



System i and System p

Remote input/output (high-speed link)
or GX Dual-port 4x HCA adapter





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Remote input/output (high-speed link)
or GX Dual-port 4x HCA adapter

Note

Before using this information and the product it supports, read the information in “Notices” on page 93 and the *IBM Systems Safety Information* manual, G229-9054.

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Safety and environmental notices

Safety notices may be printed throughout this guide:

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

World Trade safety information

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

Laser safety information

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

Laser compliance

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

CAUTION:

This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:

- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.**

(C026)

CAUTION:

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

CAUTION:

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

CAUTION:

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

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

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

The equipment is suitable for installation in the following:

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

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

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

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

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

Product recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/prp.shtml>.

Esta unidad debe reciclarse o desecharse de acuerdo con lo establecido en la normativa nacional o local aplicable. IBM recomienda a los propietarios de equipos de tecnología de la información (TI) que reciclen responsablemente sus equipos cuando éstos ya no les sean útiles. IBM dispone de una serie de programas y servicios de devolución de productos en varios países, a fin de ayudar a los propietarios de equipos a reciclar sus productos de TI. Se puede encontrar información sobre las ofertas de reciclado de productos de IBM en el sitio web de IBM <http://www.ibm.com/ibm/environment/products/prp.shtml>.



EU Only

Note: This mark applies only to countries within the European Union (EU) and Norway.

Appliances are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

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.

For Taiwan: Please recycle batteries.



For the European Union:



Note: This mark applies only to countries within the European Union (EU).

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, contact your local IBM representative.

For California: Perchlorate Material - special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate.

The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33. Best Management Practices for Perchlorate Materials. This product/part may include a lithium manganese dioxide battery which contains a perchlorate substance.

IBM Cryptographic Coprocessor Card Return Program

The following information applies only for systems originally sold prior to July 1, 2006:

This machine may contain an optional feature, the cryptographic coprocessor card, which includes a polyurethane material that contains mercury. Please follow local ordinances or regulations for disposal of this card. IBM has established a return program for certain IBM Cryptographic Coprocessor Cards. More information can be found at <http://www.ibm.com/ibm/environment/products/prp.shtml>.

About this topic

This topic contains procedures and reference information that you or your service provider can use to install, remove, or replace remote input/output cards (RIO), high-speed link (HSL), or GX Dual-port 4x HCA adapters. The reference information includes placement information and other topics relevant to RIO/HSL or GX Dual-port 4x HCA adapters.

For information about the accessibility features of this product, for users who have a physical disability, see "Accessibility features," on page 91.

RIO/HSL or GX Dual-port 4x HCA adapters and cables

The information and procedures in this topic are for remote input/output (RIO), high-speed link (HSL) or GX Dual-port 4x HCA adapters and cables, including connector locations and installing, removing, or replacing the RIO/HSL or GX Dual-port 4x HCA adapters.

System unit cable options

Learn which RIO/HSL and InfiniBand cables are supported on which system units.

Use the following table to identify the RIO/HSL cables for the model numbers and machine types identified.

Table 1. System unit RIO/HSL cable options

Cable feature	9111-520	9405-520 or 9406-520	9113-550 or 720	9406-550	9117-570	9406-570	9118-575	9119-590 or 9119-595	9406-595 or 9411-100 ²
1307 (copper)		X ¹		X ¹		X ¹			X
1308 (copper)		X		X		X			X
1460 (copper)		X		X		X			X
1461 (copper)		X		X		X			X
1462 (copper)				X		X			X
1470 (fiber optic)				X		X			X
1471 (fiber optic)				X		X			X
1472 (fiber optic)				X		X			X
1473 (fiber optic)				X		X			X
1474 (copper)		X		X		X			X
1475 (copper)		X		X		X			X
1481 (copper)		X ¹		X ¹		X ¹			X
1482 (copper)		X		X	X	X			X
1483 (copper)		X		X		X			X
1485 (copper)	X	X		X		X			X
1487 (copper)		X		X		X			X

Table 1. System unit RIO/HSL cable options (continued)

Cable feature	9111-520	9405-520 or 9406-520	9113-550 or 720	9406-550	9117-570	9406-570	9118-575	9119-590 or 9119-595	9406-595 or 9411-100 ²
3146 (copper)	X ¹		X ¹		X		X		
3147 (copper)	X		X		X			X	
3148 (copper)	X		X		X				
3156 (copper)	X ¹		X ¹		X ¹				
3168 (copper)	X				X		X		
3170 (copper)								X	
7924 (copper)							X	X	X

Notes:

1. This cable can be used only for stand-alone system units due to its length.
2. For more information about 9411-100, go to Model 9411-100 features and parts.

Expansion unit cable options

Learn which RIO/HSL cables are available for which expansion units.

Use the following table to identify the RIO/HSL cables for the expansion units identified.

Table 2. Expansion unit RIO/HSL cable options

Cable feature	IXA card	5074, 5079	0588, 5088	5094, 5294, 0694, 9194	5095, 0595	5790
1307 (copper)			X	X	X	X
1308 (copper)			X	X	X	X
1460 (copper)	X	X	X	X	X	X
1461 (copper)	X	X	X	X	X	X
1462 (copper)	X	X	X	X	X	X
1470 (fiber optic)		X	X	X	X	X
1471 (fiber optic)		X	X	X	X	X
1472 (fiber optic)		X	X	X	X	X
1473 (fiber optic)		X	X	X	X	X
1474 (copper)	X	X	X	X	X	X
1475 (copper)	X	X	X	X	X	X
1481 (copper)			X	X	X	X
1482 (copper)			X	X	X	X
1483 (copper)			X	X	X	X
1485 (copper)			X	X	X	X
1832					X	

Table 2. Expansion unit RIO/HSL cable options (continued)

Cable feature	IXA card	5074, 5079	0588, 5088	5094, 5294, 0694, 9194	5095, 0595	5790
1833					X	
1834					X	
1835						
1836						
1837					X	
1838					X	
1839						
3146 (copper)						
3147 (copper)						
3148 (copper)						
3156 (copper)						
3168 (copper)						

Table 3. Expansion unit InfiniBand cable options

Cable feature	7314-G305796
1829 0.6M 12x adapter	X
1830 1.5M 12x adapter	X
1834 8.0M 12x adapter	X
1840 3.0M 12x adapter	X

Identify RIO/HSL, and SPCN cables

You might need to identify the RIO/HSL and SPCN cables for the expansion unit. This section includes reference tables for these types of cables.

The system uses RIO/HSL to send and receive customer data and auxiliary control information to and from the expansion unit and to download expansion unit firmware. The SPCN network is used to control power to the expansion units and as a backup to the RIO/HSL for auxiliary control and firmware control.

The following expansion units do not use SPCN cables:

- 5791
- 5794
- 7040-61D

Power is controlled by the rack bulk-power assembly (BPA) through UPIC cables.

Table 4. RIO/HSL cables

Cable feature	CCIN	Cable type	Length	Part number
1307 (copper)	1307	HSL-2/RIO-2	1.75 meters	00P5238
1308 (copper)	1308	HSL-2/RIO-2	2.5 meters	00P5239
1460 (copper)	0343	HSL/RIO	3 meters	44L0005
1461 (copper)	0361	HSL/RIO	6 meters	97H7490
1462 (copper)	0368	HSL/RIO	15 meters	97H7491

Table 4. RIO/HSL cables (continued)

Cable feature	CCIN	Cable type	Length	Part number
1470 (fiber optic)	1470	Fiber optic	6 meters	21P5014
1471 (fiber optic)	1471	Fiber optic	30 meters	21P5015
1472 (fiber optic)	1472	Fiber optic	100 meters	21P5016
1473 (fiber optic)	1473	Fiber optic	250 meters	21P6326
1474 (copper)	1474	HSL/RIO to HSL-2/RIO-2	6 meters	21P5477
1475 (copper)	1475	HSL/RIO to HSL-2/RIO-2	10 meters	21P5458
1481 (copper)	1481	HSL-2/RIO-2	1 meters	21P5454
1482 (copper)	1482	HSL-2/RIO-2	3.5 meters	53P2676
1483 (copper)	1483	HSL-2/RIO-2	10 meters	21P5456
1485 (copper)	1485	HSL-2/RIO-2	15 meters	21P5457
1487 (copper)	1487	HSL-2/RIO-2	3 meter	53P5243
3146 (copper)	3146HSL-2/RIO-2	HSL-2/RIO-2	1 meter	21P5454
3147 (copper)	3147	HSL-2/RIO-2	3.5 meters	53P2676
3148 (copper)	3148	HSL-2/RIO-2	10 meters	21P5456
3156 (copper)	3156	HSL-2/RIO-2	1.75 meters	00P5238
3168 (copper)	3168	HSL-2/RIO-2	2.5 meters	00P5239
3170 (copper)	3170	HSL-2/RIO-2	8 meters	
7924 (copper)	7924	HSL-2/RIO-2	0.6 meters	

Table 5. SPCN cables

Cable feature	CCIN	Length	Part number
0369 (fiber optic)	0369	100 meters	21F9415
1463	9206	2 meters	87G6235
1464	9219	6 meters	21F9469
1465	9213	15 meters	21F9358
1466	9214	30 meters	21F9359
1468 (fiber optic)	1468	250 meters	21P6325
1827 (serial to SPCN)	1827	0.14 meter	97P4299
6001	6001	2 meters	87G6235
6006	6006	3 meters	09P1251
6007	6007	15 meters	21F9358
6008	6008	6 meters	21F9469
6029	6029	30 meters	21F9359

Before you begin

Understand prerequisites for installing, removing, or replacing features and parts.

DANGER

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

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

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

To Disconnect:

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

To Connect:

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

(D005)

DANGER

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

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



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

CAUTION

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

(R001)

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

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, wherever 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

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- 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 terra-cotta on a part of the hardware indicates a touch point where you can grip the hardware to remove it from or install it in the system, open or close a latch, and so on. Terra-cotta might also indicate that the part can be removed and replaced with the system or logical partition power on.
 5. Ensure that you have access to a medium, flat-blade screwdriver.
 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 IBM reseller, or your next level of support.
 8. If you are installing new hardware in a logical partition, you need to understand and plan for the implications of partitioning your system. For information, see Logical Partitioning, and then return to these instructions.

Replacing RIO/HSL or GX Dual-port 4x HCA cables

Learn more about replacing RIO/HSL or GX Dual-port 4x HCA cables.

This procedure describes the replacement of the cables concurrently, that is, while the system is still powered on. You will need to perform the following steps for both ends of the cable that you are replacing.

Attention: When the RIO/HSL or GX Dual-port 4x HCA cable is disconnected, it might result in the connection being lost between the units even after the cable is reconnected. This happens in rare cases depending on the state of the RIO/HSL or GX Dual-port 4x HCA hardware at both ends of the cable when the cable is disconnected. If the system is managed by an HMC, go to the HMC to cycle power to the affected unit. If the system is managed by AIX[®] or Linux[®] interfaces, fully power off the entire system. If the system is managed by i5/OS, follow the power off, power on instructions to power off the units, reconnect the RIO/HSL or GX Dual-port 4x HCA cable, and power the units back on.

Note: Additional information can be found in Setup your expansion unit. You do not need to power off the system or expansion unit. If you are replacing a cable between a system unit and an expansion unit, connect the expansion-unit end of the cable first. This will reduce the chances of the problem identified in the previous **Attention** notice from happening with the system unit. However, in rare cases the problem might still occur with the I/O unit.

Note: For additional systems that are not listed in this section, go to finding part locations. 

1. Disconnect both ends of the cable. See the previous note.
2. Is the connection an optical link?

No: Wait at least 30 seconds.

Yes: Go to Failed optical link recovery procedure.

Attention: For copper cables, you must fully connect the cable and tighten the connector's screws, if present, within 30 seconds of when the cable makes contact with the port. If you do not, the link will fail and you must disconnect and reconnect the cable again. If the connector screws are not tightened, errors will occur on the link and the link will fail.

3. Connect both ends of the new cable.
4. Verify that the repair was made successfully. After replacing a failed cable, the message **B7006985** with **4 of 12003206** (RIO/HSL loop recovered) is displayed, and **B7006985** with **12003208** (RIO/HSL link recovered)

Model 520 integrated RIO/HSL adapter

Learn more about the integrated RIO/HSL adapter.

The following information describes the model 520 integrated RIO/HSL adapter.

To set up your RIO/HSL or GX Dual-port 4x HCA cabling, see the Expansion unit topic.

