____20. Record the slot number and location of each adapter being removed.

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

- ____21. Rotate the adapter locking latch A counterclockwise. 🔁 View video.
- **22**. Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.

23. Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.

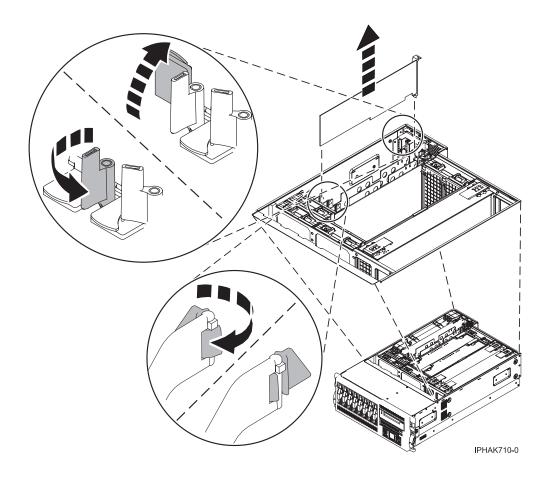


Figure 53. Model 550 PCI adapter removed from the rack-mounted system unit

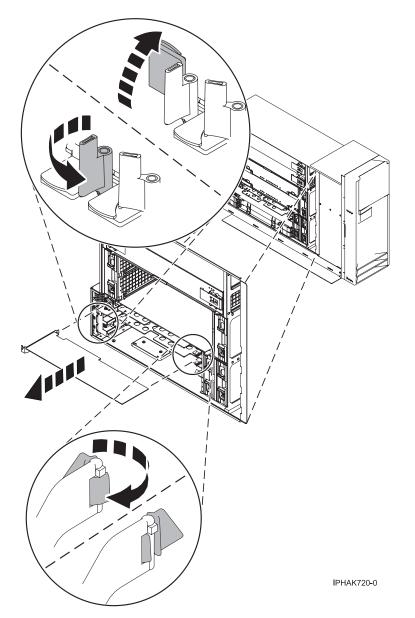


Figure 54. Model 550 PCI adapter removed from the stand-alone system unit

- **____24.** If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
- ____25. If you plan to install another adapter into the vacated slot, go to "Install a Model 550, or attached expansion unit, PCI adapter with system power on in i5/OS" on page 80; otherwise, continue with the next step.
- ____26. Seal the expansion slot using an expansion-slot cover.
- ____ 27. Replace or close the covers.
- **28**. On a rack-mounted system, close the rear rack door.
- **____29.** "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____ **30.** To replace the PCI adapter, see "Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter" on page 122.

Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power on in Linux

This procedure provides the steps you must take to remove a PCI adapter in a server, expansion unit, or partition that is running the Linux.

Note: Procedures performed on a PCI adapter with the system power on in Linux, 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 removing a PCI adapter. For instructions, see "Remove a part using the Hardware Management Console" on page 355.

Before attempting to perform the PCI hot-plug procedure, ensure that the server or partition in which the adapter is intended is at the correct level of the Linux operating system (Linux 2.6 or greater). Also, ensure that the necessary tools are available on your server by doing the following:

Installing Linux Service Aids

It is highly recommended that you 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 greater, you can install the Service Aids that gives you access to more capabilities, which can help you diagnose problems on your system.

This software is available at the Linux on POWER Service aids for hardware diagnostics web site.

____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. Use the following command to ensure that the **rpaphp** driver is loaded:

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

The directory should not be empty. 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 0001:00:02.2