Model 520 RIO/HSL connector locations

Learn more about model 520 RIO/HSL connector locations

The model 520 RIO/HSL functionality is built into the system backplane. No additional cards or adapters are required. The RIO/HSL connectors are located on the back of the system unit. The RIO1 connector is at location P1-T3, and the RIO0 connector is at location P1-T4. See the following figures for the connector locations:

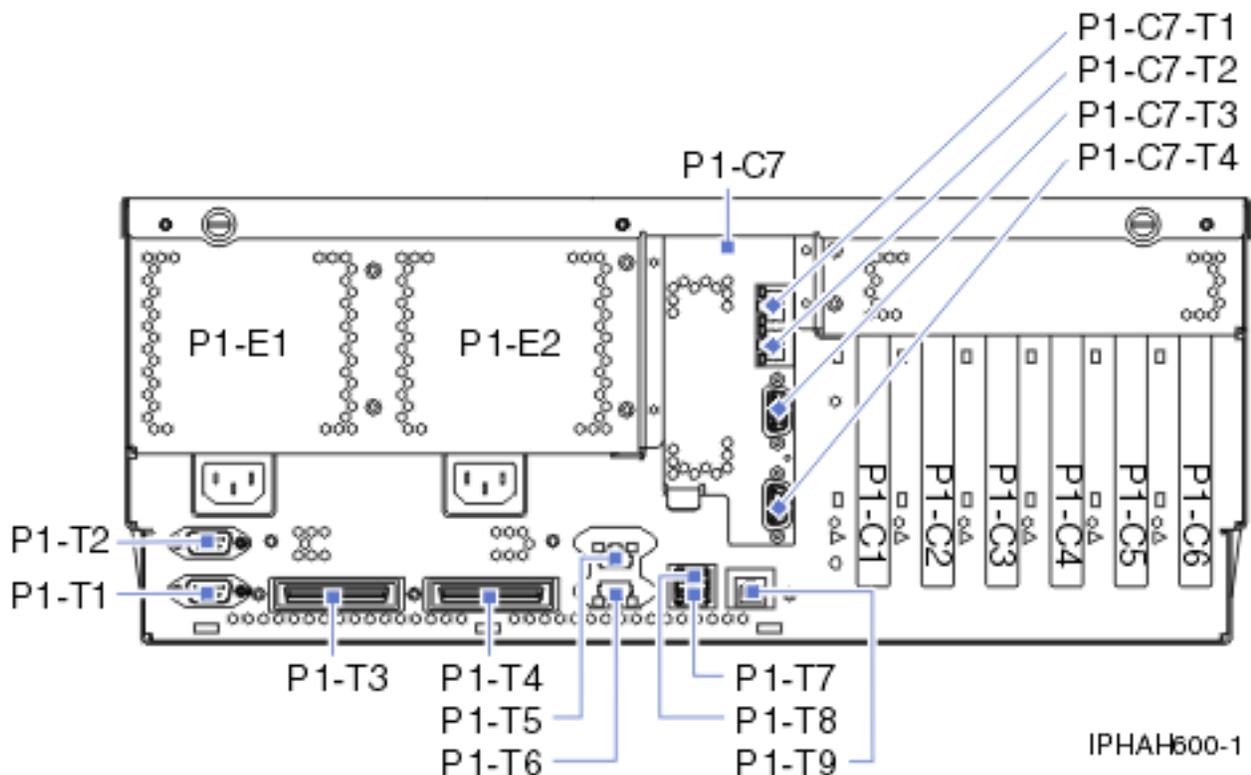


Figure 1. Model 520 rack-mounted system unit connectors

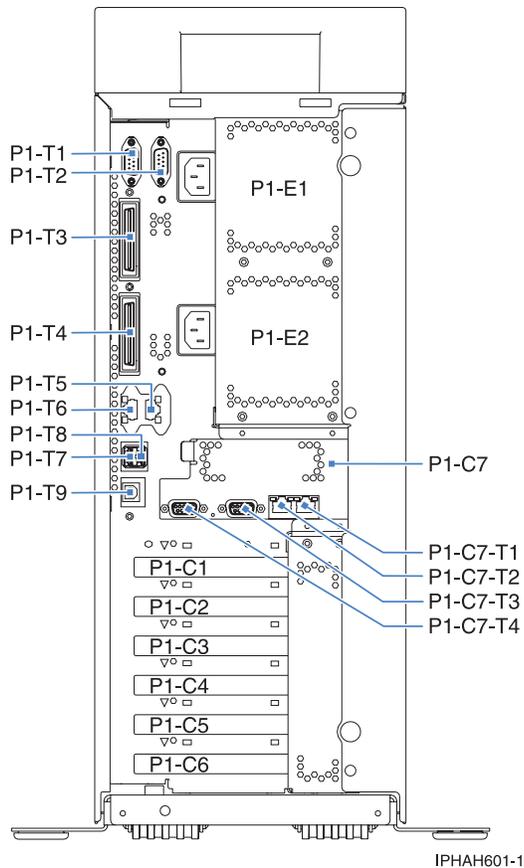


Figure 2. Model 520 stand-alone system unit connectors

Model 515, 520 (with 1.9 GHz processor), or 525 RIO/HSL adapter

Learn more about the RIO/HSL customer-replaceable adapter.

The following information describes the RIO/HSL customer replaceable adapter.

To set up your RIO/HSL or GX Dual-port 4x HCA cabling, see the Expansion unit topic.

Remove a RIO/HSL adapter from a model 515, 520 (with 1.9 GHz processor), or 525

Learn more about removing a RIO/HSL adapter.

The following procedure describes the removal of a RIO/HSL adapter.

Note: Removing this feature is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

1. Perform the prerequisite tasks described in “Before you begin” on page 5.
2. Power off the system unit to remove an adapter. See “Stop the system or logical partition” on page 59.
3. If necessary, disconnect any cables connected to the adapter at the back of the system.
4. Place the server or unit in the service position. See “Place the rack-mounted system or expansion unit in the service position” on page 70.

5. Remove the cover from the system unit. Unscrew the retaining screws **A** and then slide back cover **B** to remove.

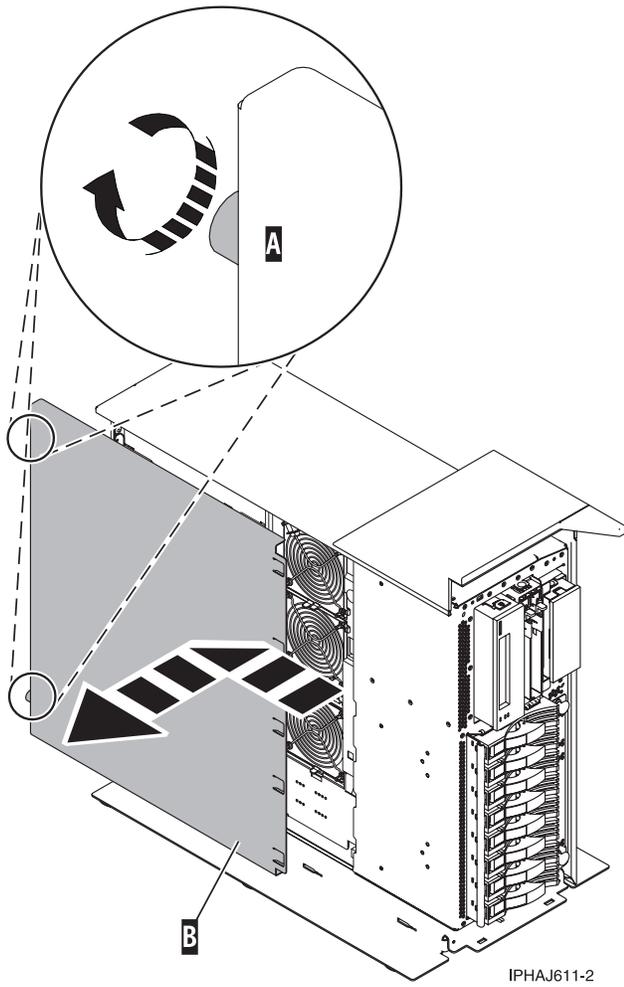
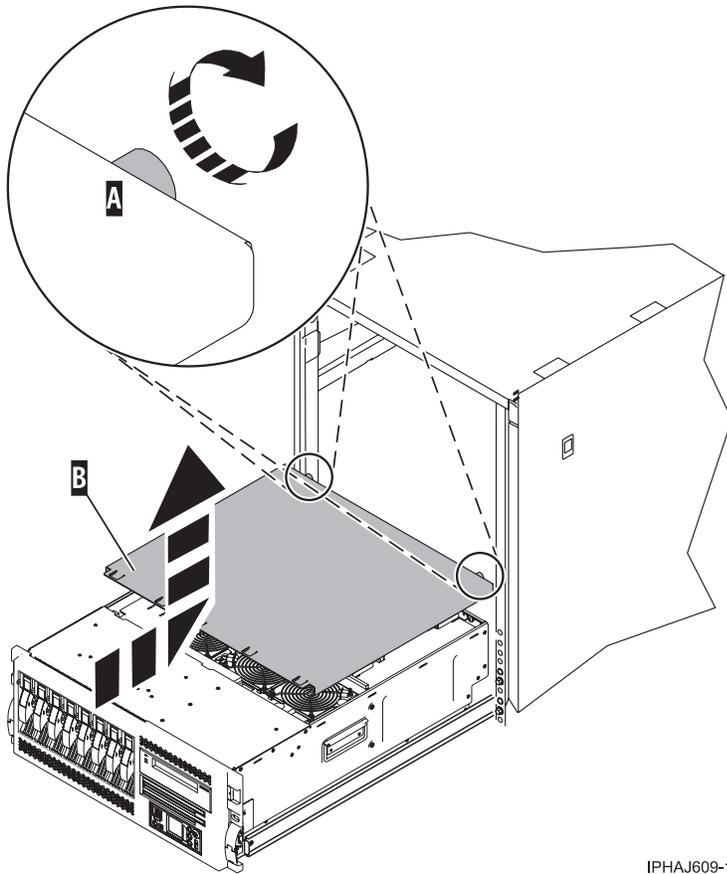


Figure 3. Cover removal on a stand-alone system



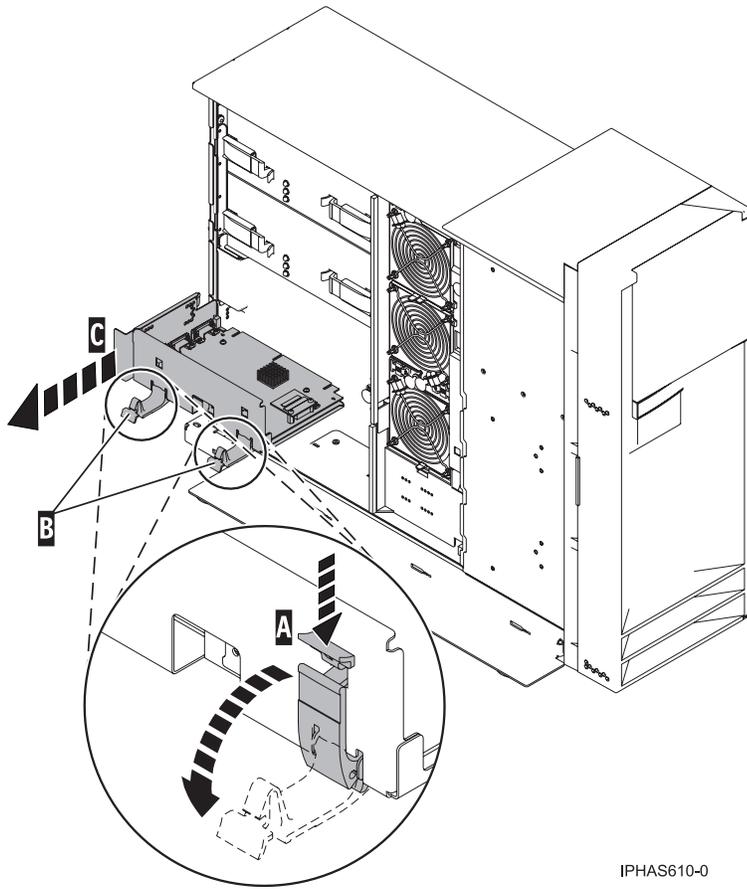
IPHAJ609-1

Figure 4. Cover removal on a rack-mounted system

6. Attach the wrist strap.

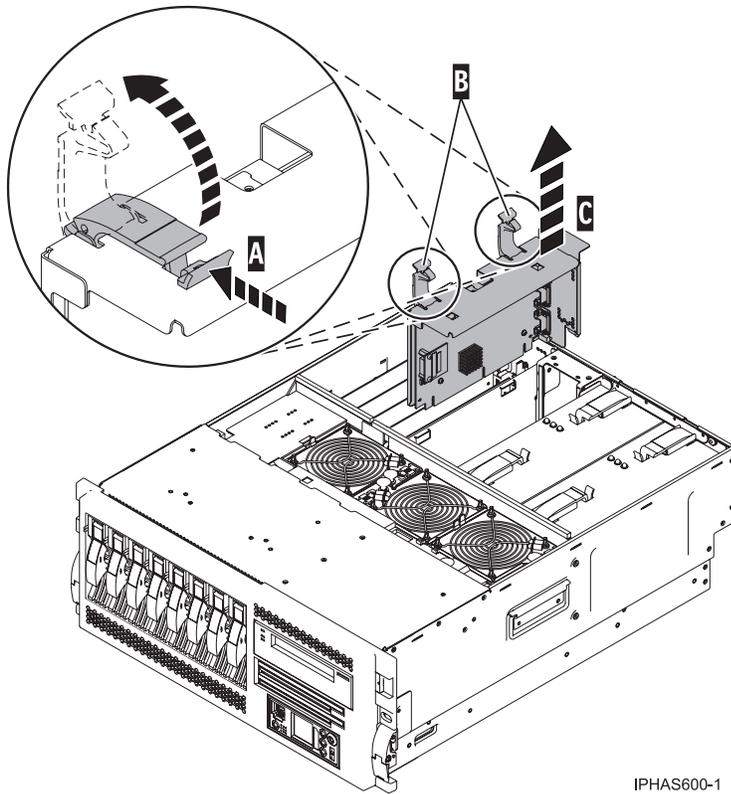
Attention:

- 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. Press tabs on the blue locking latches **A** on the FSP card inward, then pull up on latches until they unlatch **B**. See following figure.
 8. Remove the FSP card and the adapter. The RIO/HSL adapter is attached to the FSP card mounting bracket. The adapter mounting bracket has a hole at the bottom. The FSP card mounting bracket has a stud at the bottom of the bracket that fits into the hole in the adapter bracket. The top of the FSP bracket has two small latches that slide into the cutouts on the top of the RIO/HSL bracket.