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 0001:00:02.4

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 0002:00:02.0

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 0002:00:02.2
```

If the directory does not exits, run the following command:

mount -t sysfs sysfs /sys

Note: The mount -t sysfs sysfs /sys command will mount the filesystem.

____3. Ensure the following tools are available in /usr/sbin.

- lsslot
- drslot_chrp_pci
- _4. Use the following command to list the occupied PCI Hotplug slots in your server or partition:

lsslot -c pci -o

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

(Slot Number) (Description) (Devices) U7879.001.DQD014E-P1-C2 PCI-X capable, 64 bit, 133MHz slot 0002:58:01.0 U7879.001.DQD014E-P1-C3 PCI-X capable, 64 bit, 133MHz slot 0001:40:01.0 U7879.001.DQD014E-P1-C4 PCI-X capable, 64 bit, 133MHz slot 0001:48:01.0 0001:48:01.1 U7879.001.DQD014E-P1-C6 PCI-X capable, 64 bit, 133MHz slot 0001:58:01.0 0001:58:01.1

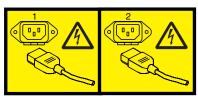
To remove a 550 and OpenPower 720 PCI adapter with the system power on in Linux, do the following:

- _____1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- ____ 2. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.
- **3**. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 550 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____4. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- ____ 5. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)



or



____ 6. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.

 ____ 7. Determine which adapter you plan to remove, then label and disconnect all cables attached to that adapter.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.

To Connect:

- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- **d.** Attach power cords to outlet.
- e. Turn device ON.
- (D005)

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

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

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

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)

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

____10. To remove the PCI adapter in U7879.001.DQD014E-P1-C3 with the power on, run the following command to enable the adapter to be removed:

drslot_chrp_pci -r -s U7879.001.DQD014E-P1-C3Following the instructions on the screen to complete the task.

- 11. Rotate the adapter locking latch 🛕 counterclockwise as shown in figure Figure 55 on page 114 or Figure 56 on page 115. 📷 View video.
- **12.** Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.

____13. Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.

Figure 55. Model 550 and OpenPower 720 PCI adapter removed from the rack-mounted system unit

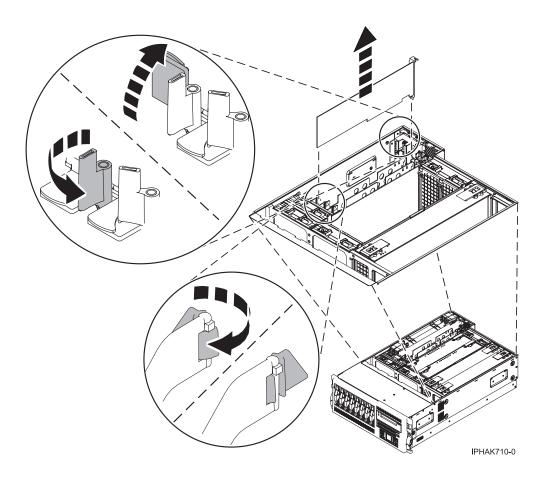
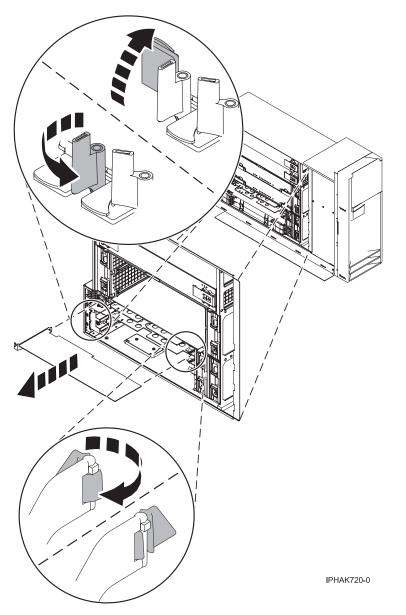


Figure 56. Model 550 and OpenPower 720 PCI adapter removed from the stand-alone system unit



- _____14. If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
- ____ 15. If you plan to install another adapter into the vacated slot, go to "Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power on in Linux" on page 135; otherwise, continue with the next step.
- ____ 16. Seal the expansion slot using an expansion-slot cover.
- ____ 17. Replace or close the covers.
- ____18. Reconnect the power source to the system.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.
 - To Disconnect:
 - a. Turn everything OFF (unless instructed otherwise).
 - **b.** Remove power cords from the outlet.
 - c. Remove signal cables from connectors.
 - d. Remove all cables from devices.
 - To Connect:
 - a. Turn everything OFF (unless instructed otherwise)
 - **b.** Attach all cables to devices.
 - c. Attach signal cables to connectors.
 - **d.** Attach power cords to outlet.
 - e. Turn device ON.
 - (D005)
- ____19. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____ 20. On a rack-mounted system, close the rear rack door.
- **____21**. "Start the system" on page 340.
- **22.** To replace the PCI adapter, see "Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter" on page 122.

Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power off

The following procedure describes the removal of a Model 550 and OpenPower 720, or attached expansion unit, PCI adapter with the system power off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing a PCI adapter. For instructions, see "Remove a part using the Hardware Management Console" on page 355.

To remove a 550 and OpenPower 720 PCI adapter with the system power off, do the following:

_____1. Perform the prerequisite tasks described in "Before you begin" on page 311.

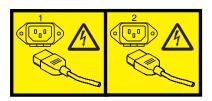
- 2. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.
- ____ **3**. "Stop the system" on page 341.
- _____ 4. Disconnect the power source from the system by unplugging the system.

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

____ 5. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 550 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- For all other rack-mounted expansion units, follow these steps:
 - a. Open the back rack door.
 - **b**. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____ 6. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- ____ 7. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.
 (L003)





____ 8. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

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

or

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)

____10. Record the slot number and location of each adapter being removed.

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

- ____ 11. Rotate the adapter locking latch 🛕 counterclockwise as shown in figure Figure 57 on page 120 or Figure 58 on page 121. The View video.
- **12.** Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.

____13. Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.

Figure 57. Model 550 and OpenPower 720 PCI adapter removed from the rack-mounted system unit

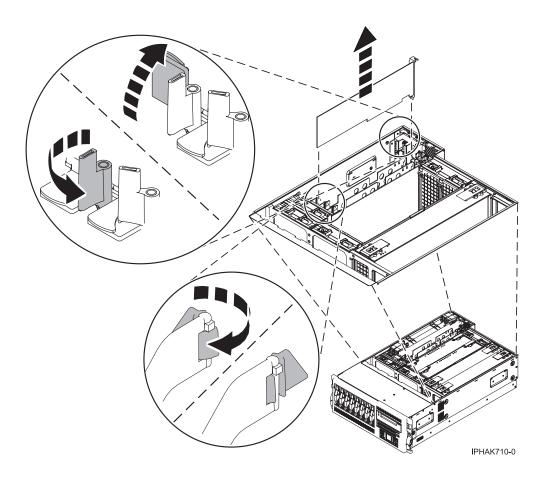
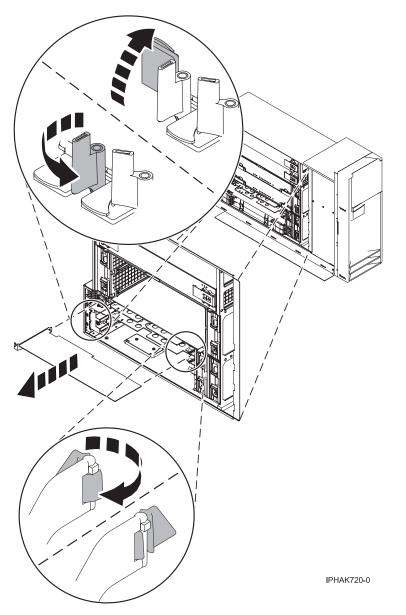


Figure 58. Model 550 and OpenPower 720 PCI adapter removed from the stand-alone system unit



- _____14. If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
- ____ 15. If you plan to install another adapter into the vacated slot, go to "Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power off" on page 139; otherwise, continue with the next step.
- ____ 16. Seal the expansion slot using an expansion-slot cover.
- ____17. Replace or close the covers.
- ____18. Reconnect the power source to the system.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.
 - To Disconnect:
 - a. Turn everything OFF (unless instructed otherwise).
 - **b.** Remove power cords from the outlet.
 - c. Remove signal cables from connectors.
 - d. Remove all cables from devices.
 - To Connect:
 - a. Turn everything OFF (unless instructed otherwise)
 - **b.** Attach all cables to devices.
 - c. Attach signal cables to connectors.
 - **d.** Attach power cords to outlet.
 - e. Turn device ON.
 - (D005)
- ____19. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____ 20. On a rack-mounted system, close the rear rack door.
- **____21**. "Start the system" on page 340.
- **22.** To replace the PCI adapter, see "Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter."

Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter

The following procedures describe the replacement of a Model 550 and OpenPower 720, or attached expansion unit, PCI adapter. It is assumed that you have already completed the procedures in "Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter" on page 98.

Select the appropriate instructions from this list:

• "Remove and replace a Model 550, or attached expansion unit, PCI adapter with the system power on in AIX" on page 123

- "Replace a Model 550, or attached expansion unit, PCI adapter with the system power on in i5/OS" on page 131
- "Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power on in Linux" on page 135
- "Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power off" on page 139

Remove and replace a Model 550, or attached expansion unit, PCI adapter with the system power on in AIX

The following procedure describes the replacement of a Model 550, or attached expansion unit, PCI adapter with the system power on in AIX. Read the following notes to determine if this is the correct procedure for the task to be performed.

Notes:

- 1. 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 "Replace a part using the Hardware Management Console" on page 355.
- 2. Use this procedure if you intend to remove a failed PCI adapter and replace it with the same type of adapter.
- **3**. If you plan to remove a failing adapter and leave the slot empty, see "Remove a Model 550, or attached expansion unit, PCI adapter with the system power on in AIX" on page 98.
- 4. 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 "Remove a Model 550, or attached expansion unit, PCI adapter with the system power on in AIX" on page 98, then install the new adapter as described in "Install a Model 550, or attached expansion unit, PCI adapter with system power on in AIX" on page 73.
- 5. 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 a failed PCI adapter in the model 550 with the system power on in AIX, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- 2. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.
- **3**. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps. If you are servicing a stand-alone system, go to the next step.

Notes:

- a. If you are placing an adapter in a model 5790 or D11, use the PCI adapter cassette procedures. See "PCI adapters and cassettes" on page 169.
- b. Installing, removing, or replacing a PCI adapter in the D10, 5791, or 5794 expansion units are not customer procedures. Contact your service provider
- For the 550 system unit, the 0595, 5095, or D20 expansion unit, follow these steps:
 - a. Open the front rack door.
 - b. Place the system or expansion unit in the service position. See "Place the rack-mounted system or expansion unit in the service position" on page 333.
 - c. Remove or open the service access cover as follows:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Open the model 0595, 5095, orD20 service access cover" on page 243

- For all other rack-mounted expansion units, follow these steps:
 - **a**. Open the back rack door.
 - b. Remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. These steps also apply to the 5294, 8294, 9194 expansion units. When the cover is removed, remove the PCI adapter access plate.
 - "Remove the back cover from the 0588 expansion unit" on page 319. These steps also apply to the model 5088.
 - "Open the model 0595, 5095, orD20 service access cover" on page 243
- _____4. If you are installing a PCI adapter in a stand-alone system or expansion unit, follow these steps.:
 - "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327
 - "Remove the back door and cover from the 5095 expansion unit" on page 318
- ____ 5. Determine which adapters you plan to remove.
- ____ 6. Record the slot number and location of each adapter being removed.

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

- ____ 7. Ensure that any processes or applications that might use the adapter are stopped.
- **8**. Enter the system diagnostics by logging in as root user or as the celogin user, type **diag** at AIX command line.
- 9. When the **DIAGNOSTIC OPERATING INSTRUCTIONS** menu displays, press Enter.
- ____10. At the FUNCTION SELECTION menu, select Task Selection, then press enter.
- ____ 11. At the Task Selection list, select PCI Hot Plug Manager.
- ____ 12. Select Unconfigure a Device, then press Enter.
- ____ 13. Press F4 or ESC 4 to display the **Device Names** menu.
- _____14. Select the adapter you are removing in the **Device Names** menu.
- ____ 15. Use the Tab key to answer N0 to **Keep Definition**. Use the Tab key again to answer YES to **Unconfigure Child Devices**, then press Enter.
- ____ 16. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfiguration is indicated by the 0K message displayed next to the Command field at the top of the screen.
- ____ 17. Press F4 or ESC 4 twice to return to the Hot Plug Manager menu.
- ____ 18. Select replace/remove PCI Hot Plug adapter.
- ____19. Select the slot that has the device to be removed from the system.
- ___ 20. Select remove.

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

- ____21. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.
- ____22. Label and disconnect all cables attached to the adapter you plan to remove.

DANGER

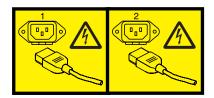
Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)
- __23. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)





____24. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

- ____ 25. Rotate the adapter locking latch 🛕 counterclockwise. 🔁 View video.
- **____26.** Lift the black tab **B** attached to the adapter retainer assembly, and keep the black tab in a vertical position.
- ____27. Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.

or

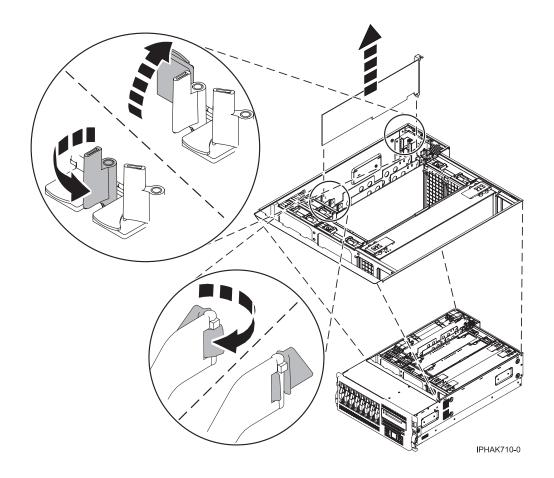


Figure 59. Model 550 PCI adapter removed from the rack-mounted system unit

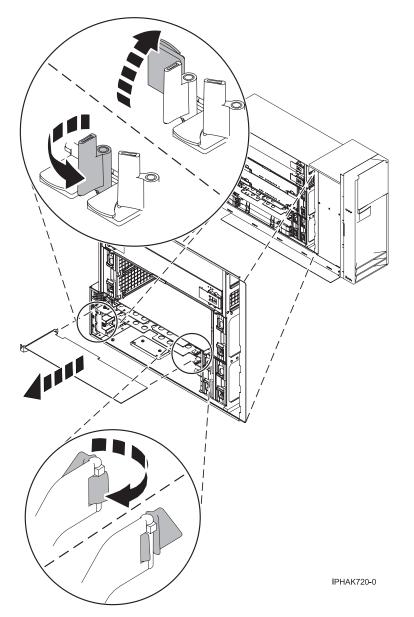


Figure 60. Model 550 PCI adapter removed from the stand-alone system unit

____28. If necessary, remove the replacement adapter from the antistatic package.

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

- **___29.** Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane. **_____** View video.
- ____ **30**. Press the adapter firmly into its connector.

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

____31. Lower the tab onto the PCI adapter faceplate. Rotate the adapter locking latches clockwise as shown in figure Figure 61 on page 129 or Figure 62 on page 130.

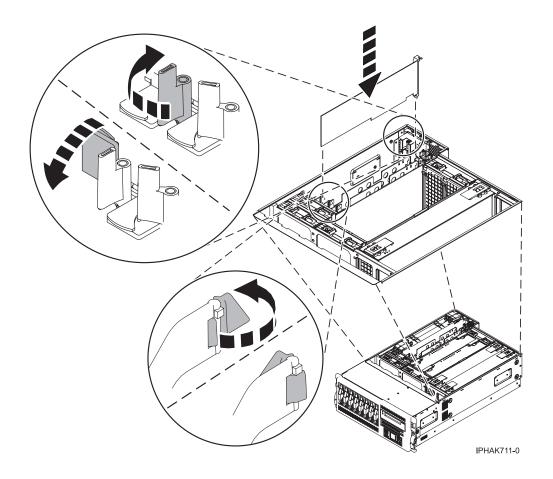


Figure 61. Model 550 PCI adapter replaced in the rack-mounted system unit

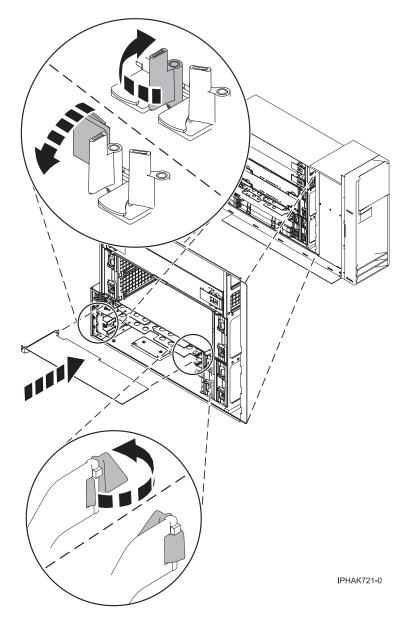


Figure 62. Model 550 PCI adapter replaced in the stand-alone system unit

___ 32. Connect the adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- ____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 0K 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), 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, then select Configure a defined device, then press Enter.
- ____41. Select the device just replaced from the list, then press Enter. The device is now configured.
- ____ 42. Press the F10 key to exit the diagnostic program.

Note: If you are running the standalone diagnostics, do not exit the program completely.

- ____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, login as root or CELOGIN, then enter the **diag** command.
 - If AIX is not available, boot the standalone diagnostics
 - b. Type the diag command if you are not already displaying the diagnostic menus
 - c. Select Advance Diagnostic Routines, then select Problem Determination.
 - d. Select the name of the resource just replaced from the menu. If the resource just replaced is not shown, choose the resource associated with it. Press Enter, then press **Commit** (F7 or ESC7).
 - e. Did the Problem Determination identify any problems?
 - No: Continue to the next step. (RETURN TO PROCEDURE THAT SENT YOU HERE)
 - Yes: A problem is identified
 - If you are a customer, record the error information, then contact your service provider.
 - If you are an authorized service provider, return to map 210-5.
- _____44. Press the F10 key to exit the diagnostic program.
- ____ 45. Replace or close the covers.
- ____46. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____ 47. On a rack-mounted system, close the rear rack door.
- ____48. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Replace a Model 550, or attached expansion unit, PCI adapter with the system power on in i5/OS

The following procedure describes the replacement of a Model 550, or attached expansion unit, PCI adapter with the system power on in i5/OS.

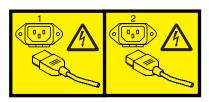
Attention: You must have already completed the procedure "Remove a Model 550, or attached expansion unit, PCI adapter with the system power on in i5/OS" on page 104 in order to have the slot powered off.

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 "Replace a part using the Hardware Management Console" on page 355.

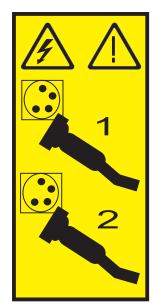
To replace an 550 PCI adapter with the system power on in i5/OS, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- ____ 2. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)



or



Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

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

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

- _____ 4. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
- ____ 5. Press the adapter firmly into its connector.

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

6. Lower the tab onto the PCI adapter faceplate. Rotate the adapter locking latches clockwise as shown in figure Figure 63 on page 133 or Figure 64 on page 134. Wiew video.

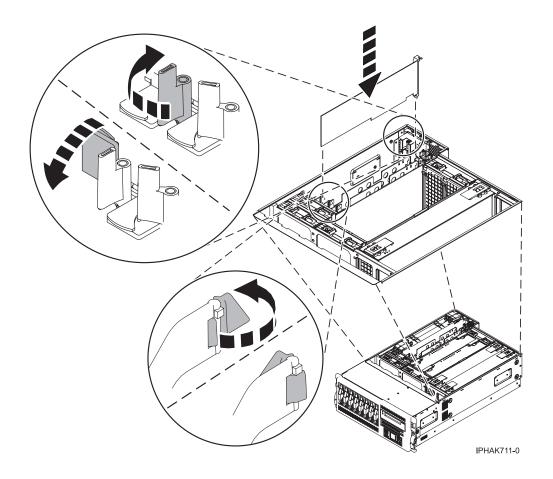


Figure 63. Model 550 PCI adapter replaced in the rack-mounted system unit

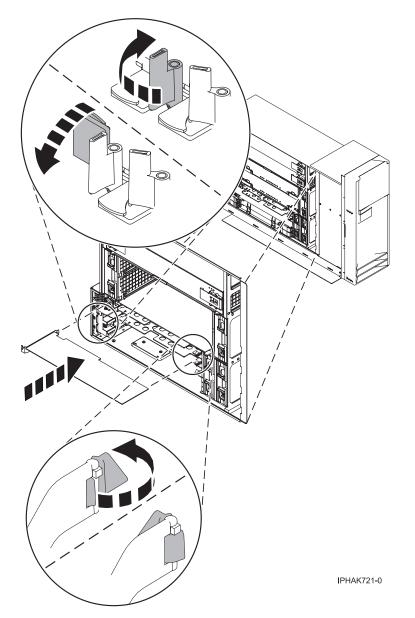


Figure 64. Model 550 PCI adapter replaced in the stand-alone system unit

____ 7. Connect the adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- **8**. Select **Power on domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
- ____ 9. Select Assign to on the resource that has an asterisk (*) on the Work with Controlling Resource display. Press Enter.
- ____10. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: Power on complete
- ____ 11. Replace or close the covers.
- ____ 12. On a rack-mounted system, close the rear rack door.

- ____13. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____14. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power on in Linux

The following procedure describes the replacement of a Model 550 and OpenPower 720, or attached expansion unit, PCI adapter with the system power on in Linux.

Attention: You must have already completed the procedure "Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power on in Linux" on page 109 in order to have the slot powered off.

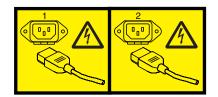
If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing a PCI adapter. For instructions, see "Replace a part using the Hardware Management Console" on page 355.

Notes:

- 1. Before performing a PCI hot-plug removal of storage devices, ensure file systems on those devices are unmounted.
- 2. Procedures performed on a PCI adapter with the system power on in Linux, 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.
- **3.** 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 "Remove a Model 520, or attached expansion unit, PCI adapter with the system power on in Linux" on page 40 and "Install a Model 520, or attached expansion unit, PCI adapter with system power on in Linux" on page 15.

To replace a 550 and OpenPower 720 PCI adapter with the system power on in Linux, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- 2. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)



Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

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

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

- _____ 4. Place the adapter, component-side up, on a flat, static-protective surface.
- ____ 5. To replace an adapter into PCI slot U7879.001.DQD014E-P1-C3, enter the following command: drslot_chrp_pci -R -s U7879.001.DQD014E-P1-C3Follow the instructions on the screen to complete the task.
- ____ 6. Press the adapter firmly into its connector.

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

- 7. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane. Wiew video.
- ____ 8. Press the adapter firmly into its connector.

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

or

9. Lower the tab onto the PCI adapter faceplate. Rotate the adapter locking latches clockwise as shown in figure Figure 65 or Figure 66 on page 138.

Figure 65. Model 550 and OpenPower 720 PCI adapter replaced in the rack-mounted system unit

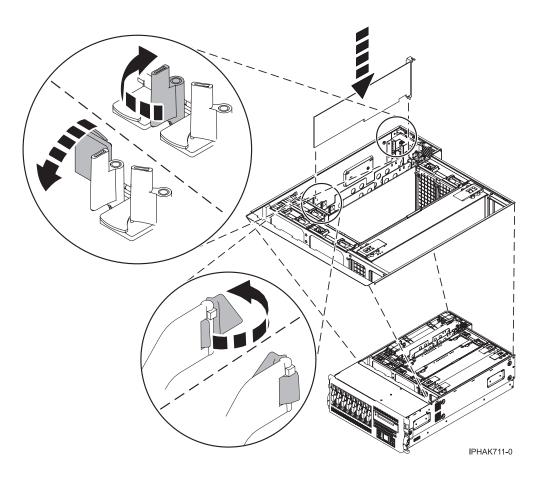
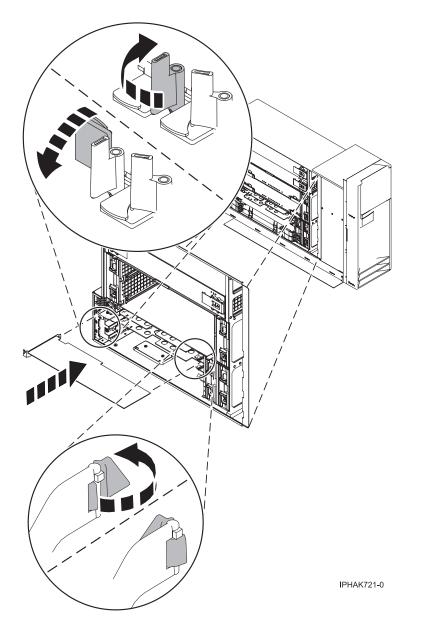


Figure 66. Model 550 and OpenPower 720 PCI adapter replaced in the stand-alone system unit



____10. Connect the adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

____11. 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

Note: After performing a PCI hot-plug install of storage devices, ensure file systems on those devices are remounted.

- ____12. If you are servicing a rack-mounted system, route the cables through the cable-management arm.
- **13**. Replace or close the covers.
- ____14. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____ 15. On a rack-mounted system, close the rear rack door.
- ____16. "Start the system" on page 340.
- ____ 17. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Replace a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power off

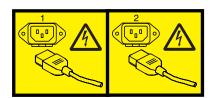
The following procedure describes the replacement of a Model 550 and OpenPower 720, or attached expansion unit, PCI adapter with the system power off.

Attention: You must have already completed the procedure "Remove a Model 550and OpenPower 720, or attached expansion unit, PCI adapter with the system power off" on page 116 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 "Replace a part using the Hardware Management Console" on page 355.

To replace a 550 and OpenPower 720 PCI adapter with the system power off, do the following:

- _____1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- 2. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)



Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

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

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

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

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

or

7. Lower the tab onto the PCI adapter faceplate. Rotate the adapter locking latches clockwise as shown in figure Figure 67 or Figure 68 on page 142. Wiew video.

Figure 67. Model 550 and OpenPower 720 PCI adapter replaced in the rack-mounted system unit

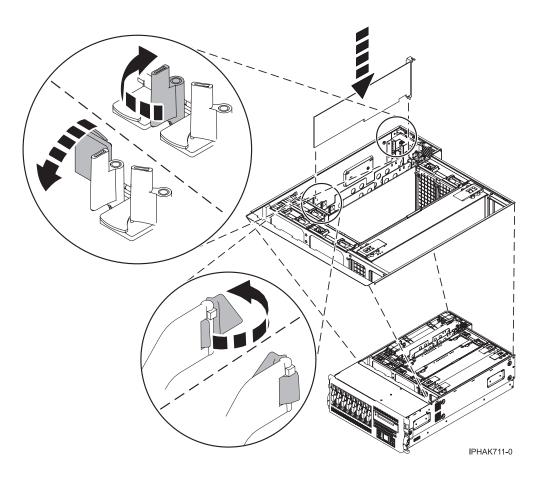
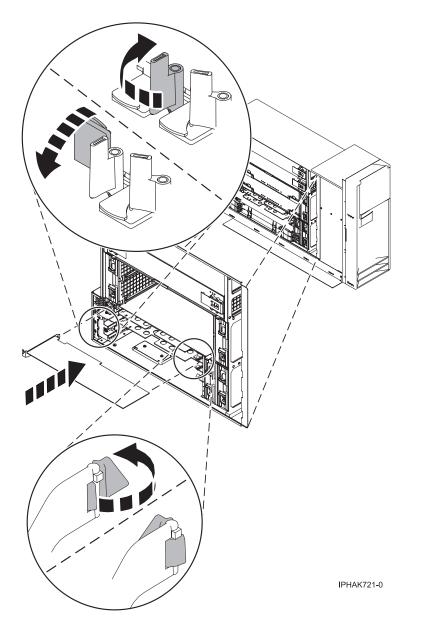


Figure 68. Model 550 and OpenPower 720 PCI adapter replaced in the stand-alone system unit



8. Connect the adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

- _____9. If you are servicing a rack-mounted system, route the cables through the cable-management arm.
- ____10. Replace or close the covers.
- ____ 11. Reconnect the power source to the system.

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.
 - To Disconnect:
 - a. Turn everything OFF (unless instructed otherwise).
 - **b.** Remove power cords from the outlet.
 - c. Remove signal cables from connectors.
 - d. Remove all cables from devices.
 - To Connect:
 - a. Turn everything OFF (unless instructed otherwise)
 - **b.** Attach all cables to devices.
 - c. Attach signal cables to connectors.
 - d. Attach power cords to outlet.
 - e. Turn device ON.
 - (D005)
- ____12. "Place the rack-mounted system or expansion unit in the operating position" on page 336 if you are servicing a rack-mounted system. If you are servicing a stand-alone system, continue to the next step.
- ____13. On a rack-mounted system, close the rear rack door.
- ____ 14. "Start the system" on page 340.
- ____15. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Model OpenPower 710 or 9110-510 PCI adapters

To install, remove, or replace Model OpenPower 710 or 9110-510, or attached expansion unit, PCI or PCI-X adapters and PCI adapter dividers, use the following procedures.

Select the appropriate instructions from this list:

Model OpenPower 710 or 9110-510 PCI adapters

- "Install a Model OpenPower 710 or 9110-510 PCI adapter" on page 144
- "Remove a Model OpenPower 710 or 9110-510 PCI adapter" on page 148
- "Replace a Model OpenPower 710 or 9110-510PCI adapter" on page 153

Install a Model OpenPower 710 or 9110-510 PCI adapter

The following procedure describes the installation of Model OpenPower 710 or 9110-510 PCI adapters with the system power off. This system does not support the installation of PCI adapters with the system power on.

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 "Install a feature using the Hardware Management Console" on page 355.

Note: If the system is multi-partitioned, select the appropriate information from the following list to learn more about working in a partitioned environment, then return here:

- Partitioning for AIX
- Partitioning for Linux

To install a OpenPower 710 or 9110-510 PCI adapter with the system power off, do the following:

- Determine in which slot to place the PCI adapter. Refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for adapters used in this system.
- ____ 2. Perform the prerequisite tasks described in "Before you begin" on page 311.

Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

- ____ **3**. "Stop the system" on page 341.
- _____ 4. Disconnect the power source from the system by unplugging the system.

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

- ____ 5. Open the front rack door.
- ____ 6. Place the system in the service position. See "Place the model 9110-510 orOpenPower 710 in the service position" on page 338.
- ____ 7. "Remove the service access cover from the rack-mounted model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 328.
- **8**. Open the PCI adapter enclosure handle **A**. Grasping the enclosure handle and the tab at the back of the enclosure, lift the enclosure out of the system unit.

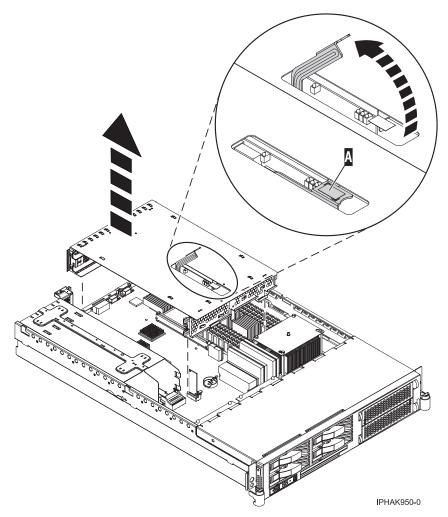


Figure 69. Model OpenPower 710 or 9110-510 PCI adapter assembly removed from the system unit

- ____ 9. Rotate it so that the enclosure opening is facing upwards.
- ____ 10. Place the enclosure on a flat, antistatic surface.
- ____ 11. If necessary, remove the adapter expansion slot shield. 🔁 View video.

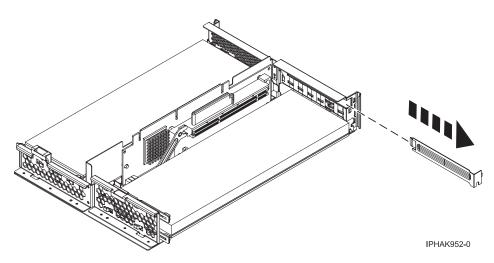


Figure 70. Model OpenPower 710 or 9110-510 PCI adapter slot cover removed from the assembly

____12. If necessary, remove the adapter from the antistatic package.

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

- ____13. Place the adapter, component-side up, on a flat, antistatic surface.
- _____14. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
- ____15. Slide the adapter into the assembly as shown in the following figure.

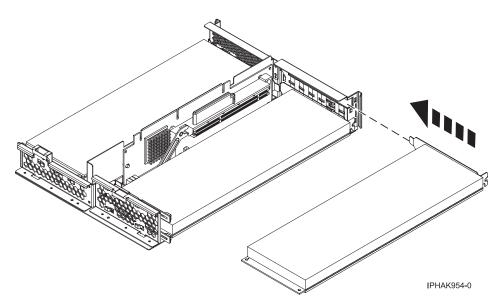


Figure 71. Model OpenPower 710 or 9110-510 PCI adapter placed in the assembly

- ____16. Press the adapter firmly into its connector.
- ____17. Rotate the PCI adapter enclosure so the handle faces out from the system unit.
- **18**. Place the enclosure in the system unit, then lock it into place by closing the handle **A** . **The View** video.

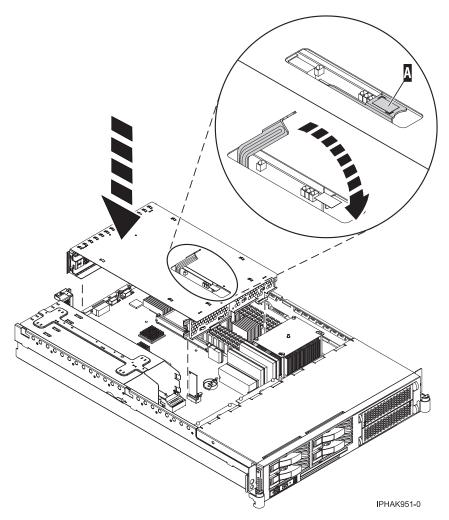


Figure 72. Model OpenPower 710 or 9110-510 PCI adapter assembly placed in the system unit

- ____19. "Install the service access cover on the rack-mounted model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 330.
- ____20. "Place the model 9110-510 orOpenPower 710 in the operating position" on page 339.
- ____21. Close the back rack door.
- ____22. Reconnect the power source to the system.

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.
 - To Disconnect:
 - a. Turn everything OFF (unless instructed otherwise).
 - **b.** Remove power cords from the outlet.
 - c. Remove signal cables from connectors.
 - d. Remove all cables from devices.
 - To Connect:
 - a. Turn everything OFF (unless instructed otherwise)
 - **b.** Attach all cables to devices.
 - c. Attach signal cables to connectors.
 - **d.** Attach power cords to outlet.
 - e. Turn device ON.
 - (D005)

____ 23. "Start the system" on page 340.

____24. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Remove a Model OpenPower 710 or 9110-510 PCI adapter

The following procedure describes the removal of a Model OpenPower 710 or 9110-510 PCI adapter with the system power off. This system does not support the removal of PCI adapters with the system power on.

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 "Remove a part using the Hardware Management Console" on page 355.

To remove a OpenPower 710 or 9110-510 PCI adapter, do the following:

- _____1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- ____ 2. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.
- ____ **3**. "Stop the system" on page 341.
- _____ 4. Disconnect the power source from the system by unplugging the system.

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

- ____ 5. Open the front rack door.
- ____6. Place the system in the service position. See "Place the model 9110-510 orOpenPower 710 in the service position" on page 338.
- ____ 7. "Remove the service access cover from the rack-mounted model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 328.
- **8**. Open the PCI adapter enclosure handle **A**. Grasping the enclosure handle and the tab at the back of the enclosure, lift the enclosure out of the system unit.

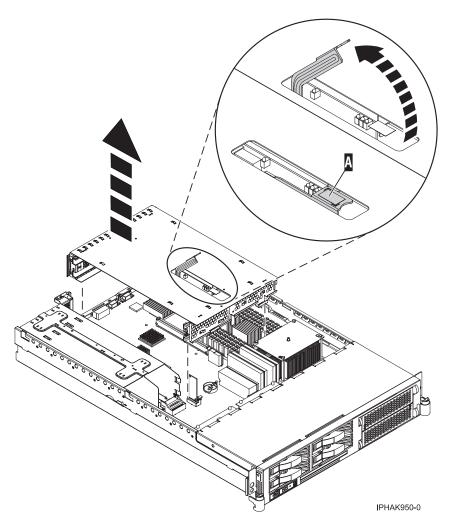
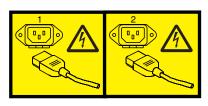


Figure 73. Model OpenPower 710 or 9110-510 PCI adapter assembly removed from the system unit

- **9**. Rotate it so that the enclosure opening is facing upwards.
- ____ 10. Place the enclosure on a flat, antistatic surface.
- ____11. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)



or



____12. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

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

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)

____14. Record the slot number and location of each adapter being removed.

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

____15. Slide the adapter out of the assembly as shown in the following figure.

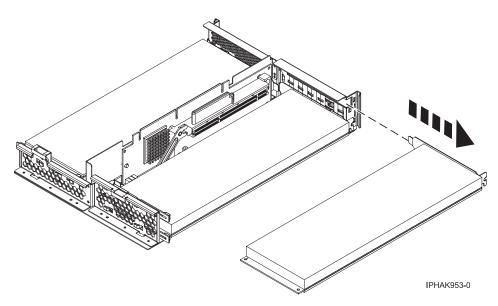


Figure 74. Model OpenPower 710 or 9110-510 PCI adapter removed from the assembly

- ____16. If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
- ____ 17. If you plan to install another adapter into the vacated slot, go to "Replace a Model OpenPower 710 or 9110-510PCI adapter" on page 153; otherwise, continue with the next step.
- ____ 18. Seal the expansion slot using an expansion-slot cover.
- ____ **19**. Replace the cover.
- ____ 20. Reconnect the power source to the system.

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.
 - To Disconnect:
 - a. Turn everything OFF (unless instructed otherwise).
 - **b.** Remove power cords from the outlet.
 - c. Remove signal cables from connectors.
 - d. Remove all cables from devices.
 - To Connect:
 - a. Turn everything OFF (unless instructed otherwise)
 - b. Attach all cables to devices.
 - c. Attach signal cables to connectors.
 - d. Attach power cords to outlet.
 - e. Turn device ON.
 - (D005)

____21. "Place the model 9110-510 orOpenPower 710 in the operating position" on page 339.

- ____22. Close the back rack door.
- **____ 23.** "Start the system" on page 340.

Replace a Model OpenPower 710 or 9110-510PCI adapter

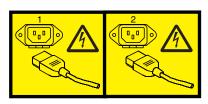
The following procedure describes the replacement of a Model OpenPower 710 or 9110-510 PCI adapter with the system power off. This system does not support the removal of PCI adapters with the system power on. You must have already completed the procedure "Remove a Model OpenPower 710 or 9110-510 PCI adapter" on page 148.

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 "Replace a part using the Hardware Management Console" on page 355.

To replace a OpenPower 710 or 9110-510 PCI adapter with the system power off, do the following:

- _____1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- ____ 2. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)



or



____ 3. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

_____ 4. If necessary, remove the adapter from the antistatic package.

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

- ____ 5. Place the adapter, component-side up, on a flat, antistatic surface.
- 6. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
- ____ 7. Slide the adapter into the assembly as shown in the following figure.

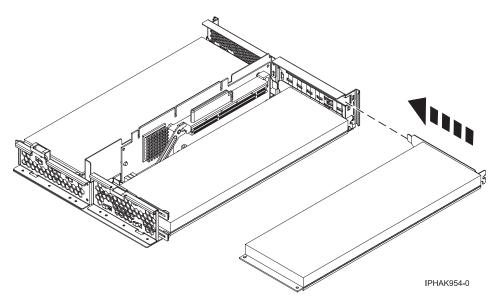


Figure 75. Model OpenPower 710 or 9110-510 PCI adapter placed in the assembly

- **8**. Press the adapter firmly into its connector.
- _____ 9. Rotate the PCI adapter enclosure so the handle faces out from the system unit.
- ____10. Place the enclosure in the system unit, then lock it into place by closing the handle 🖪 . 📷 View video.

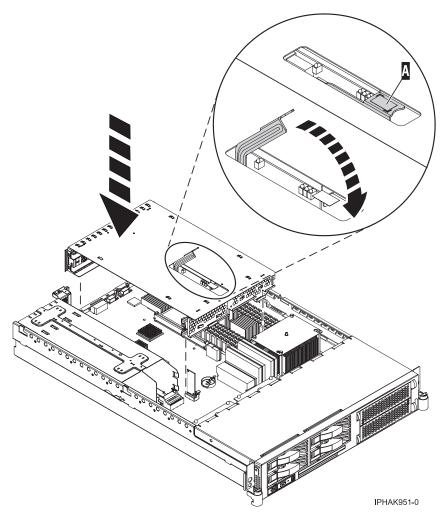


Figure 76. Model OpenPower 710 or 9110-510 PCI adapter assembly placed in the system unit

- ____11. Rotate the PCI adapter enclosure so the open faces the interior of the system unit.
- **12**. Place the enclosure in the system unit, then lock it into place by closing the handle.
- ____13. "Install the service access cover on the rack-mounted model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 330.
- ____14. "Place the model 9110-510 orOpenPower 710 in the operating position" on page 339.
- ____15. Reconnect the power source to the system.

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.
 - To Disconnect:
 - a. Turn everything OFF (unless instructed otherwise).
 - **b.** Remove power cords from the outlet.
 - c. Remove signal cables from connectors.
 - d. Remove all cables from devices.
 - To Connect:
 - a. Turn everything OFF (unless instructed otherwise)
 - **b.** Attach all cables to devices.
 - c. Attach signal cables to connectors.
 - d. Attach power cords to outlet.
 - e. Turn device ON.
 - (D005)
- ____ 16. Close the back rack door.
- ___ 17. "Start the system" on page 340.