IPHAS610-0

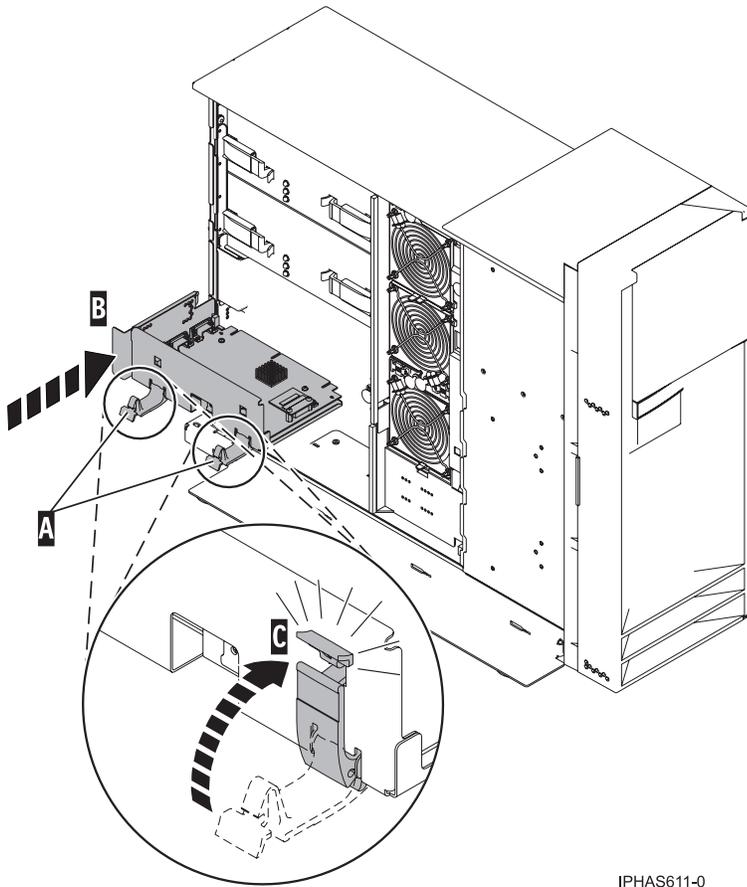
Figure 5. FSP card removal on a stand-alone system



IPHAS600-1

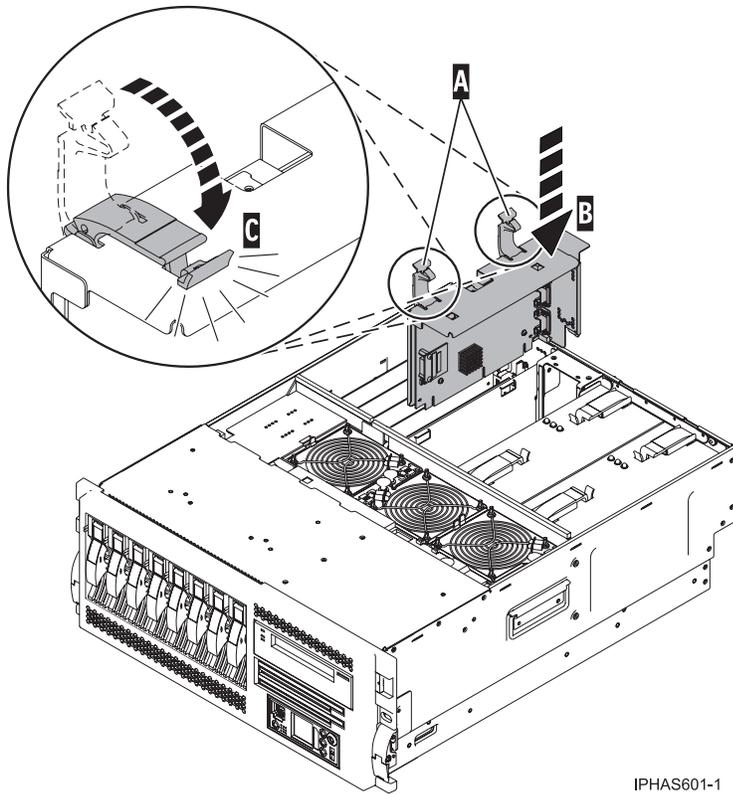
Figure 6. FSP card removal on a rack-mounted system

9. Remove the RIO/HSL adapter from the FSP card mounting bracket. Slide the adapter bracket back to disengage the latches on the FSP card mounting bracket. Make sure the stud on the bottom of the FSP card mounting bracket is unseated from the adapter bracket.
10. Reinstall the FSP card.
11. Push down on the blue locking latches A until they latch C.



IPHAS611-0

Figure 7. FSP card installation on a stand-alone system



IPHAS601-1

Figure 8. FSP card installation on a rack-mounted system

12. Replace the service access cover. For instructions, see “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 67.

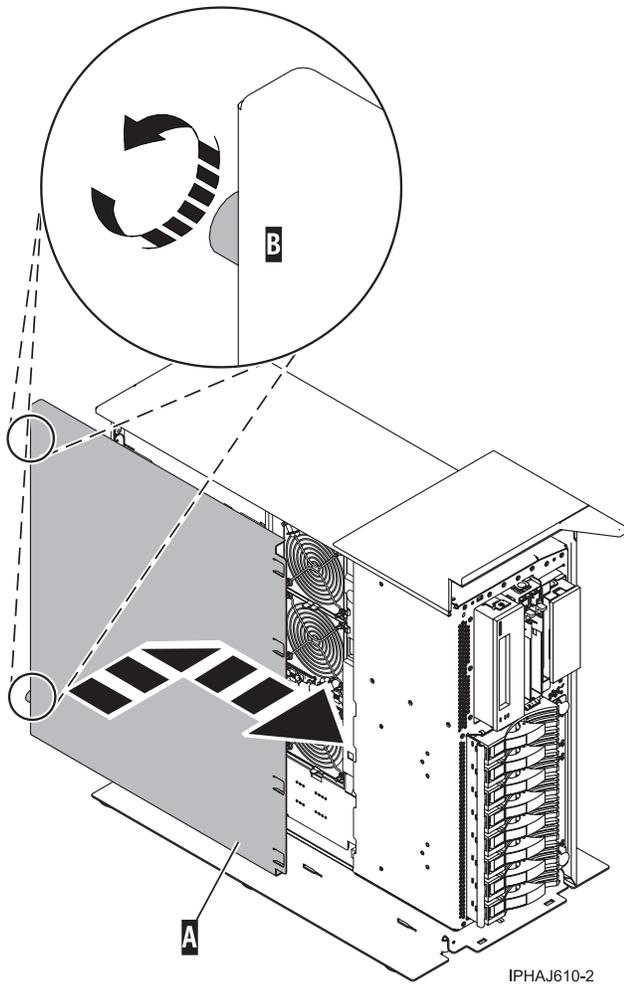
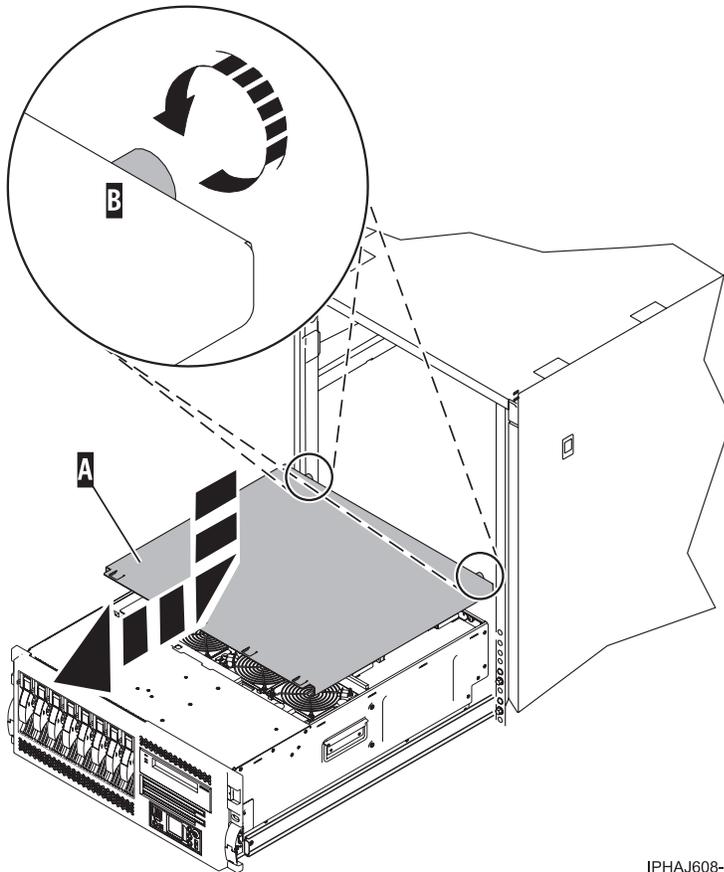


Figure 9. Installing a cover on a stand-alone system



IPHAJ608-1

Figure 10. Installing a cover on a rack-mounted system

13. If you are working on a rack-mounted system unit, ensure that the system cables are routed correctly through the cable-management arm.
14. Place the server or unit in the operating position. See “Place the rack-mounted system or expansion unit in the operating position” on page 74.
15. Reconnect all power and signal cables to their respective connectors.
16. Close the back rack door or the back system door.
17. Start the system. See “Start the system or logical partition” on page 57.
18. Verify that the new resource is working correctly. For instructions, see “Verify the installed part” on page 79.

Replace a RIO/HSL adapter in a model 515, 520 (with 1.9 GHz processor), or 525

Learn more about replacing a RIO/HSL adapter.

The following procedure describes the replacement of the adapter.

Note: Replacing this feature is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

1. Perform the prerequisite tasks described in “Before you begin” on page 5.
2. Power off the system unit to remove a RIO/HSL adapter. See “Stop the system or logical partition” on page 59.
3. If necessary, disconnect any cables connected to the adapter at the back of the system.

4. Place the server or unit in the service position. See “Place the rack-mounted system or expansion unit in the service position” on page 70.
5. Remove the cover from the system unit. Unscrew the retaining screws **A** and then slide back cover **B** to remove.

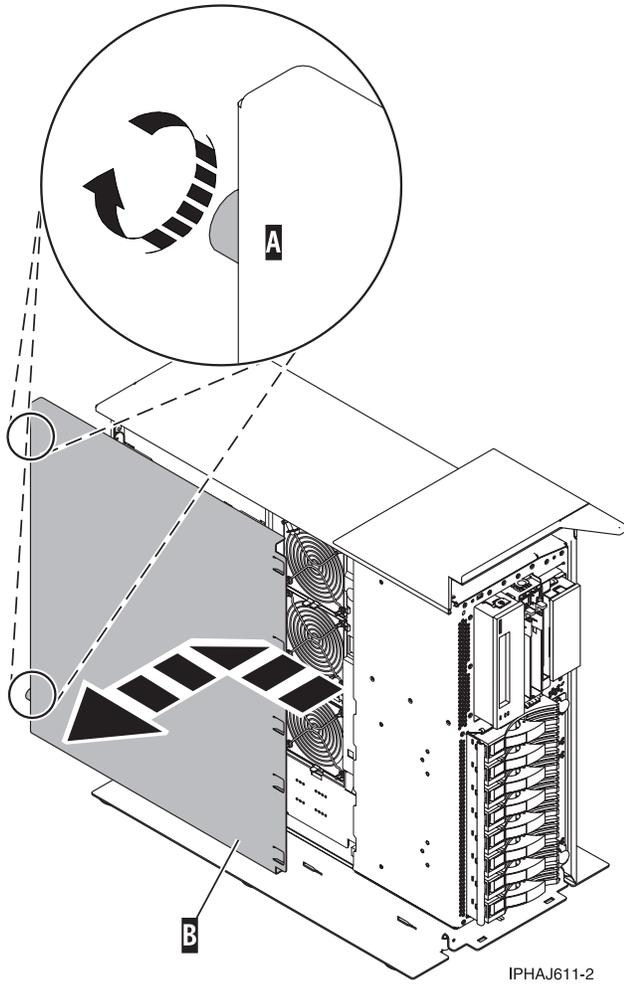
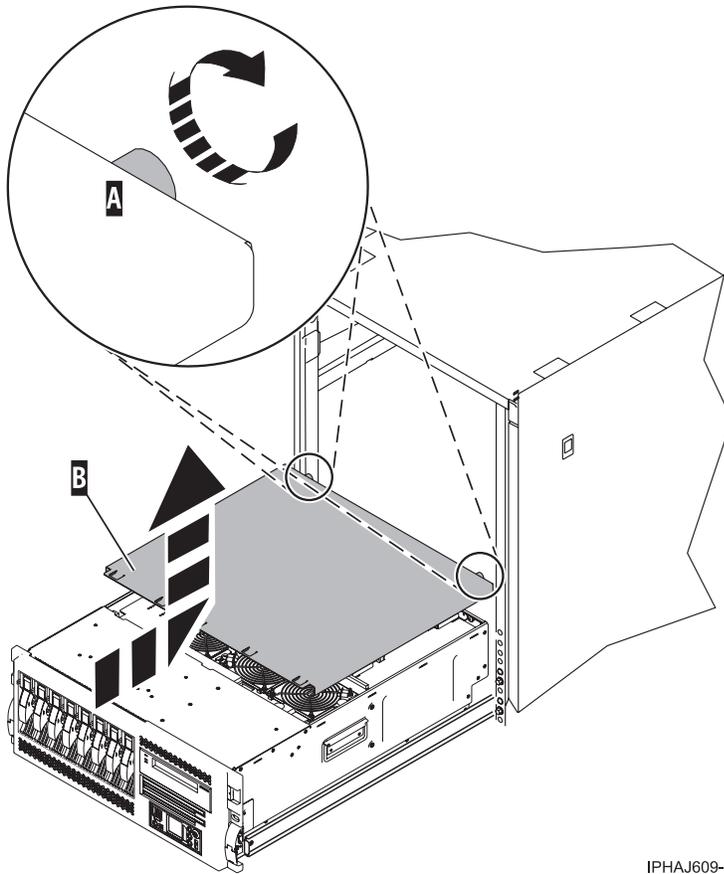


Figure 11. Cover removal on a stand-alone system



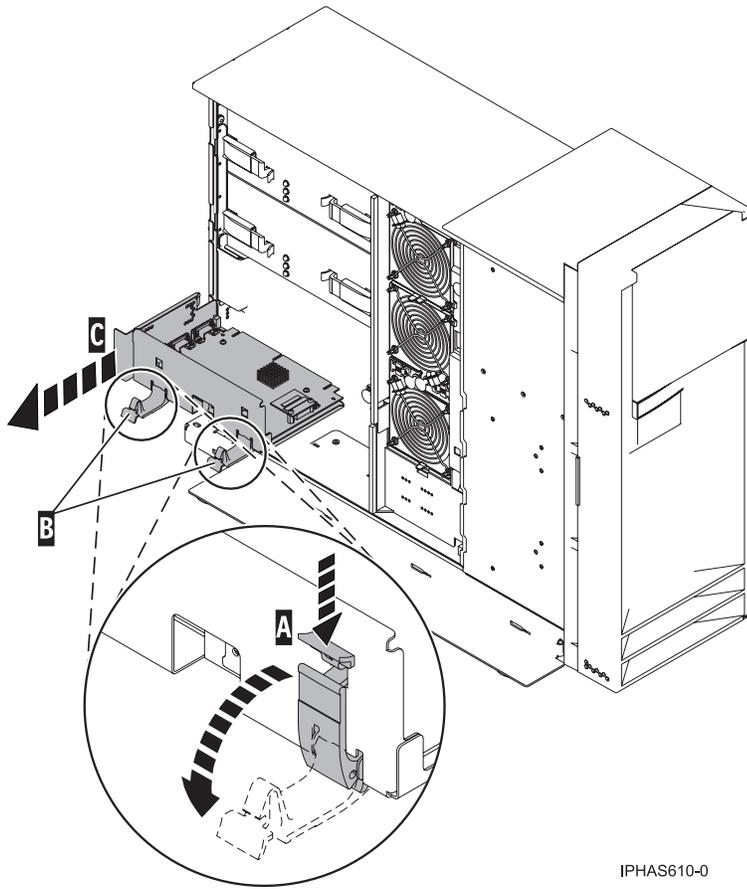
IPHAJ609-1

Figure 12. Cover removal on a rack-mounted system

6. Attach the wrist strap.

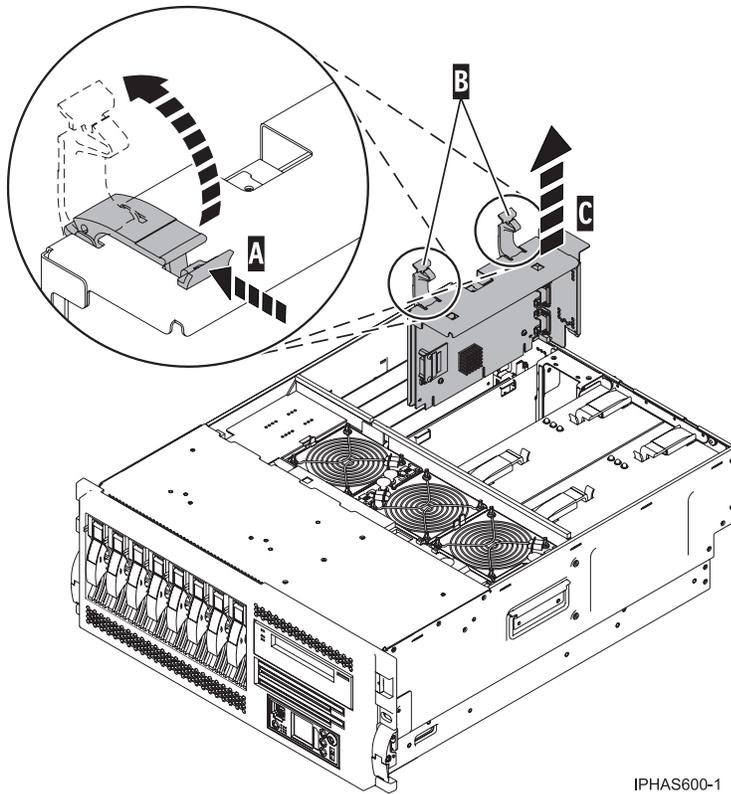
Attention:

- 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. Press tabs on the blue locking latches **A** on the FSP card inward, then pull up on latches until they unlatch **B**. See following figure.
 8. Remove the FSP card and adapter. The RIO/HSL adapter is attached to the FSP card mounting bracket. The adapter mounting bracket has a hole at the bottom. The FSP card mounting bracket has a stud at the bottom of the bracket that fits into the hole in the adapter bracket. The top of the FSP bracket has two small latches that slide into the cutouts on the top of the RIO/HSL bracket.



IPHAS610-0

Figure 13. FSP card removal on a stand-alone system



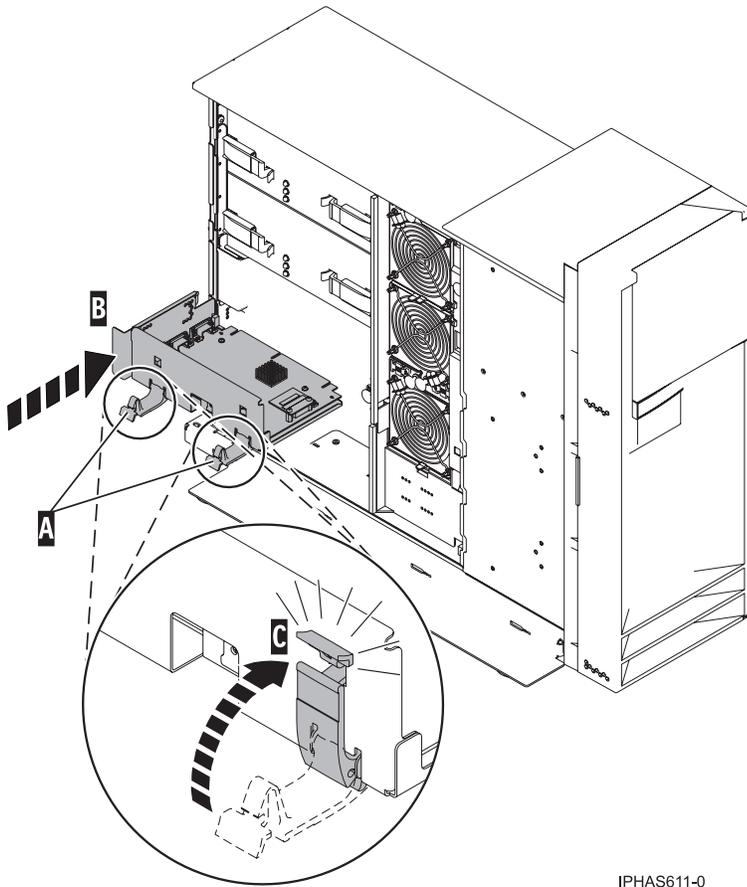
IPHAS600-1

Figure 14. FSP card removal on a rack-mounted system

9. Remove the existing adapter from the FSP card mounting bracket. Slide the adapter bracket back to disengage the latches on the FSP card mounting bracket. Make sure the stud on the bottom of the FSP card mounting bracket is unseated from the adapter bracket.
10. Install a new RIO/HSL adapter. Slide the retaining tabs of the adapter into the appropriate slots on the FSP card mounting bracket. Seat the stud on the FSP card mounting bracket into the retaining hole on the adapter.
11. Reinstall the FSP card.

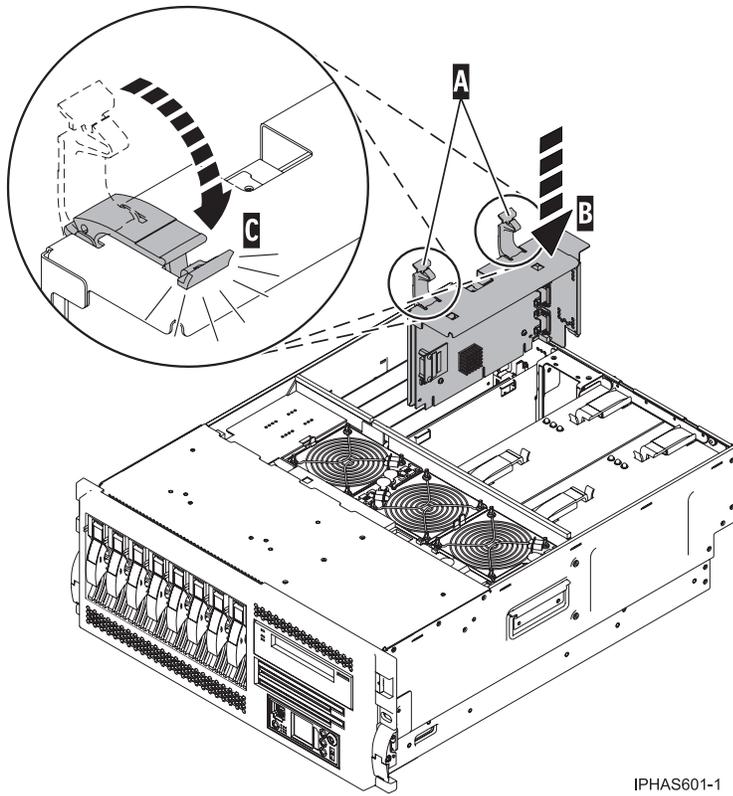
Important: When installing the FSP card mounting bracket with the RIO/HSL adapter inserted, all memory latches must be closed. If there are empty memory slots and the memory latches are left open, the FSP card mounting bracket with the RIO/HSL adapter inserted cannot be installed.

12. Push down on the blue locking latches A until they latch C.



IPHAS611-0

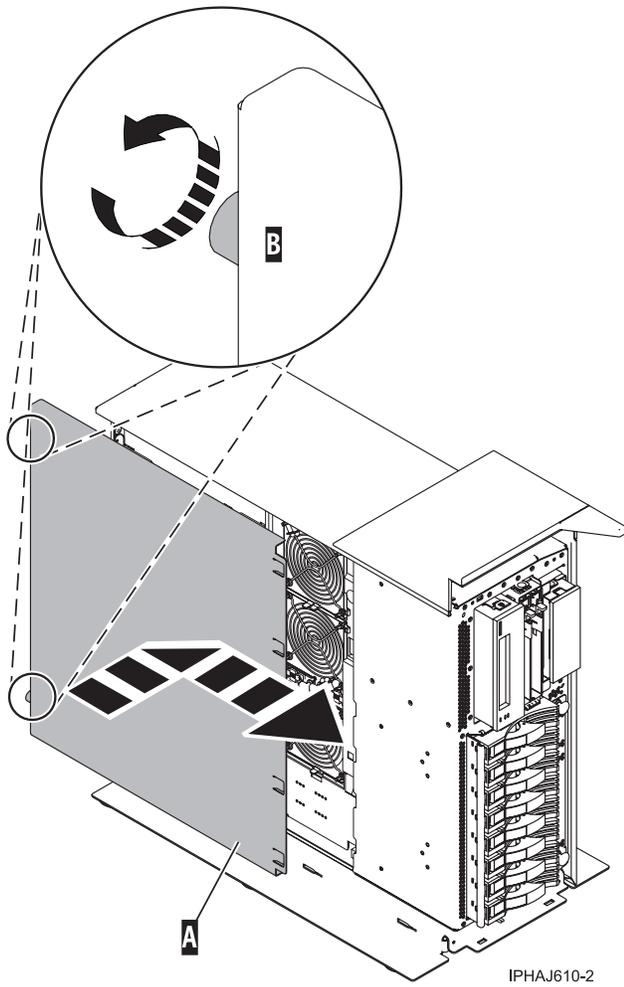
Figure 15. FSP card installation on a stand-alone system