- ____18. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Model 520, model 550and OpenPower 720 PCI adapter divider

The following procedures describe the removal and replacement of model 520, model 550 and OpenPower 720 PCI adapter dividers.

Select the appropriate instructions from this list:

- "Remove a Model 520 PCI adapter divider" on page 158
- "Replace a Model 520 PCI adapter divider" on page 160
- "Remove a model 550 and OpenPower 720 PCI adapter divider" on page 163
- "Replace a Model 550 and OpenPower 720 PCI adapter divider" on page 165

Remove a Model 520 PCI adapter divider

The following procedure describes the removal of the Model 520 PCI adapter divider with the system power off. This procedure can be done with the system power on by omitting the steps related to powering off the system.

To remove a divider, do the following:

- ____ 1. Perform prerequisite tasks as described in "Before you begin" on page 311.
- ____ 2. "Stop the system" on page 341.
- _____ **3**. Disconnect the power source from the system by unplugging the system.

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

- _____4. "Place the rack-mounted system or expansion unit in the service position" on page 333.
- ____ 5. "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327.
- ____ 6. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.

- _ 7. Locate the PCI adapter divider you want to remove.
- **8**. If you are removing a short adapter divider, continue to the next step. If you are removing a long adapter divider, do the following:
 - a. Unlatch and open the PCI adapter light-pipe plate C attached to the fan tray as shown in figure Figure 77 on page 159 or Figure 78 on page 160. The View video.
 - b. Note the guide grooves located toward the front of the system in the disk drive backplane for correct alignment.
- 9. Pull the front edge PCI adapter divider A out of the system and then pull the back edge of the adapter B away from the retention notches in the system chassis. Wiew video.

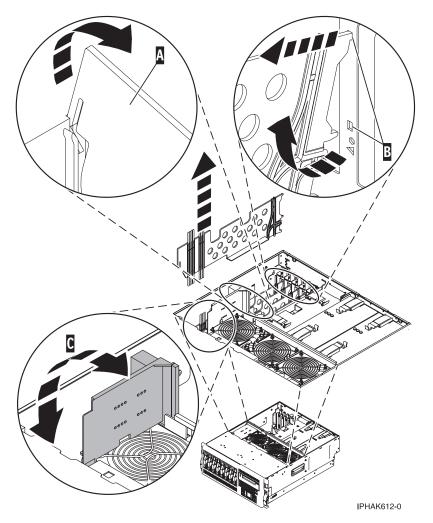


Figure 77. Model 520 PCI-adapter divider removed from the rack-mounted system unit

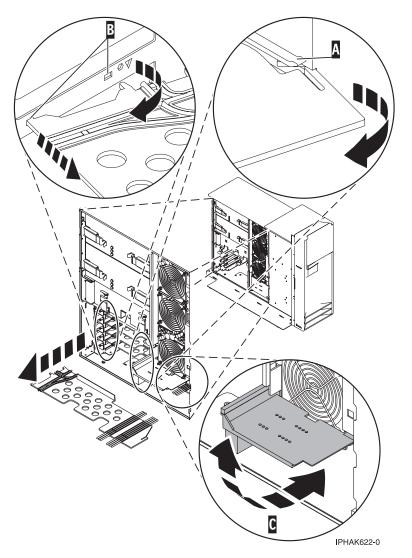


Figure 78. Model 520 PCI-adapter divider removed from the stand-alone system unit

____10. If you are removing the Model 520 PCI adapter divider as part of another procedure, return to that procedure now. To replace the divider, see "Replace a Model 520 PCI adapter divider."

Replace a Model 520 PCI adapter divider

The following procedure describes the replacement of a Model 520 PCI adapter divider with the system power off. This procedure can be done with the system power on by omitting the steps related to powering on the system. You must have already completed the procedure "Remove a Model 520 PCI adapter divider" on page 158.

To replace a divider, do the following:

___1. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

- ____2. Locate the PCI adapter divider slot that you want to use.
- ____3. Carefully grasp the adapter divider by its top edge and then align tab A and tab B on the back edge of the divider with the notches in the system chassis. See the following figures.
- ____4. Insert the front edge of the divider C into the slot located at the front of the system and then press the divider into place. The View video.

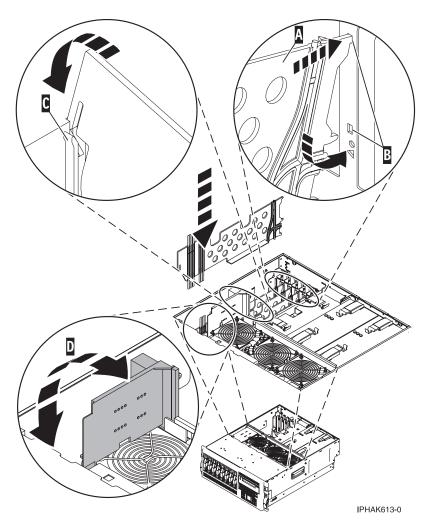


Figure 79. Model 520 PCI-adapter divider replaced in the rack-mounted system unit

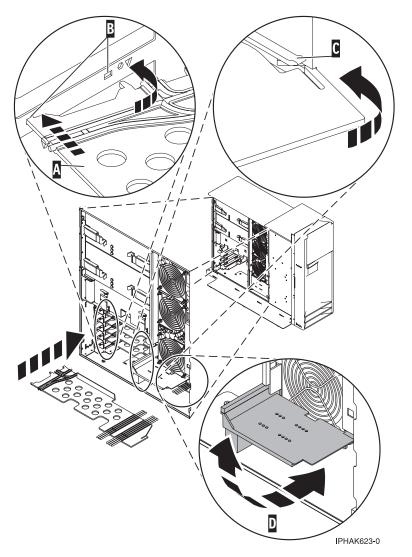


Figure 80. Model 520 PCI-adapter divider replaced in the stand-alone system unit

- ____5. If you are replacing or installing a short adapter divider, continue to the next step. If you are replacing or installing a long adapter, do the following:
 - a. Close and latch the PCI adapter light-pipe plate **D** attached to the fan tray.
 - **Note:** The light pipes below the light-pipe plate must fit through the holes in the plate for it to latch correctly.
 - b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter divider correctly.
- 6. "Install the service access cover on the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 330.
- ____7. "Place the rack-mounted system or expansion unit in the operating position" on page 336.
- **8**. Reconnect the power source to the system.

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- b. Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)

___ 9. "Start the system" on page 340.

Remove a model 550 and OpenPower 720 PCI adapter divider

The following procedure describes the removal of the model 550 and OpenPower 720 PCI adapter divider with the system power off. This procedure can be done with the system power on by omitting the steps related to powering off the system.

To remove a divider, do the following:

- ____1. Perform prerequisite tasks as described in "Before you begin" on page 311.
- **2**. "Stop the system" on page 341.
- ____3. Disconnect the power source from the system by unplugging the system.

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

- ____4. "Place the rack-mounted system or expansion unit in the service position" on page 333.
- ___ 5. "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 327.

____6. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.

- ____7. Locate the PCI adapter divider you want to remove.
- **8**. Pull the front edge PCI adapter divider **A** out of the system and then pull the back edge of the adapter **B** away from the retention notches in the system chassis. **B** View video.

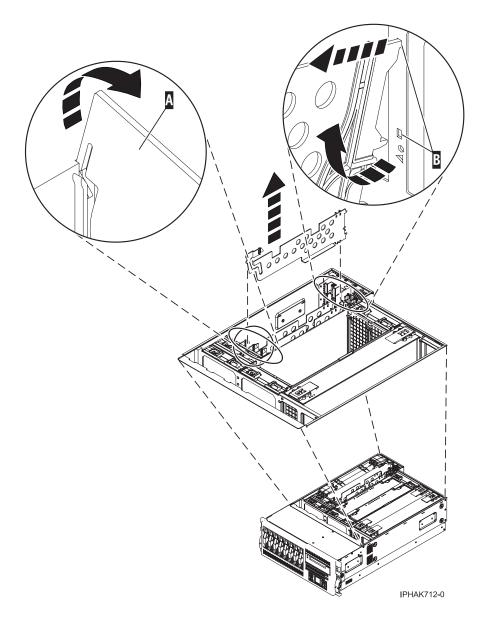


Figure 81. Model 520 PCI-adapter divider removed from the rack-mounted system unit

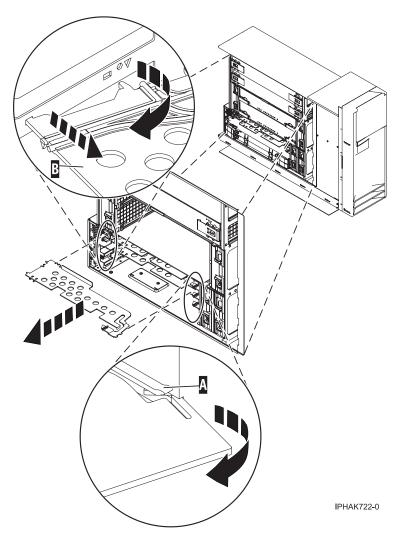


Figure 82. Model 520 PCI-adapter divider removed from the stand-alone system unit

____9. If you are removing the Model 550 PCI adapter divider as part of another procedure, return to that procedure now. To replace the divider, see "Replace a Model 550 and OpenPower 720 PCI adapter divider."

Replace a Model 550 and OpenPower 720 PCI adapter divider

The following procedure describes the replacement of a Model 520 and OpenPower 720 PCI adapter divider with the system power off. This procedure can be done with the system power on by omitting the steps related to powering on the system. You must have already completed the procedure "Remove a model 550 and OpenPower 720 PCI adapter divider" on page 163.

To replace a divider, do the following:

___1. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

- ____2. Locate the PCI adapter divider slot that you want to use.
- **____3.** Carefully grasp the adapter divider by its top edge and then align tab **A** and tab **B** on the back edge of the divider with the notches in the system chassis. See the following figures.
- _____4. Insert the front edge of the divider C into the slot located at the front of the system and then press the divider into place.

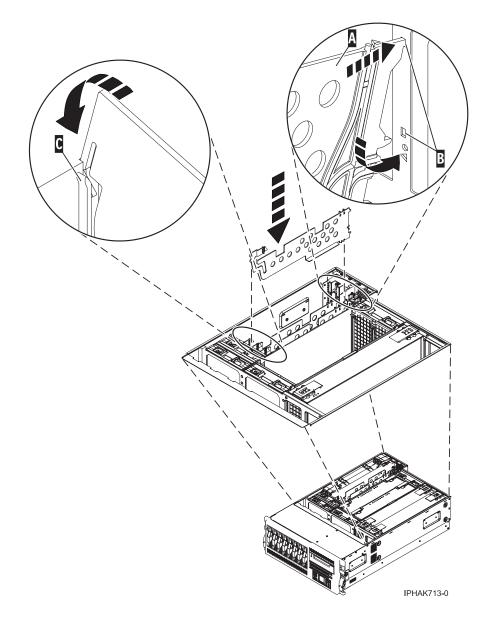


Figure 83. Model 520 PCI-adapter divider replaced in the rack-mounted system unit

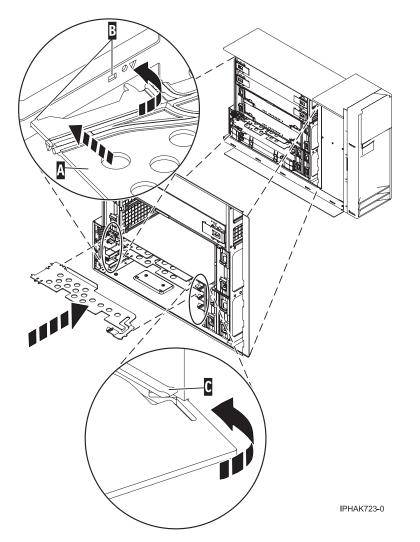


Figure 84. Model 520 PCI-adapter divider replaced in the stand-alone system unit

- ____ 5. "Install the service access cover on the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 330.
- ____6. "Place the rack-mounted system or expansion unit in the operating position" on page 336.
- ____7. Reconnect the power source to the system.

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- b. Attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.
- (D005)

8. "Start the system" on page 340.

PCI adapters and cassettes

The following procedures describe the removal, replacement, and installation of PCI or PCI-X adapters in system units or expansion units containing PCI adapter cassettes.

Select the appropriate instructions from this list:

Servicing systems that contain PCI adapter cassettes

- "Install a PCI adapter contained in a cassette" on page 170
- "Remove a PCI adapter contained in a cassette from the system" on page 191
- "Replace a PCI adapter contained in a cassette in the system" on page 208

Servicing PCI adapter cassettes

- "PCI adapter single-width cassette" on page 223
- "PCI adapter double-wide cassette" on page 234

Install a PCI adapter contained in a cassette

Select the appropriate instructions from this list:

- "Install a PCI adapter contained in a cassette with the power on in AIX"
- "Install a PCI adapter contained in a cassette with the power on in i5/OS" on page 174
- "Install a PCI adapter contained in a cassette with the power on in Linux" on page 179
- "Install a PCI adapter contained in a cassette with the power off" on page 185

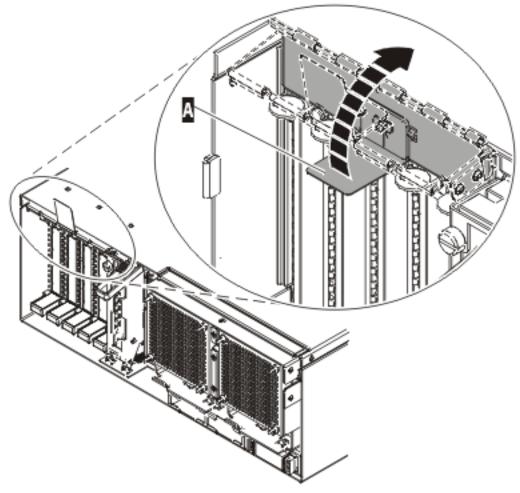
Install a PCI adapter contained in a cassette with the power on in AIX

The following procedure describes the installation of a PCI adapter contained in a cassette with the system power on in AIX.

Note: If the system is multi-partitioned, see Partitioning for AIX to learn more about working in partitions, then return here to continue the procedure.

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

- _____1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- 2. To determine in which slot to place the PCI adapter, refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for the adapters that can be used in this system.
- **3.** 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. For a rack-mounted expansion unit, remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
 - Continue with step 5.
- _____ 4. If you are installing a PCI adapter in a stand-alone expansion unit, select the appropriate procedure from the following:
 - Remove the 0595 or 5095 expansion unit back door and cover as described in "Remove the back door and cover from the 5095 expansion unit" on page 318.
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
- 5. Refer to "PCI Hot-Plug Manager Access for AIX" on page 244, 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 "Remove a PCI adapter contained in a cassette from the system with the power on in AIX" on page 191.
- ____ 10. Lift and hold the PCI adapter EMC shield A in the open position.



IP HAK507-0

Figure 85. PCI adapter EMC shield in the open position

____11. Lift up the lower cassette handle 🖪 as shown in the following figure. Pull the PCI cassette B out of the system.

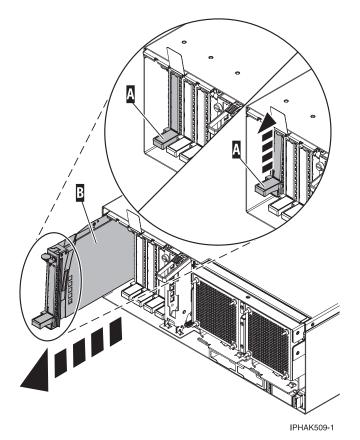
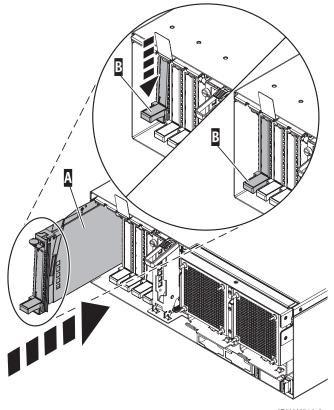


Figure 86. PCI adapter cassette removed from the system unit.

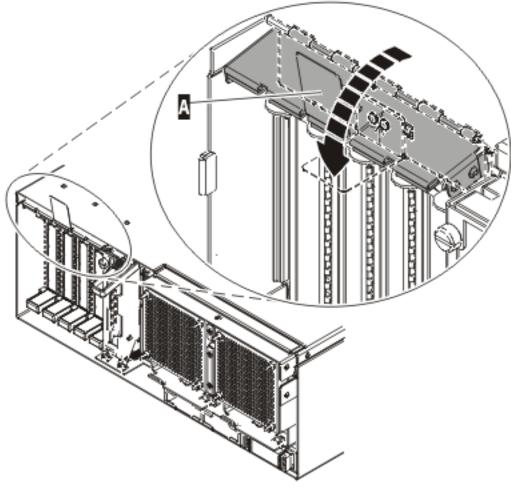
- ____12. Install the adapter into the PCI adapter cassette using the following instructions:
 - "Place an adapter in the PCI adapter single-width cassette" on page 227
 - "Remove an adapter from the PCI adapter single-width cassette" on page 223
- **13**. Ensure the lower cassette handle is pressed up toward the retainer clip. This places the adapter in the correct position to be docked in the system.
- _____14. Lift and hold the PCI adapter EMC shield A in the open position. See Figure 85 on page 171.
- ____15. Follow the instructions on the screen to install the adapter until the LED for the specified PCI slot is set to the Action state. See "Component LEDs" on page 246.
- ____16. Slide the cassette **A** into the cassette slot as shown in the following figure.
- ____ 17. 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.



IPHAK510-2

Figure 87. PCI adapter cassette removed from the system unit

_____18. Lower the PCI adapter EMC shield **A** into the closed position.



IPHAK508-0

Figure 88. PCI adapter EMC shield in the closed position

____19. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Install a PCI adapter contained in a cassette with the power on in i5/OS

The following procedure describes the installation of a PCI adapter contained in a cassette with the system power on in i5/OS. 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 "Install a feature using the Hardware Management Console" on page 355.

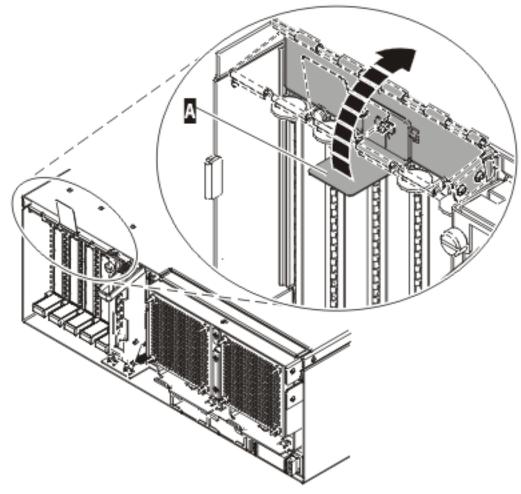
Note: If the system is multi-partitioned, see Installing new hardware for OS/400 logical partitions before installing a new PCI adapter and then return here to continue the procedure.

To install an adapter with the system power on in i5/OS, do the following:

- ____ 1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- 2. To determine in which slot to place the PCI adapter, refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for the adapters that can be used in this system.
- ____ **3**. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps:

____a. Open the rear rack door.

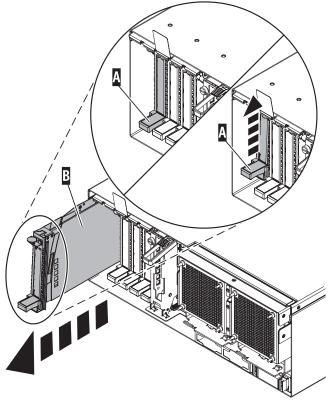
- ____b. For a rack-mounted expansion unit, remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
 - Continue with step 5.
- _____ 4. If you are installing a PCI adapter in a stand-alone expansion unit, select the appropriate procedure from the following:
 - Remove the 0595 or 5095 expansion unit back door and cover as described in "Remove the back door and cover from the 5095 expansion unit" on page 318.
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
- ____ 5. Type **strsst** on the command line of the Main Menu and then press Enter.
- 6. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.
- ____ 7. Select **Start a service tool** from the System Service Tools (SST) display and press Enter.
- ____ 8. Select Hardware service manager from the Start a Service Tool display and press Enter.
- 9. Select **Packaging hardware resources (system, frames, cards...)** from the Hardware Service Manager display. Press Enter.
- **10.** Type **9** (Hardware contained within package) in the *System Unit* or *Expansion Unit* field of the unit where you are replacing the card. Press Enter.
- _____11. Select the option to **Include empty positions**.
- **12**. Select **Concurrent Maintenance** on the card position where you want to replace the card and then press Enter.
- ____13. Select the option to **Toggle LED blink off/on**. A light-emitting diode (LED) blinks identifying the position you chose. Physically verify that this is the slot where you want to install the adapter.
- _____14. Select the option to **Toggle LED blink off/on** to stop the blinking LED.
- ____ 15. Select the option to **Power off domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
- ____16. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: Power off complete
- ____17. Locate the PCI adapter slot and cassette you want to use.
- **18**. 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 "Remove a PCI adapter contained in a cassette from the system with the power on in i5/OS" on page 197.
- ____ 19. Lift and hold the PCI adapter EMC shield A in the open position.



IP HAK507-0

Figure 89. PCI adapter EMC shield in the open position

____20. Lift up the lower cassette handle **A** as shown in the following figure. Pull the PCI cassette **B** out of the system. The View video.



IPHAK509-1

Figure 90. PCI adapter cassette removed from the system unit.

- ____21. Install the adapter into the PCI adapter cassette using the following instructions:
 - "Place an adapter in the PCI adapter single-width cassette" on page 227
 - "Remove an adapter from the PCI adapter single-width cassette" on page 223
- **22**. 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.
- **23**. Lift and hold the PCI adapter EMC shield **A** in the open position. See Figure 89 on page 176.
- ____24. Slide the cassette A into the cassette slot as shown in the following figure.
- ____25. 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.

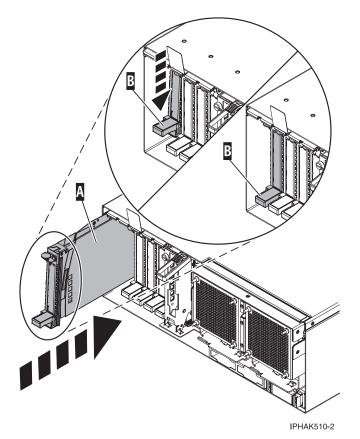
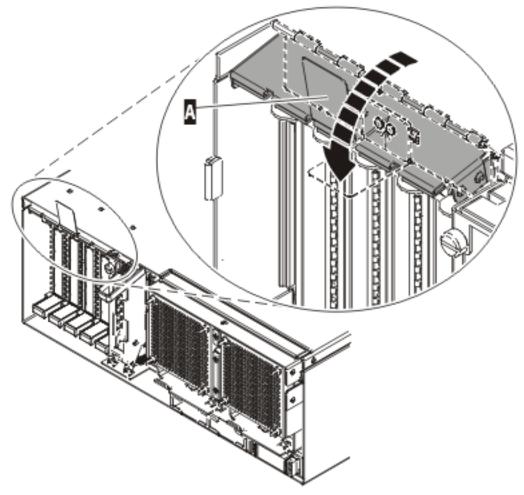


Figure 91. PCI adapter cassette removed from the system unit

____26. Lower the PCI adapter EMC shield **A** into the closed position.



IPHAK508-0

Figure 92. PCI adapter EMC shield in the closed position

- **27**. Select **Power on domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
- **28**. Select **Assign to** on the resource that has an asterisk (*) on the Work with Controlling Resource display. Press Enter.
- **____29.** Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: Power on complete
- ____ **30**. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Install a PCI adapter contained in a cassette with the power on in Linux

The following procedure describes the installation of a PCI adapter contained in a cassette with the system power on in Linux.

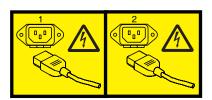
If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a PCI adapter. For instructions, see "Install a feature using the Hardware Management Console" on page 355.

If the system is multi-partitioned, see Partitioning for Linux to learn more about working in partitions, then return here to continue the procedure.

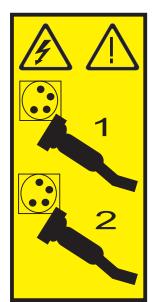
This procedure provides the steps you must take to install a PCI adapter in a server or partition that is running the Linux.

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

- ____ 1. Perform prerequisite tasks as described in "Before you begin" on page 311.
- 2. To determine in which slot to place the PCI adapter, refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for the adapters that can be used in this system.
- Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)



or



4. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

____ 5. 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. For a rack-mounted expansion unit, remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.

- Continue with step 7.
- ____ 6. If you are installing a PCI adapter in a stand-alone expansion unit, select the appropriate procedure from the following:
 - Remove the 0595 or 5095 expansion unit back door and cover as described in "Remove the back door and cover from the 5095 expansion unit" on page 318.
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
- ____ 7. Log in to the system console as the **root** user.
- **8**. 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 lsslot -c pci -a command.

____ 9. Lift and hold the PCI adapter EMC shield A in the open position.

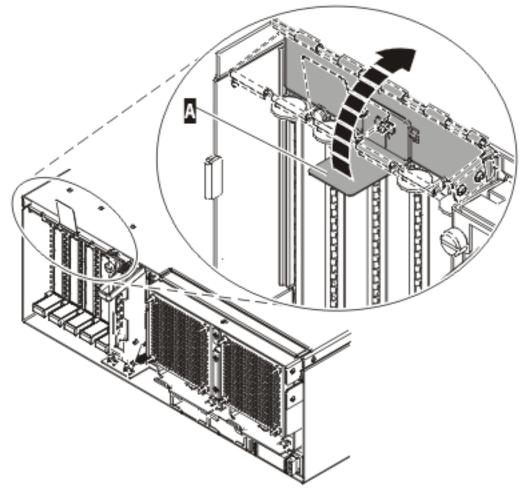
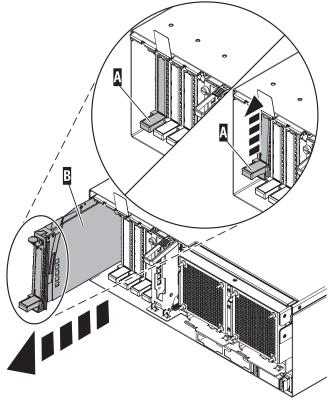


Figure 93. PCI adapter EMC shield in the open position

____10. Lift up the lower cassette handle 🗛 as shown in the following figure. Pull the PCI cassette B out of the system.



IPHAK509-1

Figure 94. PCI adapter cassette removed from the system unit

- ____11. Install the adapter into the PCI adapter cassette using the following instructions:
 - "Place an adapter in the PCI adapter single-width cassette" on page 227
 - "Remove an adapter from the PCI adapter single-width cassette" on page 223
- 12. 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.
- ____13. To hot plug an adapter into PCI slot U7879.001.DQD014E-P1-C3, enter the following command: drslot_chrp_pci -a -s U7879.001.DQD014E-P1-C3
- ____ 14. 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.
- ____ 15. 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.
- ____16. When you are instructed to install the adapter in the adapter slot, lift and hold the PCI adapter EMC shield **A** in the open position. See Figure 93 on page 182.
- ____17. Slide the cassette A into the cassette slot as shown in the following figure.
- 18. 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.

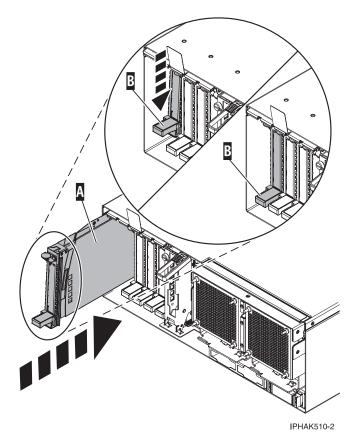
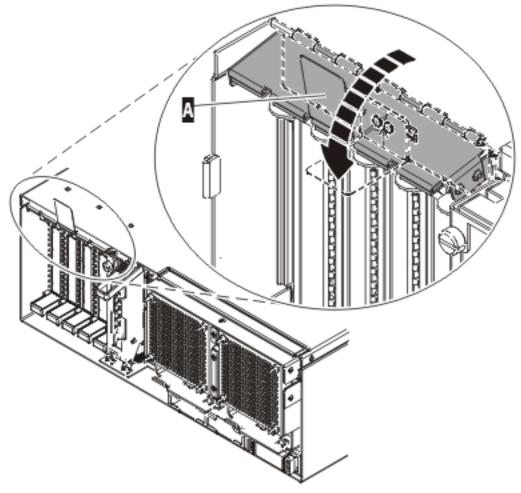


Figure 95. PCI adapter cassette removed from the system unit

____19. Lower the PCI adapter EMC shield A into the closed position.



IPHAK508-0

Figure 96. PCI adapter EMC shield in the closed position

____ 20. 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

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

The following procedure describes the installation of a PCI adapter contained in a cassette with the system power off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a PCI adapter. For instructions, see "Install a feature using the Hardware Management Console" on page 355.

Note: If the system is multi-partitioned, select the appropriate information from the following list to learn more about working in a partitioned environment, then return here:

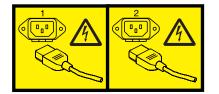
- Partitioning for AIX
- Installing new hardware for i5/OS logical partitions
- Partitioning for Linux

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

- _____1. Perform prerequisite tasks as described in "Before you begin" on page 311.
- 2. To determine in which slot to place the PCI adapter, refer to "PCI placement in the system unit or expansion unit" on page 243 for information regarding slot restrictions for the adapters that can be used in this system.
- ____ **3**. "Stop the system" on page 341.
- _____ 4. Disconnect the power source from the system by unplugging the system.

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

- ____ 5. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps:
 - ____a. Open the rear rack door.
 - ____b. For a rack-mounted expansion unit, remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
 - Continue with step 7.
- 6. If you are installing a PCI adapter in a stand-alone expansion unit, select the appropriate procedure from the following:
 - Remove the 0595 or 5095 expansion unit back door and cover as described in "Remove the back door and cover from the 5095 expansion unit" on page 318.
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
- 7. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.
 (L003)



or



8. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

- ____ 9. Determine the PCI adapter location in the system.
- ____10. Lift and hold the PCI adapter EMC shield A in the open position.

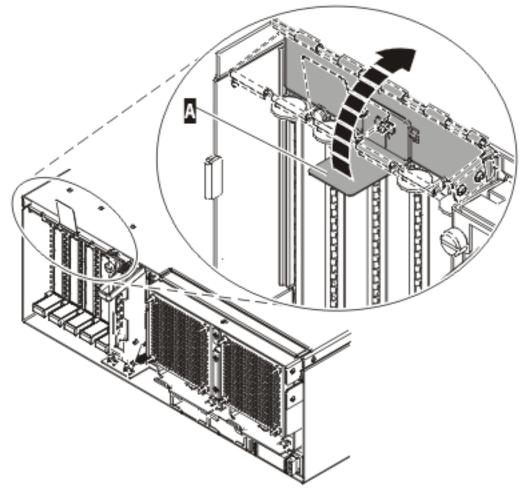
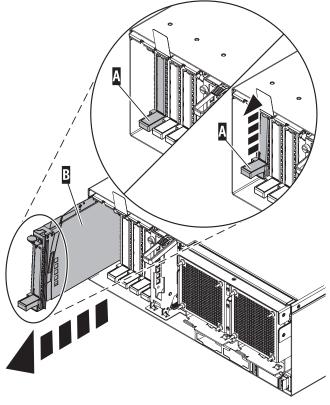


Figure 97. PCI adapter EMC shield in the open position

____11. Lift up the lower cassette handle 🖪 as shown in the following figure. Pull the PCI cassette 🖪 out of the system.



IPHAK509-1

Figure 98. PCI adapter cassette removed from the system unit

- ____12. Install the adapter into the PCI adapter cassette using the following instructions:
 - "Place an adapter in the PCI adapter single-width cassette" on page 227
 - "Remove an adapter from the PCI adapter single-width cassette" on page 223
- 13. 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.
- _____14. Lift and hold the PCI adapter EMC shield **A** in the open position. See Figure 97 on page 188.
- ____15. Slide the cassette A into the cassette slot as shown in the following figure.
- ____16. 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.

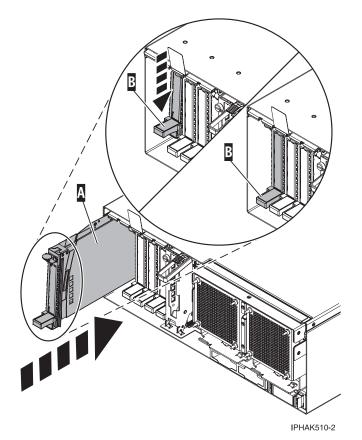
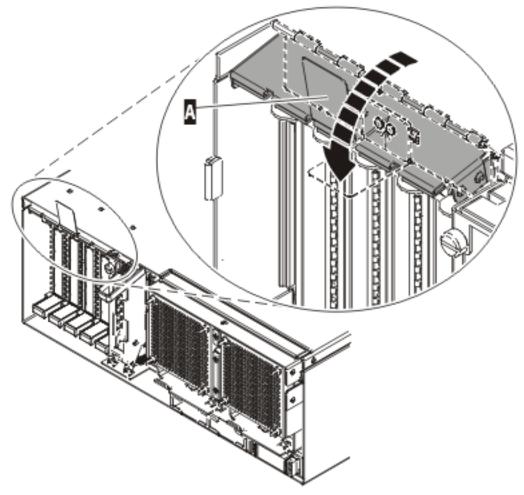


Figure 99. PCI adapter cassette removed from the system unit

____ 17. Lower the PCI adapter EMC shield **A** into the closed position.



IP HAK508-0

Figure 100. PCI adapter EMC shield in the closed position

- ____ **18**. "Start the system" on page 340.
- ____19. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

Remove a PCI adapter contained in a cassette from the system

Select the appropriate instructions from this list:

- "Remove a PCI adapter contained in a cassette from the system with the power on in AIX"
- "Remove a PCI adapter contained in a cassette from the system with the power on in i5/OS" on page 197
- "Remove a PCI adapter contained in a cassette from the system with the power on in Linux" on page 200
- "Remove a PCI adapter contained in a cassette from the system with the system power off" on page 205

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

The following procedure describes the removal of a PCI adapter contained in a cassette from the system with the system power on in AIX.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. To remove a failed adapter and replace it with the same adapter, see "Remove and replace a PCI adapter contained in a cassette in the system with the power on in AIX" on page 208.
- 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 "Install a PCI adapter contained in a cassette with the power on in AIX" on page 170.
- **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:

- _____1. Perform the prerequisite tasks as described in "Before you begin" on page 311.
- ____ 2. If you are removing a PCI adapter from a rack-mounted system or expansion unit, follow these steps:
 - ____a. Open the rear rack door.
 - ____b. For a rack-mounted expansion unit, remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
 - Continue with step 4.
- ____ **3**. If you are removing a PCI adapter from a stand-alone expansion unit, select the appropriate procedure from the following:
 - Remove the 0595 or 5095 expansion unit back door and cover as described in "Remove the back door and cover from the 5095 expansion unit" on page 318.
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
- _____ 4. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.

Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

- ____ 5. Determine the PCI adapter location in the system.
- ____ 6. Record the slot number and location of each adapter being removed.

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

- ____ 7. Ensure that any processes or applications that might use the adapter are stopped.
- **8**. Enter the system diagnostics by logging in as root user or as the celogin user, type **diag** at AIX command line.
- ____ 9. When the **DIAGNOSTIC OPERATING INSTRUCTIONS** menu displays, press Enter.
- ____10. At the FUNCTION SELECTION menu, select Task Selection, then press enter.
- ____ 11. At the Task Selection list, select **PCI Hot Plug Manager**.
- ____ 12. Select Unconfigure a Device, then press Enter.
- ____ 13. Press F4 or ESC 4 to display the **Device Names** menu.
- _____14. Select the adapter you are removing in the **Device Names** menu.
- ____ 15. Use the Tab key to answer N0 to **Keep Definition**. Use the Tab key again to answer YES to **Unconfigure Child Devices**, then press Enter.
- ____16. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfiguration is indicated by the 0K message displayed next to the Command field at the top of the screen.
- ____ 17. Press F4 or ESC 4 twice to return to the Hot Plug Manager menu.
- ____ 18. Select replace/remove PCI Hot Plug adapter.
- ____19. Select the slot that has the device to be removed from the system.
- ____ 20. Select remove.
 - **Note:** A fast blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
- ___21. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.
- **____22.** Label and disconnect all cables attached to the adapter you plan to remove.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

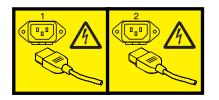
- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.

To Connect:

- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- **d.** Attach power cords to outlet.
- e. Turn device ON.

(D005)

23. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)



or



____24. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

____25. Lift and hold the PCI adapter EMC shield **A** in the open position. **_____** View video.

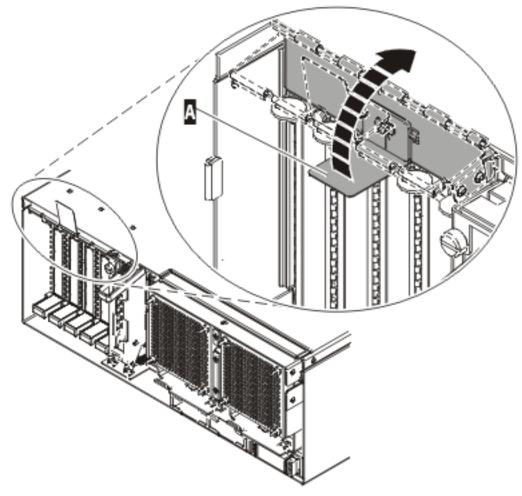
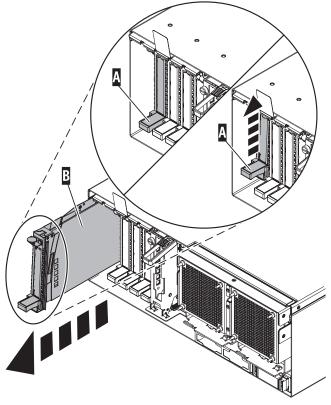


Figure 101. PCI adapter EMC shield in the open position

____26. Lift up the lower cassette handle **A** as shown in the following figure. Pull the PCI cassette **B** 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.



IPHAK509-1

Figure 102. PCI adapter cassette removed from the system unit

____27. Place the cassette with the cover facing up on an approved ESD surface.

Note: The cover will have a label on it.

- ____28. Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the 0K message displayed next to the Command field at the top of the screen.
- **____29.** 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 22 on page 193.

OR

If you do not have other adapters to remove, continue with the next step.

- ____ **30**. Press F10 to exit the Hot-Plug Manager.
- ____31. Run the **diag** -a command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
- ____32. Place an empty cassette into the unused PCI slot for proper air flow.
- **____33**. The procedure is complete.
 - To remove the adapter from the PCI adapter cassette, see "Remove an adapter from the PCI adapter single-width cassette" on page 223.
 - To install an adapter in the system, see "Install a PCI adapter contained in a cassette with the power on in AIX" on page 170.

Remove a PCI adapter contained in a cassette from the system with the power on in i5/OS

The following procedure describes the removal of a PCI adapter contained in a cassette from the system with the system power on in i5/OS.

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 "Remove a part using the Hardware Management Console" on page 355.

To remove an adapter, do the following:

- ____ 1. Perform the prerequisite tasks as described in "Before you begin" on page 311.
- **2**. If you are removing a PCI adapter from a rack-mounted system or expansion unit, follow these steps:
 - ____a. Open the rear rack door.
 - ____b. For a rack-mounted expansion unit, remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
 - Continue with step 4.
- **3.** If you are removing a PCI adapter from a stand-alone expansion unit, select the appropriate procedure from the following:
 - Remove the 0595 or 5095 expansion unit back door and cover as described in "Remove the back door and cover from the 5095 expansion unit" on page 318.
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
- _____4. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.

Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

- ____ 5. Determine the PCI adapter location in the system.
- ____ 6. Type **strsst** on the command line of the Main Menu and then press Enter.
- Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display and press Enter.
- ____ 8. Select Hardware service manager from the Start a Service Tool display and press Enter.
- 9. Select **Packaging hardware resources (system, frames, cards...)** from the Hardware Service Manager display. Press Enter.
- **10.** Type **9** (Hardware contained within package) in the *System Unit* or *Expansion Unit* field of the unit where you are removing the card. Press Enter.
- _____11. Select the option to **Include empty positions**.
- **12**. Select **Concurrent Maintenance** on the card position where you want to remove the card and then press Enter.

- **13**. Select the option to **Toggle LED blink off/on**. A light-emitting diode (LED) blinks identifying the position you chose. Physically verify that this is the slot where you want to install the adapter.
- _____14. Select the option to **Toggle LED blink off/on** to stop the blinking LED.
- **15.** Select the option to **Power off domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
- ____16. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: Power off complete
- ____ 17. Lift and hold the PCI adapter EMC shield 🖪 in the open position. 🔁 View video.

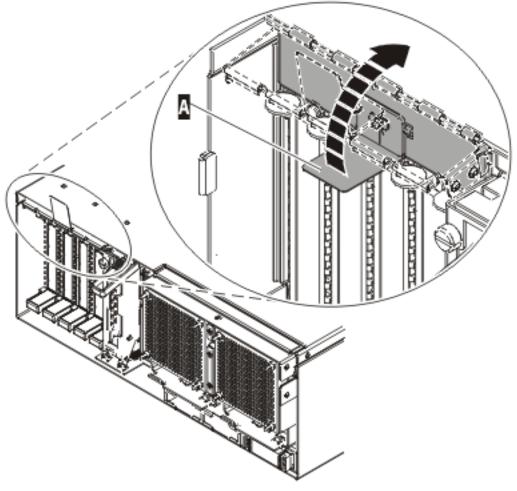


Figure 103. PCI adapter EMC shield in the open position

18. Lift up the lower cassette handle **A** as shown in the following figure. Pull the PCI cassette **B** 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.

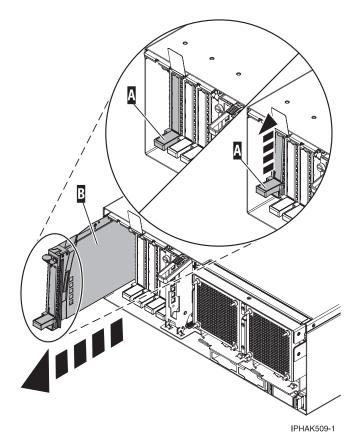


Figure 104. PCI adapter cassette removed from the system unit

____19. Place the cassette with the cover facing up on an approved ESD surface.

Note: The cover will have a label on it.

____20. To remove the adapter from the PCI adapter cassette, see "Remove an adapter from the PCI adapter single-width cassette" on page 223.

To replace the adapter in the system, see "Replace a PCI adapter contained in a cassette in the system" on page 208.

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

The following procedure describes the removal of a PCI adapter contained in a cassette from the system with the system power on in a server or partition that is running Linux.

Note: Procedures performed on a PCI adapter with the system power on in Linux, 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 removing a PCI adapter. For instructions, see "Remove a part using the Hardware Management Console" on page 355.

To remove an adapter from a Model 570 or D11 expansion unit, do the following:

 Before attempting to perform the PCI hot-plug procedure, ensure that the server or partition in which the adapter is intended is at the correct level of the Linux operating system (Linux 2.6 or greater). Also, ensure that the necessary tools are available on your server by doing the following:

Installing Linux Service Aids

It is highly recommended that you 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 greater, you can install the Service Aids that gives you access to more capabilities, which can help you diagnose problems on your system.

This software is available at the Linux on POWER Service aids for hardware diagnostics web site.

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

rpm -aq | grep rpa-pci-hotplugIf the command does not list any rpa-pci-hotplug packages, the PCI Hot Plug tools are not installed.

____b. Use the following command to ensure that the **rpaphp** driver is loaded:

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

The directory should not be empty. 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 0001:00:02.0

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 0001:00:02.2

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 0001:00:02.4

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 0002:00:02.2

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

If the directory does not exist, run the following command:

mount -t sysfs sysfs /sys

Note: The mount -t sysfs sysfs /sys command will mount the filesystem.

- ____ c. Ensure the following tools are available in /usr/sbin.
 - lsslot
 - drslot_chrp_pci
- _____d. Use the following command to list the occupied PCI Hotplug slots in your server or partition:

lsslot -c pci -o

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

```
(Slot Number) (Description) (Devices)
U7879.001.DQD014E-P1-C2 PCI-X capable, 64 bit, 133MHz slot 0002:58:01.0
U7879.001.DQD014E-P1-C3 PCI-X capable, 64 bit, 133MHz slot 0001:40:01.0
U7879.001.DQD014E-P1-C4 PCI-X capable, 64 bit, 133MHz slot 0001:48:01.0
0001:48:01.1
U7879.001.DQD014E-P1-C6 PCI-X capable, 64 bit, 133MHz slot 0001:58:01.0
0001:58:01.1
```

- **2**. Perform the prerequisite tasks as described in "Before you begin" on page 311.
- **3.** If you are removing a PCI adapter from a rack-mounted system or expansion unit, follow these steps:
 - ____a. Open the rear rack door.

- ____b. For a rack-mounted expansion unit, remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
 - Continue with step 5.
- _____ 4. If you are removing a PCI adapter from a stand-alone expansion unit, select the appropriate procedure from the following:
 - Remove the 0595 or 5095 expansion unit back door and cover as described in "Remove the back door and cover from the 5095 expansion unit" on page 318.
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
- ____ 5. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.
- ____ 6. Determine the PCI adapter location in the system.
- ____ 7. Label and disconnect all cables attached to the adapter you plan to remove.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.
- To Connect:
- a. Turn everything OFF (unless instructed otherwise)
- **b.** Attach all cables to devices.
- c. Attach signal cables to connectors.
- **d.** Attach power cords to outlet.
- e. Turn device ON.
- (D005)

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

8. To remove the PCI adapter in U7879.001.DQD014E-P1-C3 with the power on, run the following command to enable the adapter to be removed:

drslot_chrp_pci -r -s U7879.001.DQD014E-P1-C3Following the instructions on the screen to complete the task.

____ 9. Lift and hold the PCI adapter EMC shield 🖪 in the open position. 🔁 View video.

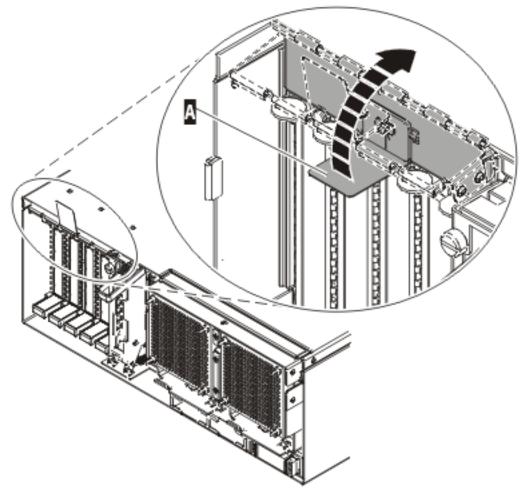
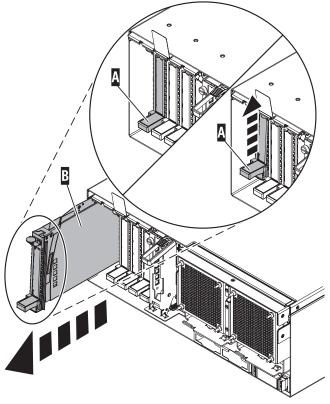


Figure 105. PCI adapter EMC shield in the open position

____10. Lift up the lower cassette handle A as shown in the following figure. Pull the PCI cassette B 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.



IPHAK509-1

Figure 106. PCI adapter cassette removed from the system unit

____11. Place the cassette with the cover facing up on an approved ESD surface.

Note: The cover will have a label on it.

____12. "Remove an adapter from the PCI adapter single-width cassette" on page 223.

To replace the adapter in the system, see "Replace a PCI adapter contained in a cassette in the system with the power on in Linux" on page 218.

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

The following procedure describes the removal of a PCI adapter contained in a cassette from the system with the system power off.

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 "Remove a part using the Hardware Management Console" on page 355.

To remove an adapter, do the following:

- _____1. Perform the prerequisite tasks as described in "Before you begin" on page 311.
- 2. If you are removing a failing PCI adapter, see "Identify a failing part" on page 344. If you are removing the PCI adapter for other reasons, continue to the next step.
- ____ **3**. "Stop the system" on page 341.
- _____ 4. Disconnect the power source from the system by unplugging the system.

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

____ 5. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

- ____ 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. For a rack-mounted expansion unit, remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
 - Continue with step 8.
- 7. If you are installing a PCI adapter in a stand-alone expansion unit, select the appropriate procedure from the following:
 - Remove the 0595 or 5095 expansion unit back door and cover as described in "Remove the back door and cover from the 5095 expansion unit" on page 318.
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
- ____ 8. Determine the PCI adapter location in the system.
- ____ 9. Lift and hold the PCI adapter EMC shield A in the open position.

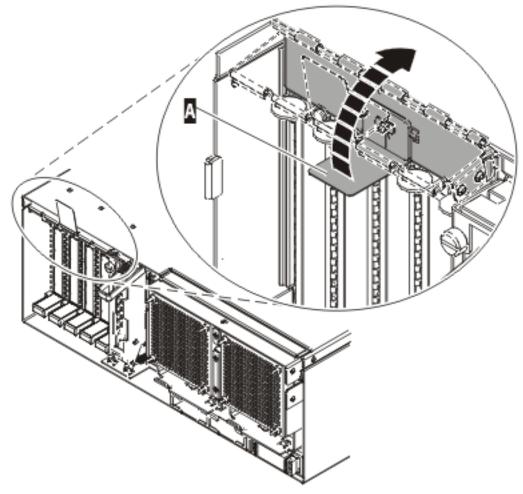


Figure 107. PCI adapter EMC shield in the open position

____10. Lift up the lower cassette handle A as shown in the following figure. Pull the PCI cassette B 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.

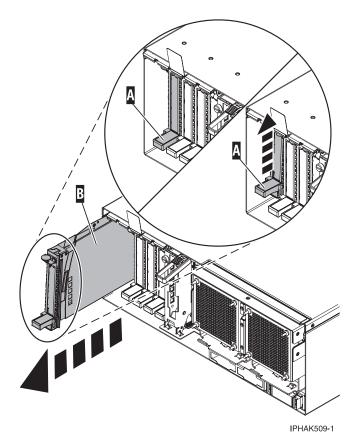


Figure 108. PCI adapter cassette removed from the system unit

____11. Place the cassette with the cover facing up on an approved ESD surface.

Note: The cover will have a label on it.

____12. "Remove an adapter from the PCI adapter single-width cassette" on page 223.

To replace the adapter in the system, see "Replace a PCI adapter contained in a cassette in the system."

Replace a PCI adapter contained in a cassette in the system

The following procedures describe the replacement of a PCI adapter contained in a cassette in the system.

Select the appropriate instructions from this list:

- "Remove and replace a PCI adapter contained in a cassette in the system with the power on in AIX"
- "Replace a PCI adapter contained in a cassette in the system with the power on in i5/OS" on page 216
- "Replace a PCI adapter contained in a cassette in the system with the power on in Linux" on page 218
- "Replace a PCI adapter contained in a cassette in the system with the system power off" on page 221

Remove and replace a PCI adapter contained in a cassette in the system with the power on in AIX

The following procedure describes the replacement of a PCI adapter contained in a cassette in the system with the power on in AIX. Read the following notes to determine if this is the correct procedure for the task to be performed.

Notes:

1. Use this procedure if you intend to remove a failed 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 "Remove a PCI adapter contained in a cassette from the system with the power on in AIX" on page 191.
- **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 "Remove a PCI adapter contained in a cassette from the system with the power on in AIX" on page 191, then install the new adapter as described in "Install a PCI adapter contained in a cassette with the power on in AIX" on page 170.
- 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.

To replace a failed adapter, do the following:

- _____1. Perform the prerequisite tasks as described in "Before you begin" on page 311.
- ____ 2. If you are replacing a PCI adapter in a rack-mounted system or expansion unit, follow these steps:
 - ____a. Open the rear rack door.
 - ____b. For a rack-mounted expansion unit, remove the cover or covers. For instructions on removing covers, select the appropriate procedure from the following:
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
 - Continue with step 4.
- **3**. If you are replacing a PCI adapter in a stand-alone expansion unit, select the appropriate procedure from the following:
 - Remove the 0595 or 5095 expansion unit back door and cover as described in "Remove the back door and cover from the 5095 expansion unit" on page 318.
 - Open the 5074, 5079, 5094, 5294, 8294, or 9194 expansion unit back door as described in "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316. Then remove the PCI adapter access plate.
 - Remove the back cover of the 0588 or 5088 expansion unit as described in "Remove the back cover from the 0588 expansion unit" on page 319.
- _____ 4. Determine the PCI adapter location 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, then press enter.
- ____ 10. At the Task Selection list, select **PCI Hot Plug Manager**.
- ____ 11. Select **Unconfigure a Device**, 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 N0 to **Keep Definition**. Use the Tab key again to answer YES to **Unconfigure Child Devices**, then press Enter.

- ____ 15. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfiguration is indicated by the 0K message displayed next to the Command field at the top of the screen.
- ____ 16. Press F4 or ESC 4 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 remove.

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 disconnect all cables attached to the adapter you plan to remove.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure 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 below when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

- a. Turn everything OFF (unless instructed otherwise).
- **b.** Remove power cords from the outlet.
- c. Remove signal cables from connectors.
- **d.** Remove all cables from devices.

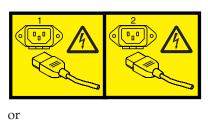
To Connect:

- a. Turn everything OFF (unless instructed otherwise)
- b. Attach all cables to devices.
- **c.** Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.

(D005)

__ 22. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)



___23. Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, 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.

____24. Lift and hold the PCI adapter EMC shield A in the open position.

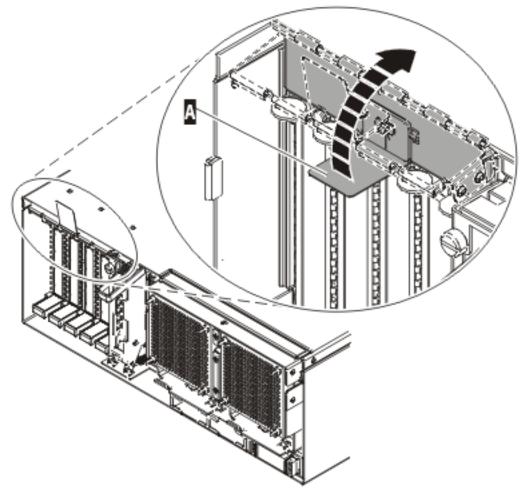
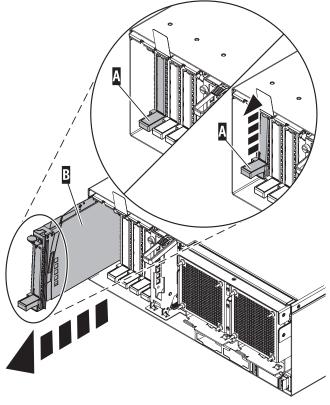


Figure 109. PCI adapter EMC shield in the open position

____25. Lift up the lower cassette handle **A** as shown in the following figure. Pull the PCI cassette **B** 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.



IPHAK509-1

Figure 110. PCI adapter cassette removed from the system unit

____26. Place the cassette with the cover facing up on an approved ESD surface.

Note: The cover will have a label on it.

- ____27. Install the replacement adapter into the PCI adapter cassette using the following instructions:
 - "Place an adapter in the PCI adapter single-width cassette" on page 227
 - "Remove an adapter from the PCI adapter single-width cassette" on page 223
- **28.** At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
- **____29.** 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.
- **____30.** Lift and hold the PCI adapter EMC shield **A** in the open position. See Figure 109 on page 212.
- ____31. Slide the cassette A into the cassette slot as shown in the following figure.
- **____32.** 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.

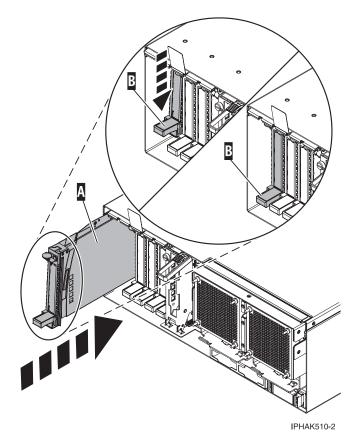


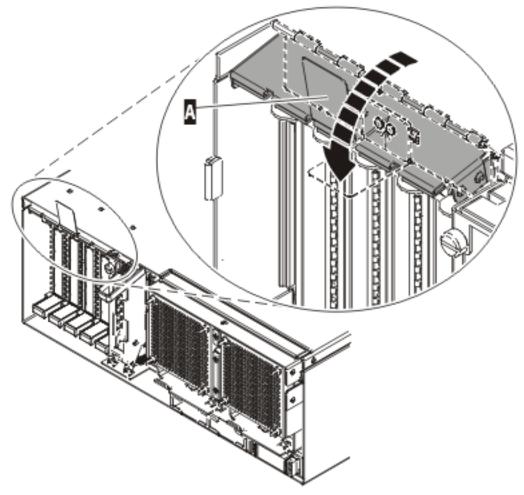
Figure 111. PCI adapter cassette removed from the system unit

____33. Connect the adapter cables.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

____34. Lower the PCI adapter EMC shield A into the closed position.



IPHAK508-0

Figure 112. PCI adapter EMC shield in the closed position

- ____35. 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 0K message displayed next to the **Command** field at the top of the screen.
- ____ **36**. Press the F3 or ESC 3 key to return to the **PCI Hot-Plug Manager** menu.
- ____ **37**. Press the F3 or ESC 3 key to return to the **TASK** selection list.
- ___ 38. Select Log Repair Action.
- ____39. Select the resource just replaced, press Enter, press Commit (F7 or ESC 7), then press Enter.
- ____ 40. Press F3 or ESC 3 to return to TASK Selection List.
- _____41. Select Hot Plug Task, press enter.
- ____42. Select PCI Hot Plug Manager, then select Configure a defined device, then press Enter.
- ____43. Select the device just replaced from the list, then press Enter. The device is now configured.
- _____44. Press the F10 key to exit the diagnostic program.

Note: If you are running the standalone diagnostics, do not exit the program completely.

- _____45. 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, login as root or CELOGIN, then enter the **diag** command.
- If AIX is not available, boot the standalone diagnostics
- b. Type the diag command if you are not already displaying the diagnostic menus
- c. Select Advance Diagnostic Routines, then select Problem Determination.
- d. Select the name of the resource just replaced from the menu. If the resource just replaced is not shown, choose the resource associated with it. Press Enter, then press **Commit** (F7 or ESC7).
- e. Did the Problem Determination identify any problems?
 - No: Continue to the next step. (RETURN TO PROCEDURE THAT SENT YOU HERE)
 - Yes: A problem is identified
 - If you are a customer, record the error information, then contact your service provider.
 - If you are an authorized service provider, return to map 210-5.

____ 46. Press the F10 key to exit the diagnostic program.

Replace a PCI adapter contained in a cassette in the system with the power on in i5/OS

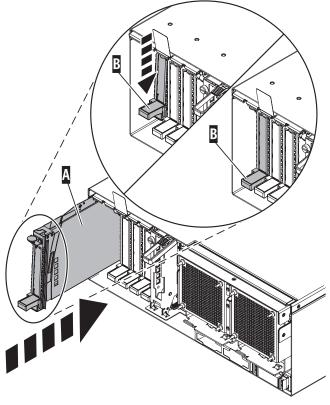
The following procedure describes the replacement of a PCI adapter contained in a cassette in the system with the power on in i5/OS.

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 "Replace a part using the Hardware Management Console" on page 355.

Attention: You must have already completed the procedure "Remove a PCI adapter contained in a cassette from the system with the power on in i5/OS" on page 197 in order to have the slot powered off.

To replace an adapter, do the following:

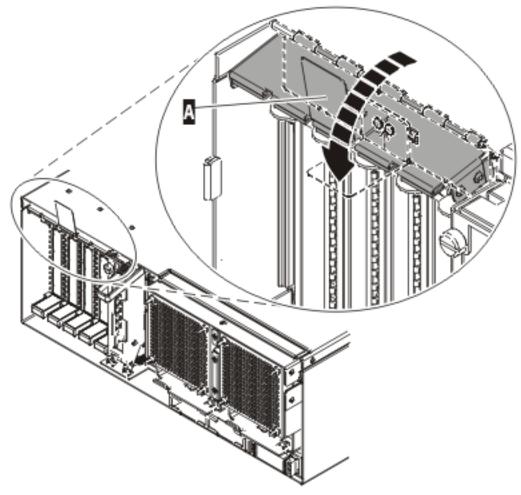
- ____ 1. Perform prerequisite tasks as described in "Before you begin" on page 311.
- 2. If the adapter needs to be placed in the PCI adapter cassette, see "Place an adapter in the PCI adapter single-width cassette" on page 227.
- **3.** At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
- _____ 4. 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.
- ____ 5. Lift and hold the PCI adapter EMC shield A in the open position. See Figure 103 on page 199.
- ____ 6. Slide the cassette A into the cassette slot as shown in the following figure.
- 7. 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.



IPHAK510-2

Figure 113. PCI adapter cassette removed from the system unit

8. Lower the PCI adapter EMC shield **A** into the closed position.



IP HAK508-0

Figure 114. PCI adapter EMC shield in the closed position

- ____ 9. Select **Power on domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
- ____10. Select Assign to on the resource that has an asterisk (*) on the Work with Controlling Resource display. Press Enter.
- ____ 11. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: Power on complete
- ____12. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

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

The following procedure describes the replacement of a PCI adapter contained in a cassette in the system with the power on in Linux.

Attention: You must have already completed the procedure "Remove a PCI adapter contained in a cassette from the system with the power on in Linux" on page 200 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 "Replace a part using the Hardware Management Console" on page 355.

Notes:

- 1. Before performing a PCI hot-plug removal of storage devices, ensure file systems on those devices are unmounted.
- 2. Procedures performed on a PCI adapter with the system power on in Linux, 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.
- **3.** 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 "Remove a PCI adapter contained in a cassette from the system with the power on in Linux" on page 200 and "Install a PCI adapter contained in a cassette with the power on in Linux" on page 179.

To replace a Model 570 or D11 expansion unit adapter with the power on in Linux, do the following:

- ____1. Perform prerequisite tasks as described in "Before you begin" on page 311.
- ____2. If the adapter needs to be placed in the PCI adapter cassette, see "Place an adapter in the PCI adapter single-width cassette" on page 227.
- ____3. At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
- ____4. 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.
- ____5. To replace an adapter into PCI slot U7879.001.DQD014E-P1-C3, enter the following command: drslot_chrp_pci -R -s U7879.001.DQD014E-P1-C3Follow the instructions on the screen to complete the task.

When you are instructed to insert the adapter in the adapter slot, lift and hold the PCI adapter EMC shield **A** in the open position. See Figure 107 on page 207.

- ____6. Slide the cassette A into the cassette slot as shown in the following figure.
- ____7. 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.

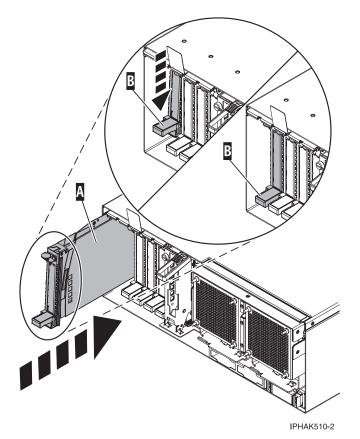
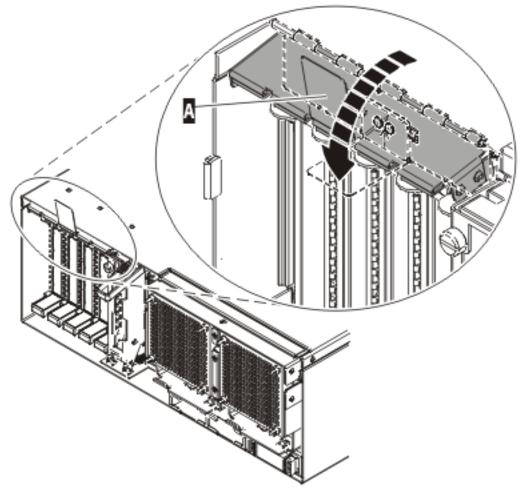


Figure 115. PCI adapter cassette removed from the system unit

___ 8. Lower the PCI adapter EMC shield **A** into the closed position.



IPHAK508-0

Figure 116. PCI adapter EMC shield in the closed position

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

Note: After performing a PCI hot-plug install of storage devices, ensure file systems on those devices are remounted.

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

The following procedure describes the replacement of a PCI adapter contained in a cassette in the system with the system power off.

Attention: You must have already completed the procedure "Remove a PCI adapter contained in a cassette from the system with the system power off" on page 205 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 "Replace a part using the Hardware Management Console" on page 355.

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

- _____1. Perform prerequisite tasks as described in "Before you begin" on page 311.
- 2. If the adapter needs to be placed in the PCI adapter cassette, see "Place an adapter in the PCI adapter single-width cassette" on page 227.
- ____ **3.** At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
- _____ 4. 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.
- ____ 5. Lift and hold the PCI adapter EMC shield A in the open position. See Figure 107 on page 207.
- ____ 6. Slide the cassette A into the cassette slot as shown in the following figure.
- 7. 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.

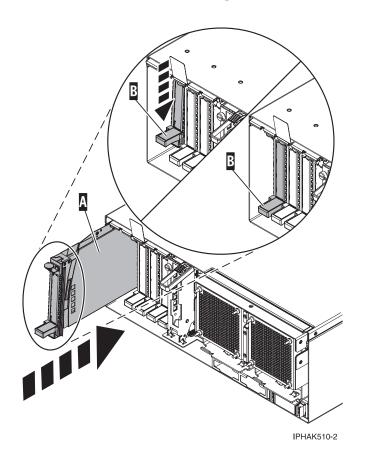
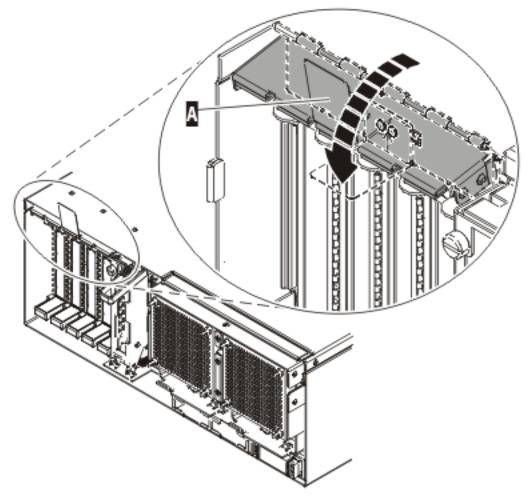


Figure 117. PCI adapter cassette removed from the system unit

8. Lower the PCI adapter EMC shield **A** into the closed position.



IPHAK508-0

Figure 118. PCI adapter EMC shield in the closed position

- ____ 9. Reconnect the system to the power source.
- ____ 10. "Start the system" on page 340.
- ____11. Verify that the new resource is functional. Refer to "Verify the installed part" on page 348.

PCI adapter single-width cassette

The following procedures describe the removal and placement of PCI or PCI-X adapters in PCI adapter single-width cassettes.

Select the appropriate instructions from this list:

- "Remove an adapter from the PCI adapter single-width cassette"
- "Place an adapter in the PCI adapter single-width cassette" on page 227

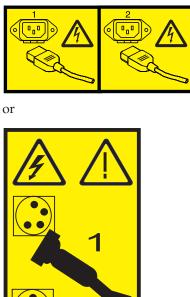
Remove an adapter from the PCI adapter single-width cassette

The following procedure describes the removal of adapters from PCI adapter single-width cassettes.

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

- ____1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- ____2. "Remove a PCI adapter contained in a cassette from the system" on page 191.
- ____3. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)





- _____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. The video.
 - b. Lift the cover **B** off of the pivot pin.
 - c. Slide the cover off of the cassette.

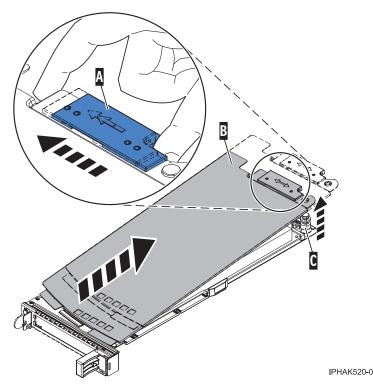


Figure 119. PCI adapter cassette cover removed

- ____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 120 on page 226.

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.

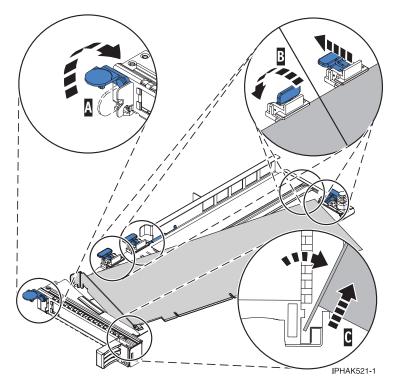


Figure 120. Adapter removed from the PCI adapter cassette

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 an adapter in the PCI adapter single-width cassette" on page 227.

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) 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.

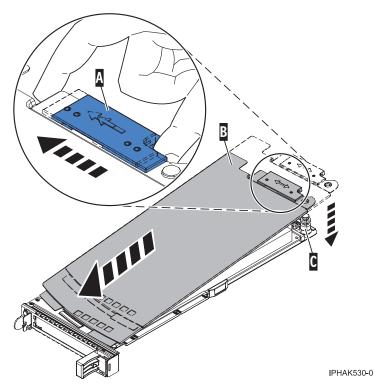


Figure 121. PCI adapter cassette cover replaced

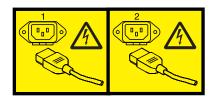
i. "Replace a PCI adapter contained in a cassette in the system" on page 208.

Place an adapter in the PCI adapter single-width cassette

The following procedure describes placing adapters in PCI adapter single-width cassettes.

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

- ____1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- ____2. "Remove a PCI adapter contained in a cassette from the system" on page 191.
- ____3. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)



_____4. Remove any shipping handles or brackets attached to the adapter.

or

- ____ 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. The View video.
 - b. Lift the cover **B** off of the pivot pin.
 - c. Slide the cover off of the cassette.

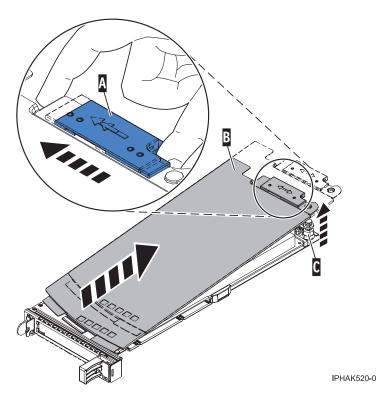


Figure 122. PCI adapter single-width cassette cover removed

- ____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:
 - "Remove an adapter from the PCI adapter single-width cassette" on page 223.
 - 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 possition by pressing the cassette handle towards the retainer clip.

- ____7. 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 123.
 - b. Rotate the adapter toward the top of the cassette and into place.
 - **c**. Close the tailstock clamp.

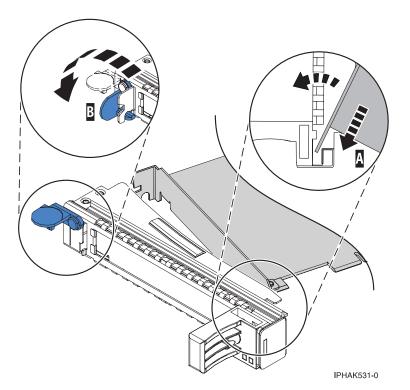


Figure 123. Adapter removed from the PCI adapter single-width cassette

d. Position the adapter retainers to support the adapter, and then rotate the retainer clip **B** into the closed position. See Figure 123.

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 124.

Attention: Use of the lower corner support retainer might inhibit 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.

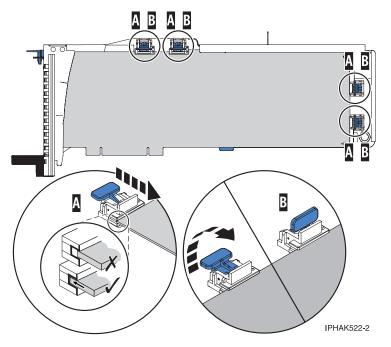


Figure 124. Long adapter in the PCI adapter cassette with the supports and stabilizer in place

Adapter-cassette retainer placement for mid-sized adapters

- a) Remove the adapter stabilizer **C** . See Figure 125.
- 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.

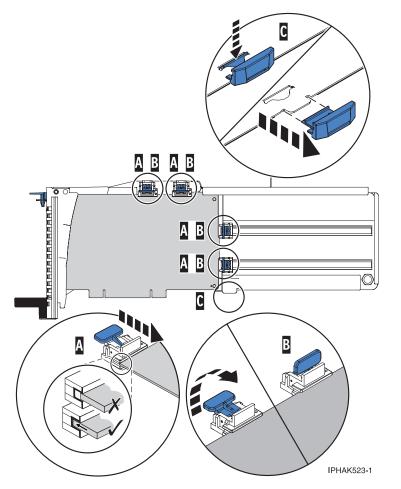


Figure 125. Medium-length adapter in the PCI adapter cassette with the supports in place

Adapter-cassette retainer placement for small adapters

- a) Remove the adapter stabilizer **C** . See Figure 126.
- 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.

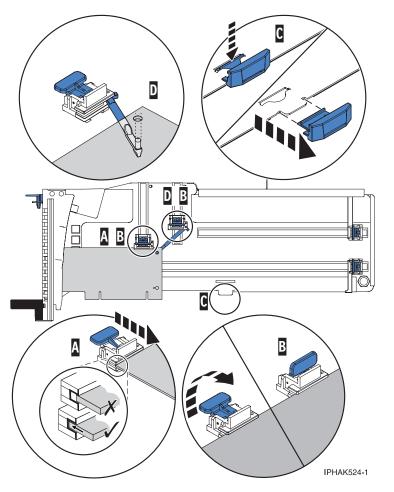


Figure 126. Short adapter in the PCI adapter cassette with the supports and the hookarm in place

- **8**. After the retainers are placed, 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 \mathbf{A} in the open position, place the cover over the pivot pin \mathbf{C} .
 - c. Release the cover latch to lock the cover into place.

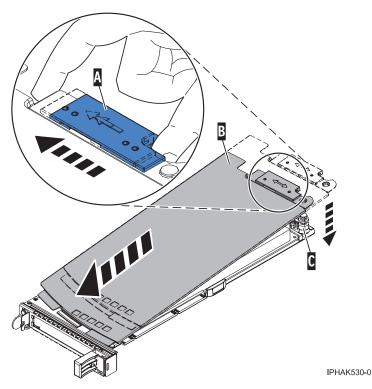


Figure 127. PCI adapter cassette cover replaced

____9. "Replace a PCI adapter contained in a cassette in the system" on page 208.

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

The following procedures describe the removal and placement of PCI or PCI-X adapters in PCI adapter cassettes.

Select the appropriate instructions from this list:

- "Remove an adapter from the PCI adapter double-wide cassette"
- "Place an adapter in the PCI adapter double-wide cassette" on page 238

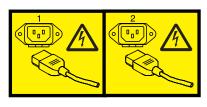
Remove an adapter from the PCI adapter double-wide cassette

The following procedure describes the removal of adapters from PCI adapter double-wide cassettes.

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

- ____1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- ____2. "Remove a PCI adapter contained in a cassette from the system" on page 191.
- ____3. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244.

(L003)



or



- ____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. The View video.
 - b. Lift the cover **B** off of the pivot pin.
 - c. Slide the cover off of the cassette.

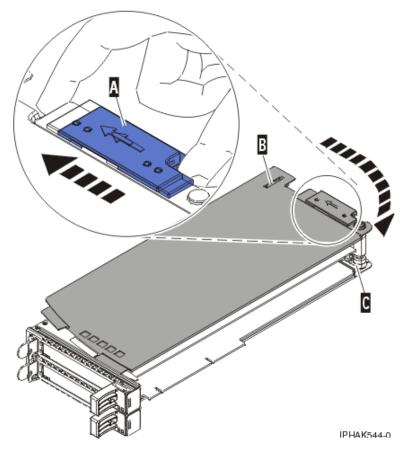


Figure 128. PCI adapter cassette cover removed

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 129 on page 237.

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.

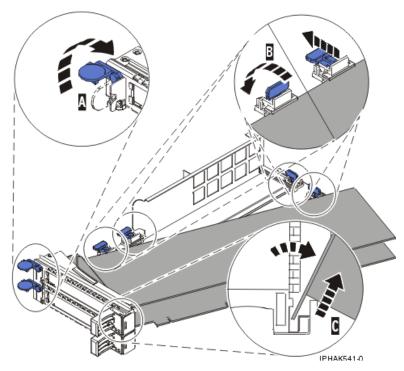


Figure 129. Adapter removed from the PCI adapter cassette

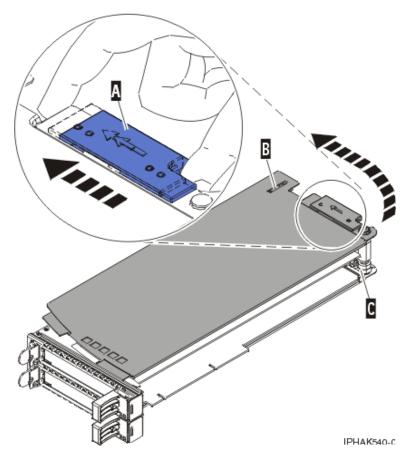
f. Put the adapter in a safe place.

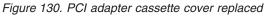
Attention: A cassette containing either a PCI adapter or filler panel must be placed in the PCI adapter slot of the system unit for proper air flow and cooling.

g. "Place an adapter in the PCI adapter double-wide cassette" on page 238.

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.





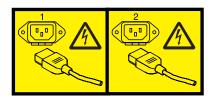
i. "Replace a PCI adapter contained in a cassette in the system" on page 208.

Place an adapter in the PCI adapter double-wide cassette

The following procedure describes placing adapters in PCI adapter double-wide cassettes.

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

- ____1. Perform the prerequisite tasks described in "Before you begin" on page 311.
- ____2. "Remove a PCI adapter contained in a cassette from the system" on page 191.
- ____3. Before handling any PCI adapter, see "Handling Static-Sensitive Devices" on page 244. (L003)



or



- ____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.

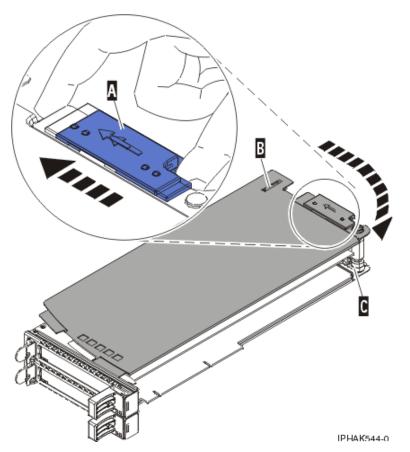


Figure 131. PCI adapter cassette cover removed

- d. Unscrew pivot pin **C** and put it in a safe place
- ____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:
 - "Remove an adapter from the PCI adapter double-wide cassette" on page 234.
 - 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 possition by pressing the cassette handle towards the retainer clip.

- ___ 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 132.
 - b. Rotate the adapter toward the top of the cassette and into place.
 - **c**. Close the tailstock clamp.

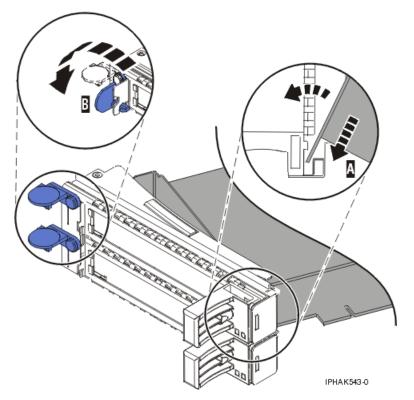


Figure 132. Adapter replaced in the PCI adapter cassette

d. Position the adapter retainers to support the adapter, and then rotate the retainer clip **B** into the closed position. See Figure 132.

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 133 on page 242.

Attention: Use of the lower corner support retainer might inhibit 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.

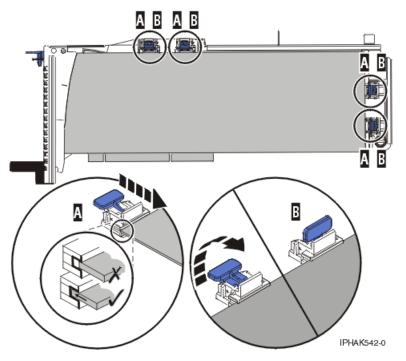


Figure 133. Long adapter in the PCI adapter cassette with the supports and stabilizer in place

- ____7. 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.

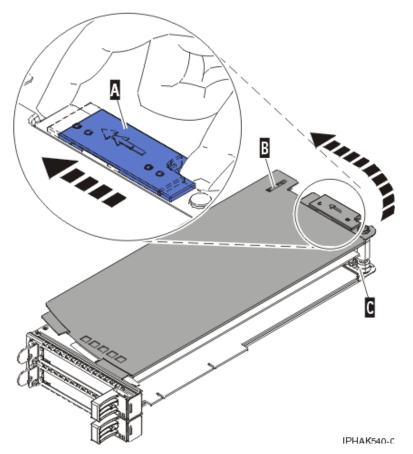


Figure 134. PCI adapter cassette cover replaced

____8. "Replace a PCI adapter contained in a cassette in the system" on page 208.
 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 placement in the system unit or expansion unit

Some adapters must be placed in specific PCI slots to function correctly at optimum performance. Use the following information to determine where to install PCI adapters in your server.

- Chapter 2, "PCI adapter placement for pSeries system units and expansion units," on page 251
- Chapter 3, "PCI adapter placement for iSeries system units and expansion units," on page 273
- Chapter 4, "PCI adapter placement for OpenPower system units and expansion units," on page 305

Open the model 0595, 5095, orD20 service access cover

The following procedure describes how to open the service access cover for the model 0595, 5095, or D20 expansion units.

To open the service access cover, do the following:

- ____1. Ensure the expansion unit in the service position as described in "Place the rack-mounted system or expansion unit in the service position" on page 333.
- ____2. Loosen the three thumbscrews located on the cover at the back of the system.
- ____ **3**. Lift the cover into the open position.

Handling Static-Sensitive Devices

The following procedures describe how to handle static-sensitive devices.

Attention: 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:

- If you have an antistatic wrist strap available, use it while handling the device.
- 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. Hold drives by the frame. Avoid touching the solder joints or pins.
- 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.

PCI Hot-Plug Manager Access for AIX

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:
 - Chapter 3, "PCI adapter placement for iSeries system units and expansion units," on page 273
 - Chapter 2, "PCI adapter placement for pSeries system units and expansion units," on page 251

Accessing Hot-Plug Management Functions

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

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 246.

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 246.

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. 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

After the repair action is completed, do the following:

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

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

PCI adapter information by feature

The following tables provide information such as device descriptions, prerequisites, and related information for tape drives.

Select the appropriate information from this list:

- "2738: 2 port USB PCI adapter" on page 247
- "2780: PCI-X Ultra4 RAID Disk Ctrl" on page 248
- "0627: Direct Attach-2780" on page 249

2738: 2 port USB PCI adapter

Description • 32-bit 33MHz PCL Local Bus Specification Revision 2.2			
I	 32-bit, 33MHz PCI Local Bus Specification Revision 2.2 Single-slot half-size PCI card 		
	 Single-slot, half-size PCI card +5V or +3.3V Signaling 		
	FCC Class B		
	Two downstream USB ports		
	Full 12 MHz bandwidth on each port		
	• Full compliance with Universal Serial Bus Specifications Revision 1.1 and 2.0		
	• Compatible with OpenHCI Open Host Controller Interface Specifications for USB Release 1.1 and 2.0		
	• NEC uPD720101, same component used on planar for native USB support these systems.		
	Item	Description	
	I/O Bus Archited	cture PCI 2.2 compliant	
	Busmaster	Yes	
	Maximum number		
		For system-specific adapter placement, see the <i>PCI Adapter Placement Reference Guide</i> (SA38-0538)	
	Connector	Standard USB Single Pin-Type Series "A" Receptacle	
	Wrap plug	None	
	Cables	None	
Operating system or partition	The 2 Port USB PCI Adapter is supported on AIX Versions 5.2.0 ML04 or later. The base system filesets level must be 5.2.0.40 or later. The initial adapter fileset level will be 5.2.0.0. The device driver package is named <i>devices.pci.99172704</i> . Ensure that your operating system supports the adapter before installing it. Contact your support representative for assistance.		
Required software or driver	Media containing the device driver software		
Tools	Flat-blade screwdriver		
Cables	Refer to your local procedures for information about connecting the 2 Port USB PCI Adapter to a USB device.		
Restrictions	For PCI slot restriction information, see:		
	• Chapter 3, "PCI adapter placement for iSeries system units and expansion units," on page 273		
	• Chapter 2, "PCI adapter placement for pSeries system units and expansion units," on page 251		
Required Documentation	Registration card		
	Operating system documentation		
	System unit documentation		
	PCI Adapter Placement Reference guide		
Related information	Note: Be sure to retain your proof of purchase as it might be required to receive warranty service.		

2780: PCI-X Ultra4 RAID Disk Ctrl

Description	This feature is an Ultra4 (u320) SCSI controller with a maximum compressed write cache of 757MB and a maximum compressed read cache size of 1GB, that provides RAID-5 protection for internal disks and also supports internal tape units, CD-ROM and DVD units. This feature has four Ultra4(U320) SCSI buses. In addition to providing RAID-5 protection for disks, this feature is also designed to work as a high performance controller for disks protected by system mirroring or disks with no protection. It controller supports a maximum of 20 disk units. A minimum of three disk units of the same capacity are needed for a valid RAID-5 configuration. A maximum of six arrays are allowed per controller, with a maximum of 18 disk units allowed per array. All disk units in an array must be of the same capacity. Parity is spread across either two, four, eight, or 16 disk units in an array of four to seven disk units is started, parity is spread across four disk units. If an array of 8-15 disk units is started, parity is spread across four disk units. If an array of 8-16 disk units is started, parity is spread across eight disk units. If an array of 8-16 disk units is started, parity is spread across four disk units. If an array of support of either "Balance", "Performance", or "Capacity" in Operations Navigator when starting arrays. An optimization of "Balance" will be used by default when starting arrays from the green screens. If disk units are included into an existing array, the number of parity drives does not increase, so parity may be spread across less than the preferred number of disk units. In this case the RAID function must be stopped and then started in order to redistribute the parity.	
	Note: This controller does not support DASD compression.	
	Attributes provided: SCSI Raid Controller	
	Attributes required: One 3V long PCI slot	
Operating system or partition	 This feature is supported on the following levels of AIX or higher: AIX 5L Version 5.1 with the 5100-07 Recommended Maintenance Package (IY57842) AIX 5L Version 5.2 with the 5200-04 Recommended Maintenance Package (IY56722) 	
	This feature is supported on the following Linux distributions:Red Hat Enterprise Linux 3 Update 3 or newerSuSE Linux Enterprise Server 9 or newer	
Required software or driver	Media containing the device driver software	
Tools	Flat-blade screwdriver	
Cables	You must use the correct SCSI cables to properly attach SCSI hard disk drives and subsystems. If you install an Ultra320 SCSI hard disk drive or subsystem that can transfer data at up to 320 MB/s, the maximum cable length is limited to 20 meters (approximately 60 feet). For more information about connecting SCSI hard disk drives to the PCI-X Quad Channel	
	Ultra320 SCSI RAID Adapter, refer to the PCI-X SCSI RAID Controller Reference Guide for AIX, order number SA23-1323 or PCI-X SCSI RAID Controller Reference Guide for Linux, order number SA23-1327.If you plan to install internal SCSI hard disk drives, you must obtain the necessary cables for your system unit. Refer to your system unit documentation for information about installing internal SCSI backplanes, hard disk drives, and cables.A SCSI terminator must be located at the end of the internal cable. Terminators are built into the backplane within the computer.	

Restrictions	For PCI slot restriction information, see:
	• Chapter 3, "PCI adapter placement for iSeries system units and expansion units," on page 273
	• Chapter 2, "PCI adapter placement for pSeries system units and expansion units," on page 251
Required	Registration card
Documentation	Operating system documentation
	System unit documentation
Related information	Note: Be sure to retain your proof of purchase as it might be required to receive warranty service.

0627: Direct Attach-2780

Description	This feature is ordered when the function of a PCI-X Ultra 4 RAID Disk Controller, feature (#2780), is required and the card will be controlled by a non-i5OS operating system.
	Notes:
	1. Cards controlled by non-i5OS operating systems do not use/require PCI IOPs.
	2. Direct attach cards are supported only in an LPAR partition.
	 Attributes provided: Support for internal disk drives and internal tape, CD-ROM and DVD units
	Attributes required: #0140, and #0142 and/or #0145
	For more information, see "2780: PCI-X Ultra4 RAID Disk Ctrl" on page 248

Chapter 2. PCI adapter placement for pSeries system units and expansion units

Use this information to determine if specific slot requirements exist for adapters you are installing.

Some adapters must be placed in specific PCI slots to function correctly at optimum performance. Use the following information to determine where to install adapters in your server.

Note: In addition to these instructions, you can also use the LPAR Validation Tool to determine adapter placement. Go to the LPAR Validation Tool Web page (www.ibm.com/servers/eserver/iseries/lpar/systemdesign.htm).

Logical partition information

• "Logical partition (LPAR) considerations"

System Placement information

- "Model 9110-510 adapter placement" on page 252
- "Model 520 pSeries adapter placement" on page 253
- "Model 550 pSeries adapter placement" on page 256
- "Model 570 pSeries adapter placement" on page 259
- "Model 590 or 595 pSeries adapter placement" on page 264
- "Model 9118-575 pSeries adapter placement" on page 261
- "D11 expansion unit" on page 267
- "D20 expansion unit" on page 268
- "Expansion units 5791, 5794, and 7040-61D" on page 264

Supported PCI adapters

• "pSeries PCI and PCI-X adapters" on page 270

Logical partition (LPAR) considerations

Place redundant devices in separate I/O units for best availability performance. Place nonredundant devices in the same I/O unit. If you place nonredundant devices in one unit, the system is less exposed to other-unit failures.

Some devices do not have enhanced error handling capabilities built in to their device drivers. If these devices fail, the PCI bridge set in which they are placed are affected. If the I/O subsystem encounters a severe error, all slots in the PCI bridge set are also affected. To clear this condition, you may reboot the system. In addition, it is also possible to remove the failed PCI slots on an affected PCI bridge set from the partition profile or profiles that include these PCI slots, and reboot the partition or partitions that terminated at the time of the error.

To avoid PCI bridge set errors related to non-enhanced error handling adapters, it is strongly recommended that if a non-enhanced error handling adapter is used, all slots on that PCI bridge set should be assigned to a single LPAR.

Model 9110-510 adapter placement

The following information provides direction on what adapters can be placed in the system and where adapters should be placed for optimum performance.

Select the appropriate information from this list:

- "System unit back view"
- "PCI slot description"
- "Recommended system unit slot placement and maximums"
- "Performance notes (for optimum performance)" on page 253

System unit back view

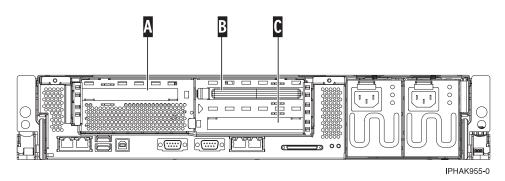


Figure 135. Model 9110-510 rack mounted system unit back view with four PCI slots available.

PCI slot description

• The following table shows the slot properties and PHB connections:

PHB2					
Slot 1 (A)	Slot 2 (B)	Slot 3 (C)			
Long	Long	Long			
64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz			
Un-P2-C1	Un-P2-C2	Un-P2-C4			

Table 1. Model 9110-510 Slot location description

- Slots C1 through C3 are compatible with PCI and PCI-X adapters.
- All slots are long slots
- Short adapters can go in short or long slots.
- All slots support Enhanced Error Handling (EEH)

Recommended system unit slot placement and maximums

See the following table to identify the recommended system unit slot placement and maximum number of specified adapters recommended. If the space in the **Maximum number of adapters allowed** is blank, there is no maximum limit for that adapter.

Feature Code	Base Unit slot priority	Maximum number of adapters allowed
5719**	1, 2, 3	1
5718**	1, 2, 3	1

5707*	1, 2, 3	
5706*	1, 2, 3	
5701*	1, 2, 3	
5700*	1, 2, 3	
5714*	1, 2, 3	
5713*	1, 2, 3	
5716*	1, 2, 3	
5712*	1, 2, 3	
5703*	1, 2, 3	
2738	1, 2, 3	1
2849	1, 2, 3	1
4962	1, 2, 3	
5723	1, 2, 3	
2943	1, 2, 3	
2944	1, 2, 3	
2962	1, 2, 3	
2947	1, 2, 3	

** Extra-high Bandwidth (EHB) adapter. See the **Performance notes** before installing this adapter.

* High Bandwidth (HB) adapter. See the **Performance notes** before installing this adapter.