IPHAS601-1

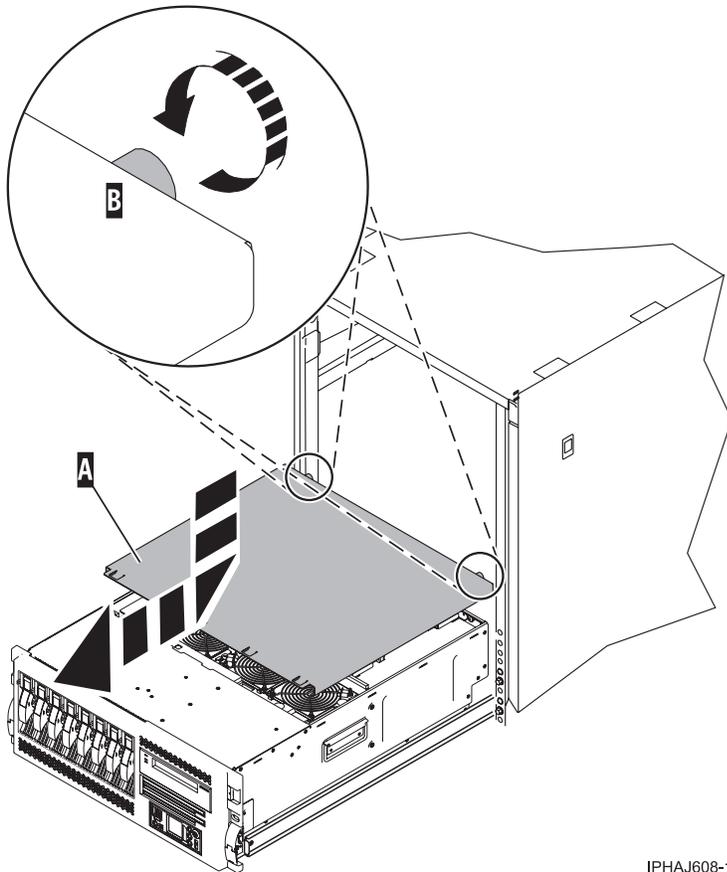
Figure 16. FSP card installation on a rack-mounted system

13. Replace the service access cover. For instructions, see “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 67.



IPHAJ610-2

Figure 17. Cover installation on a stand-alone system



IPHAJ608-1

Figure 18. Cover installation on a rack-mounted system

14. If you are working on a rack-mounted system unit, ensure that the system cables are routed correctly through the cable-management arm.
15. Place the server or unit in the operating position. See “Place the rack-mounted system or expansion unit in the operating position” on page 74.
16. Reconnect all power and signal cables to their respective connectors.
17. Close the back rack door or the back system door.
18. Start the system. See “Start the system or logical partition” on page 57.
19. Verify that the new resource is working correctly. For instructions, see “Verify the installed part” on page 79.

Install a RIO/HSL adapter in a model 515, 520 (with 1.9 GHz processor), or 525

Learn more about installing a RIO/HSL adapter.

The following procedure describes the installation of a RIO/HSL adapter.

Note: Installing this feature is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

1. Perform the prerequisite tasks described in “Before you begin” on page 5.
2. Power off the system unit to remove a RIO/HSL adapter. See “Stop the system or logical partition” on page 59.
3. If necessary, disconnect any cables connected to the adapter at the back of the system.

4. Place the server or unit in the service position. See “Place the rack-mounted system or expansion unit in the service position” on page 70.
5. Remove the cover from the system unit. Unscrew the retaining screws **A** and then slide back cover **B** to remove.

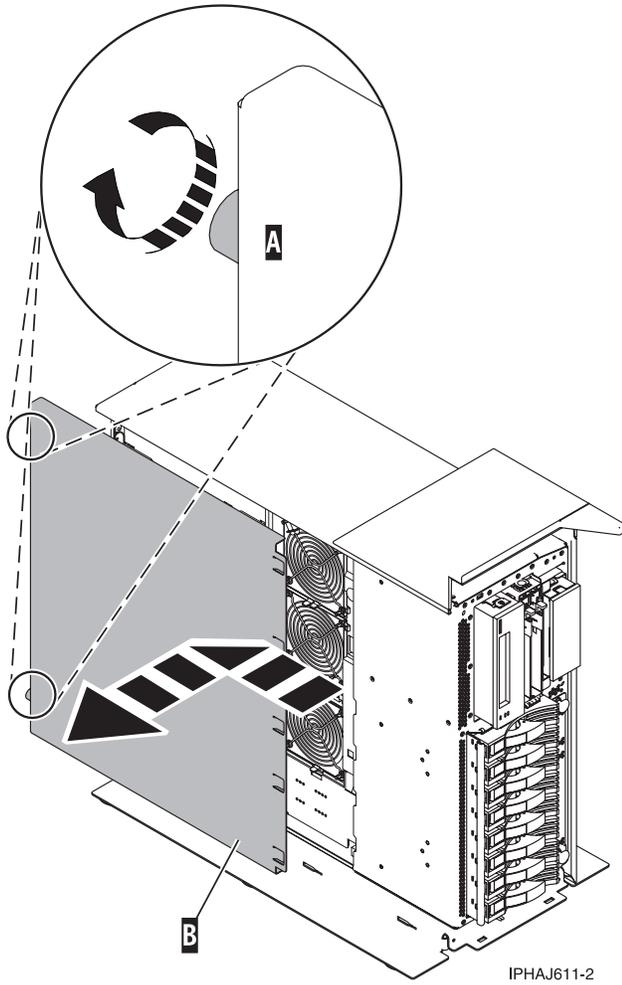
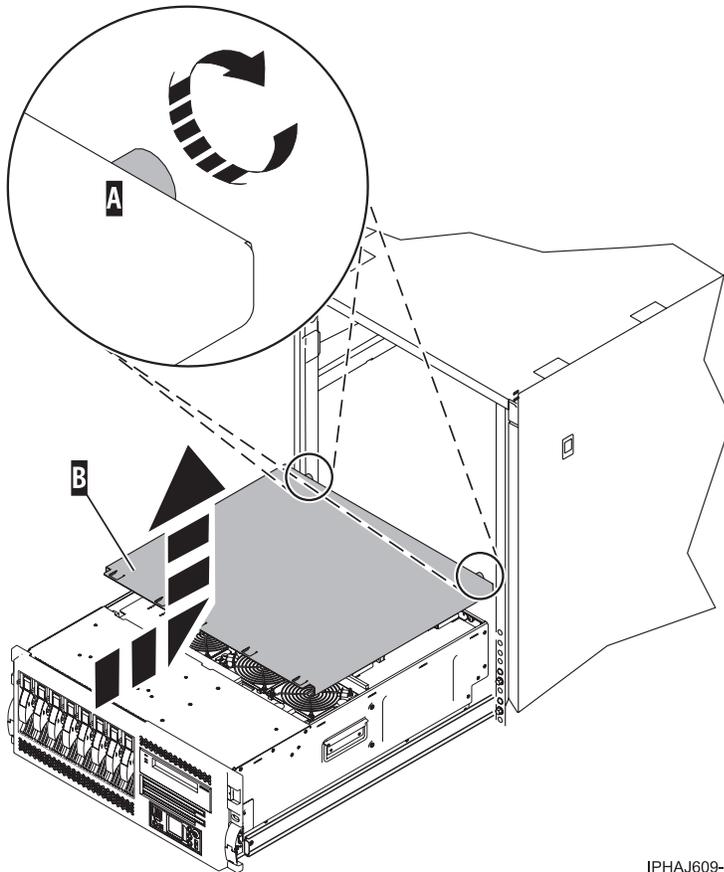


Figure 19. Cover removal on a stand-alone system



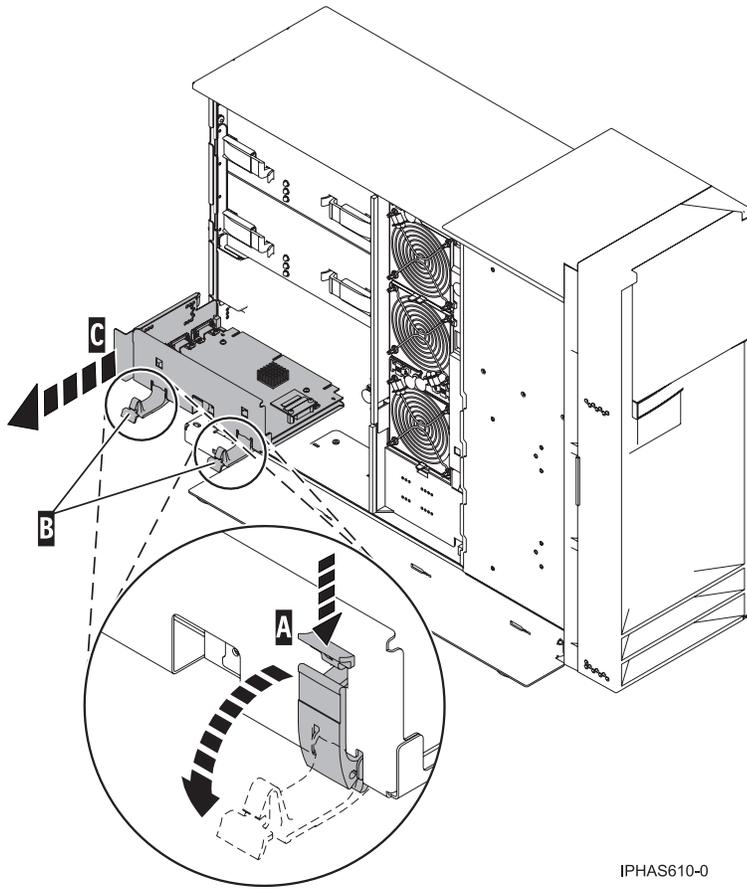
IPHAJ609-1

Figure 20. Cover removal on a rack-mounted system

6. Attach the wrist strap.

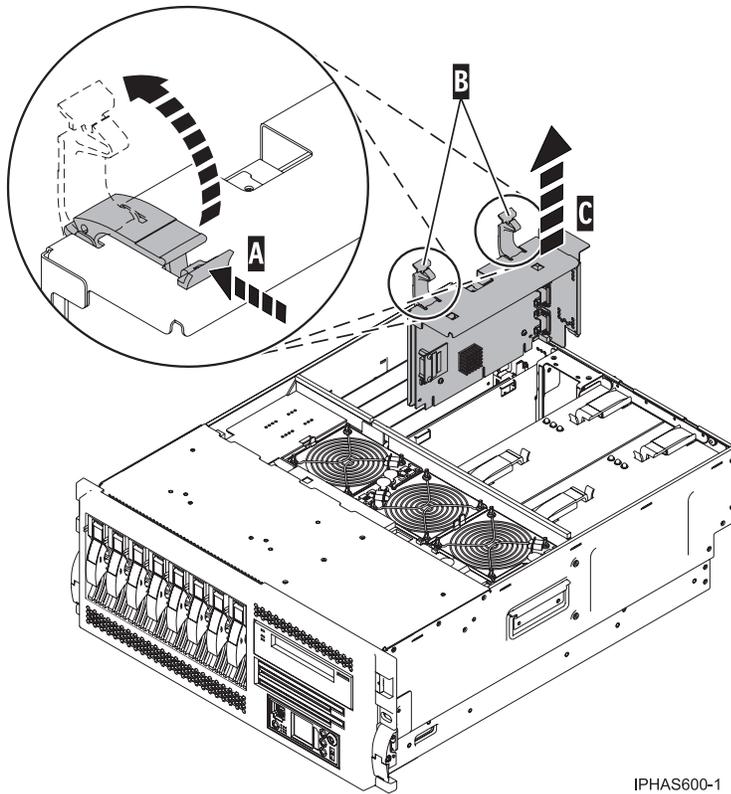
Attention:

- 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. Press tabs on the blue locking latches **A** on the FSP card inward, then pull up on latches until they unlatch **B**. See following figure.
 8. Remove the FSP card.



IPHAS610-0

Figure 21. FSP card removal on a stand-alone system



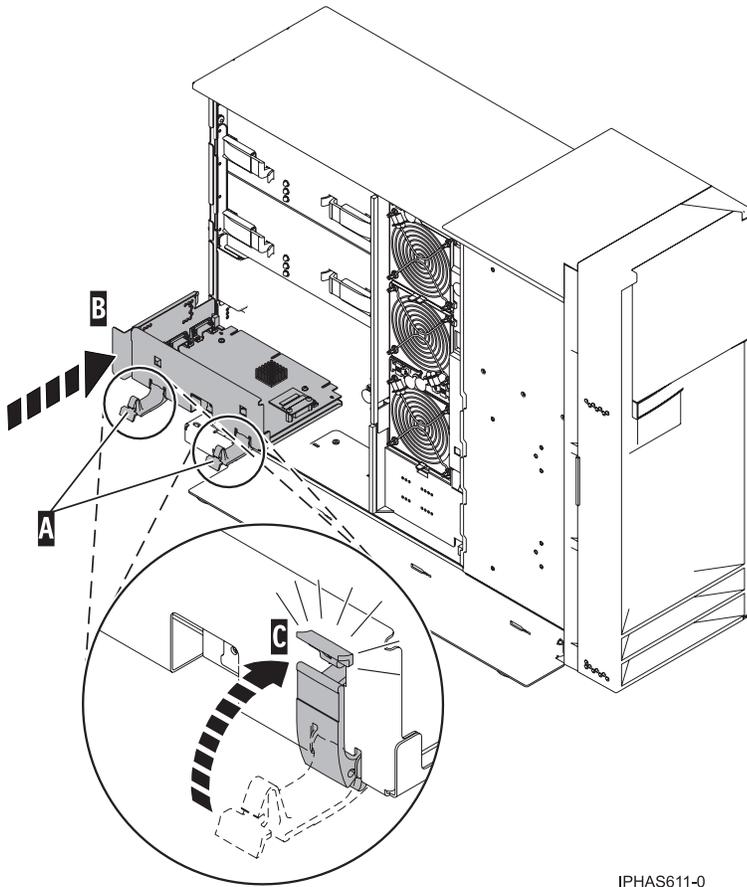
IPHAS600-1

Figure 22. FSP card removal on a rack-mounted system

9. Install a new RIO/HSL adapter. Slide the retaining tabs of the adapter into the appropriate slots on the FSP card mounting bracket. Seat the stud on the FSP card mounting bracket into the retaining hole on the adapter.
10. Reinstall the FSP card.