For more information about listed adapters, see"pSeries PCI and PCI-X adapters" on page 270.

Performance notes (for optimum performance)

System unit information:

- A maximum of one 10Gb etherport port allowed on a 2 way system.
- No more than three Gb ethernet ports per PHB or system.
- No more than two high-bandwidth adapters per PHB or system.
- If one 10Gb port is present, no other 10Gb or 1Gb ports are allowed for optimum performance.
- No more than three Gb ethernet ports per on CPU in a system.

Model 520 pSeries adapter placement

The following information provides direction on what adapters can be placed in the system and where adapters should be placed for optimum performance.

Select the appropriate information from this list:

- "System unit back view"
- "PCI slot description" on page 254
- "Recommended system unit slot placement and maximums" on page 254
- "Performance notes (for optimum performance)" on page 256

System unit back view

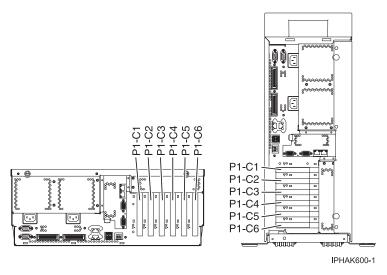


Figure 136. Model 520 rack mounted and deskside system unit back view with numbered slots.

PCI slot description

• The following table shows the slot properties and PHB connections:

Table 2. Model 520 Slot location description

РНВО			PHB2				
Slot 3	Slot 5	Slot 6	Integrated SCSI U320	Slot 1	Slot 2	Slot 4	Integrated Duel 1 Gb
Short	Long	Long	3031 0320	Short	Short	Long	Ethernet
32-bit 3.3V, 66 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	133 MHz	64-bit 3.3V, 133 MHz	32-bit 3.3V, 66 MHz	64-bit 3.3V, 133 MHz	133 MHz
Un-P1-C3	Un-P1-C5	Un-P1-C6		Un-P1-C1	Un-P1-C2	Un-P1-C4	

- Slots C1 through C6 are compatible with PCI and PCI-X adapters.
- Slot C5 can only accommodate short cards if feature 6594 (Force-4) is present in the system unit.
- Short adapters can go in short or long slots.
- For best performance 64-bit adapters should go in 64-bit slots.
- All slots support Enhanced Error Handling (EEH)
- The system supports up to 4 total expansion units, models D11 and D20.
- The model D20 expansion unit, with most its features, can migrate from other pSeries systems.

Recommended system unit slot placement and maximums

See the following table to identify the recommended system unit slot placement and maximum number of specified adapters recommended. If the space in the **Maximum number of adapters allowed** is blank, the limit is the number of slots available.

Feature Code	Base Unit slot priority	Maximum number of adapters allowed		
		Base Unit	Expansion Unit	System
5709	Attaches to CEC IO - no slot used	0		
1800	Attaches to CEC IO - no slot used	0		
6312 ¹	4, 5, 6	3		18
5719**	5, 6	1	1	1

5718**	5, 6	1	1	1
5707*	5, 6, 1, 4, 3, 2	6		
5706*	5, 6, 1, 4, 3, 2	6		
5701*	5, 6, 1, 4, 3, 2	6		
5700*	5, 6, 1, 4, 3, 2	6		
5714*	5, 6, 1, 4, 3, 2	3		15
5713 [*]	5, 6, 1, 4, 3, 2	3		15
5716*	5, 6, 1, 4, 3, 2	6		
6239*		0		
6228*		0		
5712*	5, 6, 1, 4, 3, 2	6		
5703 [*]	5, 6, 4	3		
2946*		0		6
6230*		0		16
6231	128 MByte DRAM Option Card for feature 6230			
6235	32 MByte Fast-Write Cache Option Card for feature 6230			
2498		0		16
2737		0	4	4
2738	2, 3, 4, 1, 6, 5	2	6	6
2848		0	4	4
2849	2, 3, 4, 1, 6, 5	2	6	6
2943	2, 3, 4, 1, 6, 5	6		10
2944	2, 3, 4, 1, 6, 5	6		10
2947	4, 5, 6	3	4	4
2962	2, 3, 4, 1, 6, 5	6		10
4953		0		20
4957		0		20
4959	2, 3, 4, 1, 6, 5	4		20
4960		0		16
4961		0		20
4962	2, 3, 4, 1, 6, 5	6		
4963		0		8
5709	Attaches to CEC IO - no slot used	1		
5723	2, 3, 4, 1, 6, 5	2		10
6203		0		16
6204	2, 3, 4, 1, 6, 5	2		10
8244	2, 3, 4, 1, 6, 5	1	1	1

** Extra-high Bandwidth (EHB) adapter. See the **Performance notes** before installing this adapter.

^{*} High Bandwidth (HB) adapter. See the **Performance notes** before installing this adapter.

¹Digital Trunk adapters have an internal cable and must be in contiguous slots.

For more information about listed adapters, see "pSeries PCI and PCI-X adapters" on page 270.

Performance notes (for optimum performance)

System unit information:

- No more than three Gb ethernet ports per PHB. This total includes the two integrated Gb ethernet ports on PHB 2.
- No more than two high bandwidth adapters per PHB; four per base system; eight per entire system with one or more expansion units
- No more than one 10Gb ethernet port per 2 CPUs in a system. If one 10Gb ethernet port is present per 2 CPUs, no other 10Gb or 1Gb ports allowed for optimum performance.
- No more than three 1Gb ethernet ports per one CPU in a system. More ethernet adapters may be added for connectivity.

Model 550 pSeries adapter placement

The following information provides direction on what adapters can be placed in the system and where adapters should be placed for optimum performance.

Select the appropriate information from this list:

- "System unit back view"
- "PCI slot description"
- "Recommended system unit slot placement and maximums" on page 257
- "Performance notes (for optimum performance)" on page 258

System unit back view

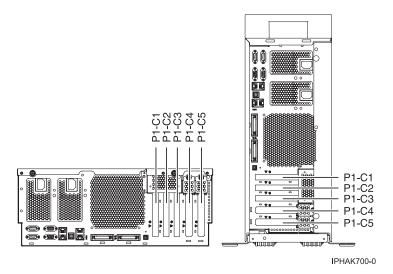


Figure 137. Model 550 rack mounted and deskside system unit back view with numbered slots.

PCI slot description

• The following table shows the slot properties and PHB connections:

Table 3. Model 550 pSeries slot location descriptions

PHB0	PHB2

Table 3. Model 550 pSeries slot location descriptions (continued)

Slot 1	Slot 2	U 0	Integrated SCSI	Slot 3	Slot 4	Slot 5
Long	Long	1 Gb Ethernet	Gb Ethernet U320	Long	Long	Short
64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	133 MHz	133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	Short, 64-bit 3.3V, 133 MHz or GX+ adapter placement
Un-P1-C1	Un-P1-C2			Un-P1-C3	Un-P1-C4	Un-P1-C5

- Slots C1 through C5 are compatible with PCI and PCI-X adapters.
- Slots C5 can contain one PCI, PCI-X, or GX+ adapter. If a GX+ adapter is installed, it must be placed in the C5 slot.
- Short adapters can go in short or long slots.
- All slots support Enhanced Error Handling (EEH)
- The system supports up to 8 total expansiton units, models D11 and D20.
- The model D20 expansion unit, with most its features, can migrate from other pSeries systems.
- •

Recommended system unit slot placement and maximums

See the following table to identify the recommended system unit slot placement and the recommended maximum number of specified adapters.

Note: If the space in the Maximum number of adapters	allowed is blank, the limit is the number of slots
available.	

Feature Code	Base unit slot priority	Maximum number of adapters allowed			
		Base Unit	Expansion Unit	System	
5709	Attaches to CEC IO - no slot used	1	0	1	
1806	Attaches to CEC IO - no slot used	1	0	1	
6312 ¹	1, 2, 3, 4	4		36	
5719**	3, 1, 4, 2, 5	2	2	2	
5718**	3, 1, 4, 2, 5	2	2	2	
5707*	3, 4, 1, 5, 2	5		5	
5706*	3, 4, 1, 5, 2	5			
5701*	3, 4, 1, 5, 2	5			
5700 [*]	3, 4, 1, 5, 2	5			
5714*	3, 4, 1, 5, 2	3	3	27	
5713 [*]	3, 4, 1, 5, 2	3	3	27	
5716*	3, 4, 1, 5, 2	5			
6239*		0			
6228*		0			
5712 [*]	3, 4, 1, 5, 2	5			
5703 [*]	3, 4, 1, 2	4			
2946*		0		6	
6230 [*]		0		32	

6231	128 MByte DRAM Option Card for feature 6230		
6235	32 MByte Fast-Write Cache Option Card for feature 6230		
2498		0	11
2737		0	8
2738	2, 5, 1, 4, 3	2	8
2848		0	8
2849	2, 5, 1, 4, 3	2	8
2943	2, 5, 1, 4, 3	2	18
2944	2, 5, 1, 4, 3	2	18
2947	2, 1, 4, 3	4	8
2962	2, 5, 1, 4, 3	4	20
4953		0	20
4957		0	20
4959	2, 5, 1, 4, 3	4	20
4960		0	32
4961		0	20
4962	2, 5, 1, 4, 3	5	
4963		0	16
5723	2, 5, 1, 4, 3	2	18
6203		0	32
6204	5, 2, 4, 1, 3	2	18

** Extra-high Bandwidth (EHB) adapter. See the **Performance notes** before installing this adapter.

* High Bandwidth (HB) adapter. See the **Performance notes** before installing this adapter.

¹Digital Trunk adapters have an internal cable and must be in contiguous slots.

For more information about listed adapters, see"pSeries PCI and PCI-X adapters" on page 270.

Performance notes (for optimum performance)

System unit information:

- No more than three Gb ethernet ports per PHB. This total should include the two integrated Gb ethernet ports on PHB 0.
- No more than three high bandwidth adapters per PHB; eight per entire system with one RIO-G loop; 16 per entire system with two RIO-G loops.
- No more than one Extra-high bandwidth adapter per PHB; two per base system; four per entire system with one RIO-G loop; eight per entire system with two RIO-G loops
- No more than one 10Gb ethernet port per two CPUs in a system. If one 10Gb ethernet port is present per two CPUs, no other 10Gb or 1Gb ports allowed for optimum performance.
- No more than two 1Gb ethernet ports per one CPU in a system. More ethernet adapters may be added for connectivity.

Model 570 pSeries adapter placement

The following information provides direction on what adapters can be placed in the system and where adapters should be placed for optimum performance.

Select the appropriate information from this list:

- "System unit back view"
- "PCI slot description"
- "Recommended system unit slot placement and maximums" on page 260
- "Performance notes (for optimum performance)" on page 261

System unit back view

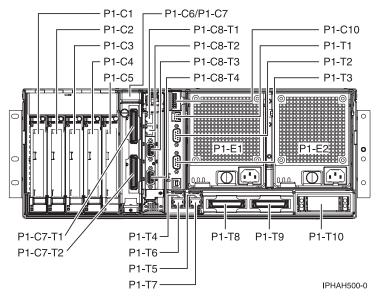


Figure 138. Model 570 rack mounted system unit back view with numbered slots.

PCI slot description

• The following table shows the slot properties and PHB connections:

Table 4. Model 570 pSeries slot location description

	PHB1				PHB2	
Slot 3	Slot 4	Slot 5	Slot 6	Slot 1	Slot 2	Integrated SCSI
Long	Long	Long	Short	Long	Long	U320
64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz or HSL-2/RIO-G adapter placement	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	133 MHz
Un-P1-C3	Un-P1-C4	Un-P1-C5	Un-P1-C6	Un-P1-C1	Un-P1-C2	

- Slots C1 through C6 are compatible with PCI and PCI-X adapters.
- Slot C6 is a short slot. This space can be occupied by an adapter or a high-speed link (HSL-2/RIO-G) card.
- Short adapters can go in short or long slots.
- All slots support Enhanced Error Handling (EEH)

- The system supports up to 4 total base units connected to up to 20 total expansion units, models D10, D11, and D20. The first base unit supports up to 8 total expansion units, the next 3 base units can support up to 4 total expansion units each.
- The model D10 and D20 expansion unit, with most its features, can migrate from other pSeries systems.

Recommended system unit slot placement and maximums

See the following table to identify the recommended system unit slot placement and maximum number of specified adapters recommended. If the space in the **Maximum number of adapters allowed** is blank, the limit is the number of slots available.

Feature Code	Suggested system unit slot priority	Maximum number of adapters allowed				
		Base Unit	Expansion Unit	System		
5709	Attaches to CEC IO - no slot used	1	N/A	1		
1800	Attaches to CEC IO - no slot used	1	0	1		
6312 ¹		0	4	4 per attached expansion unit		
5719**	3, 1, 4, 2, 5, 6	2	2	2 per base unit		
5718**	3, 1, 4, 2, 5, 6	2	2	2 per base unit		
5707*	3, 1, 4, 2, 5, 6	6				
5706*	3, 4, 1, 5, 2, 6	6				
5701*	3, 4, 1, 5, 2, 6	6				
5700*	3, 4, 1, 5, 2, 6	6				
5714*	3, 4, 1, 5, 2, 6	3	3	3 per base unit, 3 per expansion unit		
5713 [*]	3, 4, 1, 5, 2, 6	3	3	3 per base unit, 3 per expansion unit		
5716*	3, 4, 1, 5, 2, 6	6				
6239*	3, 4, 1, 5, 2, 6	6				
6228*	3, 1, 4, 2, 5, 6	6				
5712*	3, 4, 1, 5, 2, 6	6		62		
5703 [*]	3, 4, 1, 5, 2	5		62		
2946*	3, 4, 1, 5, 2, 6	6		20		
6230*	3, 4, 1, 5, 2, 6	6		104		
6231	128 MByte DRAM Option Card for feature 6230					
6235	32 MByte Fast-Write Cache Option Card for feature 6230					
2498	6, 2, 5, 1, 4, 3	6		104		
2737	6, 2, 5, 1, 4, 3	4		8		
2738	6, 2, 5, 1, 4, 3	6		8		
2848	6, 2, 5, 1, 4, 3	6		8		
2849	6, 2, 5, 1, 4, 3	6		8		

2943	6, 2, 5, 1, 4, 3	2	42
2944	6, 2, 5, 1, 4, 3	2	42
2947	2, 5, 1, 4, 3	5	20
2962	6, 2, 5, 1, 4, 3	4	44
4953	6, 2, 5, 1, 4, 3	6	20
4957	6, 2, 5, 1, 4, 3	6	20
4959	6, 2, 5, 1, 4, 3	6	20
4960	6, 2, 5, 1, 4, 3	6	32
4961	6, 2, 5, 1, 4, 3	6	80
4962	6, 2, 5, 1, 4, 3	6	
4963	6, 2, 5, 1, 4, 3	6	32
5723	6, 2, 5, 1, 4, 3	2	42
6203	6, 2, 5, 1, 4, 3	6	80
6204	6, 2, 5, 1, 4, 3	6	42

** Extra-high Bandwidth (EHB) adapter. See the **Performance notes** before installing this adapter.

* High Bandwidth (HB) adapter. See the Performance notes before installing this adapter.

¹Digital Trunk adapters have an internal cable and must be in contiguous slots.

For more information about listed adapters, see"pSeries PCI and PCI-X adapters" on page 270.

Performance notes (for optimum performance)

System unit information:

- No more than three Gb ethernet ports per PHB. There are no integrated gigabit ethernet ports attached to PHB 1 or PHB 2.
- No more than three high bandwidth adapters per PHB; five per base system; eight per entire system with one RIO-G loop; 16 per entire system with two RIO-G loops.
- No more than one Extra-high bandwidth adapter per PHB; two per base system; four per entire system with one RIO-G loop; eight per entire system with two RIO-G loops.
- No more than one 10Gb ethernet port per two CPUs in a system. If one 10Gb ethernet port is present per two CPUs, no other 10Gb or 1Gb ports allowed for optimum performance.
- No more than two 1Gb ethernet ports per one CPU in a system. More ethernet adapters may be added for connectivity.

Model 9118-575 pSeries adapter placement

The following information provides direction on what adapters can be placed in the system and where adapters should be placed for optimum performance.

Select the appropriate information from this list:

- "System unit back view" on page 262
- "PCI slot description" on page 262
- "Recommended system unit slot placement and maximums" on page 262
- "Performance notes (for optimum performance)" on page 264

System unit back view

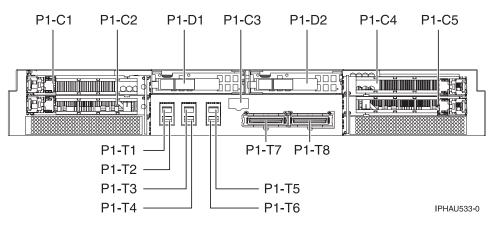


Figure 139. Model 9118-575 rack mounted system unit back view with four PCI slots available.

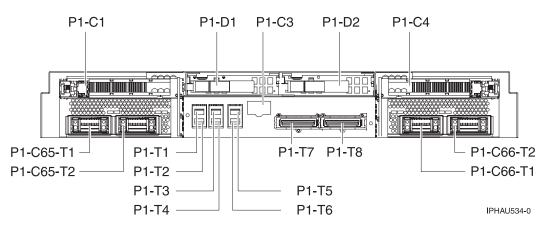


Figure 140. Model 9118-575 rack mounted system unit back view with two PCI slots available and two IXS slots.

PCI slot description

• The following table shows the slot properties and PHB connections:

Table 5. Model 570 pSeries slot location description

PH	IB1		PHB2
Slot 1	Slot 2	Slot 4	Slot 5
Long	Long or IXS	Long	Long or IXS
64-bit 3.3V, 133 MHz			
Un-P1-C1	Un-P1-C2	Un-P1-C4	Un-P1-C5

- Slots 1 through 4 are compatible with PCI and PCI-X adapters.
- Short adapters can go in short or long slots.
- All slots support Enhanced Error Handling (EEH)
- The base unit will support 1 expansion unit, models 5791, 5794, and 7040-61D.

Recommended system unit slot placement and maximums

See the following table to identify the recommended system unit slot placement and maximum number of specified adapters recommended.

Feature Code	Suggested system unit	Maximum number of adapters allowed				
	slot priority	Base Unit Expansion Unit System				
7910	Blocks 2 OR 5	1	0	1		
5719**	1, 4, 2, 5	2	4	4		
5718**	1, 4, 2, 5	2	4	4		
5707 [*]	1, 3, 2, 4	4	16	20		
5706 [*]	1, 4, 2, 5	4	20	24		
5701 [*]	1, 4, 2, 5	4	20	24		
5700 [*]	1, 4, 2, 5	4	20	24		
5714 [*]	1, 4, 2, 5	4	20	24		
5713 [*]	1, 4, 2, 5	4	20	24		
5716 [*]	1, 4, 2, 5	4	20	24		
6239*		0	20	20		
6228		0	20	24		
5711 [*]	1, 4, 2, 5	4	20	24		
5710*	1, 4, 2, 5	4	20	24		
2946*		0	20	20		
6230*		0	12	12		
6231	128 MByte DRAM Option Card for feature 6230					
6235	32 MByte Fast-Write Cache Option Card for feature 6230					
2737		0	8	8		
2738	1, 4, 2, 5	4	4	8		
2848		0	4	4		
2849	1, 4, 2, 5	4	4	8		
2943	1, 4, 2, 5	4	20	24		
2944	1, 4, 2, 5	4	20	24		
2947	1, 4, 2, 5	4	16	20		
2962	1, 4, 2, 5	4	20	24		
4953		0	20	20		
4957		0	20	20		
4959	1, 4, 2, 5	4	20	24		
4960		0	8	8		
4961		0	20	20		
4962	1, 4, 2, 5	4	20	24		
4963		0	8	8		
5723	1, 4, 2, 5	4	20	24		
6203		0	10	10		
6204	1, 4, 2, 5	1	10	11		

** Extra-high Bandwidth (EHB) adapter. See the **Performance notes** before installing this adapter.

^{*} High Bandwidth (HB) adapter. See the **Performance notes** before installing this adapter.

^{*1}Digital Trunk adapters have and internal calbe and must be in contiguous slots.

For more information about listed adapters, see "pSeries PCI and PCI-X adapters" on page 270.

Performance notes (for optimum performance)

System unit information:

- No more than three Gb ethernet ports per PHB. There are no integrated gigabit ethernet ports attached to PHB 1 or PHB 2.
- No more than three high bandwidth adapters per PHB.
- No more than one Extra-high bandwidth adapter per PHB; two per base system; four per entire system with one RIO-G loop.
- No more than one 10Gb ethernet port per two CPUs in a system. If one 10Gb ethernet port is present per two CPUs, no other 10Gb or 1Gb ports allowed for optimum performance.
- No more than two 1Gb ethernet ports per one CPU in a system. More ethernet adapters may be added for connectivity.

Model 590 or 595 pSeries adapter placement

PCI adapters connected to the model 590 or 595 pSeries system units are placed in expansion units. For information about PCI adapter placement for these systems, see "Expansion units 5791, 5794, and 7040-61D."

Expansion unit AIX adapter placement

Expansion units 5791, 5794, and 7040-61D

The following information provides direction on what adapters can be placed in the 5791, 5794, and 7040-61DExpansion units and where adapters should be placed for optimum performance.

Notes:

- 1. Model5791 and 5794 expansion units are orderable.
- 2. Model 7040-61D expansion units can be migrated if they contain the PCI-X planar (FC 6571). Units with the non-PCI-X planar (FC 6563) cannot be migrated.

Select the appropriate information from this list:

- "System unit back view"
- "PCI slot description" on page 265
- "Recommended system unit slot placement and maximums" on page 265
- "Performance notes (for optimum performance)" on page 267

Expansion unit back view

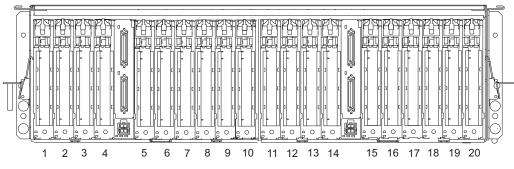


Figure 141. 7040-61D expansion unit back view with numbered slots.

PCI slot description

• The following tables show the slot properties and PHB connections:

	РНВО					PHB2		
Planar 1	1	2	3	4	5	6	7	Integrated SCSI U160
Planar 2	11	12	13	14	15	16	17	
	Long	Long	Long	Long	Long	Long	Long	66 MHz
	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz					

 Table 6. Model 7040-61D expansion unit pSeries slot location description (PHB 1 and 2)

Table 7. Model 7040-61L) expansion unit nSeries	slot location	description (PHR 3)
TADIE 7. MOUEL 7040-01L	і ехранзіон ині роенез	SIDE IDCALION	

	PHB3					
Planar 1	8	9	10	Integrated SCSI U160		
Planar 2	18	19	20			
	Long	Long	Long	66 MHz		
	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz			

- Slots 1 through 20 are compatible with PCI or PCI-X adapters
- Short adapters can go in short or long slots.
- All slots support Enhanced Error Handling (EEH).
- The model 9118-575 can support 1 expansion unit, the model 590 can support up to 8 total expansion units, and the model 595 can support up to 12 total expansion units.
- **Note:** The Uffff.ccc.sssssss.Pn.Cm..... represents the Hardware Management Console (HMC) location code, which provides information as to the identify of the enclosure, backplane, PCI adapter(s), and connector. The ffff.ccc.ssssss in the location code represents the following:
 - ffff = Feature Code of the Enclosure (drawer or node)
 - ccc = the Sequence Number of the Enclosure
 - sssssss = the Serial Number of the Enclosure.

Recommended system unit slot placement and maximums

Feature Code	Expansion unit slot priority	Expansion unit maximum	System maximum
		These maximums are for conn	ectivity

5719**	1, 11 , 5, 15 , 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	4	 24 for model 595 16 for model 590
5718**	1, 11, 5, 15, 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	4	 24 for model 595 16 for model 590
5707*	1, 11 ,6, 16, 9, 19, 2, 12, 7, 17, 10, 20, 3, 13, 4, 14	16	 192 for model 595 128 for model 590
5706*	1, 11, 5, 15, 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	20	 192 for model 595 160 for model 590
5701*	1, 11, 5, 15, 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	20	 192 for model 595 160 for model 590
5700 [*]	1, 11, 5, 15, 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	20	 192 for model 595 160 for model 590
5714*	1, 11 , 5, 15 , 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	20	48
5713 [*]	1, 11 , 5, 15 , 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	20	48
5716*	1, 11, 5, 15, 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	20	 192 for model 595 160 for model 590
5710*	1, 11, 5, 15, 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	20	62
5711*	1, 11 , 5, 15 , 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	20	62
6230*	1, 11 , 5, 15 , 8, 18, 2, 12, 6, 16, 9, 19, 3, 13, 4, 14, 7, 17, 10, 20	20	62
6231	128 MByte DRAM Option Card for feature 6230		
6235	32 MByte Fast-Write Cache Option Card for feature 6230		
2738	10, 20, 9, 19, 8, 18, 7, 17, 6, 16, 5, 15, 4, 14, 3, 13, 2, 12, 1, 11	4	16
2849	10, 20, 9, 19, 8, 18, 7, 17, 6, 16, 5, 15, 4, 14, 3, 13, 2, 12, 1, 11	4	16
2943	10, 20, 9, 19, 8, 18, 7, 17, 6, 16, 5, 15, 4, 14, 3, 13, 2, 12, 1, 11	20	32
2944	10, 20, 9, 19, 8, 18, 7, 17, 6, 16, 5, 15, 4, 14, 3, 13, 2, 12, 1, 11	20	32
2947	10, 20, 9, 19, 8, 18, 7, 17, 6, 16, 5, 15, 4, 14, 3, 13, 2, 12, 1, 11	16	16
2962	10, 20, 9, 19, 8, 18, 7, 17, 6, 16, 5, 15, 4, 14, 3, 13, 2, 12, 1, 11	20	32

4959	10, 20, 9, 19, 8, 18, 7, 17, 6, 16, 5, 15, 4, 14, 3, 13, 2, 12, 1, 11	20	20
4962	10, 20, 9, 19, 8, 18, 7, 17, 6, 16, 5, 15, 4, 14, 3, 13, 2, 12, 1, 11	20	 192 for model 595 160 for model 590
5723	10, 20, 9, 19, 8, 18, 7, 17, 6, 16, 5, 15, 4, 14, 3, 13, 2, 12, 1, 11	20	32
6204	10, 20, 9, 19, 8, 18, 7, 17, 6, 16, 5, 15, 4, 14, 3, 13, 2, 12, 1, 11	20	32

Extra-high Bandwidth (EHB) adapter. See the **Performance notes before installing this adapter.

* High Bandwidth (HB) adapter. See the **Performance notes** before installing this adapter.

For more information about listed adapters, see"pSeries PCI and PCI-X adapters" on page 270.

Performance notes (for optimum performance)

System unit information:

- No more than three Gb ethernet ports per PHB.
- No more than three high bandwidth adapters per PHB.
- No more than one Extra-high bandwidth adapter per PHB.
- No more than one 10Gb ethernet port per two CPUs in a system. If one 10Gb ethernet port is present per two CPUs, no other 10Gb or 1Gb ports allowed for optimum performance.
- No more than two 1Gb ethernet ports per one CPU in a system. More ethernet adapters may be added for connectivity.

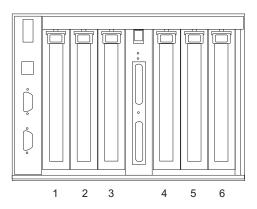
D11 expansion unit

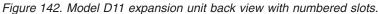
The following information provides direction on what adapters can be placed in the expansion unit and where adapters should be placed for optimum performance.

Select the appropriate information from this list:

- "System unit back view"
- "PCI slot description" on page 268
- "Recommended system unit slot placement and maximums" on page 268
- "Performance notes (for optimum performance)" on page 268

System unit back view





PCI slot description

• The following table shows the slot properties and PHB connections:

	PHB1			PHB2	
Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6
Long	Long	Long	Long	Long	Long
64-bit 3.3V, 133 MHz					
Un-P1-C1	Un-P1-C2	Un-P1-C3	Un-P1-C4	Un-P1-C5	Un-P1-C6

Table 8. Model D11 expansion unit pSeries slot location description

- Slots C1 through C6 are compatible with PCI and PCI-X adapters.
- Short adapters can go in short or long slots.
- All slots support Enhanced Error Handling (EEH)

Recommended system unit slot placement and maximums

- Slot priority for all adapters is: 1, 4, 2, 5, 3, 6
- For more information, refer to the information for the base system unit the expansion unit is attached to:
 - "Model 520 pSeries adapter placement" on page 253
 - "Model 550 pSeries adapter placement" on page 256
 - "Model 570 pSeries adapter placement" on page 259

Performance notes (for optimum performance)

For more information, refer to the base system unit the expansion unit is attached to:

- "Model 520 pSeries adapter placement" on page 253
- "Model 550 pSeries adapter placement" on page 256
- "Model 570 pSeries adapter placement" on page 259

D20 expansion unit

The following information provides direction on what adapters can be placed in the expansion unit and where adapters should be placed for optimum performance.

Select the appropriate information from this list:

• "System unit back view" on page 269

- "PCI slot description"
- "Recommended system unit slot placement and maximums"
- "Performance notes (for optimum performance)"

System unit back view

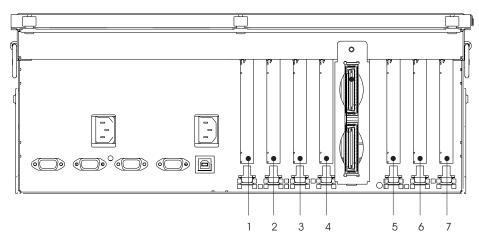


Figure 143. D20 expansion unit back view with numbered slots.

PCI slot description

• The following table shows the slot properties and PHB connections:

Table 9. Model D20 expansion unit pSeries slot location description

	PHB1				PHB2	
Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7
Long						
64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz
Un-P1-C1	Un-P1-C2	Un-P1-C3	Un-P1-C4	Un-P1-C5	Un-P1-C6	Un-P1-C7

- Slots 1 through 7 are compatible with PCI and PCI-X adapters.
- Short adapters can go in short or long slots.
- All slots support Enhanced Error Handling (EEH)

Recommended system unit slot placement and maximums

- Slot priority for all adapters is: 1, 5, 2, 6, 3, 7, 4
- For more information, refer to the information for the base system unit the expansion unit is attached to:
 - "Model 520 pSeries adapter placement" on page 253
 - "Model 550 pSeries adapter placement" on page 256
 - "Model 570 pSeries adapter placement" on page 259

Performance notes (for optimum performance)

For more information, refer to the information for the base system unit the expansion unit is attached to:

- "Model 520 pSeries adapter placement" on page 253
- "Model 550 pSeries adapter placement" on page 256
- "Model 570 pSeries adapter placement" on page 259

pSeries PCI and PCI-X adapters

The following table shows the pSeries PCI and PCI-X adapters supported in the AIX operating system.

Notes:

- 1. Adapters with an **X** shown in the **Systems/Expansion Units** column are supported and can be ordered.
- 2. Adapters with an **S** cannot be ordered, but are supported.
- **3**. Adapters with a **D** in the **Systems/Expansion Units** column are supported in an attached model D20 expansion unit.
- 4. Adapters supported in Linux will show a Y in the Linux Support column.
- 5. Adapters can be serviced with the system power on (Hot-pluggable) unless noted that they must be serviced with the system power off (Not hot-pluggable).
- 6. All adapters support Extended Error Handling (EEH).

Feature/ CCIN	Description	Adapter characteristics	Linux Support	Other information
1800/	RIO-2 Remote I/O Loop Adapter	Attaches to CEC IO - no slot used	Y	
1806/	Dual Port RIO-2 I/O Hub	Attaches to CEC IO - no slot used	Y	
2498/ 4-X	PCI 4-Channel Ultra3 SCSI RAID Adapter	Long, 32 or 64-bit, 3.3 or 5V		
2737/ N-D	Keyboard/Mouse Attachment Adapter	Short, 32-bit, 3.3 or 5V	Y	
2738/ 2738	2 Port USB PCI Adapter	Short, 32-bit, 3.3 or 5V	Y	
2848/ I-X	POWER GXT135P Graphics Accelerator with Digital Support	Short, 32-bit, 3.3 or 5V	Y	Not hot-pluggable
2849/ 2849	POWER [™] GXT135P Graphics Accelerator with Digital Support	Short, 32 or 64-bit, 3.3V	Y	Not hot-pluggable
2943/ 4-H	8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus	Short, 32-bit, 3.3 or 5V		
2944/ 3-C	128-Port Asynchronous Controller, PCI bus	Short, 32-bit, 3.3 or 5V		
2946/ A-B	Turboways 622 Mbps PCI MMF ATM Adapter	Short, 64-bit, 3.3 or 5V		• High bandwidth
2947/ 9-R	IBM [®] ARTIC960Hx 4-Port Multiprotocol PCI Adapter	Long, 32-bit, 3.3 or 5V		
2962/ 9-L	2-Port Multiprotocol PCI Adapter	Short, 32-bit, 3.3 or 5V		
4953/ A-C	IBM 64bit/66MHz PCI ATM 155 UTP Adapter	Short, 32 or 64-bit, 3.3 or 5V		
4957/ A-D	IBM 64bit/66MHz PCI ATM 155 MMF Adapter	Short, 32 or 64-bit, 3.3 or 5V		
4959/ 9-Y	IBM Token-Ring PCI Adapter	Short, 32-bit, 3.3 or 5V		
4960/ 6-J	Cryptographic Accelerator	Short, 32-bit, 3.3 or 5V		
4961/ A-E	IBM Universal 4-Port 10/100 Ethernet Adapter	Long, 32 or 64-bit, 3.3 or 5V	Y	
4962/ A-F	10/100 Mbps Ethernet PCI Adapter II	Short, 32-bit, 3.3 or 5V	Y	

4963/ 6-I	PCI Cryptographic Coprocessor (FIPS-4)	Short, 32-bit, 3.3 or 5V		
5700/	IBM Gigabit Ethernet-SX PCI-X	Short, 32 or 64-bit, 3.3	Y	High bandwidth
5700	Adapter	or 5V		
5701/ 5701	IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	Y	• High bandwidth
5703/ 5703	PCI-X Dual Channel Ultra320 SCSI RAID Adapter	Long, 32 or 64-bit, 3.3V	Y	High bandwidth
5706/ 5706	IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	Y	• High bandwidth
5707/ 5707	IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	Y	• High bandwidth
5709/ 5709	Dual Channel SCSI RAID Enablement Card		Y	
5710/ 5702	PCI-X Dual Channel Ultra320 SCSI Blind Swap Adapter	64-bit, 3.3 volt	Y	• High bandwidth
5711/ 5703	PCI-X Dual Channel Ultra320 SCSI RAID Blind Swap Adapter	Long, 32 or 64-bit, 3.3V	Y	High bandwidth
5712/ 5702	PCI-X Dual Channel Ultra 320 SCSI Adapter	Short, 32 or 64-bit, 3.3V	Y	• High bandwidth
5713/ 5713	ISCSI TOE Gigabit ENET (Copper), PCI-X Adapter	Short, 32 or64-bit, 3.3 or 5V		High bandwidth
5714/ 5714	ISCSI TOE Gigabit ENET (Fiber) PCI-X Adapter	Short, 32 or64-bit, 3.3 or 5V		High bandwidth
5716/ 280B	2 Gigabit Fibre Channel PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	Y	• High bandwidth
5718/ 5718	10 Gigabit-SR Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3V		• Extra-high bandwidth
5719/ 5719	10 Gigabit-LR Ethernet PCI-X Adapter	Short, 32 to 64-bit, 3.3V		• Extra-high bandwidth
5723/ 5723	2-Port EIA-232 Asynch PCI Adapter	Short, 32–bit, 3.3V or 5V		
6203/ 4-Y	PCI Dual Channel Ultra3 SCSI Adapter	Long, 32 to 64-bit, 3.3V or 5V	Y	
6204/ 4-U	PCI Universal Differential Ultra SCSI Adapter	Short, 32-bit, 3.3 or 5V	Y	
6228/ 4-W	2 Gigabit Fibre Channel Adapter for 64-bit PCI Bus	Short, 32 to 64-bit, 3.3V or 5V	Y	High bandwidth
6230/ 4-P	Advanced Serial RAID Plus Adapter	Short, 32 to 64-bit, 3.3V or 5V		High bandwidth
6231	128 MByte DRAM Option Card for feature 6230/ 4-P			
6235	32 MByte Fast-Write Cache Option Card for feature 6230/ 4-P			
6239/ 5704	2 Gigabit Fibre Channel PCI-X Adapter	Short, 32 to 64-bit, 3.3V or 5V	Y	High bandwidth
6312/ 6312	Quad Digital Trunk Telephony PCI Adapter	Long, 32 or 64-bit, 3.3 or 5V		• Digital Trunk adapters have an internal cable and must be in contiguous slots.
8244/ 8244	Audio PCI Adapter for Workstations	Short, 32-bit, 3.3V		• Not hot-pluggable in model 520

Chapter 3. PCI adapter placement for iSeries system units and expansion units

To determine the slot placement of PCI adapters in iSeries system units and expansion units, use the instructions in the following procedures.

- 1. "Find your current system configuration in i5/OS" (This is from within i5/OS)
- 2. Viewing information about the managed system
- 3. "Determine the best place to install your adapter" on page 274

These procedures make reference to the following tables.

- "Current[®] configuration tables for iSeries system units and expansion units" on page 282
- "Placement tables" on page 293
- "iSeries[™] AIX PCI adapters" on page 294
- "iSeries i5/OS PCI adapters" on page 296
- "iSeries Linux PCI adapters" on page 300

Find your current system configuration in i5/OS

Find the current configuration of your system unit or expansion unit. Bring up an i5/OS session and sign on to the system. If you have more than one system, bring up a session on the system that is being upgraded and for which you have service tools authority.

- ____ 1. Type **strsst** on the command line of the Main Menu and press Enter.
- 2. Type your service tools user ID and service tools password on the Start Service Tools (STRSST) Sign On display and press Enter.
- ____ **3**. Select **Start a service tool** from the System Service Tools (SST) display and press Enter.
- _____ 4. Select Hardware service manager from the Start a Service Tool display and press Enter.
- ____ 5. Select **Packaging hardware resources (system, frames, cards...)** from the Hardware Service Manager display and press Enter.
- ____ 6. Type 9 on the System Unit line and press Enter.
- ___ 7. Select Include empty positions.
- 8. Look for the adapters in the Adapter position column (xxx). Record here the Type number of the existing adapters (xxxx) listed in the applicable configuration table. See "Current[®] configuration tables for iSeries system units and expansion units" on page 282.

Type:

- ____ 9. Press F12.
- ____ 10. Do you have an expansion unit attached?
 - ____ **No:** Continue with the instructions.
 - ____ Yes: Do the following:
 - ____a. Type 9 for the System Expansion Unit field and press Enter.
 - ____b. Select Include empty positions.
 - ____ c. Look for the adapters in the Adapter position column (Cxx). Record the Type number of the existing adapters (Cxx) listed in the applicable configuration table. See "Current[®] configuration tables for iSeries system units and expansion units" on page 282.
 - Туре: __
 - ____d. Press F12.

____ e. If you have more than one expansion unit, go to step 10a on page 273 and repeat the steps for each expansion unit that is listed.

Determine the best place to install your adapter

- **Note:** In addition to these instructions, you can also use the LPAR Validation Tool to determine adapter placement. Go to the LPAR Validation Tool Web page (www.ibm.com/servers/eserver/iseries/lpar/systemdesign.htm).
- ____1. Are you installing a 4806, 5706 or 5707 feature?
 - No: Continue with the next step.
 - Yes: 4806, 5706, and 5707 do not require an IOP. Select an available slot using the "Current[®] configuration tables for iSeries system units and expansion units" on page 282 and return to the PCI adapter installation instructions that sent you here.

Maximum of three total IXS 2790/2890, 2791/2891, 2792/2892. 2799/2899, 4710/4810, 4811/4812/4813/9744/9812/9813 in any combination per 5074/5079/0574, 5088/0588, 5094/0694/5294 tower.

- ____2. Are you installing a 289x or 4810 feature?
 - _ No: Continue with the next step.
 - **Yes:** The 289x and 4810 IOP (IXS) adapter are customer installable unless the 289x or 4810 is being installed in a 5074, 5079, 5294 or 5094 expansion unit, contact your service provider to install the feature.
 - You may need to install memory on the 289x or 4810 IOP (IXS) adapter.
 - The 289x and 4810 are not installable in the 520,550, and 570system units.
 - In the expansion units, the 2890, 2891, and 2899 adapter occupies two adapter positions, and a third adapter position is reduced to a short adapter position. The 2892 and the 4810 occupy two adapter positions.
 - For feature 2890, 2891, and 2899, place the first LAN IOA in the short adapter position following the IXS. All IXS LAN adapters must be in the same multi-adapter bridge as the IXS.
 - If you have a second LAN, place that adapter in the next position.
 - If you have a third LAN, place that adapter in the next position.
 - Check your current system configuration to see if the IXS position and the LAN IOA position are available. If not, you need to move adapters. For more information on how to remove and replace adapters, see Chapter 1, "PCI adapter," on page 1.

Continue to step 4.

- **____3.** Are you installing a 2843 or 2844 IOP feature?
 - _ Yes: Continue with the next step.
 - **No**: Go to step 6 on page 276.
- ____4. Use Table 10 on page 275 to locate the values of your current configuration, then continue to the next step.

Notes:

- a. You can install the 2843 or 2844 IOP in any adapter position labeled **IOP**. Refer to "Current[®] configuration tables for iSeries system units and expansion units" on page 282 for the IOP locations.
- b. You may need to move an IOA to install your IOP. If you need to move an IOA, go to step 6 on page 276 to determine where to move the adapter.
- c. By installing an IOP, you are creating a new IOP adapter group.
- d. IOPs cannot be placed in consecutive positions. IOPs can be placed in the position following 2792, 2892, 4710, or 4810.

e. You can install features 289x and 4810 only in any adapter position labelled IXS.

Feature number	CCIN	Description	Restrictions	Maximum number IOAs	Memory value	Performance value
2790 2791 2799	2890–001 2890–002 2890–003	PCI Integrated xSeries Server	Not customer installable.These features get converted.	3		
2792	2892-001	PCI Integrated xSeries Server	Not customer installable.These features get converted.	3		
2842	2842	PCI Node Input/Output Processor (IOP)	Not supported with 5xx systems and attached expansion units.	4	100	100
2843	2843	PCI Node Input/Output Processor (IOP)	 IOPs cannot be placed in consecutive positions. 3 volt slot required, short or long slot	4	211	100
2844 9744 9844	2844	PCI Input/Output Processor	 IOPs cannot be placed in consecutive positions. 3 volt slot required, short or long slot	4	211	100
2890 2891 2899	2890-001 2890-002 2890-003	PCI Integrated xSeries Server Input/Output Processor (IOP)	 Only customer installable in 0595, 5095, and 5088. An authorized service representative must install or remove this adapter in the model 5074, 5079, 5094, and5294 expansion unit. Maximum of three total IXS 2790/2890, 2791/2891, 2792/2892. 2799/2899, 4710/4810, 4811/4812/4813/9744/9812/9813 in any combination per 5078/0578, 5074/5079/0574, 5088/0588, 5094/0694/5294 tower. IOPs cannot be placed in consecutive positions. Only 2744, 2743, 2760, 4838 IOAs can be added in the same CCIN 2890 adapter group. Two positions are used by the CCINs 2890 adapter and the third position is reduced to half length. 	3		

Table 10. IOP adapter numbers, names, memory values, performance values, and restrictions

Feature number	CCIN	Description	Restrictions	Maximum number IOAs	Memory value	Performance value
2892	2892-001	PCI Integrated xSeries Server	 Only customer installable in 0595, 5095, and 5088. An authorized service representative must install or remove this adapter in the model 5074, 5079, 5094, and5294 expansion unit. Maximum of three total IXS 2790/2890, 2791/2891, 2792/2892. 2799/2899, 4710/4810, 4811/4812/4813/9744/9812/9813 in any combination per 5078/0578, 5074/5079/0574, 5088/0588, 5094/0694/5294 tower. Only 2744, 5700, 5701 IOAs can be added in the same IOP adapter group. Two positions are used by the 2892 or the 4810 adapter. 	3		
4710	2892-002	PCI Integrated xSeries Server	 Not customer installable. These features get converted. Maximum of three total IXS 2790/2890, 2791/2891, 2792/2892. 2799/2899, 4710/4810, 4811/4812/4813/9744/9812/9813 in any combination per 5078/0578, 5074/5079/0574, 5088/0588, 5094/0694/5294 tower. 	3		
4810	2892-002	PCI Integrated xSeries Server	 Only customer installable in 0595, 5095, and 5088. Only 2744, 5700, 5701 IOAs can be added in the same IOP adapter group. Two positions are used by the 2892 or the 4810 adapter. An authorized service representative must install or remove this adapter in the model 5074, 5079, 5094, and5294 expansion unit. Maximum of three total IXS 2790/2890, 2791/2891, 2792/2892. 2799/2899, 4710/4810, 4811/4812/4813/9744/9812/9813 in any combination per 5078/0578, 5074/5079/0574, 5088/0588, 5094/0694/5294 tower. 	3		

Table 10. IOP adapter numbers, names, memory values, performance values, and restrictions (continued)

- ____ 5. To install your IOP adapter, return to the PCI adapter installation instructions that sent you here.
- ____6. When going through the following steps, refer to the "Placement tables" on page 293 to determine the best place to install or move your IOA, using the adapter information in the "Current[®] configuration tables for iSeries system units and expansion units" on page 282 (entered at step 8 on page 273 of "Find your current system configuration in i5/OS" on page 273).
 - ____a. Locate the first IOP (2843, 2844).
 - ____b. Determine the IOAs controlled by the IOP (IOP adapter group).
 - An IOP adapter group is an IOP and all IOAs controlled by that IOP.

- IOP adapter groups cannot cross PCI bridge set boundaries. Refer to "Current[®] configuration tables for iSeries system units and expansion units" on page 282.
- The Model 520 system unit has integrated SCSI controller that is controlled by the base IOP. Be sure to include this adapter when determining IOP memory and performance limits.
- ____ c. Locate the first IOP adapter group that has an empty position.
- _____d. Find and enter (on the placement table) the values of each IOA that is currently installed in this IOP adapter group that has an empty position. Use Table 11 to find the values.
- **____e.** Install the new adapter in the next available position in the IOP adapter group. Do not leave open positions if possible.

You should try to not move your console position.

- ____f. Write down the feature number or CCIN of the new adapter in the table.
- ____ g. Find and enter the values of the new adapter in the placement table.
- ___h. Add together the IOA *Memory Value* and record it in the IOA totals.
- ___i. Add together the IOA *Performance Value* and record it in the *IOA totals*.
- _____j. If the totals are not greater than the value of the IOP for that adapter group, verify the restrictions, such as adapter length to make sure the adapter can be installed in the empty position. If the restrictions are not met, choose another empty position and repeat the process. Otherwise, you are ready to install the new adapter in that empty position.
- ____ k. If the totals are greater than either IOP adapter value, move to the next available IOP adapter group that has an empty adapter position and repeat the steps to complete another placement worksheet.

I.	Return to	the PCI	adapter	installation	instructions	that sent	you here.
----	-----------	---------	---------	--------------	--------------	-----------	-----------

Feature number	CCIN	Description	Restrictions	Adapter length	Memory value	Performance value
0092	2689	Integrated Adapter for xSeries		Long		
1800	1800	HSL-2 Ports Copper				
1801	1801	HSL-2 Ports Optical				
2742	2742	PCI Two-line WAN		Short	15	14
2743	2743	PCI Ethernet/IEEE 802.3 adapter	 Only TCP/IP supported. These restrictions do not apply if 2743 is part of a CCIN 2890 IOP adapter groups. Do not place in a 5V position. Place in a 64-bit position. An IOP with a 2743 supports a maximum of one other IOA of any kind. 	Short	2	26
2744	2744	PCI 100/16/4MB Token-Ring	A maximum of two 4838, 4805, 2849, and 2744 in any combination allowed per IOP, except for CCIN 289x and 4810 IOPs.	Short	25	36
2749	2749	PCI Ultra Magnetic Media Controller		Short	22	25

Table 11. Adapter numbers, names, memory values, performance values, and restrictions

Feature number	CCIN	Description	Restrictions	Adapter length	Memory value	Performance value
2757	2757	PCI-X Ultra RAID Disk Unit Controller	A maximum of three 2757, 2780, 9748, 4778, 9778, 5703, or 5705 allowed per IOP in any combination.	Long	29	30
2760	2760	PCI 1 Gbps Ethernet UTP	 These restrictions do not apply if 2760 is part of a CCIN 2890 IOP adapter group. Do not place in a 5V position. Place in a 64-bit position. An IOP with a 2743 supports a maximum of one other IOA of any kind. 	Short	2	26
2763	2763	PCI 2-Port RAID Disk Unit Controller	Only on 0595 and 5095.A maximum of two allowed per IOP.	Long	29	21
2765	2765	PCI Fibre Channel Tape Controller	 For best performance, place in a 64-bit position. A maximum of two 2765, 2766, 2787, or 5704 (any combination) per PCI bridge set boundary. 	Short	36	50
2766	2766	PCI Fibre Channel Disk Unit Controller	 For best performance, place in a 64-bit position. A maximum of two 2765, 2766, 2787, or 5704 (any combination) per PCI bridge set boundary. Only one per IOP and no other IOAs. This IOA can be used in Multipath configurations, allowing multiple IOAs to be attached to the same externally attached disk units. To improve the availability provided by Multipath configurations, it is recommended that each IOA and its IOP be placed on different expansion units or on different multi-adapter bridges. 	Short		
2768	2768	Magnetic Media Controller	Attention: Not supported with 5xx system. Do not plug into 5xx system units or damage could result.			
2772	2772	Dual WAN/Modem Adapter	Non-CIM (complex impedence matching).	Short	15	14
2773	2773	Dual WAN/Modem Adapter	CIM (complex impedence matching).	Short	15	14

Table 11. Adapter numbers, names, memory values, performance values, and restrictions (continued)

Feature number	CCIN	Description	Restrictions	Adapter length	Memory value	Performance value
2780	2780	PCI-X Ultra 4 RAID Disk Unit Controller	A maximum of three 2757, 2780, 9748, 4778, 9778, 5703, or 5705 allowed per IOP in any combination. This feature is not supported in slot 1 of models 5074,5079,5094, and 5294.	Long	29	30
2782	2782	PCI-X RAID Disk Unit Controller	A maximum of three 2782, 2763, 2780, 2757, 4748, 9748, 4778, 9778, 5703, or 5705 allowed per IOP in any combination.	Long	29	21
2787	2787	PCI-X Fibre Channel Disk Unit Controller	 For best performance, place in a 64-bit position. Only one per IOP and no other IOAs. A maximum of two 2765, 2766, 2787, or 5704 (any combination) per PCI bridge set boundary. This IOA can be used in Multipath configurations, allowing multiple IOAs to be attached to the same externally attached disk units. To improve the availability provided by Multipath configurations, it is recommended that each IOA and its IOP be placed on different HSL loops, in different expansion units or on different multi-adapter bridges. 	Short		
2793	2793	PCI 2-Line WAN with Modem	Non-CIM (complex impedence matching).	Short	15	14
2794	2793	PCI 2-Line WAN with Modem	CIM (complex impedence matching).	Short	15	14
2805	2805	PCI Quad Modem IOA	Non-CIM (Complex impedence matching)	Long	15	14
2806	2805	PCI Quad Modem IOA	CIM (Complex impedence matching)	Long	15	
2849	2849	PCI 100/10 Mbps Ethernet	A maximum of two 2849 and 2744 in any combination allowed per IOP.	Short	25	36
2886/9876	2886	Optical Bus Adapter				
2887/9887	2887	HSL-2 Bus Adapter				
4723	2723	PCI Ethernet/IEEE 10		Short	25	12
4745	2745	PCI Two-Line		Short	15	14
4746	9746	PCI Twinaxial Workstation Controller		Short	10	6

Table 11. Adapter numbers, names, memory values, performance values, and restrictions (continued)

Feature number	CCIN	Description	Restrictions	Adapter length	Memory value	Performance value
4778/9778 2748	2748	PCI RAID Disk Unit Controller	• A maximum of three 4748, 9748, 2757, 2780, 2782, 5703, 5705, 4778, or 9778 allowed per IOP.	Long	29	21
			• Not supported in 5xx system unit.			
4778/9778	2778/ 4778/ 9778	PCI RAID Disk Unit Controller	• A maximum of No more than three 9748, 2757, 2780, 5703, 5705, 4778, or 9778 allowed per IOP.	Long	29	25
			• Not supported in 5xx system unit			
4801	4758	PCI Cryptographic Coprocessor	Cannot be controlled by the load source IOP.	Short	11	18
4805	2058	PCI Cryptographic Accelerator	• Cannot be controlled by the load source IOP.	Short	2	26
		• A maximum of two 4805, 5700, or 5701 in any combination per IOP.				
4811 4812 4813 9812 9813	4812	PCI Integrated xSeries Server	 Maximum of 1 per IOP. Requires 2 consecutive long slots. For 5xx system units, must be placed in the following slots:520; C04 (feature code 4811), 550; C02, 570; C04 (requires blind swap cassette, feature code 4813), 590; no restrictions. Requires feature 2844 to serve as the IOP Requires 3.3 v PCI slot. 64 bit slot recommended for best performance, but not required. 	Double- width	25	51
4838	2838	PCI 100/10 Mbps Ethernet	A maximum of two 4838, 2849, and 2744 in any combination allowed per IOP, except for CCIN 2890 IOPs.	Short	25	36

Table 11. Adapter numbers, names, memory values, performance values, and restrictions (continued)

Feature number	CCIN	Description	Restrictions	Adapter length	Memory value	Performance value
5700	5700	PCI-X 1 Gbps Ethernet	 If installing in the 5074 and 5079, place in the 32-bit position. Place in PCI-X slot if available (64-bit slot preferred. A cross-over cable is not supported. The following restrictions do not apply if 5700/5701 is part of a CCIN 2892 IOP adapter group. Can be combined with a maximum of one other IOA. A maximum of two 4805, 5700, or 5701 in any combination per IOP. Only TCP/IP supported. Half Duplex (HDX) 	Short	2	26
5702	5702	PCI-X Ultra Tape	mode is not supported.SNA is not supported.A maximum of three 5702,	Short	29	21
5702	5702	Controller	2757, 2780, 4778, 5703, 5712, 9778 allowed per IOP in any combination.	Short	29	21
5712	5702	PCI-X Tape Controller	A maximum of three 5702, 5715, 2757, 2780, 4778, 5703, 5712, 9778 allowed per IOP in any combination.	Short	29	21
5715	5702	PCI-X Tape/DASD Unit Controller	A maximum of three 5702, 2757, 2780, 4778, 5703, 5712, 9778 allowed per IOP in any combination.	Short	29	21
5703	5703	PCI-X RAID Disk Unit Controller	A maximum of three 2780, 2757, 9748, 4778, 9778, 5703, 5712 or 5715 allowed per IOP in any combination.	Long	29	21
5704	5704	PCI-X Fibre Channel Tape Controller	 For best performance, place in a 64-bit position. A maximum of two 2765, 2766, 2787, or 5704 (any combination) per PCI bridge set boundary. 	Short	36	50
5705	5702	PCI Tape/Disk Unit Controller	5705 is not supported in the Model 520 or 570 system units. This feature can be converted to a "5702"	Short	29	21
9771	2771	PCI 2–Line WAN w/Modem	Only one per system.	Short	15	14
Embedded	570B	Integrated Base SCSI Controller	If 5709 is install then CCIN 570B is not used.	NA	29	21
5709	5709	RAID Enabler Card		NA	29	21
6417/9517	28E7	HSL-2/RIO-G BUS ADAPTER				

Table 11. Adapter numbers, names, memory values, performance values, and restrictions (continued)	Table 11. Adapter numbers,	names, memory values,	performance values,	and restrictions	(continued)
---	----------------------------	-----------------------	---------------------	------------------	-------------

Current[®] configuration tables for iSeries system units and expansion units

Locate your system unit or expansion unit and current configuration:

- "Model 520 iSeries system unit"
- "Model 550 iSeries system unit" on page 284
- "Model 570 iSeries system unit" on page 285
- "Model 590 or 595 iSeries system unit" on page 287
- "5074 expansion unit" on page 287
- "5079 expansion unit" on page 287
- "5088 or 0588 expansion unit" on page 288
- "5094 and 9194expansion unit" on page 289
- "0595 or 5095 expansion unit" on page 290
- "5294 and 8294 expansion unit" on page 291
- "Feature code 5790 or 7311-D11 expansion unit" on page 292

Model 520 iSeries system unit

The arrows in the following figure indicate the direction and sequence that an IOP will search for IOAs that it will control in the same PCI bridge set.



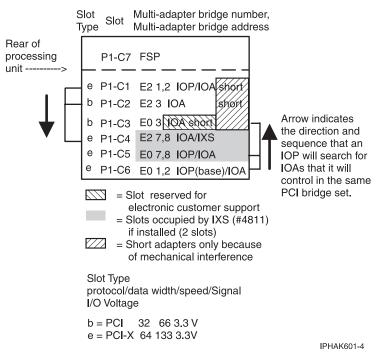
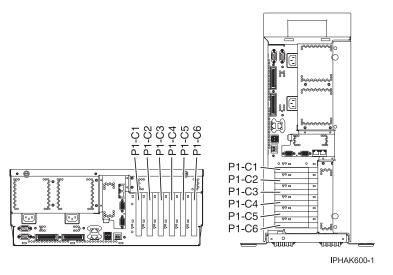


Figure 144. Model 520 IOP flow chart.





- Slots C1 through C6 are compatible with PCI and PCI-X adapters.
- Slots C1, C2, and C3 are short slots.
- Slots C4, C5, and C6 are long slots "*."
- Short adapters can go in short or long slots.
- 32 or 64-bit adapters can go in 32-bit slots.
- 32 or 64-bit adapters can go in 64-bit slots.
- For best performance, 64-bit adapters should go in 64-bit slots.

* When feature 6584 is installed, only short PCI cards can be plugged into PCI slot P1-C4. When feature 6594 is installed, only short PCI cards can be into PCI slot P1-C5.

Slot	PCI bridge set	Planar	Location code	Slot characteristics
1	2	1	Un-P1-C1	Short, 64-bit 3.3V, 133 MHz
2	2	1	Un-P1-C2	Short, 32-bit 3.3V, 66 MHz
3	0	1	Un-P1-C3	Short, 32-bit 3.3V, 66 MHz
4	2	1	Un-P1-C4	Long, 64-bit 3.3V, 133 MHz
5	0	1	Un-P1-C5	Long, 64-bit 3.3V, 133 MHz
6	0	1	Un-P1-C6	Long, 64-bit 3.3V, 133 MHz

Table 12. Model 520 iSeries slot location reference

To identify compatible PCI adapters, see the following tables:

- "iSeries[™] AIX PCI adapters" on page 294
- "iSeries i5/OS PCI adapters" on page 296
- "iSeries Linux PCI adapters" on page 300

Model 550 iSeries system unit

The arrows in the following figure indicate the direction and sequence that an IOP will search for IOAs that it will control in the same PCI bridge set.

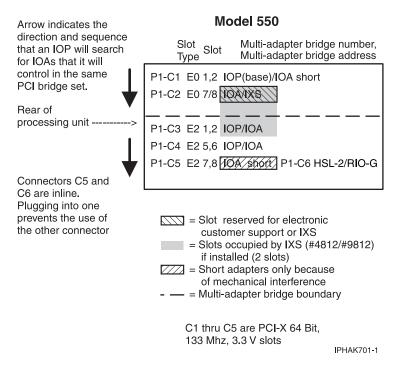


Figure 146. Model 550 IOP flow chart

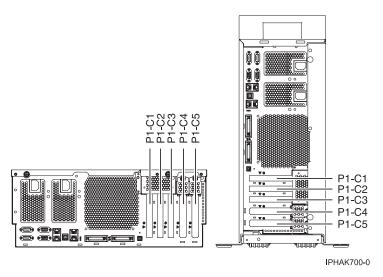


Figure 147. Model 550 rack mounted and deskside system unit back view with numbered slots.

- Slots C1 through C5 are compatible with PCI and PCI-X adapters.
- Slots C1 through C4 are long slots.
- Slots C5 is a short slot.
- Slots C5 can contain one PCI, PCI-X, or GX+ adapter. If a GX+ adapter is installed, it must be placed in the C5 slot.
- Short adapters can go in short or long slots.
- 32 or 64-bit adapters can go in 64-bit slots.

- 32 or 64-bit adapters can go in 32-bit slots.
- For best performance 64-bit adapters should go in 64-bit slots.
- All slots support Enhanced Error Handling (EEH)

Table 13.	Model 55	0 iSeries	slot lo	cation	reference
-----------	----------	-----------	---------	--------	-----------

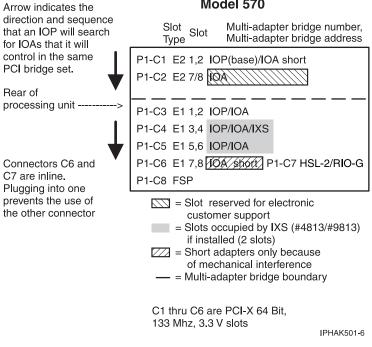
Slot	PCI bridge set	Planar	Location code	Slot characteristics
1	0	1	Un-P1-C1	Long, 64-bit 3.3V, 133 MHz
2	0	1	Un-P1-C2	Long, 64-bit 3.3V, 133 MHz
3	2	1	Un-P1-C3	Long, 64-bit 3.3V, 133 MHz
4	2	1	Un-P1-C4	Long, 64-bit 3.3V, 133 MHz
5	2	1	Un-P1-C5	Short, 64-bit 3.3V, 133 MHz

To identify compatible PCI adapters, see the following tables:

- "iSeries[™] AIX PCI adapters" on page 294
- "iSeries i5/OS PCI adapters" on page 296
- "iSeries Linux PCI adapters" on page 300

Model 570 iSeries system unit

The arrows in the following figure indicate the direction and sequence that an IOP will search for IOAs that it will control in the same PCI bridge set.



Model 570

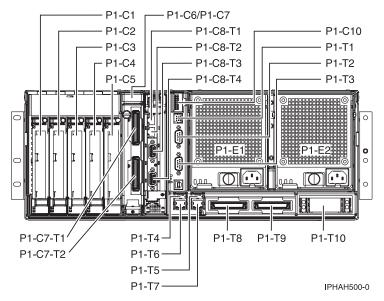


Figure 149. Model 570 rack mounted system unit back view with numbered slots.

- Slots C1 through C6 are compatible with PCI and PCI-X adapters.
- Slots C1, C2, C3, C4, and C5 are long slots.
- Slot C6 is a short slot. This space can be occupied by a PCI adapter or a high-speed link (HSL-2/RIO-G) card.
- Short adapters can go in short or long slots.
- 32 or 64-bit adapters can go in 32-bit slots.
- 32 or 64-bit adapters can go in 64-bit slots.
- For best performance, 64-bit adapters should go in 64-bit slots.

Table 14. 570 iSeries slot location reference

Slot	PCI bridge set	Planar	Location code	Slot characteristics
1	2	1	Un-P1-C1	Long, 64-bit 3.3V, 133 MHz
2	2	1	Un-P1-C2	Long, 64-bit 3.3V, 133 MHz
3	1	1	Un-P1-C3	Long, 64-bit 3.3V, 133 MHz
4	1	1	Un-P1-C4	Long, 64-bit 3.3V, 133 MHz
5	1	1	Un-P1-C5	Long, 64-bit 3.3V, 133 MHz
6	1	1	Un-P1-C6	Short, 64-bit 3.3V, 133 MHz or HSL-2/RIO-G adapter placement

To identify compatible PCI adapters, see the following tables:

- "iSeries[™] AIX PCI adapters" on page 294
- "iSeries i5/OS PCI adapters" on page 296
- "iSeries Linux PCI adapters" on page 300

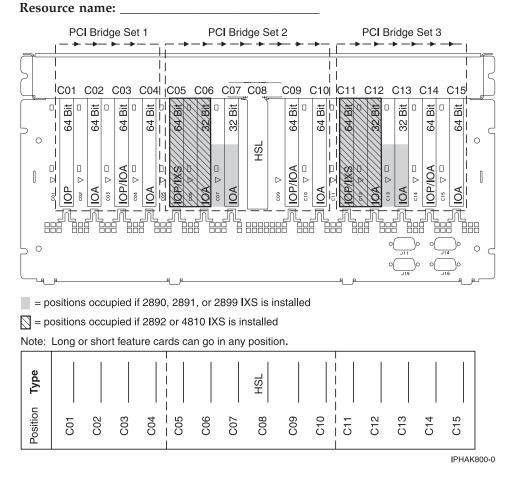
Model 590 or 595 iSeries system unit

PCI adapters connected to the model 590 or 595 pSeries system units are placed in expansion units. For information about PCI adapter placement for these systems, refer to the information for the model of expansion unit that is attached to the system. See "Current[®] configuration tables for iSeries system units and expansion units" on page 282.

5074 expansion unit

You need one diagram for each expansion unit that is attached to the system unit. Copy the diagram for your use.

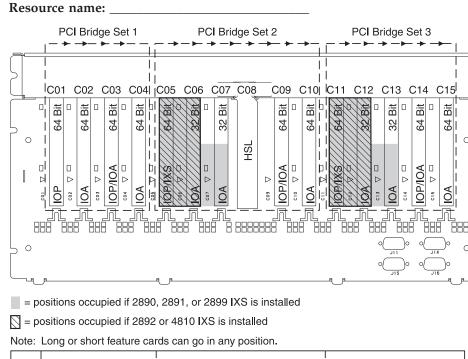
- Place the first disk unit controller card 2757, 4778 in position C02, C03, or C04.
- 5074 Expansion Units have a maximum of three disk-unit controllers.
- Slots C06, C07, C12, and C13 are 5 Volt slots. Adapter cards must be 5 Volt compatible to go in these slots.
- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.



5079 expansion unit

You need one diagram for each expansion unit that is attached to the system unit. Copy the diagram for your use.

- Place the first disk unit controller card 2757, 2780, 4778 or 5703 in position C02, C03, or C04.
- 5079 Expansion Units have a maximum of six disk unit controllers.
- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.
- Slots C06, C07, C12, and C13 are 5 Volt slots. Adapter cards must be 5 Volt compatible to go in these slots.



Type							HSL						
Position	C01 _	C02 _	C03	C04 _	 C06	C07	C08	C09	C10	C12	C13	C14 _	C15 _

IPHAK800-0

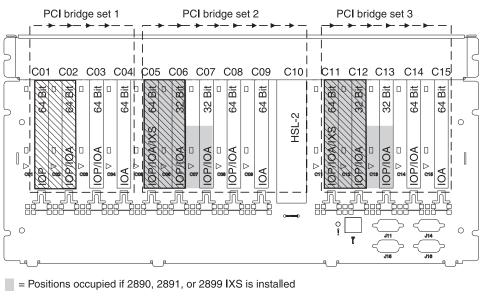
0

0

5088 or 0588 expansion unit

- 2892 and 4810 are the only IXS cards allowed in C01.
- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.

Resource name:



S = Positions occupied if 2892 or 4810 IXS is installed

Note: Long or short feature cards can go in any position.

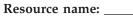
Type										HSL-2					
Position	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15

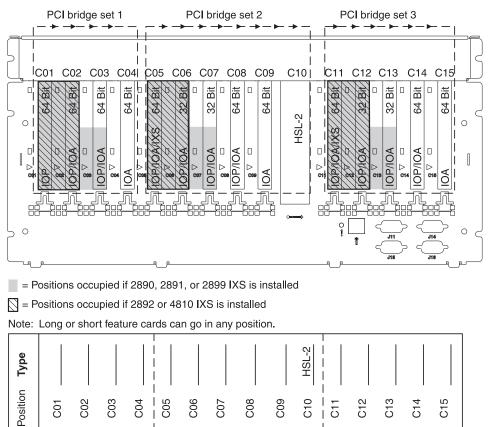
IPHAK801-1

5094 and 9194 expansion unit

You need one diagram for each expansion unit that is attached to the system unit. Copy the diagram for your use.

- Place the first disk unit controller adapter 2757, 2780, 4778 or 5703 in position C02, C03, C04, C05, C06, C07, C08, or C09.
- 5094 Expansion Units have a maximum of six disk unit controllers.
- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.





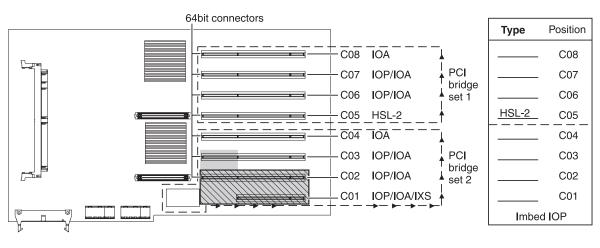
0595 or 5095 expansion unit

You need one diagram for each expansion unit that is attached to the system unit. Copy the diagram for your use.

IPHAK802-0

- The IOP controls C02 and possibly C03 and C04.
- IOPs control IOAs in the direction of the arrows in the PCI bridge set.
- SCSI in the diagram indicates the disk unit controller position (adapters 2757, 2780, 4778, 5703).

Resource name:



= Positions occupied if 2890, 2891, or 2899 IXS is installed

S = Positions occupied if 2892 or 4810 IXS is installed

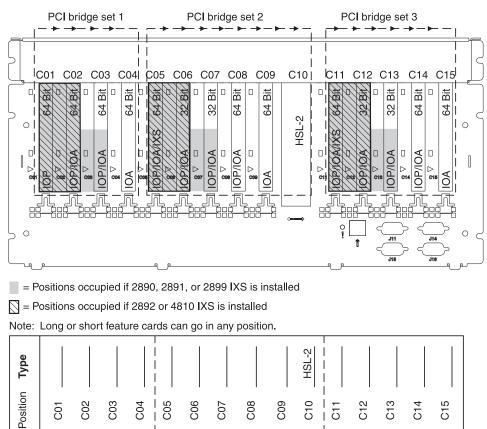
RZAQ5513-3

5294 and 8294 expansion unit

You need one diagram for each expansion unit that is attached to the system unit. Copy the diagram for your use.

- Place the first disk unit controller adapter 2757, 2780, 4778, 5703, or 9778 in position C02, C03, or C04, C05, C06, C07, C08, or C09.
- 5294 expansion units have a maximum of 12 disk unit controllers.
- IOPs control IOAs in the direction of the arrows in the PCI bridge sets.

Resource name: _



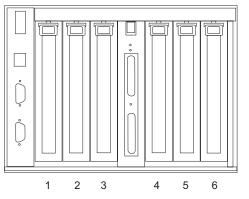
Feature code 5790 or 7311-D11 expansion unit

You need one diagram for each expansion unit that is attached to the system unit. Copy the diagram for your use.

IPHAK802-0

• IOPs control IOAs in the direction of the arrows in the PCI bridge sets.

Resource name:



• The following table shows the slot properties and PHB connections:

Table 15. Model 5790 or 7311-D11 slot location description

	PHB1		PHB2			
Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	
Long	Long	Long	Long	Long	Long	

Table 15. Model 5790 or 7311-D11 slot location description (continued)

| 64-bit 3.3V, 133 |
|------------------|------------------|------------------|------------------|------------------|------------------|
| MHz | MHz | MHz | MHz | MHz | MHz |
| Un-P1-C1 | Un-P1-C2 | Un-P1-C3 | Un-P1-C4 | Un-P1-C5 | |

- Slots C1 through C6 are compatible with PCI and PCI-X adapters.
- Short adapters can go in short or long slots.

Placement tables

If your unit is shut down, look at the back of the unit and record the numbers on the adapters in the applicable table below. Use the "Current[®] configuration tables for iSeries system units and expansion units" on page 282 to locate the embedded IOPs.

Use one worksheet for each IOP in all of your units.

- "Example of a completed placement table"
- "2843 IOP"
- "2844 IOP" on page 294
- "289x or 4810 Integrated xSeries Server IOP" on page 294

Example of a completed placement table

IOP adapter group	Adapter position	Feature number or CCIN number from type column	Memory value	Performance value
IOP	C01	2843	211	100
IOA	C02	2748	30	21
IOA	C03	4745	15	7
IOA	C04	4746	10	6
IOA	C05		26	37
	IOA totals		81	71

2843 IOP

IOP adapter group	Adapter position	Feature number or CCIN number from type column	Memory value	Performance value
	С	2843	211	100
	С			
	С			
	С			
	С			
	IOA totals			

2844 IOP

IOP adapter group	Adapter position	Feature number or CCIN number from type column	Memory value	Performance value
	С	2844	211	100
	С			
	С			
	С			
	С			
	IOA totals			

289x or 4810 Integrated xSeries Server IOP

CCIN 2890 (feature codes 2743, 2760, 2790, 2791, 2799, 2890, 2891, 2899, 4838) restrictions:

- Add only 2744, 2743, 2760, 4838 IOAs.
- The 2890 adapter uses three positions (if an IOA is used).
- Memory and performance values have no maximum limits.

CCIN 2892 (feature codes 2792, 2892, 4710, 4810) restrictions:

- Add only 2744, 5700, and 5701 IOAs.
- Two positions are used.
- Memory and performance values have no maximum limits.

This IOP is not allowed in model 520, 550, or 570 processing units.

IOP adapter group	Adapter position	Feature number or CCIN number from adapter position
	С	289x IXS
	С	
	С	
	С	

iSeries[™] AIX PCI adapters

The following iSeries PCI adapters are supported in the AIX operating system.

For other adapters, see "iSeries i5/OS PCI adapters" on page 296 and "iSeries Linux PCI adapters" on page 300.

Notes:

- 1. To see the adapters supported in other operating systems, see see "iSeries i5/OS PCI adapters" on page 296 and "iSeries Linux PCI adapters" on page 300.
- 2. Adapters can be serviced with the system power on (Hot-pluggable) unless noted that they must be serviced with the system power off (Not hot-pluggable).
- 3. All adapters support Extended Error Handling (EEH).

Feature/ CCIN	Systems/ Expansion Units			Description	Adapter characteristics	Other information	
	520	550	570	595			
0611/2765	Х	Х	Х	Х	Direct Attach-2765: PCI 2 Gb Fibre Channel Tape Controller	Short, 64-bit, 66MHz	High bandwidth

0620/5700	X	X	X	X	IBM Gigabit Ethernet-SX PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth
0621/5701	X	Х	Х	X	IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth
0625/5704	X	X	Х	X	Direct Attach-5704	Short, 32 or 64-bit, 3.3V	• High Bandwidth
0627/2780	X	X	X	X	Direct Attach-2780: PCI-X Ultra4 RAID Disk Ctrl	Long, 64-bit, 133MHz	 High Bandwidth This feature is not supported in slot 1 of models 5074, 5079, 5094, and 5294
0628	X	Х	Х	X	PCI-X Dual Channel Ultra320 SCSI RAID Adapter	Long, 32 or 64-bit, 3.3V	• High Bandwidth
0632	X	X	X	X	PCI USB 2.0 Adapter	Short, 32-bit, 3.3 or 5V	High Bandwidth
0633	X	X	X	X	Graphics Adapter	Short, 32-bit, 3.3 or 5V	Not hot-pluggable
0634	X	Х	Х	X	128-Port Asynchronous Controller, PCI bus	Short, 32-bit, 3.3 or 5V	
0635	X	X	X	X	2-Port Multiprotocol PCI Adapter	Short, 32-bit, 3.3 or 5V	
0637			Х	X	100/10Mbps 4-port Ethernet Adapter	Long, 32 or 64-bit, 3.3 or 5V	
0638			X		Advanced Serial RAID Plus Adapter	Short, 32 to 64-bit, 3.3V or 5V	• High bandwidth
0639					128 MByte DRAM Option Card for feature 6230/ 4-P		
0640					32 MByte Fast-Write Cache Option Card for feature 6230/ 4-P		
0642	X		Х		PCI Ultra-3 RAID Adapter	Long, 32 or 64-bit, 3.3 or 5V	• High bandwidth
0643	X	Х	Х	X	IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth
0644	X	Х	Х	X	IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth
0645	X	Х	X	X	PCI-X Dual Channel Ultra320 SCSI Adapter	Short, 32 or 64-bit, 3.3V	• High bandwidth
0646	X	Х	X	X	2 Gigabit Fibre Channel PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth
2737			Х		Keyboard/Mouse Attachment Adapter	Short, 32-bit, 3.3 or 5V	
2848			Х		POWER GXT135P Graphics Accelerator with Digital Support	Short, 32-bit, 3.3 or 5V	Not hot-pluggable
2849	X	X	Х	X	POWER GXT135P Graphics Accelerator with Digital Support	Short, 32 or 64-bit, 3.3V	Not hot-pluggable
2943	X	X	X	X	8-Port Asynchronous Adapter EIA-232/RS-422, PCI bus	Short, 32-bit, 3.3 or 5V	
2946			X		Turboways 622 Mbps PCI MMF ATM Adapter	Short, 64-bit, 3.3 or 5V	• High bandwidth
2947	x	X	X	X	IBM ARTIC960Hx 4-Port Multiprotocol PCI Adapter	Long, 32-bit, 3.3 or 5V	
4959	x	Х	X	X	IBM Token-Ring PCI Adapter	Short, 32-bit, 3.3 or 5V	
4960		X	X		Cryptographic Accelerator	Short, 32-bit, 3.3 or 5V	

4962	X	X	Х	X	10/100 Mbps Ethernet PCI Adapter II	Short, 32-bit, 3.3 or 5V	
4963			X		PCI Cryptographic Coprocessor (FIPS-4)	Short, 32-bit, 3.3 or 5V	
5709/5709	X	X	X		Dual Channel SCSI RAID Enablement Card	Custom slot	
5713	X	X	X	X	ISCSI TOE Gigabit ENET(Copper), PCI-X Adapter	Short, 32 or64-bit, 3.3 or 5V	High bandwidth
5714	X	X	X	X	ISCSI TOE Gigabit ENET(Fiber) PCI-X Adapter	Short, 32 or64-bit, 3.3 or 5V	High bandwidth
5718	X	X	X	X	10 Gigabit Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3V	• Extra-high bandwidth
5719	X	X	X	X	10 GIGABIT ENET(FIBER), PCIX	Short, 32 to 64-bit, 3.3V	• Extra-high bandwidth
5723	X	X	X	X	2–Port EIA-232 Asynch PCI Adapter	Short, 32–bit, 3.3V or 5V	
6203			X		PCI Dual Channel Ultra3 SCSI Adapter	Long, 32 to 64-bit, 3.3V or 5V	
6204	X	X	X	Х	PCI Universal Differential Ultra SCSI Adapter	Short, 32-bit, 3.3 or 5V	
6312	X	Х			Quad Digital Trunk Telephony PCI Adapter	Long, 32 or 64-bit, 3.3 or 5V	Digital Trunk adapters have an internal cable and must be in contiguous slots.
7818				Х	HSL-2/RIO-G 2-Ports Copper	Custom slot	Two port RIO-G (copper) bus adapter for model 595
7819				X	HSL/RIO 2-Ports Optical	Custom slot	Two port RIO-G (optical) bus adapter for model 595
8244	Х				Audio PCI Adapter for Workstations	Short, 32-bit, 3.3V	Not hot-pluggable in model 520

iSeries i5/OS PCI adapters

The following iSeries PCI adapters are supported in the i5/OS operating system.

For other adapters, see "iSeries[™] AIX PCI adapters" on page 294 and "iSeries Linux PCI adapters" on page 300.

Notes:

- 1. If the adapter is supported in other operating systems, the compatible operating systems will be shown in the **Other Information** column of the following table. To see the adapters supported in other operating systems, see see "iSeries[™] AIX PCI adapters" on page 294 and "iSeries Linux PCI adapters" on page 300.
- 2. Adapters can be serviced with the system power on (Hot-pluggable) unless noted that they must be serviced with the system power off (Not hot-pluggable).

Feature/ CCIN	Systems/ Expansion Units			ts	Description	Adapter characteristics	Other Information
	520	550	570	595			
2742/2742	X	Х	Х	Х	PCI Two-Line WAN IOA	Short, 32-bit, 66MHz	
2743/2743	X	Х	Х	Х	PCI 1 Gbps Ethernet IOA	Short, 64-bit, 66MHz	High bandwidth
2744/2744	X	Х	Х	Х	PCI 4/16/100 Mbps Token-Ring IOA	Short, 32-bit, 33MHz	
2749/2749	X	Х	Х	Х	PCI Ultra Magnetic Media Controller	Short, 32-bit, 33MHz	
2757/2757	X	Х	Х	Х	PCI Ultra RAID Disk Controller	Long, 64-bit,	High bandwidth
2760/2760	X	Х	Х	Х	PCI 1 Gbps Ethernet UTP IOA	Short, 64-bit, 66MHz	High bandwidth

2765/2765	X	X	X	X	PCI 2 Gb Fibre Channel Tape Controller	Short, 64-bit, 66MHz	High bandwidth
2766/2766	X	X	Х	X	PCI Fibre Channel Disk Unit Controller	Short, 64-bit, 66MHz	High bandwidth
2772/2772	X	X	X	X	PCI Dual WAN/Modem IOA	Short, 32-bit, 33MHz	
2773/2772	X	X	Х	X	PCI Dual WAN/Modem IOA (ANSI)	Short, 32-bit, 33MHz	
2780/2780	X	X	X	X	PCI-X Ultra4 RAID Disk Ctrl	Long, 64-Bit, 133 MHz	High bandwidth
							• This feature is not supported in slot 1 of models 5074, 5079, 5094, and 5294.
2782/2782	X	X	X	X	PCI-X RAID Disk Unit Controller	Long, 64bit, 133MHz	High Bandwidth
2787/2787	X	X	X	X	PCI-X Fibre Channel Disk Unit Controller	Short, 64-bit, 133MHz	• High Bandwidth
2793/2793	X	X	X	X	PCI 2-Line WAN with Modem	Short, 32-bit, 66MHz	
2794/2793	X	Х	X	X	PCI 2-Line WAN with Modem (complex impedence matching)	Short, 32-bit, 66MHz	
2805/2805	X	X	Х	X	PCI Quad Modem IOA	Long, 32-bit, 66MHz	
2806/2805	Х	Х	X	X	PCI Quad Modem IOA (complex impedence matching)	Long, 32-bit, 66MHz	
2843/2843	X	Х	X	X	PCI Node Input/Output Processor (IOP)	Long, 32-bit, 66MHz	
2844/2844	X	Х	X	X	PCI Node Input/Output Processor (IOP)	Short, 32-bit, 66MHz	
2849/2849	X	X	X	X	PCI 100/10 Mbps Ethernet IOA	Short, 32-bit, 33MHz	
2947/	X	X	X	X	PCI Multiprotocol Adapter	Long, 32-bit, 3.3 or 5V	
4723/2723	X	X	X	X	PCI 10 Mbps Ethernet IOA	Short, 32-bit, 33MHz	
4745/2745	X	X	X	X	PCI Two-Line WAN IOA	Short, 32-bit, 33MHz	
4746/9746	X	Х	X	X	PCI Twinaxial Workstation Controller IOA	Short, 32-bit, 33MHz	
4801/4758	X	X	X	X	PCI Cryptographic Coprocessor	Short, 32-bit, 33MHz	
4805/2058	X	X	X	Х	PCI Cryptographic Accelerator	Short, 32-bit, 33MHz	

4810/2892XXXXPCI Integ xSeries ServerLong, special NS slot required, double-widthFour memory slots, must battery unit analbel when you analbel when you4810/2892XXXXPCI Integ xSeries ServerLong, special NS slot required, double-widthFour memory slots, must be appoind an avoid the battery unit analbel width or of this battery unit analbel width or slot required, double-width4810/2892XXXXPCI Integ xSeries ServerLong, special NS slot required, double-width4810/2897XXXXPCI 100/10 Mbps Ethernet IOAShort, 32-bit, 33MHz4830/2838XXXXPCI 100/10 Mbps Ethernet IOAShort, 32-bit, 33MHz4830/27000XXXXPCI 100/10 Mbps Ethernet IOAShort, 32-bit, 33MHz5700/57000XXXXPCI 100/10 Mbps Ethernet IOAShort, 64-bit, 133MHz5701/5701XXXXPCI-X I Gbps Ethernet IOAShort, 64-bit, 133MHz• Only TCP/IP supported in must be populated in identical in a made 507 of 507 tort, if must be placed in 32 bit slot"5701/5701XXXXPCI-X I Gbps Ethernet UTP IOAShort, 64-bit, 133MHz• Only TCP/IP supported in must be placed in 32 bit slot"5701/5701XXXXXPCI-X I Gbps Ethernet UTP IOAShort, 64-bit, 133MHz• Only TCP/IP supported in must be placed in 32 bit slot"5701/5701XXX <th>4806/4764</th> <th>X</th> <th>X</th> <th>X</th> <th>X</th> <th>PCI-X Cryptographic Coprocessor</th> <th>Short, 64-bit, 133 MHz, 3.3 V</th> <th>• 9-pin D-shell connector</th>	4806/4764	X	X	X	X	PCI-X Cryptographic Coprocessor	Short, 64-bit, 133 MHz, 3.3 V	• 9-pin D-shell connector
kinki								 battery. CAUTION: Only trained service personnel may replace this battery. 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
Image: Second								Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you
4838/2838 X	4810/2892	X	X	X	X	PCI Integ xSeries Server		be populated in identical
4959/XXXXXXPCI 16/4Mbps Token-Ring IOAShort, 32-bit, 3.3 or 5V4962/4962XXXXXPCI 100/10Mbps Ethernet IOAShort, 32-bit, 3.3 or 5V5700/5700XXXXXPCI-X 1 Gbps Ethernet IOAShort, 64-bit, 133MHz• Only TCP/IP supported • High Bandwidth • If this feature is placed in a model 5074 or 5079 tower, it must be placed in 32 bit slot"5701/5701XXXXPCI-X 1 Gbps Ethernet UTP IOAShort, 64-bit, 133MHz• Only TCP/IP supported • High Bandwidth • If this feature is placed in a model 5074 or 5079 tower, it must be placed in 32 bit slot"5701/5701XXXXPCI-X 1 Gbps Ethernet UTP IOAShort, 64-bit, 133MHz• Only TCP/IP supported • High Bandwidth • If this feature is placed in a model 5074 or 5079 tower, it must be placed in 32 bit slot"5702/5702XXXXPCI-X Ultra Tape ControllerShort, 64-bit, 133MHz• High Bandwidth	4838/2838	x	x	X	x	PCI 100/10 Mbps Ethernet IOA	Short, 32-bit, 33MHz	1
4962/4962 X X X X X X PCI 100/10Mbps Ethernet IOA Short, 32-bit, 3.3 or 5V 5700/5700 X X X X X PCI-X 1 Gbps Ethernet IOA Short, 64-bit, 133MHz • Only TCP/IP supported 5700/5700 X X X X PCI-X 1 Gbps Ethernet IOA Short, 64-bit, 133MHz • Only TCP/IP supported 5701/5701 X X X PCI-X 1 Gbps Ethernet UTP IOA Short, 64-bit, 133MHz • Only TCP/IP supported 5701/5701 X X X PCI-X 1 Gbps Ethernet UTP IOA Short, 64-bit, 133MHz • Only TCP/IP supported 5702/5702 X X X PCI-X 1 Gbps Ethernet UTP IOA Short, 64-bit, 133MHz • Only TCP/IP supported 5702/5702 X X X PCI-X Ultra Tape Controller Short, 64-bit, 133MHz • High Bandwidth	4959/	x	x	x	x	-	Short, 32-bit, 3.3 or 5V	
5700/5700 X X X X X X X X PCI-X 1 Gbps Ethernet IOA Short, 64-bit, 133MHz • Only TCP/IP supported • High Bandwidth 5701/5701 X X X X PCI-X 1 Gbps Ethernet UTP IOA Short, 64-bit, 133MHz • Only TCP/IP supported 5701/5701 X X X X PCI-X 1 Gbps Ethernet UTP IOA Short, 64-bit, 133MHz • Only TCP/IP supported 5701/5701 X X X PCI-X 1 Gbps Ethernet UTP IOA Short, 64-bit, 133MHz • Only TCP/IP supported 5702/5702 X X X PCI-X Ultra Tape Controller Short, 64-bit, 133MHz • High Bandwidth		-			X			
5702/5702 X X X X X PCI-X Ultra Tape Controller Short, 64-bit, 133MHz • High Bandwidth	5700/5700	x	X	X	X	PCI-X 1 Gbps Ethernet IOA	Short, 64-bit, 133MHz	supportedHigh BandwidthIf this feature is placed in a model 5074 or 5079 tower, it must be
5702/5702 X X X X PCI-X Ultra Tape Controller Short, 64-bit, 133MHz • High Bandwidth	5701/5701	x	X	X	X	PCI-X 1 Gbps Ethernet UTP IOA	Short, 64-bit, 133MHz	 Only TCP/IP supported High Bandwidth If this feature is placed in a model 5074 or 5079 tower, it must be
	5702/5702	X	X	X	x	PCI-X Ultra Tape Controller	Short, 64-bit, 133MHz	
	5703/5703	X	x	x	x	PCI-X RAID Disk Unit Ctlr	Long, 32 or 64-bit, 3.3V	

5704/5704	X	X	X	X	PCI-X Fibre Channel Tape Controller	Short, 64-bit, 133MHz	High Bandwidth
5706/5706	X	X	X	X	PCI-X 1 Gbps Ethernet UTP 2-port IOA	Short, 64-bit, 133MHz	 Only TCP/IP supported High Bandwidth If this feature is placed in a model 5074 or 5079 tower, it must be placed in 32 bit slot"
5707/5707	X	X	X	X	PCI-X 1 Gbps Ethernet SX Fiber 2-port IOA	Short, 64-bit, 133MHz	 Only TCP/IP supported High Bandwidth If this feature is placed in a model 5074 or 5079 tower, it must be placed in 32 bit slot"
5712/5702	X	X	X	X	PCI-X U320 Tape Controller	Short, 64-bit, 133MHz	High Bandwidth
5715/5702	X	Х	X	X	PCI-X U320 Tape/Disk Unit Controller	Short, 32 or 64-bit, 3.3V	High bandwidth
7818				x	HSL-2/RIO-G 2-Ports Copper		Two port RIO-G (copper) bus adapter for model 595
7819				x	HSL/RIO 2-Ports Optical		Two port RIO-G (optical) bus adapter for model 595
9531	X	x	Х	Х	Base HSL-2 Bus Adapter		Provides two HSL-2 ports and is included as base on the #5790 PCI Expansion Drawer.
9710/2892		x	X		Base PCI Integ xSeries Srvr	Long, special IXS slot required, two slots used	
9771/2771	Х	Х	Х	Х	PCI 2-Line WAN with Modem	Short, 64-bit, 133MHz	
9793/2793	Х	Х	Х	Х	Base PCI 2-Line WAN w/Modem	Short, 32-bit, 66MHz	
9794/2793	X	X	X	X	Base PCI 2-Line WAN w/Modem	Short, 32-bit, 66MHz	

4811 4812 4813 9812 9813	X	X	X	Base PCI Integrated xSeries Server	Long, double-width, 64 bit, 66 MHz, 3.3 V	•	A keyboard and mouse can either connect to the traditional ports or connect to the USB ports.
						•	Two memory slots. These slots must always contain a pair of identical memory features.
						•	Contains a 2.0GHz processor with 2MB integrated L2 cache
						•	Two integrated 1000/100/10Mbps ethernet ports, two USB 1.1 ports and traditional PC keyboard and mouse ports
						•	A keyboard and mouse can either connect to the traditional ports or connect to the USB ports
						•	An SVGA video port for connection of a display.
						•	This feature has two memory slots. These slots must always contain a pair of identical memory features
						•	Available memory features are: #9726 - Base 512MB Server Memory (Initial order only) #8546 - Opt Base 1GB Server Memory (Initial order only) #0446 - 512MB DDR Server Memory (MES only) #0447 - 1GB DDR Server Memory (MES only) The #9812
							requires an IOP (#2844, #9744 or #9844) to drive it.

iSeries Linux PCI adapters

The followingiSeries Linux PCI adapters are ordered when the function of that adapter is required, but the card will be controlled by a Linux operating system. Cards controlled by a Linux operating system do not use or require PCI IOPs.

For other adapters, see "iSeries[™] AIX PCI adapters" on page 294 and "iSeries i5/OS PCI adapters" on page 296.

Note: If the adapter is supported in other operating systems, the compatible operating systems will be shown in the Other Information column of the following table. To see the adapters supported in other operating systems, see "iSeries[™] AIX PCI adapters" on page 294 and "iSeries i5/OS PCI adapters" on page 296.

Feature/ CCIN	Syste Expa	ems/ insion	Units		Description	Adapter characteristics	Other Information
	520	550	570	595		1	1
0603/2744	Х	Х	Х	Х	Direct Attach Token Ring	Short, 32-bit, 66MHz	
0607/4838	Х	X	X	Х	Direct Attach-4838: PCI 100/10 Mbps Ethernet IOA	Short, 32-bit, 33 MHz	
0608/2745	X	X	X	Х	Direct Attach-4745: PCI Two-Line WAN IOA	Short, 32-bit, 33MHz	
0609/2772	X	X	X	X	Direct Attach-2772: PCI Dual WAN/Modem IOA	Short, 32-bit, 33MHz	
0610/2772	X	X	X	X	Direct Attach-2773: PCI Dual WAN/Modem IOA (ANSI)	Short, 32-bit, 33MHz	
0611/2765	X	X	X	X	Direct Attach-2765: PCI Fibre Channel Tape Controller	Short, 64-bit, 66MHz	• High bandwidth
0612/2766	Х	Х	Х	Х	Direct Attach-2766: PCI Fibre Channel Disk Unit Controller	Short, 64-bit, 66MHz	• High bandwidth
0613/2742	X	Х	X	Х	Direct Attach-2742: PCI Two-Line WAN IOA	Short, 32-bit, 66MHz	
0614/2793	X	X	X	X	Direct Attach-2793: PCI 2-Line WAN with Modem	Short, 32-bit, 66MHz	
0615/2793	Х	Х	X	X	Direct Attach-2794: PCI 2-Line WAN with Modem (complex impedence matching)	Short, 32-bit, 66MHz	
0616/2805	X	Х	X	Х	Direct Attach-2805: PCI Quad Modem IOA	Long, 32-bit, 66MHz	
0617/2805	Х	Х	X	X	Direct Attach-2806: PCI Quad Modem IOA (complex impedence matching)	Long, 32-bit, 66MHz	
0620/5700	X	x	X	X	Direct Attach-5700: IBM Gigabit Ethernet-SX PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	 EEH Supported High Bandwidth Place in 64-bit PCI-X slot if available If this feature is placed in a model 5074 or 5079 tower, it must be placed in 32 bit slot
0621/5701	X	x	X	Х	Direct Attach-5701: IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	 EEH Supported High Bandwidth Place in 64-bit PCI-X slot if available If this feature is placed in a model 5074 or 5079 tower, it must be placed in 32 bit slot"
0623/2849	X	Х	X	X	Direct Attach-2849	Short, 32-Bit, 33 MHz, 3.3 or 5 V	• EEH Supported
0624/5702	X	X	X	X	Direct Attach-5702: PCI-X Dual Channel Ultra320 SCSI Adapter	Short, 32 or 64-bit, 3.3V	 EEH Supported High Bandwidth
0625/5704	x	X	X	Х	Direct Attach-5704	Short, 32 or 64-bit, 3.3V	• High Bandwidth

0626/2787	X	X	X	X	Direct Attach-2787: PCI-X Fibre Channel Disk Unit Controller	Short, 64-bit, 133MHz	• High Bandwidth
0627/2780	X	X	X	X	Direct Attach-2780: PCI-X Ultra4 RAID Disk Ctrl	Long, 64-bit, 133MHz	 High Bandwidth This feature is not supported in slot C01 of models 5074, 5079, 5094, and 5294
0628/5703	X	Х	X	X	Direct Attach-5703: PCI-X Dual Channel Ultra320 SCSI RAID Adapter	Long, 32 or 64-bit, 3.3V	 EEH supported High Bandwidth Supported in AIX
0632	X	Х	Х	Х	PCI USB 2.0 Adapter	Short, 32-bit, 3.3 or 5V	
0637			X	X	4 Port Ethernet 10/100"	Long, 32 or 64-bit, 3.3 or 5V	
0645	X	X	X	X	Direct Attach-5712: PCI-X Dual Channel Ultra320 SCSI Adapter	Short, 32 or 64-bit, 3.3V	• EEH Supported
0646	X	X	X	X	2 Gigabit Fibre Channel PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	High BandwidthSupported in AIX
2848	Х	Х	X	X	GXT135P Graphics Adapter	Short, 32 or 64-bit, 3.3 or 5V	
4962	X	Х	X	X	10/100 Mbps Ethernet PCI Adapter II	Short, 32-bit, 3.3 or 5V	EEH Supported
5706/5706	X	X	X	X	Direct Attach-5706	Short, 64-bit, 3.3 or 5 V,	 High Bandwidth Place in 64-bit PCI-X slot if available
							• If this feature is placed in a model 5074 or 5079 tower, it must be placed in 32 bit slot
5707/5707	X	X	X	X	Direct Attach-5706	Short, 64-bit, 3.3 or 5 V,	 High Bandwidth Place in 64-bit PCI-X slot if available If this feature is placed in a
							model 5074 or 5079 tower, it must be placed in 32 bit slot
5709/5709	X	X	X		RAID Enabler Card, Special adapter card for RAID	Custom location slot	
5713	X	X	X	Х	ISCSI TOE Gigabit ENET(Copper), PCI-X Adapter	Short, 32 or64-bit, 3.3 or 5V	• High Bandwidth
5714	X	Х	Х	Х	ISCSI TOE Gigabit ENET(Fiber) PCI-X Adapter	Short, 32 or64-bit, 3.3 or 5V	• High Bandwidth
5741	Х	Х	X	Х	Single Bus Ultra320 SCSI Repeater		
6203		1	X	x	ULTRA3 SCSI ADAPTER		
6303	X	X	X	X	PCI Ultra3 SCSI Adapter		High Bandwidth
6204	X	Х	X	X	PCI Universal Differential Ultra SCSI Adapter	Short, 32-bit, 3.3 or 5V	• EEH Supported
7818				X	HSL-2/RIO-G 2-Ports Copper		Two port RIO-G (copper) bus adapter for model 595
7819				X	HSL/RIO 2-Ports Optical		Two port RIO-G (optical) bus adapter for model 595

9531	Х	Х	Х	Х	Base HSL-2 Bus Adapter	Provides two HSL-2 ports and is
					-	included as base on the #5790 PCI
						Expansion Drawer.

Chapter 4. PCI adapter placement for OpenPower system units and expansion units

Use this information to determine if specific slot requirements exist for adapters you are installing.