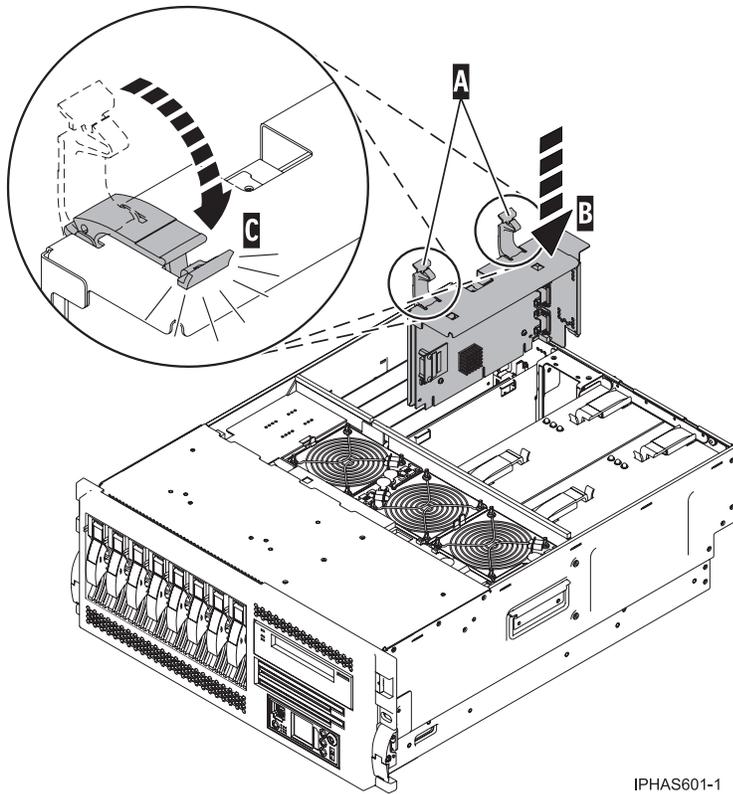
Important: When installing the FSP card mounting bracket with the RIO/HSL adapter inserted, all memory latches must be closed. If there are empty memory slots and the memory latches are left open, the FSP card mounting bracket with the RIO/HSL adapter inserted cannot be installed.

11. Push down on the blue locking latches **A** until they latch **C**.



IPHAS611-0

Figure 23. FSP card installation on a stand-alone system



IPHAS601-1

Figure 24. FSP card installation on a rack-mounted system

12. Replace the service access cover. For instructions, see “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 67.

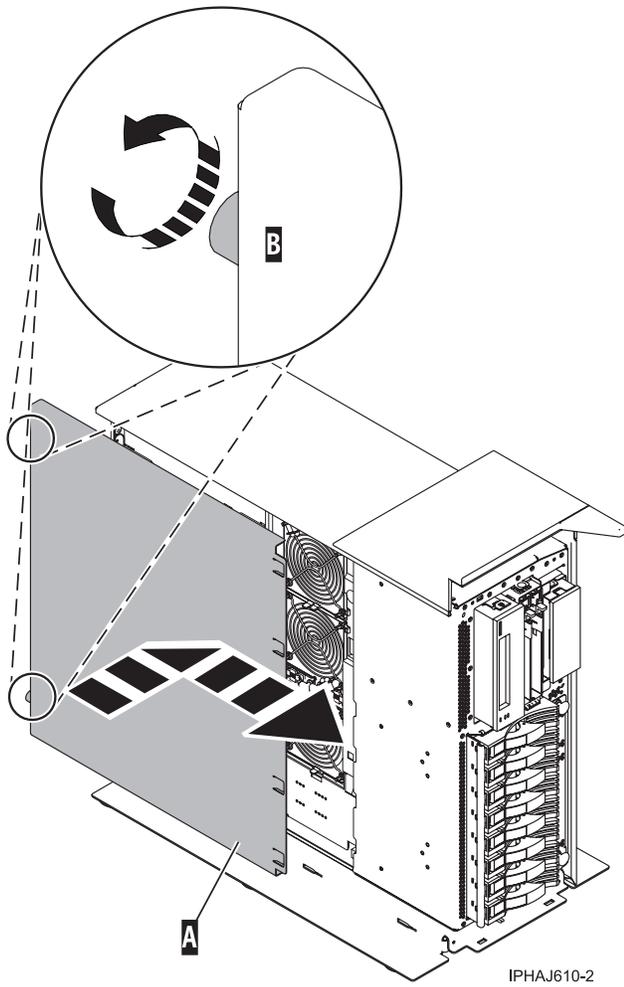
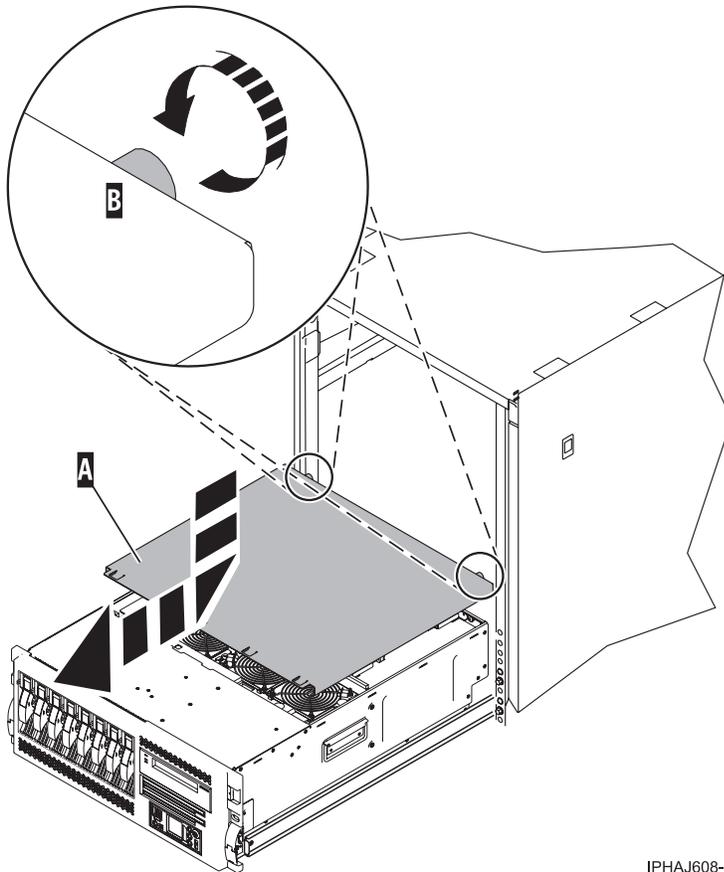


Figure 25. Cover installation on a stand-alone system



IPHAJ608-1

Figure 26. Cover install on a rack-mounted system

13. If you are working on a rack-mounted system unit, ensure that the system cables are routed correctly through the cable-management arm.
14. Place the server or unit in the operating position. See “Place the rack-mounted system or expansion unit in the operating position” on page 74.
15. Reconnect all power and signal cables to their respective connectors.
16. Close the back rack door or the back system door.
17. Start the system. See “Start the system or logical partition” on page 57.
18. Verify that the new resource is working correctly. For instructions, see “Verify the installed part” on page 79.

Model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter

Learn more about the model 550, 550Q, and 720 RIO/HSL or GX Dual-port 4x HCA adapter.

The following procedures describe the removal, replacement, and installation of the model 550, 550Q, and 720 RIO/HSL or GX Dual-port 4x HCA adapter.

Replacing this feature is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

To set up your RIO/HSL or GX Dual-port 4x HCA cabling, see the Expansion unit topic.

Remove a model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter

Learn more about removing a model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter.

The following procedure describes the removal of the model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the following steps for removing the model 550, 550Q, and 720 RIO/HSL or GX Dual-port 4x HCA adapter. See “Remove a part using the Hardware Management Console” on page 76.

To remove the adapter from a system that is not managed by the HMC, complete the following steps:

1. Perform the prerequisite tasks described in “Before you begin” on page 5.
2. Identify the failing part. For instructions, see “Identify a failing part” on page 85.
3. Stop the system. See “Stop the system or logical partition” on page 59.
4. On a rack-mounted system unit, open the back rack door.
5. Disconnect the power source from the system by unplugging the system.

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

6. If necessary, disconnect any cables connected to the adapter at the back of the system.
7. Place the server or unit in the service position. See “Place the rack-mounted system or expansion unit in the service position” on page 70.
8. Remove the access cover. See “Remove the service access cover from the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 64.
9. Attach the wrist strap.

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.
10. On the RIO/HSL or GX Dual-port 4x HCA adapter assembly, located in expansion slot 5, press together and pull up on the blue locking latches **A** until they unlatch **B**.
 11. Carefully grasp the RIO/HSL or GX Dual-port 4x HCA adapter assembly and pull it out of the expansion slot **C**.

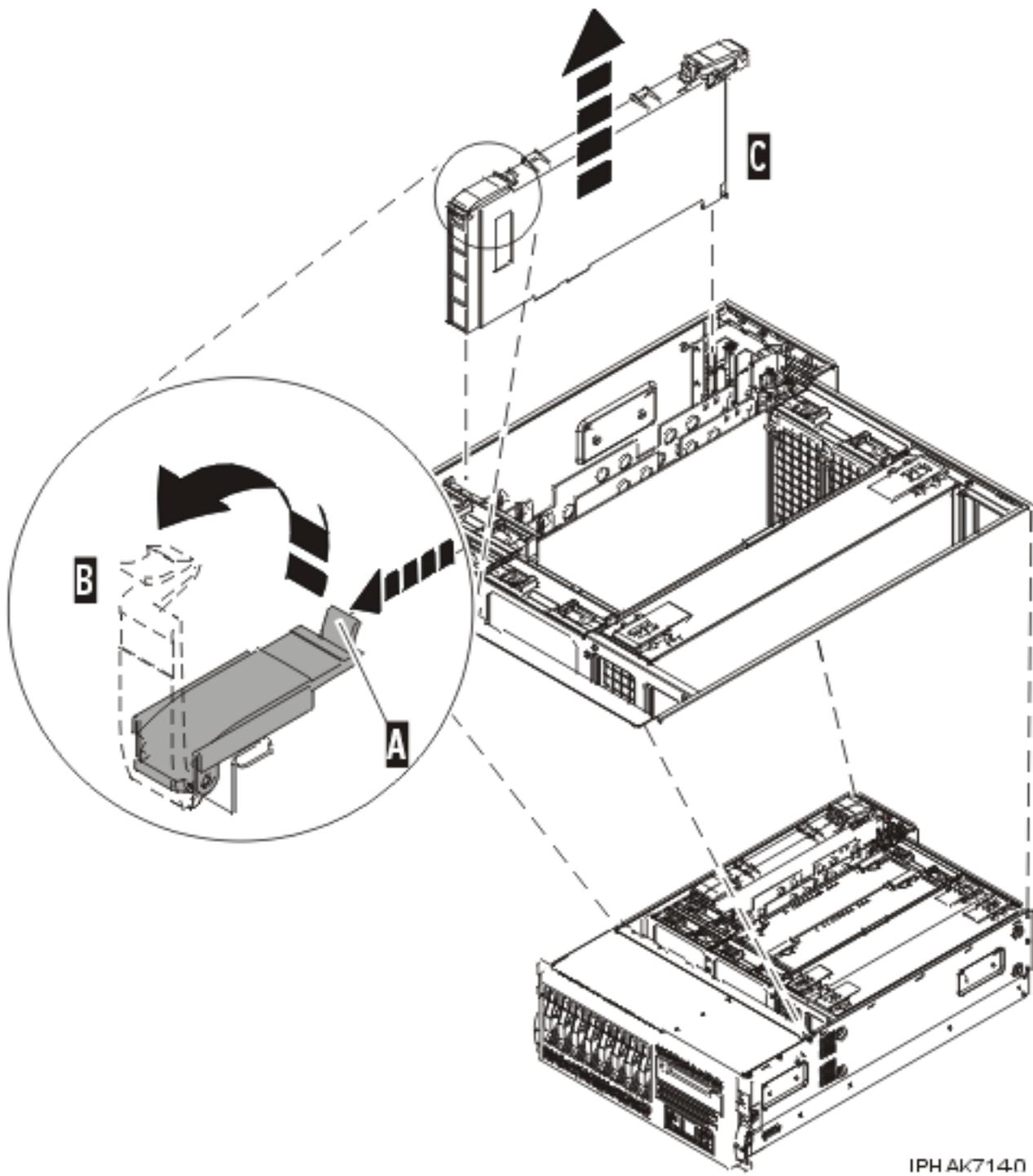
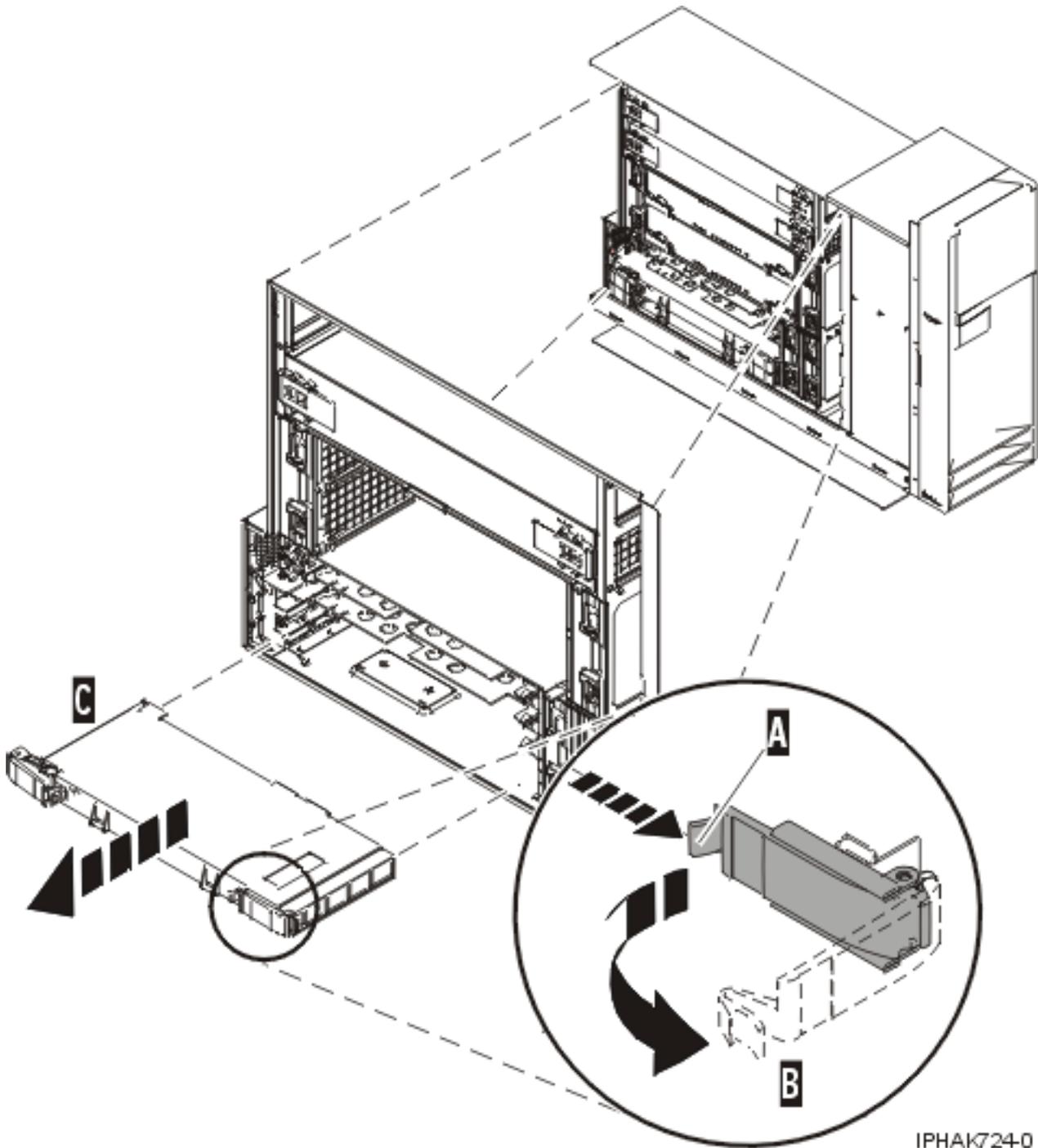