Some adapters must be placed in specific PCI slots to function correctly at optimum performance. Use the following information to determine where to install adapters in your server.

Note: In addition to these instructions, you can also use the LPAR Validation Tool to determine adapter placement. Go to the LPAR Validation Tool Web page (www.ibm.com/servers/eserver/iseries/lpar/systemdesign.htm).

Logical partition information

• "Logical partition (LPAR) considerations"

System Placement information

- "Model OpenPower 710 adapter placement"
- "Model OpenPower 720 adapter placement" on page 307

Supported PCI adapters

• "OpenPower PCI and PCI-X adapters" on page 309

Logical partition (LPAR) considerations

Place redundant devices in separate I/O units for best availability performance. Place nonredundant devices in the same I/O unit. If you place nonredundant devices in one unit, the system is less exposed to other-unit failures.

Some devices do not have enhanced error handling capabilities built in to their device drivers. If these devices fail, the PCI bridge set in which they are placed are affected. If the I/O subsystem encounters a severe error, all slots in the PCI bridge set are also affected. To clear this condition, you may reboot the system. In addition, it is also possible to remove the failed PCI slots on an affected PCI bridge set from the partition profile or profiles that include these PCI slots, and reboot the partition or partitions that terminated at the time of the error.

To avoid PCI bridge set errors related to non-enhanced error handling adapters, it is strongly recommended that if a non-enhanced error handling adapter is used, all slots on that PCI bridge set should be assigned to a single LPAR.

Model OpenPower 710 adapter placement

The following information provides direction on what adapters can be placed in the system and where adapters should be placed for optimum performance.

Select the appropriate information from this list:

- "System unit back view" on page 306
- "PCI slot description" on page 306
- "Recommended system unit slot placement and maximums" on page 306
- "Performance notes (for optimum performance)" on page 307

System unit back view

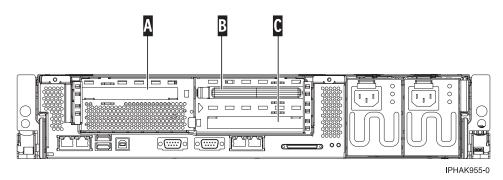


Figure 150. Model OpenPower 710 rack mounted system unit back view with four PCI slots available.

PCI slot description

• The following table shows the slot properties and PHB connections:

PHB2								
Slot 1 (A)	Slot 2 (B)	Slot 3 (C)						
Long	Long	Long						
64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz						
Un-P2-C1	Un-P2-C2	Un-P2-C4						

Table 16. Model OpenPower 710 Slot location description

- Slots C1 through C3 are compatible with PCI and PCI-X adapters.
- All slots are long slots
- Short adapters can go in short or long slots.
- All slots support Enhanced Error Handling (EEH)

Recommended system unit slot placement and maximums

See the following table to identify the recommended system unit slot placement and maximum number of specified adapters recommended. If the space in the **Maximum number of adapters allowed** is blank, there is no maximum limit for that adapter.

Feature Code	Base Unit slot priority	Maximum number of adapters allowed
1982**	1, 2, 3	1
1981**	1, 2, 3	1
1984*	1, 2, 3	
1983*	1, 2, 3	
1979*	1, 2, 3	
1978*	1, 2, 3	
1977*	1, 2, 3	
1975*	1, 2, 3	
1974*	1, 2, 3	
1980	1, 2, 3	1
1985	1, 2, 3	

5723	1, 2, 3	2
2738	1, 2, 3	1

** Extra High Bandwidth (EHB) adapter. See the **Performance notes** before installing this adapter.

^{*} High Bandwidth (HB) adapter. See the **Performance notes** before installing this adapter.

For more information about listed adapters, see "OpenPower PCI and PCI-X adapters" on page 309.

Performance notes (for optimum performance)

System unit information:

- A maximum of one 10Gb etherport port allowed on a 2 way system.
- No more than three Gb ethernet ports per PHB or system.
- No more than two high-bandwidth adapters per PHB or system.
- If one 10Gb port is present, no other 10Gb or 1Gb ports are allowed for optimum performance.
- No more than three Gb ethernet ports per on CPU in a system.

Model OpenPower 720 adapter placement

The following information provides direction on what adapters can be placed in the system and where adapters should be placed for optimum performance.

Select the appropriate information from this list:

- "System unit back view"
- "PCI slot description"
- "Recommended system unit slot placement and maximums" on page 308
- "Performance notes (for optimum performance)" on page 309

System unit back view

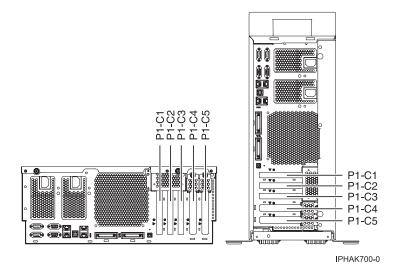


Figure 151. Model OpenPower 720 rack mounted and deskside system unit back view with numbered slots.

PCI slot description

• The following table shows the slot properties and PHB connections:

РНВО			PHB2			
Slot 1	Slot 2	U U	Integrated SCSI	Slot 3	Slot 4	Slot 5
Long	Long	1 Gb Ethernet	U320	Long	Long	Short
64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	133 MHz	133 MHz	64-bit 3.3V, 133 MHz	64-bit 3.3V, 133 MHz	Short, 64-bit 3.3V, 133 MHz
Un-P1-C1	Un-P1-C2			Un-P1-C3	Un-P1-C4	Un-P1-C5

 Table 17. Model OpenPower 720 pSeries slot location descriptions

- Slots C1 through C5 are compatible with PCI and PCI-X adapters.
- Short adapters can go in short or long slots.
- All slots support Enhanced Error Handling (EEH)

Recommended system unit slot placement and maximums

See the following table to identify the recommended system unit slot placement and the recommended maximum number of specified adapters.

Feature Code	Base unit slot priority	Maximum number of adapters allowed			
		Base Unit	Expansion Unit	System	
1806	Attaches to CEC IO- no slot used.	1	N/A	N/A	
5709	Attaches to CEC IO- no slot used.	1	N/A	N/A	
1976	Attaches to CEC IO- no slot used.	1	N/A	N/A	
5719**	3, 4, 1, 5, 2	2	N/A	N/A	
1982**	3, 4, 1, 5, 2	2	N/A	N/A	
5718**	3, 4, 1, 5, 2	2	N/A	N/A	
1981**	3, 4, 1, 5, 2	2	N/A	N/A	
5707*	3, 4, 1, 5, 2	5	N/A	N/A	
1984*	3, 4, 1, 5, 2	5	N/A	N/A	
5706*	3, 4, 1, 5, 2	5	N/A	N/A	
1983*	3, 4, 1, 5, 2	5	N/A	N/A	
5701*	3, 4, 1, 5, 2	5	N/A	N/A	
1979*	3, 4, 1, 5, 2	5	N/A	N/A	
5700*	3, 4, 1, 5, 2	5	N/A	N/A	
1978*	3, 4, 1, 5, 2	5	N/A	N/A	
5716*	3, 4, 1, 5, 2	5	N/A	N/A	
1977*	3, 4, 1, 5, 2	5	N/A	N/A	
5712*	3, 4, 1, 5, 2	5	N/A	N/A	
1974*	3, 4, 1, 5, 2	5	N/A	N/A	
5703*	3, 4, 1, 2	4	N/A	N/A	
1975*	3, 4, 1, 2	4	N/A	N/A	
2849	2, 5, 1, 4, 3	2	N/A	N/A	
1980	2, 5, 1, 4, 3	2	N/A	N/A	

4962	2, 5, 1, 4, 3	5	N/A	N/A
1985	2, 5, 1, 4, 3	5	N/A	N/A
5723	2, 5, 1, 4, 3	2	N/A	N/A
2738	2, 5, 1, 4, 3	2	N/A	N/A

** Extra High Bandwidth (EHB) adapter. See the **Performance notes** before installing this adapter.

* High Bandwidth (HB) adapter. See the **Performance notes** before installing this adapter.

For more information about listed adapters, see "OpenPower PCI and PCI-X adapters."

Performance notes (for optimum performance)

System unit information:

- No more than three Gb ethernet ports per PHB. This total should include the two integrated Gb ethernet ports on PHB 0.
- No more than three high bandwidth adapters per PHB
- No more than one extra high bandwidth adapter per PHB and two per base system
- No more than one 10Gb ethernet port per two CPUs in a system. If one 10Gb ethernet port is present per two CPUs, no other 10Gb or 1Gb ports allowed for optimum performance.
- No more than two 1Gb ethernet ports per one CPU in a system. More ethernet adapters may be added for connectivity.

OpenPower PCI and PCI-X adapters

The following table shows the OpenPower PCI and PCI-X adapters supported in the Linux operating system.

Notes:

- 1. Adapters can be serviced with the system power on (Hot-pluggable) unless noted that they must be serviced with the system power off (Not hot-pluggable).
- 2. All adapters support Extended Error Handling (EEH).

Feature/ Feature/ CCIN	Description	Adapter characteristics	Other information
1974/ 1974	PCI-X Dual Channel Ultra320 SCSI Adapter	Short, 32 or 64-bit, 3.3V	• High bandwidth
1975/ 1975	PCI-X Dual Channel Ultra320 SCSI RAID Adapter	Long, 32 or 64-bit, 3.3V	• High bandwidth
1976/ 1976	Dual Channel SCSI RAID Enablement Card		
1977/ 197E	2 Gigabit Fibre Channel PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth
1978/ 1978	IBM Gigabit Ethernet-SX PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth
1979/ 1979	IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth
1980/ 1980	POWER GXT135P Graphics Accelerator with Digital Support	Short, 32-bit, 3.3 or 5V	
1983/ 1983	IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth

1984/ 1984	IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	High bandwidth
1985/ 1985	10/100 Mbps Ethernet PCI Adapter II	Short, 32-bit, 3.3 or 5V	
1986/ 1986	ISCSI TOE Gigabit Ethernet (Copper),	Short, 32 or 64-bit, 3.3 or 5V	High bandwidth
1987/ 1987	ISCSI TOE Gigabit Ethernet (Fibre),	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth
1995/ 1995	10 Gigabit Ethernet Fibre	Short, 32 or 64-bit, 3.3V	Extra-high bandwidth
1996/ 1996	10 Gigabit Ethernet Fibre	Short, 32 or 64-bit, 3.3V	High bandwidth
2738/ 2738	2 Port USB PCI Adapter	Short, 32-bit, 3.3 or 5V	
2849/ 2849	POWER GXT135P Graphics Accelerator with Digital Support	Short, 32 or 64-bit, 3.3V	Not hot-pluggable in model OpenPower 720
4962/ A-F	10/100 Mbps Ethernet PCI Adapter II	Short, 32-bit, 3.3 or 5V	
5700/ 5700	IBM Gigabit Ethernet-SX PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	High bandwidth
5701/ 5701	IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	• High bandwidth
5703/ 5703	PCI-X Dual Channel Ultra320 SCSI RAID Adapter	Long, 32 or 64-bit, 3.3V	High bandwidth
5706/ 5706	IBM 2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	High bandwidth
5707/ 5707	IBM 2-Port Gigabit Ethernet-SX PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	High bandwidth
5709/ 5709	Dual Channel SCSI RAID Enablement Card		
5716/ 280B	2 Gigabit Fibre Channel PCI-X Adapter	Short, 32 or 64-bit, 3.3 or 5V	High bandwidth
5712/ 5702	PCI-X Dual Channel Ultra 320 SCSI Adapter	Short, 32 or 64-bit, 3.3V	High bandwidth
5718/ 5718	10 Gigabit-SR Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3V	• Extra-high bandwidth
5719/ 5719	10 Gigabit-SR Ethernet PCI-X Adapter	Short, 32 or 64-bit, 3.3V	• Extra-high bandwidth
5723/ 5723	2-Port EIA-232 Asynch PCI Adapter	Short, 32–bit, 3.3V or 5V	

Chapter 5. Related procedures

Before you begin

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

1. If you are installing a new feature, ensure that you have the software required to support the new feature and determine if there are any existing PTF prerequisites.

To do this, go to the following Web site:

http://www-912.ibm.com/e_dir/eServerPrereq.nsf

2. If you are performing an installation or replacement procedure that might put your data at risk, ensure, if possible, that you have a current backup of your system or logical partition (including operating systems, licensed programs, and data).

For information on backing up your system or logical partition, select from the following:

- AIX[®] backup
- i5/OS[™] backup
- Linux[®] backup
- ____3. Review the installation or replacement procedure for the feature or part.
- _____4. Note the significance of color on your system.

Blue or *orange* 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. *Orange* 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.
- ___6. If parts are incorrect, missing, or visibly damaged, do the following:
 - If you are replacing a part, contact your service provider or next level of support.
 - If you are installing a feature, contact one of the following:
 - Your service provider or next level of support.
 - In the United States, contact the IBM Rochester Manufacturing Automated Information Line (R–MAIL) at 1–800–300–8751.
 - In countries outside of the United States, use the following Web site to locate your service and support telephone numbers:
 - http://www.ibm.com/planetwide
- ____7. If you encounter difficulties during the installation, contact your service provider, your authorized dealer, 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 Partitioning the server, and then return to these instructions.

Model 520, 550, and OpenPower 720 door

The following procedures describe how to remove and install the front door of the stand-alone model 520, 550, or OpenPower 720.

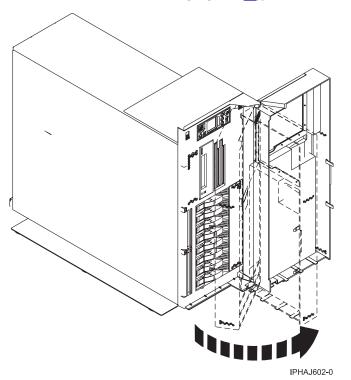
Select the appropriate instructions from this list:

- "Remove the door from the model 520, 550, or OpenPower 720" on page 312
- "Install the door on the model 520, 550, or OpenPower 720" on page 313

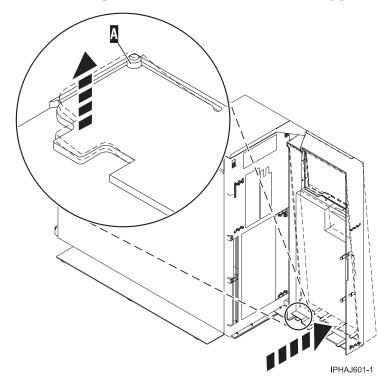
Remove the door from the model 520, 550, or OpenPower 720

To remove the model 520, 550, or OpenPower 720 door, do the following:

____1. Open the front door by grasping the door handle. Pull the door out and away from the system unit as shown in the following figure.



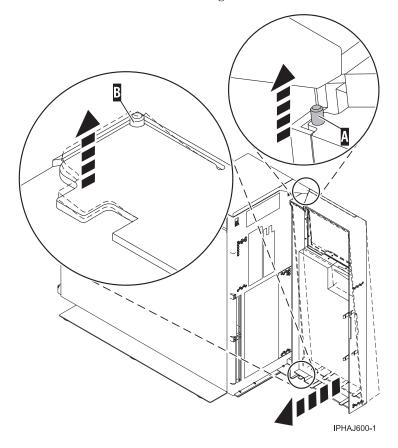
- ____2. To remove the door, press down on the top back edge of the door.
- ____3. Gently swivel the top back edge of the door forward and out past the top of the system unit.
- ____4. Lift the door up to release it from the lower retaining post.



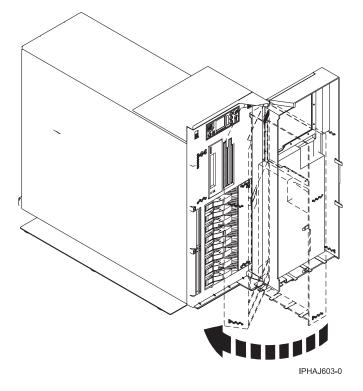
Install the door on the model 520, 550, or OpenPower 720

To install the model 520, 550, or OpenPower 720 front door, do the following:

- ____1. Set the door on the lower retaining post. The View video.
- ____2. Rotate the door toward the top of the system unit.
- ____3. Press down on the lower back edge of the door, and seat the top post into its matching slot.



_ 4. Close the door.



Expansion unit cover or door

Select the appropriate expansion unit and task:

- "Remove the front door from the 5074 or 5094 expansion unit"
- "Remove the front door from the 5079 or 5294 expansion unit" on page 315
- "Remove the back door from the 5074, 5079, and 5094 expansion unit" on page 316
- "Remove the front cover from the 5095 expansion unit" on page 318
- "Remove the back door and cover from the 5095 expansion unit" on page 318
- "Remove the back cover from the 0588 expansion unit" on page 319
- "Remove and install the front cover on the 5791 or 5794 expansion unit" on page 320

Remove the front door from the 5074 or 5094 expansion unit

To remove the front door from the expansion unit , follow these steps:

- ____ 1. Open the front door **A** as shown in Figure 152 on page 315.
- ____2. Use the latch **B** to remove the door.

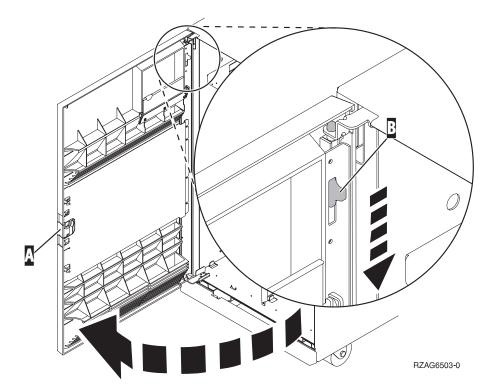


Figure 152. Removing the 5074 or 5094 expansion unit front door

Remove the front door from the 5079 or 5294 expansion unit

To remove the front door from the expansion unit , follow these steps:

- ____ 1. Open the front door **A** as shown in the following figure.
- ____2. Use the latch **B** to remove the door.

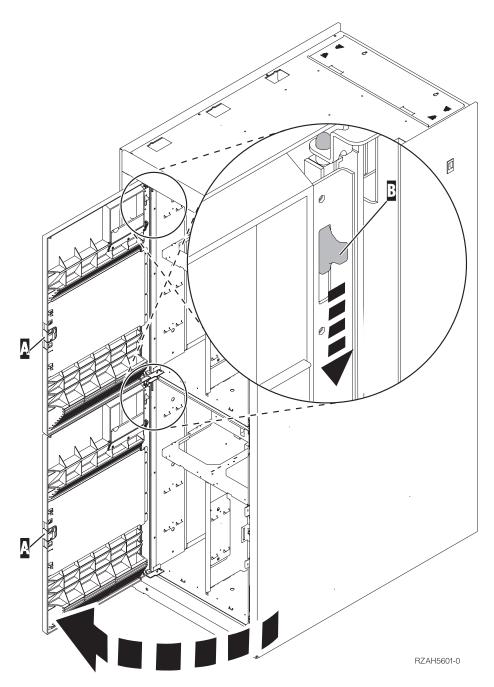


Figure 153. Removing the 5079 or 5294 expansion unit front door

Remove the back door from the 5074, 5079, and 5094 expansion unit

To remove the back door from the expansion unit, follow these steps:

- Open the back door **A** as shown in Figure 154 on page 317.
- Use the latch **B** to remove the door.

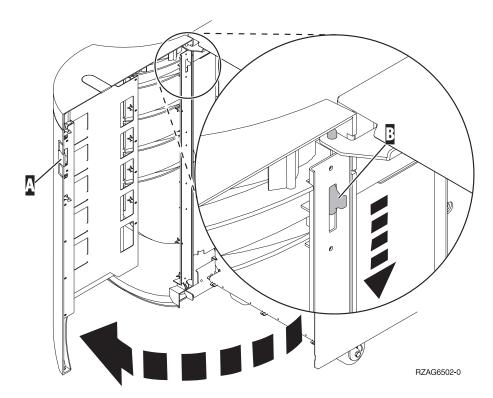
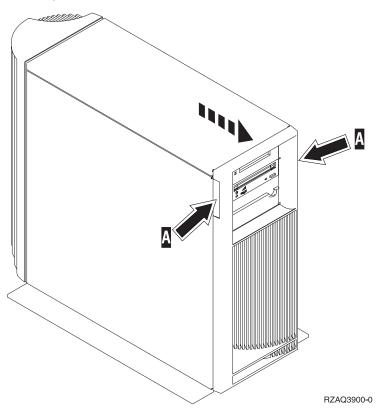


Figure 154. Removing 5074, 5079, and 5094 expansion unit back door

Remove the front cover from the 5095 expansion unit

To remove the front cover from the expansion unit , grip the sides of the cover **A** and pull the cover toward you.



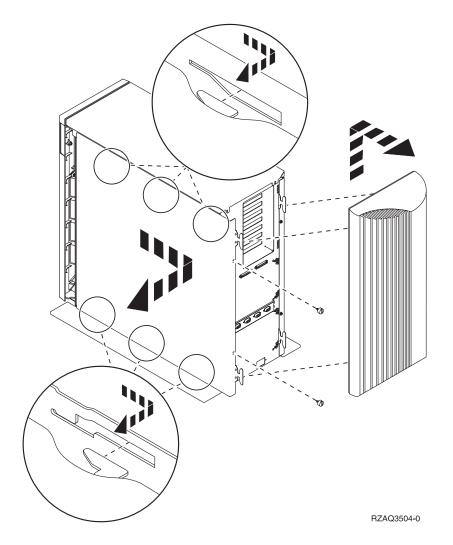
Remove the back door and cover from the 5095 expansion unit

To remove the back door and cover from the expansion unit , follow these steps:

- ____1. Place your hand near the bottom of the back cover and lift up and out.
- **2. Attention:** If you remove the cover while the server is powered on, errors might occur due to electromagnetic interference.

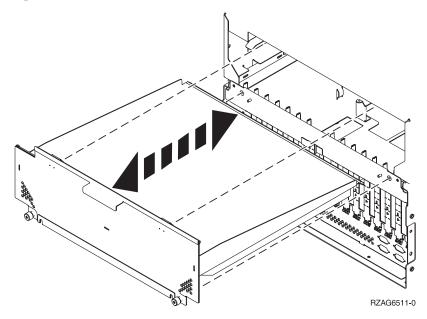
Remove the left cover (view from back) by loosening the thumbscrews and sliding the cover from front to back until it stops.

____ **3**. Pull the cover out.



Remove the back cover from the 0588 expansion unit

Open the back cover and remove the air flow shield.



Remove and install the front cover on the 5791 or 5794 expansion unit

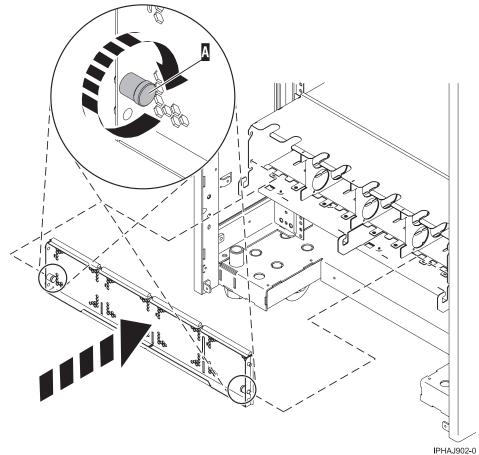
These procedures describe how to remove and install the cover of the 5791 or 5794 expansion unit. Select the appropriate procedure from this list:

- "Remove the front cover from the 5791 or 5794 expansion unit"
- "Install the front cover on the 5791 or 5794 expansion unit"

Remove the front cover from the 5791 or 5794 expansion unit

To remove the front cover, follow these steps:

- ____1. Open the rack front door, if necessary.
- ____2. Pull in the knobs on the left and right of the front cover as shown in the following figure:



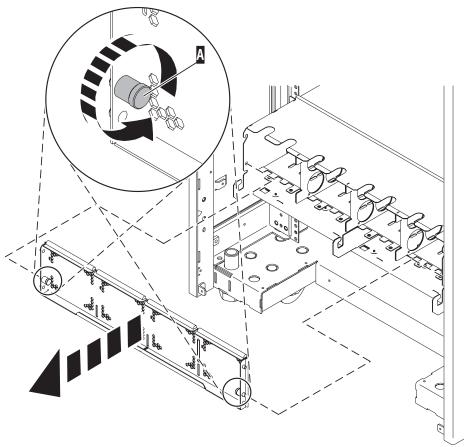
IPHAJ902

____ **3**. Pull the cover out and away from the expansion unit.

Install the front cover on the 5791 or 5794 expansion unit

To install the front cover, follow these steps:

____1. Position the cover on the front of the expansion unit so that the pins on the cover line up with the slots on the front of the expansion unit as shown in the following figure:



IPHAJ903-0

- ____2. Pull in the knobs on the left and right of the front cover.
- ____ **3**. Push the cover on to the front of the expansion unit.
- _____4. Release the knobs on the left and right of the front cover.

Front cover

The following procedures describe how to remove and install the front cover of the system or expansion unit.

Select the appropriate instructions from this list:

- "Front cover for models 520, 550, and OpenPower 720, and the 0595 expansion unit"
- "Front cover for the model 570" on page 325

Front cover for models 520, 550, and OpenPower 720, and the 0595 expansion unit

The following procedures describe how to remove and install the front cover of the stand-alone model 520, 550, or OpenPower 720 or the rack-mounted model 520, 550, or OpenPower 720, or the 0595 expansion unit.

Select the appropriate instructions from this list:

• "Remove the front cover from the model 520, 550, or OpenPower 720, or the 0595 expansion unit" on page 322

• "Install the front cover on the model 520, 550, or OpenPower 720, or the 0595 expansion unit" on page 323

Remove the front cover from the model 520, 550, or OpenPower 720, or the 0595 expansion unit

The following procedures describe how to remove the front cover of the stand-alone model 520, 550, or OpenPower 720 or the rack-mounted model 520, 550, or OpenPower 720, or the 0595 expansion unit.

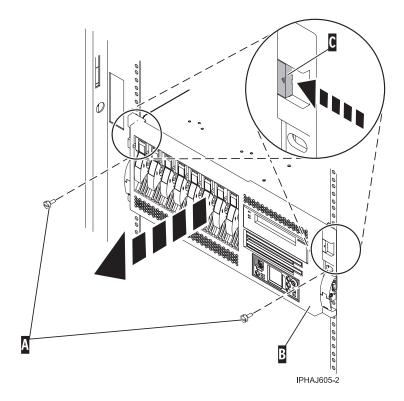
Select the appropriate instructions from this list:

- "Remove the front cover from the rack-mounted model 520, 550, or OpenPower 720, or the 0595 expansion unit"
- "Remove the front cover from the stand-alone model 520, 550, or OpenPower 720"

Remove the front cover from the rack-mounted model 520, 550, or OpenPower 720, or the 0595 expansion unit: To remove the rack-mounted system or expansion unit front cover, follow these steps:

____1. Open the front rack door.

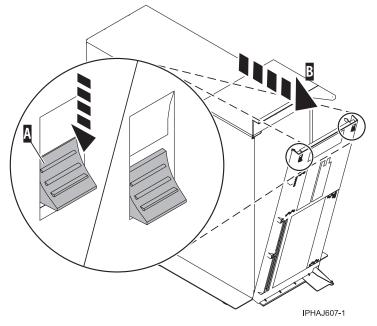
- **____2**. Remove the two thumbscrews **A** that secure the system or expansion unit **B** to the rack as shown in the following figure. **_____** View video.
- ____3. Push both cover-release latches C in the direction of the arrows to release the cover from the system or expansion unit.
- ____4. Pull the cover out and away from the system or expansion unit.



Remove the front cover from the stand-alone model 520, 550, or OpenPower 720: To remove the stand-alone model 520, 550, or OpenPower 720 front cover, follow these steps:

- ____1. "Remove the door from the model 520, 550, or OpenPower 720" on page 312.
- ____2. Press down on the two cover-release levers. 🔁 View video.

_ 3. Pull the top of the cover out and away from the system as shown in the following figure.



____4. Gently pull the cover up and off the base, releasing the lower cover-locking tabs.

Install the front cover on the model 520, 550, or OpenPower 720, or the 0595 expansion unit

The following procedures describe how to install the front cover for the rack-mounted and stand-alone model 520, 550, or OpenPower 720.

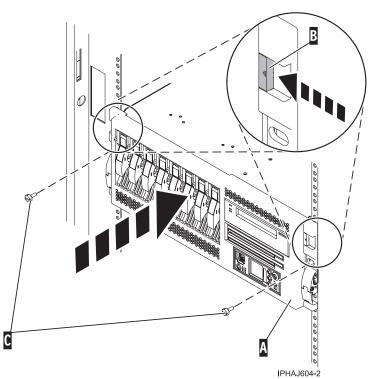
Select the appropriate instructions from this list:

- "Install the front cover on the rack-mounted model 520, 550, or OpenPower 720, or the 0595 expansion unit"
- "Install the front cover on the stand-alone model 520, 550, or OpenPower 720" on page 324

Install the front cover on the rack-mounted model 520, 550, or OpenPower 720, or the 0595 expansion unit: To install the front cover on a rack-mounted model 520, 550, or OpenPower 720, follow these steps:

- ____1. Position the cover on the front of the system or expansion unit so that the two thumbscrews **C** align with the screw holes on the front of the system or expansion unit **A** . **T** View video.
- **2**. Push the cover-release latches **B** in the direction of the arrows to attach the cover to the front of the system or expansion unit as shown in the following figure. The latches should hold the cover

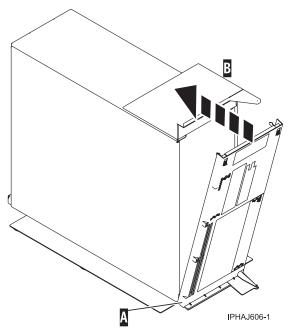
in place.



- ___ **3**. Tighten the thumbscrews.
- ____4. Close the front rack door.

Install the front cover on the stand-alone model 520, 550, or OpenPower 720: To install the stand-alone model 520, 550, or OpenPower 720 front cover, follow these steps:

____1. Place the two lower cover-locking tabs into the retaining slots located on the base of the system unit as shown in the following figure. The View video.



2. Rotate the cover up toward the top of the system, ensuring that the aligning pins are aligned with their matching slots located on the system.

- ____3. Gently push the cover in until the two cover-release levers are seated in their respective slots.
- ____4. "Install the door on the model 520, 550, or OpenPower 720" on page 313.

Front cover for the model 570

The following procedures describe how to remove and install the front cover for rack-mounted 570 system units.

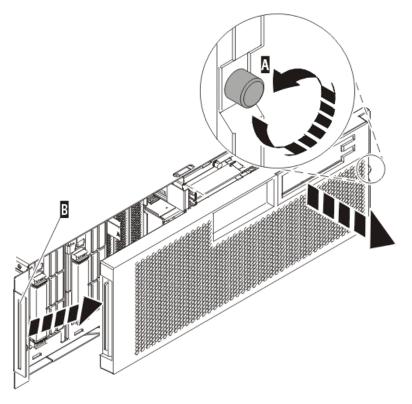
Select the appropriate instructions from this list:

- "Remove the front cover from the model 570"
- "Install the front cover on the model 570"

Remove the front cover from the model 570

To remove the front cover from the model 570, follow these steps:

- ____1. If necessary, open the front rack door.
- ____2. Loosen the thumbscrew on the right side of the cover as shown in the following figure. The video.



IPHAI501-1

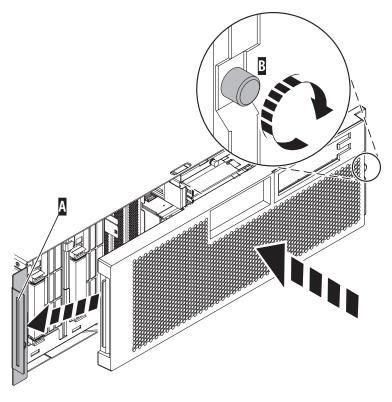
____3. Slide the cover to the right and remove it from the system unit.

Install the front cover on the model 570

To install the front cover on the model 570, follow these steps:

____1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot on the left side of the system unit as shown in the following figure.

video.



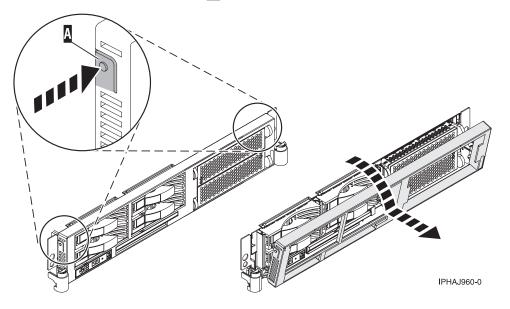
IPHAJ500-1

- ____2. Tighten the thumbscrew on the right side of the cover.
- ____ **3**. Close the front rack door.

Remove the front cover from the model 9110-510 orOpenPower 710

To remove the front cover, follow these steps:

- ____1. If necessary, open the front rack door.
- ____2. Push both cover-release latches A down to release the cover as shown in the following figure.

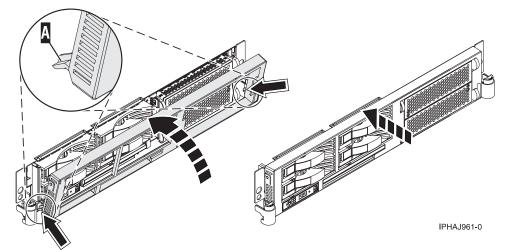


- ____3. Pivot the cover from the bottom and swing the top of the cover out.
- _____4. Pull the bottom of the cover up and then away from the system unit. This releases the two tabs located on the bottom of the cover.
- ____ 5. Put the cover in a safe place.

Install the front cover on the model OpenPower 710 or 9110-510

To install the front cover, follow these steps:

- 1. If necessary, open the front rack door.
- 2. Insert the two tabs A located on the bottom edge of the cover into their locking slots, located on the system unit frame as shown in the following figure.



- 3. Pivot the front cover up toward the top of the system unit frame.
- 4. Align the tabs to the matching slots located on the front of the system unit frame.
- 5. Gently push the tabs into the slots until the cover seats against the front of the system unit.
- 6. Close the front rack door.

Model 9110-510,520, 550, OpenPower 710, or OpenPower 720 service access cover

This topic describes how to remove and install the service access cover for the model , 9110-510, 520, 550, OpenPower 710, or OpenPower 720.

Select the appropriate instructions from this list:

- "Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720"
- "Install the service access cover on the model 9110-510,520, 550, OpenPower 710, or OpenPower 720" on page 330

Remove the service access cover from the model 9110-510,520, 550, OpenPower 710, or OpenPower 720

The following procedures describe how to remove the service access cover for the rack-mounted and stand-alone model 9110-510, 520, 550 ,OpenPower 710, or OpenPower 720.

Note: Some of the figures in these procedures may not look exactly like the system unit that you have. However, the steps to perform the task are the same. Select the appropriate instructions from this list:

- "Remove the service access cover from the rack-mounted model 9110-510,520, 550, OpenPower 710, or OpenPower 720"
- "Remove the service access cover from the stand-alone model 520, 550, OpenPower 720" on page 329

Remove the service access cover from the rack-mounted model 9110-510,520, 550, OpenPower 710, or OpenPower 720

To remove the service access cover from a rack-mounted model 9110-510, 520, 550OpenPower 710, or OpenPower 720, refer to Figure 155 and Figure 156 on page 329, and follow these steps:

- ____1. "Place the rack-mounted system or expansion unit in the service position" on page 333.
- ____2. Loosen the two thumbscrews located at the back of the cover.

View video.

____3. Slide the cover toward the back of the system unit. When the front of the service access cover clears the upper frame ledge, lift the cover up and off the system unit.

Attention: For proper cooling and airflow, install the cover before starting the system. Operating the system without the cover for more than 30 minutes could damage the system components.

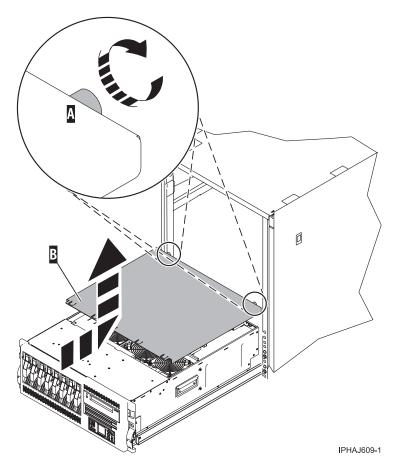


Figure 155. Remove the service access cover from the rack-mounted 520, 550, or OpenPower 720

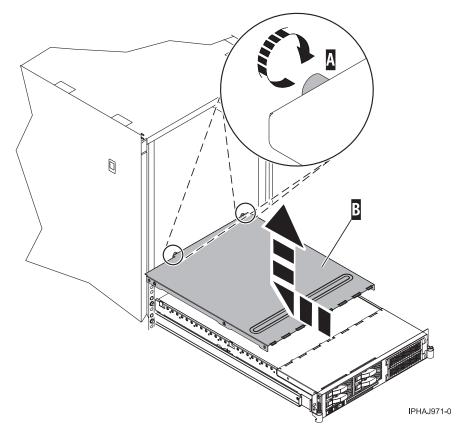
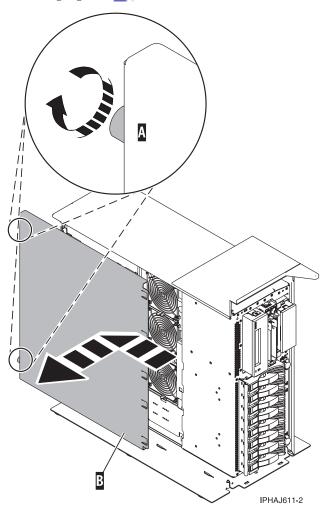


Figure 156. Remove the service access cover from the 9110-510 or OpenPower 710

Remove the service access cover from the stand-alone model 520, 550, OpenPower 720

To remove the service access cover from a stand-alone model 520, 550, or OpenPower 720, do the following:

____1. Loosen the two thumbscrews located at the back of the service access cover as shown in the following figure. The View video.



2. Slide the service access cover toward the back of the system unit. When the front of the cover clears the front frame ledge, lift the cover off the system unit.

Attention: For proper cooling and airflow, install the cover before starting the system. Operating the system without the cover for more than 30 minutes could damage the system components.

Install the service access cover on the model 9110-510,520, 550, OpenPower 710, or OpenPower 720

The following procedures describe how to install the service access cover on the rack-mounted and stand-alone model 9110-510, 520, 550, OpenPower 710, or OpenPower 720.

Select the appropriate instructions from this list:

- "Install the service access cover on the rack-mounted model 9110-510,520, 550, OpenPower 710, or OpenPower 720"
- "Install the service access cover on the stand-alone model 520, 550, or OpenPower 720" on page 332

Install the service access cover on the rack-mounted model 9110-510,520, 550, OpenPower 710, or OpenPower 720

To install the service access cover on a rack-mounted model 9110-510, 520, 550, OpenPower 710, or OpenPower 720, refer to Figure 157 on page 331 and Figure 158 on page 332, and follow these steps:

- ____1. Place the service access cover A on the top of the system unit, approximately 25 mm (1 in.) from the front of the system unit.
- ____2. Hold the service access cover against the system unit, and slide it toward the front of the system. Ensure that the fan LED cables do not get caught on the front edge of the service access cover as you move it forward.

The tabs on the service access cover slide beneath the upper chassis ledge, and the two thumbscrews align with the screw holes at the back of the system unit. The View video.

____3. Tighten the thumbscrews **B** located at the back of the cover.

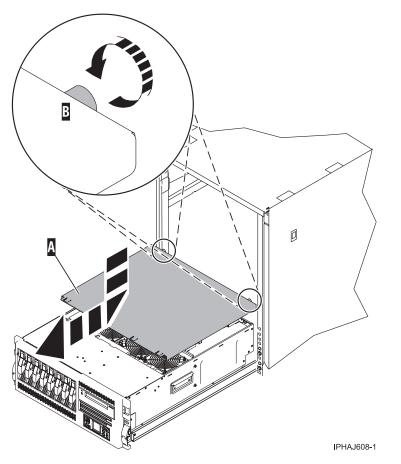


Figure 157. Install the service access cover on the rack-mounted model 520, 550, or OpenPower 720

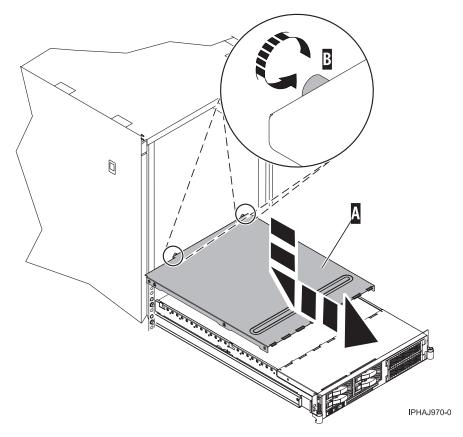


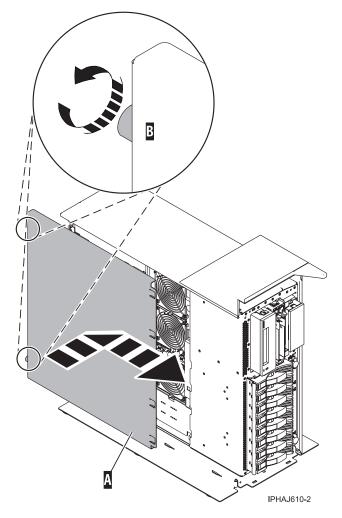
Figure 158. Install the service access cover on the model 9110-510 or OpenPower 710

Install the service access cover on the stand-alone model 520, 550, or OpenPower 720

To install the service access cover on a stand-alone model 520, 550, or OpenPower 720, follow these steps:

- ____1. Align the service access cover pins with the slots in the system. The flanges on the top and bottom of the cover wrap around the system frame. The video.
- ____2. Hold the service access cover against the system unit and slide it toward the front of the system.

____3. Tighten the two thumbscrews located at the back of the cover.



Place the rack-mounted system or expansion unit in the service position or operating position

The following procedures describe how to place a rack-mounted system or expansion unit into the service position or the operating position.

Select the appropriate instructions from this list:

- "Place the rack-mounted system or expansion unit in the service position"
- "Place the rack-mounted system or expansion unit in the operating position" on page 336

Place the rack-mounted system or expansion unit in the service position

By placing the rack-mounted system or expansion unit in the service position, you can access the inside of the unit.

Note: Some of the figures in these procedures might not look exactly like the system or expansion unit that you have. However, the steps to perform the task are the same.

To place the rack-mounted system or expansion unit into the service position, follow these steps:

- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- To avoid hazardous conditions due to uneven mechnical 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 a shelf or work space. Do not place any object 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 before servicing any device in the rack cabinet.
- 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 electical 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 electical shock.

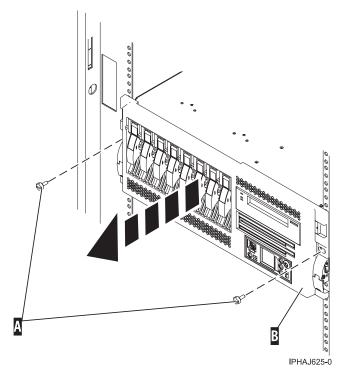
CAUTION:

- 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 may become unstable if you pull out more than one drawer at a time.
- (*For fixed drawers.*) This drawer is a fixed drawer and should not be moved for servicing unless specified by manufacturer. Attempting to move the drawer partially or completely out of the rack may cause the rack to become unstable or cause the drawer to fall out of the rack.

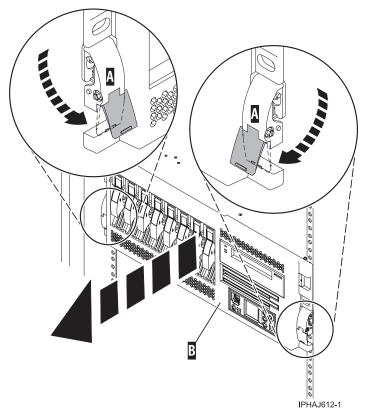
(R001)

____1. If necessary, open the front rack door.

2. Remove the two thumbscrews **A** that secure the system or expansion unit **B** to the rack as shown in the following figure. The View video.



____3. Release the rack latches A on both the left and right sides as shown in the following figure.



____4. Review the following notes, and then slowly pull the system or expansion unit out from the rack until the rails are fully extended and locked.

Notes:

- a. If the procedure you are performing requires you to unplug cables from the back of the system or expansion unit, do so before you pull the unit out from the rack.
- b. Ensure that the cables at the rear of the system or expansion unit do not catch or bind as you pull the unit out from the rack.
- c. When the rails are fully extended, the rail safety latches lock into place. This action prevents the system or expansion unit from being pulled out too far.

Place the rack-mounted system or expansion unit in the operating position

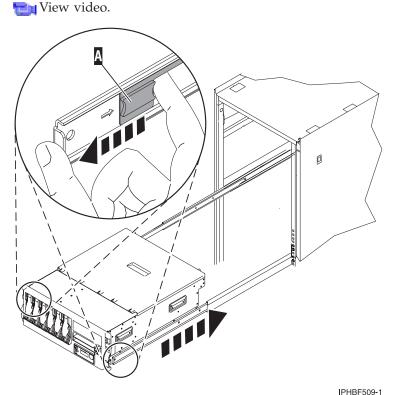
By placing the rack-mounted system or expansion unit in the operating position, you make the unit available for use.

Note: Some of the figures in these procedures might not look exactly like the system or expansion unit that you have. However, the steps to perform the task are the same.

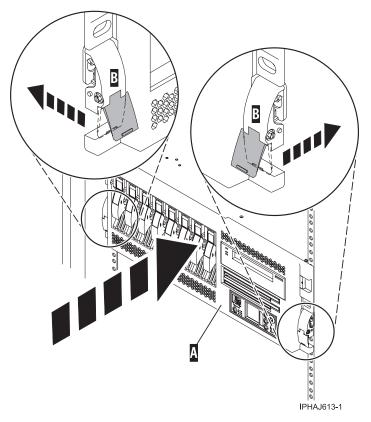
To place the rack-mounted system or expansion unit into the operating position, follow these steps:

____1. Simultaneously release the blue rail safety latches A , located near the front of each rail, and push the system or expansion unit into the rack as shown in the following figure.

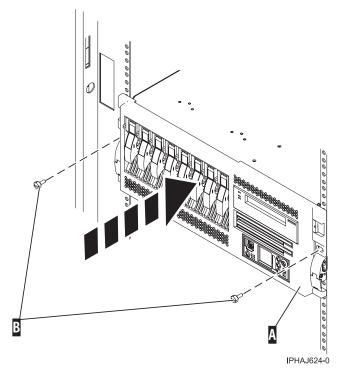
Note: Ensure that the cables at the rear of the system or expansion unit do not catch or bind as you push the unit back into the rack.



Both rack latches **B** should lock into position as shown in the following figure.



____2. Replace and tighten the two thumbscrews **B** that secure the system or expansion unit **A** to the rack as shown in the following figure.



____3. Close the front rack door.

Place the model 9110-510 orOpenPower 710 in the service position

To place the rack-mounted system unit into the service position, follow these steps:

Note: Some of the figures in these procedures might not look exactly like the system unit that you have. However, the steps to perform the task are the same.

DANGER

- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- To avoid hazardous conditions due to uneven mechnical 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 a shelf or work space. Do not place any object 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 before servicing any device in the rack cabinet.
- 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 electical 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 electical shock.

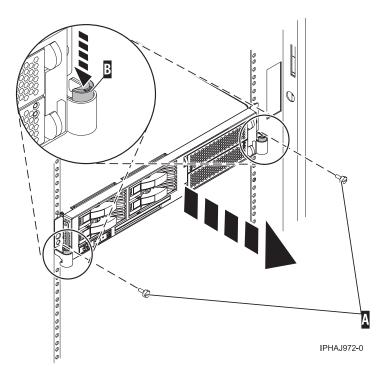
CAUTION:

- 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 may become unstable if you pull out more than one drawer at a time.
- (*For fixed drawers.*) This drawer is a fixed drawer and should not be moved for servicing unless specified by manufacturer. Attempting to move the drawer partially or completely out of the rack may cause the rack to become unstable or cause the drawer to fall out of the rack.

(R001)

____1. If necessary, open the front rack door.

2. Remove the two thumbscrews A that secure the system unit to the rack as shown in the following figure. The View video.



- ___ 3. Release the rack latches **B** on both the left and right sides as shown in the previous figure.
- ____4. Review the following notes, and then slowly pull the system unit out from the rack until the rails are fully extended and locked.

Notes:

- a. If the procedure you are performing requires you to unplug cables from the back of the system unit, do so before you pull the unit out from the rack.
- b. Ensure that the cables at the rear of the system unit do not catch or bind as you pull the unit out from the rack.
- c. When the rails are fully extended, the rail safety latches lock into place. This action prevents the system unit from being pulled out too far.

Place the model 9110-510 orOpenPower 710 in the operating position

Note: Some of the figures in these procedures might not look exactly like the system unit that you have. However, the steps to perform the task are the same.

To place the system unit into the operating position, follow these steps:

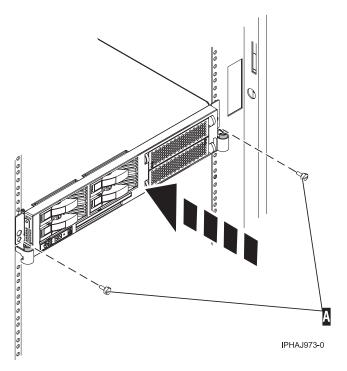
____1. Simultaneously release the blue rail safety latches, located near the middle of each rail, and push the system unit into the rack.

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

View video.

Both rack latches should lock into position.

2. Replace and tighten the two thumbscrews **A** that secure the system unit to the rack as shown in the following figure.



____3. Close the front rack door.

Start or stop the system

To start or stop the system, select the appropriate instructions from this list:

- "Start the system"
- "Stop the system" on page 341

Start the system

To start the system, select the appropriate procedure from this list:

- "Start a system that is not managed by a Hardware Management Console (HMC)"
- "Start the system using the Hardware Management Console" on page 341

Start a system that is not managed by a Hardware Management Console (HMC)

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

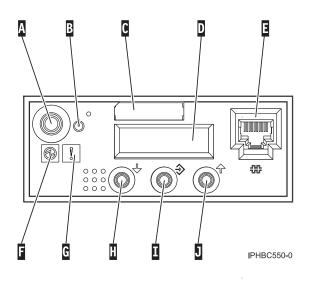
____1. On a rack-mounted system unit, open the front rack door, if necessary.

On a stand-alone system unit, open the front door.

____2. Before you press the power button on the control panel, ensure that power is connected to the system unit as follows:

Note: On the OpenPower 710 or model 9110-510, the power button is on the operations panel.

- All system power cables are connected to a power source.
- The power-on light **F** is slowly blinking.
- The top of the display **D** contains 01 V=F.



Note: The system attention light **G** does not appear on the control panel on the model 570. **3**. Press the power button **A** on the control panel.

Note: If pressing the power button does not start the system, use the Advanced System Management Interface (ASMI) to start the system. First, set up access to the ASMI. For instructions, see Accessing the ASMI. Then, start the system using the ASMI. For instructions, see Powering the system on and off.

After pressing the power button, observe the following:

- a. The power-on light begins to blink visibly faster.
- b. The system cooling fans are activated after approximately 30 seconds and begin to accelerate to operating speed.
- **c.** Progress indicators, also referred to as checkpoints, appear on the control panel display while the system is being started. The power-on light on the control panel stops blinking and remains on, indicating that system power is on.

Start the system using the Hardware Management Console

After the required cables are installed and the power cables are connected to a power source, you can use the Hardware Management Console user interface to start the system or logical partition.

For instructions on starting a logical partition, see Activating a partition profile. For instructions on starting the system, see Powering on the managed system.

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

Stop the system

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

To stop the system, select the appropriate procedure:

- "Stop the system that is not managed by a Hardware Management Console (HMC)" on page 342
- "Stop the system using the Hardware Management Console" on page 343

Stop the system that is not managed by a Hardware Management Console (HMC)

The following procedure describes how to stop a system that is not managed by a Hardware Management Console.

Prepare to stop the system

Before you stop the system, do the following:

- ____1. If an Integrated xSeries Adapter (IXA) is present on the system, shut it down using i5/OS options.
- ____2. Ensure that all jobs are completed and end all applications before stopping the operating system.
- **3**. Before removing power from the system, ensure that the operating system is stopped. Failure to do so can result in the loss of data.
- _____4. Record the IPL type and IPL mode from the control panel display to help you return the system to this state when the installation or replacement procedure is completed.