Figure 27. Model 550, 550Q, and 720 adapter removal on a rack-mounted system



IPHAK724-0

Figure 28. Model 550, 550Q, and 720 adapter removal on a stand-alone system

12. Place an adapter or a filler panel in the expansion slot of the system unit for proper air flow and cooling.
 - To replace the adapter, see “Replace a model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter” on page 39.
 - If you are not replacing the adapter, place a filler panel into the slot and continue with the next step.
13. Replace the adapter-retaining bracket for the expansion slot.

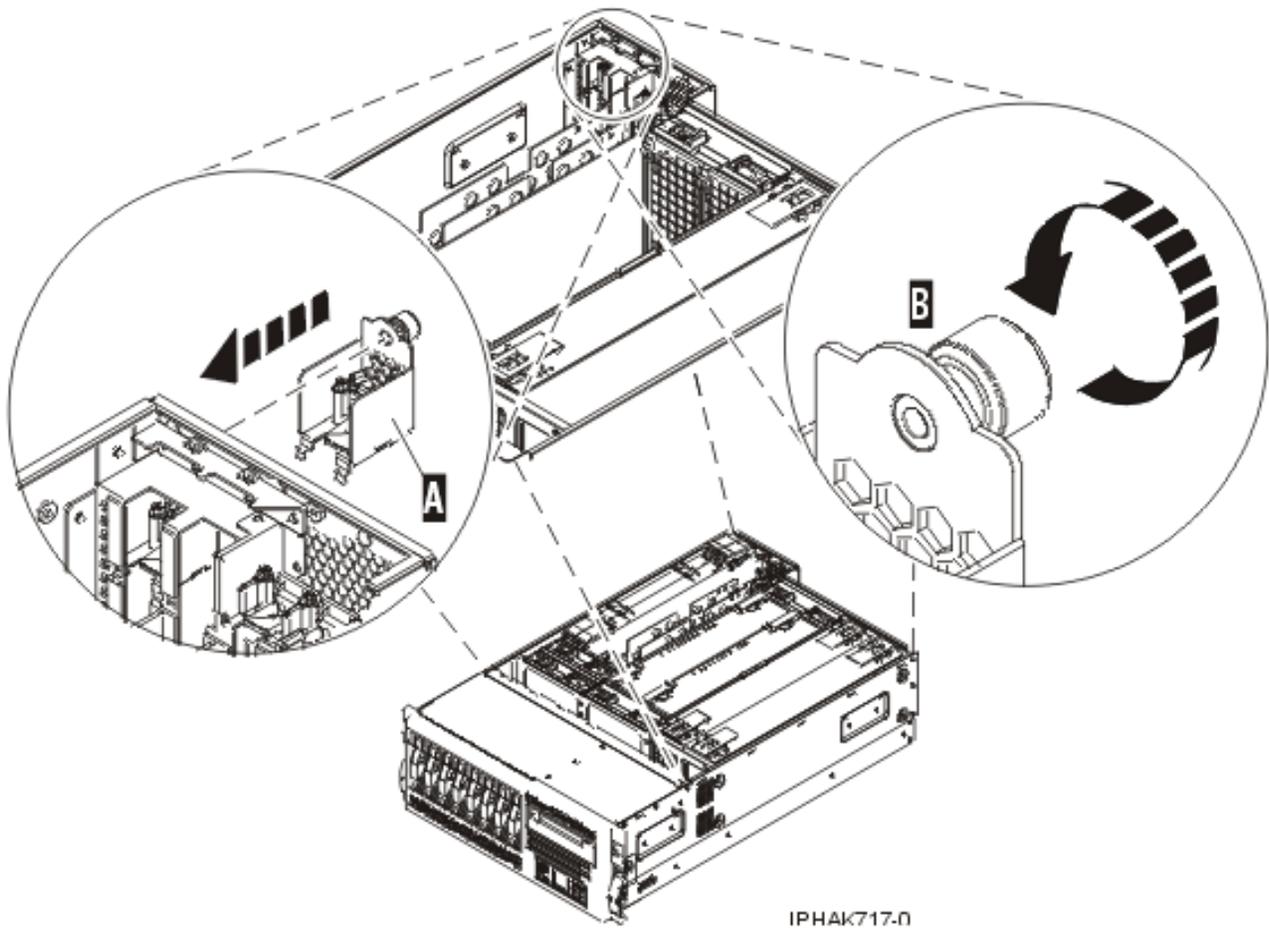
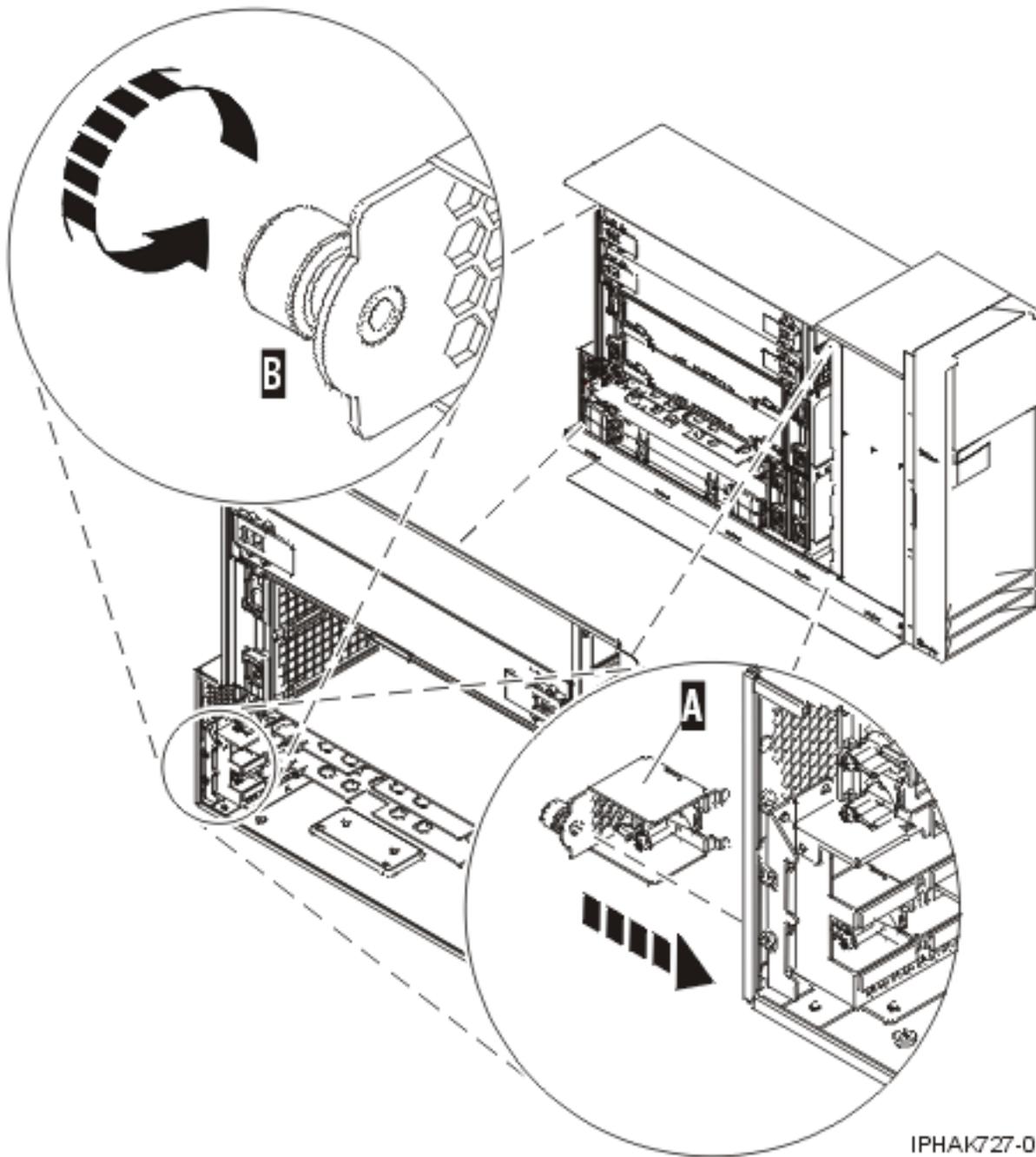


Figure 29. Model 550, 550Q, and 720 adapter-retaining-bracket installation on a rack-mounted system



IPHA1727-0

Figure 30. Model 550, 550Q, and 720 adapter retaining bracket installation on a stand-alone system

14. Seal the expansion slot using an expansion slot cover.
15. Replace the service access cover. For instructions, see “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 67.
16. If you are working on a rack-mounted system unit, ensure that the system cables are routed correctly through the cable-management arm.
17. Place the server or unit in the operating position. See “Place the rack-mounted system or expansion unit in the operating position” on page 74.
18. Reconnect all power and signal cables to their respective connectors.
19. Close the back rack door or the back system door.

20. Start the system. See “Start the system or logical partition” on page 57.
21. Verify that the new resource is working correctly. For instructions, see “Verify the installed part” on page 79.

Replace a model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter

Learn more about replacing a model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter.

The following procedure describes the replacement of the model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter.

Note: Replacing this feature is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the model 550, 550Q, and 720 RIO/HSL or GX Dual-port 4x HCA adapter. See “Replace a part using the Hardware Management Console” on page 77.

Attention: When you replace an GX Dual-port 4x HCA adapter, you must review the LPAR partition and GUID offset settings. See “Installing a model 550, 550Q, and 720 RIO/HSL or GX Dual-port 4x HCA adapter” in *Guide to Clustering systems using InfiniBand hardware*.