- ____5. If you are stopping your system due to an error or to make a repair, write down the information displayed on the control panel before stopping the system. For more information, see Collecting reference codes and system information.

Stop the system

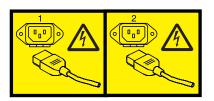
To stop a system that is not managed by an HMC, follow these steps:

- ____1. Log in to the system as a user with the authority to run the shutdown or pwrdwnsys (Power Down System) command.
- ____2. At the command line, enter one of the following commands:
 - If your system is running AIX, type **shutdown**.
 - If your system is running i5/OS, type pwrdwnsys *immed.
 - If your system is running Linux, type **shutdown** -h now.

These commands stop the operating system. The system power turns off, the power-on light begins to slowly blink, and the system goes into a standby state.

- ____3. Set the power switches of any devices connected to the system to off.
- _____4. Unplug any power cables that are attached to the unit from electrical outlets. Ensure that you unplug power cables from peripheral devices, such as printers and expansion units.
 - **Note:** This system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

(L003)





Stop the system using the Hardware Management Console

You can use the Hardware Management Console user interface to stop the system or a logical partition. For instructions on stopping the system, see Powering off the managed system.

Gain access to the model OpenPower 710 and 9110-510 control panels

Since only part of the model OpenPower 710 and 9110-510 control panel is visible from the front of the server, the following procedure describes how to gain access to all of the control panel's features, including the display.

To access all of the control panel's features, do the following:

____1. Press inward on the spring-loaded tab 🛕 located on the right side of the control panel 🖪 so that it pops out slightly.

or

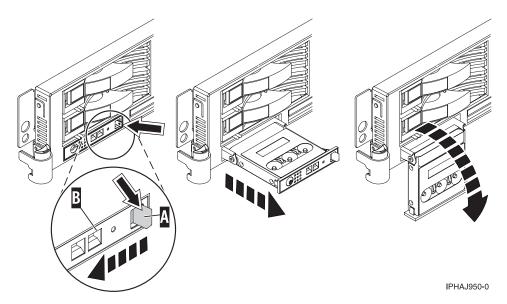


Figure 159. Gain access to the model OpenPower 710 and 9110-510 control panels

- ____2. Pull the control panel out toward the front of the system until it can be pivoted downward on its hinge.
- ____3. To move the control panel back into the device enclosure, lift the control panel up to align it with the opening and push it into place until you feel the tab lock.

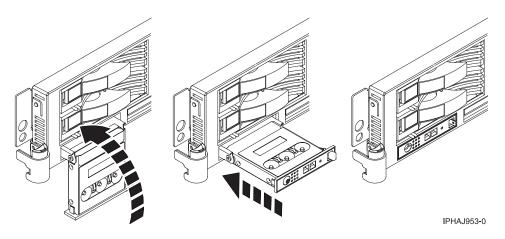


Figure 160. Close the model OpenPower 710 and 9110-510 control panels

Identify a failing part

This topic describes how to locate and identify a failing part on your system or expansion unit. Select the appropriate procedure from the following:

- "Identify a failing part on an AIX system or logical partition"
- "Identify a failing part on an i5/OS system or logical partition" on page 345
- "Identify a failing part on a Linux system or logical partition" on page 346
- "Identify a failing part using the Advanced System Management Interface (ASMI)" on page 348

Identify a failing part on an AIX system or logical partition

There are two steps to identifying a failing part on a system or logical partition running AIX. These steps are as follows:

- If you know the location code of the failing part, go to "Activate the indicator light for the failing part."
- If you do not know the location code of the failing part, go to "Locate a failing part in an AIX system or logical partition" and then go to "Activate the indicator light for the failing part."

Locate a failing part in an AIX system or logical partition

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

- ____ 1. Log in as root user or celogin-.
- ____ 2. At the command line, type diag and press Enter.
- ____ **3**. From the *Function Selection* menu, select **Task Selection** and press Enter.
- ____ 4. Select **Display Previous Diagnostic Results** and press Enter.
- 5. From the *Display Previous Diagnostic Results* display, select **Display Diagnostic Log Summary**. A *Display Diagnostic Log* display appears. This display contains a chronological list of events.
- ____ 6. Look in the T column for the most recent S entry.
- ____ 7. Select this row in the table and press Enter.
- ____ 8. Choose Commit.
 - The details of this log entry is shown.
- _____9. Record the location information and the SRN value shown near the end of the entry.
- ____ 10. Exit to the command line.

Use the location information for the failing part to activate the indicator light that identifies the failing part. For instructions, see "Activate the indicator light for the failing part."

Activate the indicator light for the failing part

The light helps you locate which part to replace. To activate the indicator light, follow these steps:

- ____1. Log in as root user.
- ____2. At the command line, type diag and press Enter.
- ____3. From the Function Selection menu, select Task Selection. Press Enter.
- ____4. From the Task Selection Menu, select Identify and Attention Indicators. Press Enter.
- ____5. From the list of lights, select the location code for the failing part and press Enter.
- ____6. Press Commit. This turns on the system attention and indicator light for the failing part.
- ____7. Exit to the command line.

Identify a failing part on an i5/OS system or logical partition

This topic describes how to activate the indicator light for the failing part. After you replace the failing part, you can deactivate the indicator light and clear the log entry. Select the appropriate procedure from the following:

- "Activate the failing part indicator light"
- "Deactivate the failing part indicator light" on page 346

Activate the failing part indicator light

This procedure describes how to search the service action log for an entry that matches the time, reference code, or resource of the reported problem and then activate the indicator light for the failing part.

- ____ 1. Be sure you are signed on with at least service level authority.
- ____ 2. On the command line of the i5/OS session, type strsst and press Enter.
 - **Note:** If you cannot get to the System Service Tools display, use function 21 from the control panel. Alternatively, if the system is managed by hardware management console (HMC), use the Service Focal Point Utilities to get to the Dedicated Service Tools (DST) display.

3. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.

Note: The service tools password is case-sensitive.

- _ 4. Select Start a service tool from the System Service Tools (SST) display. Press Enter.
- ____ 5. Select Hardware service manager from the Start a Service Tool display. Press Enter.
- ____ 6. Select Work with service action log from the Hardware Service Manager display. Press Enter.
- ____ 7. On the Select Timeframe display, change the From: Date and Time field to a date and time prior to when the customer reported having the problem.
- **8**. Search for an entry that matches one or more conditions of the problem:
 - Reference code
 - Resource
 - Date/Time
 - Failing item list
- ____ 9. Select option 2 (Display failing item information) to display the service action log entry.
- ____ 10. Select option 2 (Display details) to display location information for the failing part to be replaced. The information displayed in the date and time fields is the date and time for the first occurrence of the specific reference code for the resource displayed during the time range selected.
- 11. If location information is available, select option 6 (indicator on) to turn on the failing part's indicator light.
 - **Note:** If the failing part does not contain a physical indicator light, a higher-level indicator light will be activated. For example, the indicator light for the backplane or unit that contains the failing part might be lit. In this case, use the location information to locate the actual failing part.
- ____12. Look for the enclosure indicator light to locate the enclosure that contains the failing part.
- ____13. Follow the procedure to replace the failing part and then return to this procedure to deactivate the failing part indicator light.

Deactivate the failing part indicator light

After replacing a failing part, follow these steps:

- _____1. If the failing part indicator light was turned on during the remove and replace procedure, select option 7 (Indicator off) to turn off the indicator light.
- **2.** If all problems have been resolved, use the **Acknowledge all errors** function at the bottom of the service action log display.
- **3**. Close the log entry by selecting option **8** (Close a new entry) on the service action log report display.

Identify a failing part on a Linux system or logical partition

Choose one of the following methods to identify a failing part on a system or logical partition running Linux:

• "Locate a failing part and activate the indicator light" on page 347

Use this method if the service aids have been installed.

- "Identify a failing part using stand-alone eServer diagnostics" on page 347
 Use this method if the operating system is stopped or if you need to stop the system or logical partition to replace the failing part.
- "Identify a failing part using the Advanced System Management Interface (ASMI)" on page 348 Use this method if the operating system is running on the system or logical partition.

Locate a failing part and activate the indicator light

There are two steps to identifying a failing part on a system or logical partition running Linux. These steps are as follows:

- ____1. "Locate a failing part in a Linux system or logical partition"
 - If you know the location of the location of the failing part, skip to the next step.
- ____2. "Activate the indicator light for the failing part"

To deactivate the indicator lights after replacing the falling part, see "Deactivate the failing part indicator light."

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

- ____1. Log in as root user.
- ____2. At the command line, type grep diagela /var/log/platform and press Enter.
- ____3. Look for the most recent entry that contains an SRC.
- ____4. Record the location information.

Next topic: "Activate the indicator light for the failing part."

Activate the indicator light for the failing part

The indicator light helps you locate which part to replace. To activate the indicator light, follow these steps:

- ____1. Log in as root user.
- ____2. At the command line, type /usr/sbin/usysident -s identify -l <location code> and press Enter, substituting the location code of the failing unit for <location code>.
- ____3. Look for the system attention light to identify the enclosure that contains the failing part.

Deactivate the failing part indicator light

After replacing a failing part, follow these steps to deactivate the failing part indicator light:

- ____1. Log in as root user.
- ____2. At the command line, type /usr/sbin/usysident -s normal -l <location code> and press Enter, substituting the location code of the failing unit for <location code>.
- ____3. Look for the system attention light to identify the enclosure that contains the failing part.

Identify a failing part using stand-alone eServer diagnostics

You can use stand-alone diagnostics to identify a failing part in a Linux system, expansion unit, or logical partition. You access these diagnostics from a CD-ROM or from the Network Installation Management (NIM) server. This procedure describes how to use the diagnostics from a CD-ROM. For information on running diagnostics from the Network Installation Management (NIM) Server, see Running the stand-alone eServer[™] diagnostics from a Network Installation Management server.

Prerequisites:

- ____1. If this server is directly attached to another server or attached to a network, be sure communications with the other servers are stopped.
- 2. Stand-alone eServer diagnostics require use of all of the logical partition resources. No other activity can be running on the logical partition.
- ____3. Stand-alone eServer diagnostics require access to the system console.

To use stand-alone diagnostics from a CD-ROM, follow these steps:

- Stop all jobs and applications and then stop the operating system on the system or logical partition.
- ____2. Remove all tapes, diskettes, and CD-ROM.

3. Turn off the system unit power.

The next step boots the server or logical partition from the eServer stand-alone diagnostic CD-ROM. If the CD-ROM or DVD-ROM drive is not available as the boot device on the server or logical partition on which you are working, follow these steps:

- a. Access the ASMI. See Managing your server using the Advanced System Management Interface for information on using the ASMI.
- ____b. On the ASMI main menu, click **Power/Restart Control**.
- ____ c. Click Power On/Off System.
- _____d. Select the **Service mode boot** from default boot list option in the AIX/Linux logical partition mode boot drop-down menu.
- ____e. Click **Save settings** and power on. As soon as the optical drive has power, insert the AIX diagnostic diskette.
- ____f. Go to step 5.
- _____4. Turn on the system unit power and immediately insert the diagnostics CD-ROM into the CD-ROM drive.
- ____5. After the **keyboard** POST indicator displays on the firmware console and before the last POST indicator (**speaker**) displays, press the numeric 5 key on either the directly attached keyboard or the ASCII terminal. This indicates that a service mode boot should be initiated using the default service mode boot list.
- ____6. Enter any requested password.
- ____7. At the Diagnostic Operating Instructions display, press Enter.

Note: If the Diagnostic Operating Instructions display does not appear, contact your support center for assistance.

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

Next topic: "Identify a failing part on an AIX system or logical partition" on page 344.

Identify a failing part using the Advanced System Management Interface (ASMI)

To activate the indicator light for a failing part, follow these steps:

- ____1. If the unit ID does not match the label on the system or expansion unit, update the configuration information.
 - For information on setting up the ASMI refer toAccessing the Advanced System Management Interface.
 - For information on using the ASMI, refer to Managing your server using the Advanced System Management Interface
- ____2. Turn on the failing part indicator light. For instructions, see Changing service indicators.

Verify the installed part

This topic describes how to verify a newly installed or replaced part on your system, logical partition, or expansion unit. Verify an installed feature or replaced part by selecting the appropriate procedure for the operating system or for the console as follows.

By operating system:

- "Verify an installed feature or replaced part on an AIX system or logical partition (run AIX diagnostics)" on page 349
- "Verify the presence of an installed part on an i5/OS system or logical partition" on page 351

• "Verify the installed part on a Linux system or logical partition (run AIX diagnostics)" on page 352

By console:

- "Verify the presence of an installed part using Hardware Management Console (HMC)" on page 354
- "Verify the presence of an installed part using the Advanced System Management Interface (ASMI)" on page 354

Verify an installed feature or replaced part on an AIX system or logical partition (run AIX diagnostics)

To verify the operation of a newly installed feature or replacement part, select the appropriate procedure:

- "Verifying the installed feature using AIX"
- "Verifying the replaced part using AIX"

Verifying the installed feature using AIX

- ____1. Log in as root user.
- ____ 2. At the command line, type diag and press Enter.
- ___ 3. Select Advanced Diagnostics Routines. Press Enter.
- ____4. From the Diagnostic Mode Selection menu, select **System Verification**. Press Enter.
- ____5. When the Advanced Diagnostic Selection menu appears, do one of the following:
 - To test a single resource, select the resource that you just installed from the list of resources and press Enter.
 - To test all the resources available to the operating system, select All Resources and press Enter.
- ____6. Choose **Commit**, and wait until the diagnostic programs run to completion, responding to any prompts that appear.
- ____7. Did the diagnostics run to completion and display the message No trouble was found?

No: If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. Review the installation procedures to ensure that the new feature is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system is running in LPAR mode, note the logical partition in which you installed the feature. Contact your service provider for assistance.

Note: If you received an SRN or other reference code when you run the diagnostic programs, you can learn more about these codes in Reference codes.

This ends the procedure.

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

Verifying the replacement part using AIX

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

- 1. Did you replace the part using either AIX or the online diagnostics service aid's hot-swap operation?
 - No: Go to step 2.

Yes: Go to step 5 on page 350.

____ 2. Is the system powered off?

Yes: If the system supports slow boot, set the system to perform a slow boot. For information, see Performing a slow boot.

No: Go to step 4 on page 350.

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

Did the AIX login prompt display?

Yes: Go to step 4

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

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

Note: If you received an SRN or any other reference code when you attempted to start the system, you can learn more about these codes in the Reference codes.

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

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

- ____a. Select the resource and press Enter.
- ____b. Select Commit.
- ____ c. Follow any instructions that are shown.
- _____d. If a *Do you want to review the previously displayed error*? message is shown, select **Yes** and press Enter.
- ____e. If an SRN is shown, suspect a loose card or connection. If no obvious problem is shown, record the SRN and go to AIX fast-path problem isolation.
- ____f. If no SRN is shown, go to 5.
- 5. Follow these steps:
 - a. At the command line, type diag and press Enter.
 - b. From the Function Selection menu, select Advanced Diagnostics Routines. Press Enter.
 - c. From the Diagnostic Mode Selection menu, select System Verification. Press Enter.
 - d. When the Advanced Diagnostic Selection menu appears, select **All Resources**, or test only the part you replaced, and any devices that are attached to the part you replaced, by selecting the diagnostics for the individual part. Press Enter.

Did the Resource Repair Action menu appear?

No: Go to step 6.

Yes: Go to step 7.

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

No: There is still a problem. Contact your service provider. This ends the procedure.

Yes: Select **Log Repair Action**, if not previously logged, from the *Task Selection* menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the Resource List, select **sysplanar0**. Press Enter.

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

Go to step 9 on page 351

____ 7. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the *Resource Repair Action* menu appears. After replacing a part, you must select the resource for that part from the *Resource Repair Action* menu. This updates the AIX error log to indicate that a system-detectable part has been replaced.

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

Follow these steps:

- a. Select the resource that has been replaced from the *Resource Repair Action* menu. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**. Press Enter.
- b. Select **Commit** after you make your selections. Did another *Resource Repair Action* display appear?

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

Yes: Go to step 8.

8. The parent or child of the resource you just replaced may also require that you run the Resource Repair Action option on it. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the *Resource Repair Action* menu appears. After replacing that part, you must select the resource for that part from the *Resource Repair Action* menu. This updates the AIX error log to indicate that a system-detectable part has been replaced.

Note: This changes the indicator light for the part from the fault state to the normal state. Follow these steps:

- a. From the *Resource Repair Action* menu, select the parent or child of the resource that has been replaced. If the repair action was to reseat a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**. Press Enter.
- b. Select **Commit** after you make your selections.
- c. If the *No Trouble Found* display appears, go to step 9.
- _____ 9. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the value they had prior to servicing the system.
- ____ 10. Did you do any hot-plug procedures before doing this procedure?

No: Go to step 11.

Yes: Go to step 12.

____11. Start the operating system, with the system or logical partition in normal mode. Were you able to start the operating system?

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

- Yes: Go to step 12.
- ____ 12. Are the indicator lights still on?

No. This ends the procedure.

Yes. Turn off the lights. See one of the following for instructions:

- Identify a failing part using stand-alone eServer diagnostics
- Running the stand-aloneeServer diagnostics from a Network Installation Management server
- Changing service indicators with the ASMI menus

This ends the procedure.

Verify the presence of an installed part on an i5/OS system or logical partition

To verify that the system recognizes the new feature or part, follow these steps:

- ____1. Deactivate the failing item indicator light and close the service action log entry. For instructions, see "Deactivate the failing part indicator light" on page 346.
- ____2. Be sure you are signed on with at least service level authority.
- ____3. On the command line of the i5/OS session, type strsst and press Enter.

Note: If you cannot get to the System Service Tools display, use function 21 from the control panel. Alternatively, if the system is managed by Hardware Management Console (HMC), use the Service Focal Point Utilities to get to the Dedicated Service Tools (DST) display.

_____4. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.

Note: The service tools password is case-sensitive.

- ____ 5. Select Start a service tool from the System Service Tools (SST) display. Press Enter.
- ____6. Select Hardware service manager from the Start a Service Tool display. Press Enter.
- ____7. Select **Logical hardware resources (buses, IOPs, controllers)** from the Hardware Service Manager display. This option allows you to display and work with logical resources. Logical hardware resources are the functional resources of the system used by the operating system.
- ___ 8. Press Enter.

When you select one of the options from the Logical Hardware Resources display, you can do the following:

- Display logical hardware resource status
- Display or change logical hardware resource information
- · Display associated packaging hardware resources

For more information on collecting information and performing specific functions using the options and function keys from the Logical Hardware Resources display or for details on the symbols that appear next to the Resource Description field, see the online Help information.

Verify the installed part on a Linux system or logical partition (run AIX diagnostics)

To verify the newly installed or replaced part, choose one of the following:

- "Verify the presence of an installed part using the Advanced System Management Interface (ASMI)" on page 354
- "Verify an installed part using the eServer stand-alone diagnostics"

Verify an installed part using the eServer stand-alone diagnostics

You can use stand-alone diagnostics to verify an installed part in a Linux system, expansion unit, or logical partition. You access these diagnostics from a CD-ROM or from the Network Installation Management (NIM) server. This procedure describes how to use the diagnostics from a CD-ROM. For information on running diagnostics from the Network Installation Management (NIM) server, see Running the eServer stand-alone diagnostics from a Network Installation Management server.

Prerequisites

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

To use stand-alone diagnostics, follow these steps:

- Stop all jobs and applications and then stop the operating system on the system or logical partition.
- _ 2. Remove all tapes, diskettes, and CD-ROM.
- ____ **3**. Turn off the system unit power.

The next step boots the server or logical partition from the eServer stand-alone diagnostics CD-ROM. If the optical drive is not available as the boot device on the server or logical partition on which you are working, follow these steps:

- **a**. Access the ASMI. See Managing your server using the Advanced System Management Interface for information on using the ASMI.
- ____b. On the ASMI main menu, click on Power/Restart Control.
- ____ c. Click on Power On/Off System.
- _____d. Select the **Service mode boot from default boot list** option in the AIX/Linux logical partition mode boot drop-down menu.
- ____e. Click on **Save settings and power on**. As soon as the optical drive has power, insert the eServer standalone diagnostic CD-ROM.
- ____f. Go to step 5.
- _____ 4. Turn on the system unit power and immediately insert the diagnostics CD-ROM into the optical drive.
- 5. After the keyboard POST indicator displays on the system console and before the last POST indicator (speaker) displays, press the numeric 5 key on the system console to indicate that a service mode boot should be initiated using the default service mode boot list.
- ____ 6. Enter any requested password.
- ____ 7. At the *Diagnostic Operating Instructions* display, press Enter.

Note:

If an SRN or other reference code is displayed, suspect a loose adapter or cable connection. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system will not boot or you have no login prompt go to Problems with loading and starting the operating system.

Note: If you received an SRN or any other reference code when you attempted to start the system, you can learn more about these codes in Reference codes.

- **8**. If the terminal type is requested, you must use the **Initialize Terminal** option on the *Function Selection* menu to initialize the operating system before you can continue.
- ____ 9. From the Function Selection menu, select Advanced Diagnostics Routines. Press Enter.
- ____10. From the Diagnostic Mode Selection menu, select **System Verification**. Press Enter.
- ____11. When the Advanced Diagnostic Selection menu appears, select **All Resources**, or test only the part you replaced, and any devices that are attached to the part you replaced, by selecting the diagnostics for the individual part. Press Enter.
- ____ 12. Did the *Testing Complete, No trouble was found* message appear?

No: There is still a problem. Contact your service provider.

- Yes: Go to step 13.
- 13. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the value they had prior to servicing the system.
- _____14. If the indicator lights are still on, follow these steps:
 - ____a. Select **Identify and Attention Indicators** from the *Task Selection* menu to turn off the system attention and indicator lights. Press Enter.
 - ____b. Select **Set System Attention Indicator to NORMAL** and press Enter.

- ____ c. Select Set All Identify Indicators to NORMAL and press Enter.
- ____d. Choose Commit.

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

____e. Exit to the command line.

Verify the presence of an installed part using Hardware Management Console (HMC)

Use this procedure to update your HMC records after you have completed a service action on your server. If you have reference codes, symptoms, or location codes that you used during the service action, locate the records to use during this procedure.

- ____1. At the HMC, examine the service action event log for any open service action events. See Viewing serviceable events for details.
- ____2. Are there any service action events that are open?

No: If the system attention LED is still on, use the HMC to turn off the LED. See Activating and Deactivating LEDs. **This ends the procedure.**

Yes: Continue with the next step.

- ____ **3**. Record the list of open service action events.
- _____4. Examine the details of the open service action event. Is the error code associated with this service action event the same as you gathered earlier.

Yes: Continue with the next step.

No: Choose from the following options:

- Review the other serviceable events and find one that does match and continue with the next step.
- If the log does not match what you had gathered earlier, contact your service provider.
- ____5. Select and highlight the service action event from the Error Associated With This Serviceable Event window.
- ____6. Click Close Event.
- ____7. Add comments for the serviceable event. Include any unique additional information. Click **OK**.
- ____8. Did you replace, add, or modify a FRU of the open service action event?

No: Select the No FRU Replaced for this Serviceable Event option and click OK to close the service action event.

Yes: Perform the following steps:

- a. From the FRU list, select a FRU that you need to update.
- b. Double-click the FRU and update the FRU information.
- c. Click **OK** to close the service action event.
- ____9. If you continue to have problems, contact your service provider.

Verify the presence of an installed part using the Advanced System Management Interface (ASMI)

To verify the newly installed or replaced part, follow these steps:

- ____1. If the unit ID does not match the label on the system or expansion unit, update the configuration information.
 - For information on accessing up the ASMI, refer to Accessing the Advanced System Management Interface
 - For information on using the ASMI Managing your server using the Advanced System Management Interface.

____2. Turn off the failing part indicator light. For instructions, see Changing service indicators.

Install a feature using the Hardware Management Console

To use the Hardware Management Console user interface to install a feature in a system or expansion unit that is managed by a Hardware Management Console (HMC), follow these steps:

- ____ 1. In the navigation area, expand **Management Environment**.
- **2**. Expand the managed system into which you are installing a feature.
- ____ **3.** Expand **Service Applications**.
- _____ 4. Select Service Focal Point.
- ____ 5. In the contents area, select Install/Add/Remove Hardware.
- ____ 6. In the Install/Add/Remove Hardware window, click System Processor.
- ____ 7. From the Selected menu, select Add FRU.
- **8**. In the **Installed enclosure types** field, select the system or expansion unit into which you are installing a feature.
 - 9. In the Available FRU types for selected enclosure, select the feature you are installing.
- ___ 10. Click Next.
- ____ 11. Follow the instructions to install the feature.

Note: The HMC might open the information center instructions for installing the feature. If so, follow these instructions to install the feature.

Remove a part using the Hardware Management Console

To use the Hardware Management Console user interface to remove a part in a system or expansion unit that is managed by a Hardware Management Console (HMC), follow these steps:

- ____ 1. In the navigation area, expand the Management Environment.
- ____ 2. Expand the managed system in which you are replacing a part.
- ____ 3. Expand Service Applications.
- ____ 4. Select Service Focal Point.
- ____ 5. In the contents area, select Install/Add/Remove Hardware.
- 6. In the **Install/Add/Remove Hardware** window, click System Processor.
- ____ 7. From the Selected menu, select **Remove FRU**.
- **8**. In the **Installed enclosure types** field, select the system or expansion unit from which you are removing a part.
- _____ 9. In the Available FRU types for selected enclosure, select the partyou are removing.
- ___ 10. Click Next.
- ____ 11. Follow the instructions to remove the part.

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

Replace a part using the Hardware Management Console

To use the Hardware Management Console user interface to replace a part in a system or expansion unit that is managed by a Hardware Management Console (HMC), follow these steps:

- ____1. In the navigation area, expand the Management Environment.
- ____2. Expand the managed system in which you are replacing a part.
- ___ 3. Expand Service Applications.

- _____4. Select Service Focal Point.
- ____ 5. In the contents area, select **Repair Serviceable Event**.
- ____6. Select the system and click **OK**.
- ____7. In the window, click the problem number for the part you want to replace.
- ____8. Follow the instructions to replace the part.
 - **Note:** The HMC might open the information center instructions for replacing the part. If so, follow these instructions to replace the part.

Appendix. 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 give 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 INFORMATION 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 Web sites not owned by the manufacturer are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this product and use of those Web sites 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.

Trademarks

The following terms are trademarks of International Business Machines Corporation in the United States, other countries, or both:

AIX AIX 5L e(logo)server eServer i5/OS IBM iSeries pSeries

Intel, Intel Inside (logos), MMX and Pentium are trademarks of Intel Corporation in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

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

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product or service names may be trademarks or service marks of others.

Communications statements

The following Class A statements apply to these models:

5790 5791 5794 7310-C04 7310-CR3 7311-D10 7311-D11 7311-D20 7315-C03 7315-CR2 9110-510 9111-520 (rack-mounted version) 9113-550 9117-570 9118-575 9119-590 9119-595 **OpenPower** 710 **OpenPower** 720 9405-520 9406-520 9406-550 9406-570 9406-595 9411-100

The following Class B statements apply to model 9111-520 (stand-alone version).

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.

Responsible Party:

International Business Machines Corporation New Orchard Road Armonk, NY 10504

Telephone: 1-919-543-2193

Industry Canada Compliance Statement

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC 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.

Australia and New Zealand Class A statement

Attention: 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

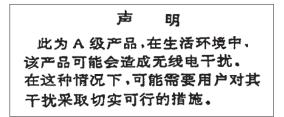
この装置は、クラス A 情報技術装置です	この装置を家庭環境で使用する
と電波妨害を引き起こすことがあります。	この場合には使用者が適切な対策
を講ずるよう要求されることがあります。	VCCI-A

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 Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Electromagnetic Interference (EMI) Statement - People's Republic of China

Per GB 9254–1998, the user manual for a Class A product must carry the following warning message (English translation from the Chinese standard) about use in a residential environment in Chinese (*Simplified Chinese*):



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.

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit Dem deutschen EMVG vom 9.Nov.92 das EG–Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse A. Für diese von Geräten gilt folgende Bestimmung nach dem EMVG:

Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind.

(Auszug aus dem EMVG vom 9.Nov.92, Para.3, Abs.4)

Hinweis

Dieses Genehmigungsverfahren ist von der Deutschen Bundespost noch nicht veröffentlicht worden.

The following Statement applies to this IBM product. The statement for other IBM products intended for use with this product will appear in their accompanying manuals.

Federal Communications Commission (FCC) statement

Note: 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 using other than recommended cables or 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 interferences, and (2) this device must accept any interferences received, including interference that may cause undesired operation.

Responsible Party:

International Business Machines Corporation New Orchard Road Armonk, NY 10504

Telephone: 1-919-543-2193

Industry Canada Compliance Statement

This Class B digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC 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 CISPR 22 / 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 devices.

Properly shielded and grounded cables and connectors (IBM part number 75G5958 or its equivalent) must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. Such cables and connectors are available from IBM authorized dealers. IBM cannot accept responsibility for an interference caused by using other than recommended cables and connectors.

Terms and conditions for downloading and printing information

Permissions for the use of the information you have selected for download are granted subject to the following terms and conditions and your indication of acceptance thereof.

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

Commercial Use: You may reproduce, distribute and display this information solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of this information, or reproduce, distribute or display this information or any portion thereof outside your enterprise, without the express consent of the manufacturer.

Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the information or any 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 information 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 THIS INFORMATION. THE INFORMATION IS PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE

All material copyrighted by IBM Corporation.

By downloading or printing information from this site, you have indicated your agreement with these terms and conditions.

Product recycling and disposal

This unit contains materials such as circuit boards, cables, electromagnetic compatibility gaskets and connectors which may contain lead and copper/beryllium alloys that require special handling and disposal at end of life. Before this unit is disposed of, these materials must be removed and recycled or discarded according to applicable regulations. IBM offers product-return programs in several countries. Information on product recycling offerings can be found on IBM's Internet site at http://www.ibm.com/ibm/environment/products/prp.shtml.

IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of programs and services to assist equipment owners in recycling their IT products. Information on product recycling offerings can be found on IBM's Internet site at http://www.ibm.com/ibm/environment/products/prp.shtml.

Battery return program

This product may contain sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to

http://www.ibm.com/ibm/environment/products/batteryrecycle.shtml or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and other battery packs from IBM Equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Please have the IBM part number listed on the battery available prior to your call.

In the Netherlands, the following applies:



In Taiwan, the following applies. Please recycle batteries.



IBM Cryptographic Adapter Card Return Program

IBM has established a return program for certain IBM Cryptographic Adapter Cards. More information can be found at: http://www.ibm.com/ibm/environment/products/prp.shtml



Printed in USA