To replace the adapter on a system that is not managed by the HMC, complete the following steps:

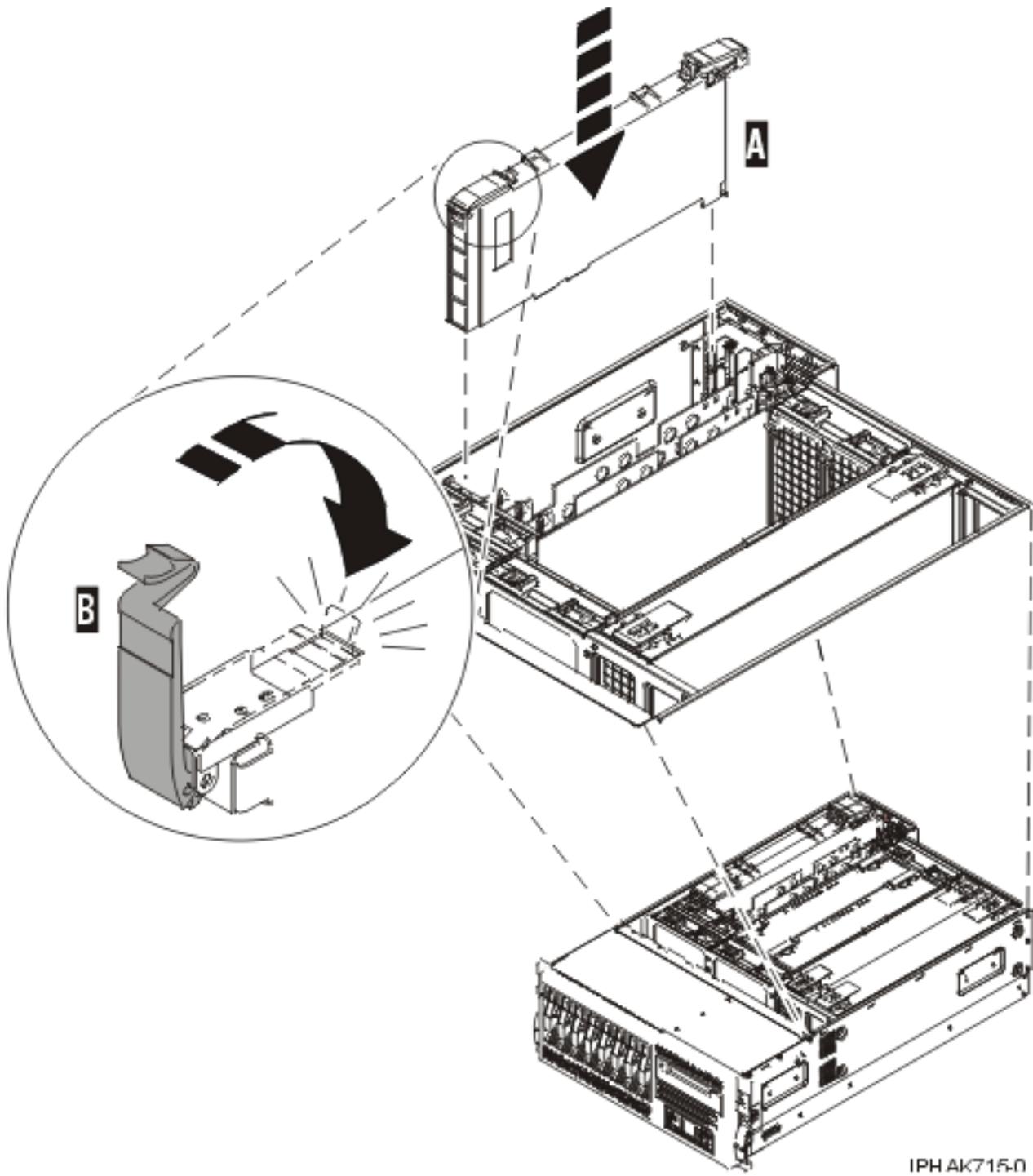
1. Remove the adapter from the system unit. See “Remove a model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter” on page 34.
2. Attach the wrist strap.

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. Carefully grasp the adapter assembly by its top edge, and align the adapter assembly with the slot and its connector on the system backplane.
 4. Press the adapter assembly firmly into its connector **A**.

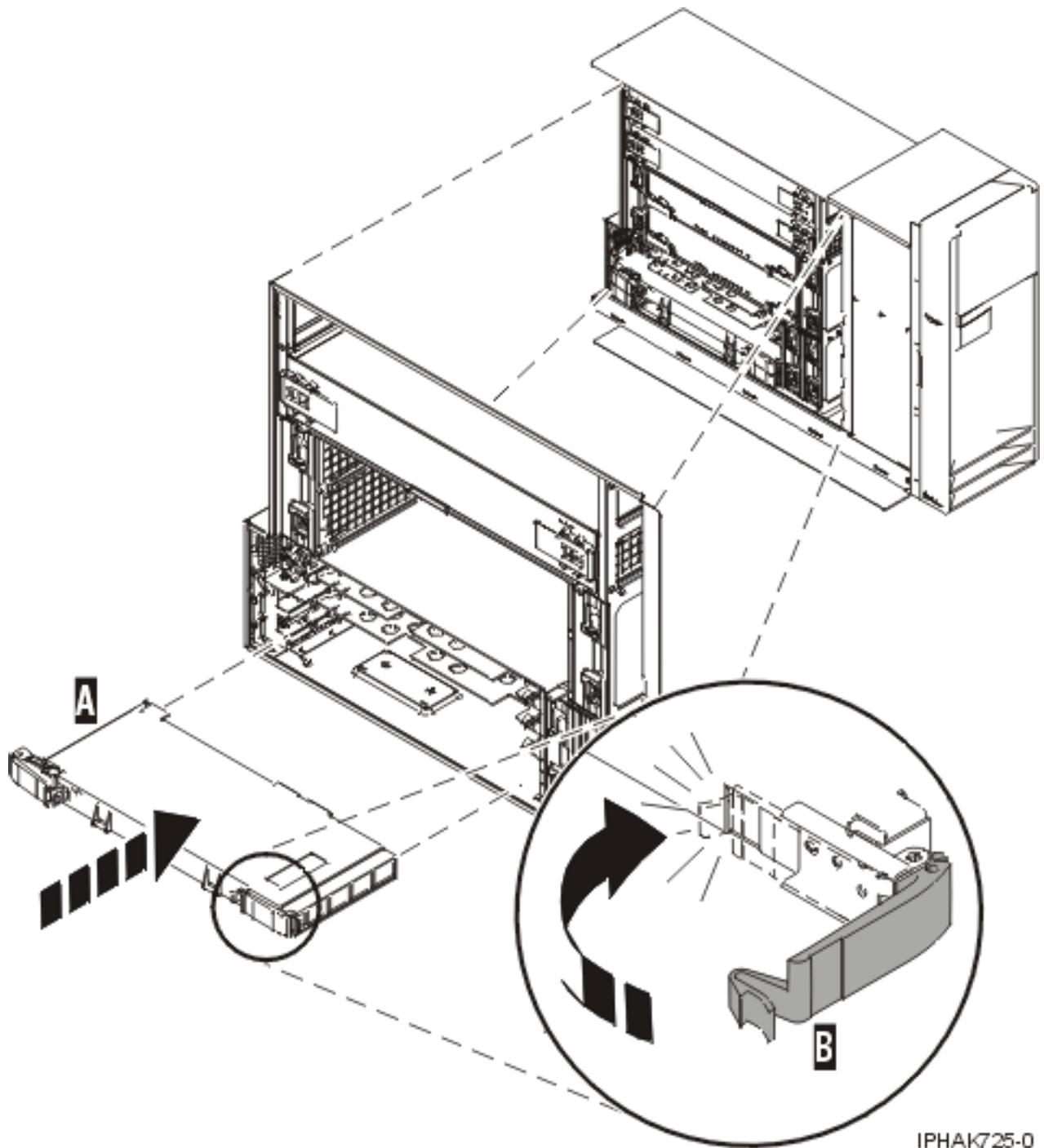
Attention: When you install an adapter into the system, be sure that it is completely and correctly seated in its connector.

5. Push down evenly on both of the blue locking latches at the same time until the latches snap into place, indicating that the adapter assembly is seated correctly and locked into position **B**.



IPH AK715-0

Figure 31. Model 550, 550Q, and 720 adapter installation on rack-mounted system



IPHAK725-0

Figure 32. Model 550, 550Q, and 720 adapter installation on a stand-alone system

6. Replace the service access cover. For instructions, see “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 67.
7. If you are working on a rack-mounted system unit, ensure that the system cables are routed through the cable-management arm correctly.
8. Place the server or unit in the operating position. See “Place the rack-mounted system or expansion unit in the operating position” on page 74.
9. Reconnect all power and signal cables to their respective connectors.
10. Close the back rack door or the back system door.

11. Start the system. See “Start the system or logical partition” on page 57.
12. Verify that the new resource is working correctly. For instructions, see “Verify the installed part” on page 79.

Install a model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter

Learn more about installing a model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter

The following procedure describes the installation of the model 550, 550Q, or 720 RIO/HSL or GX Dual-port 4x HCA adapter.

Note: Replacing this feature is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

If your system is managed by the HMC, use the HMC to complete the steps for installing the model 550, 550Q, and 720 RIO/HSL or GX Dual-port 4x HCA adapter. See “Install a feature using the Hardware Management Console” on page 76.

Attention: When you install an GX Dual-port 4x HCA adapter, you can set the LPAR partition and GUID offset settings. See “Installing a model 550, 550Q, and 720 RIO/HSL or GX Dual-port 4x HCA adapter” in *Guide to Clustering systems using InfiniBand hardware*.

To install the adapter on a system that is not managed by the HMC, complete the following steps:

1. Perform the prerequisite tasks as described in “Before you begin” on page 5.
2. On a rack-mounted system unit, open the back rack door.
3. Disconnect the power source from the system by unplugging the system.

Note: This system can 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. If necessary, disconnect any cables connected to the adapter at the back of the system.
5. Place the server or unit in the service position. See “Place the rack-mounted system or expansion unit in the service position” on page 70.
6. Remove the access cover. See “Remove the service access cover from the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 64.
7. Attach the wrist strap.

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.
8. If one is present, remove PCI adapter in slot 5. For instructions, see PCI adapters.
 9. Remove the adapter-retaining bracket located in expansion slot 5 by unscrewing it **A** and pulling it out **B**.

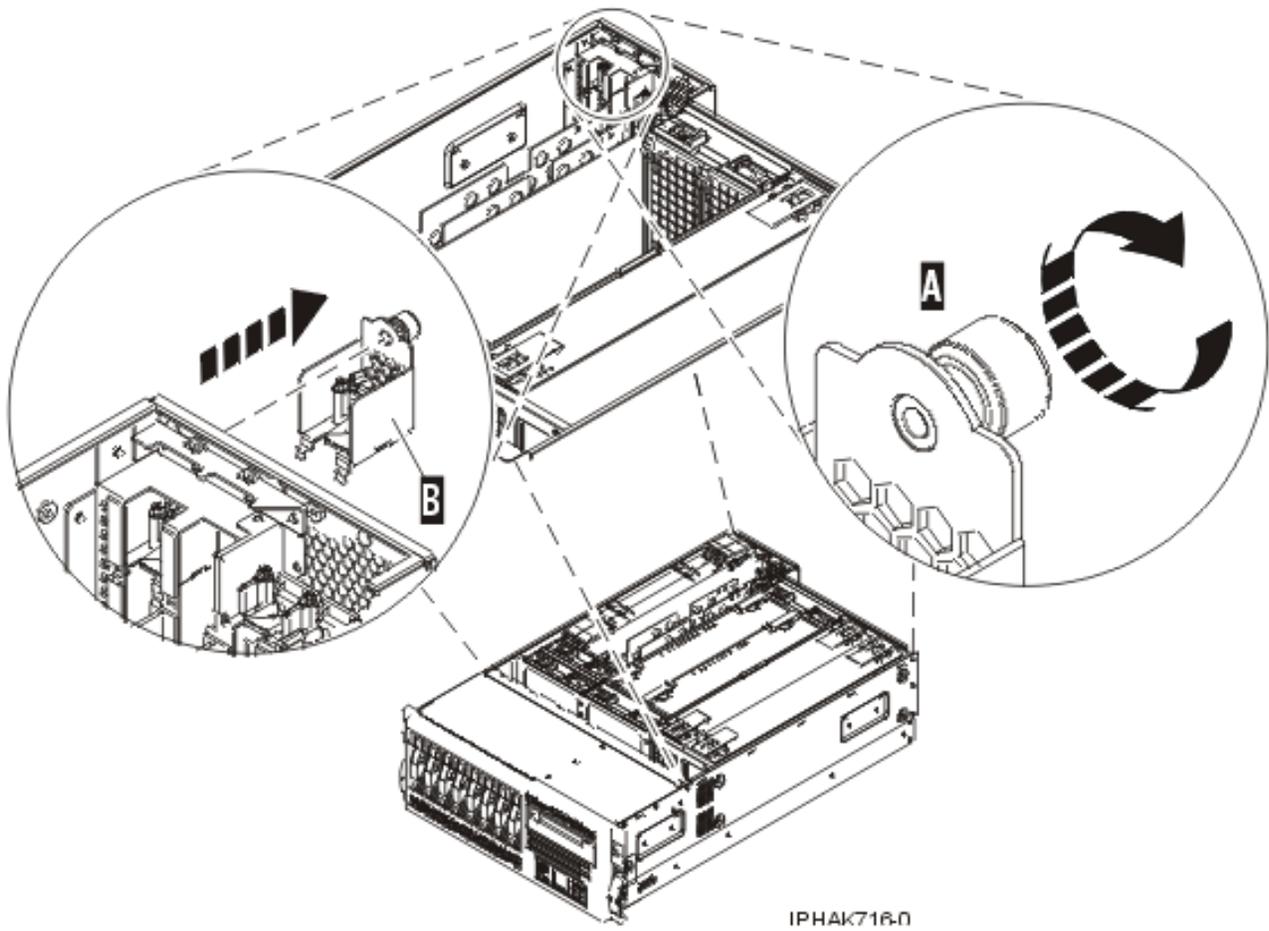
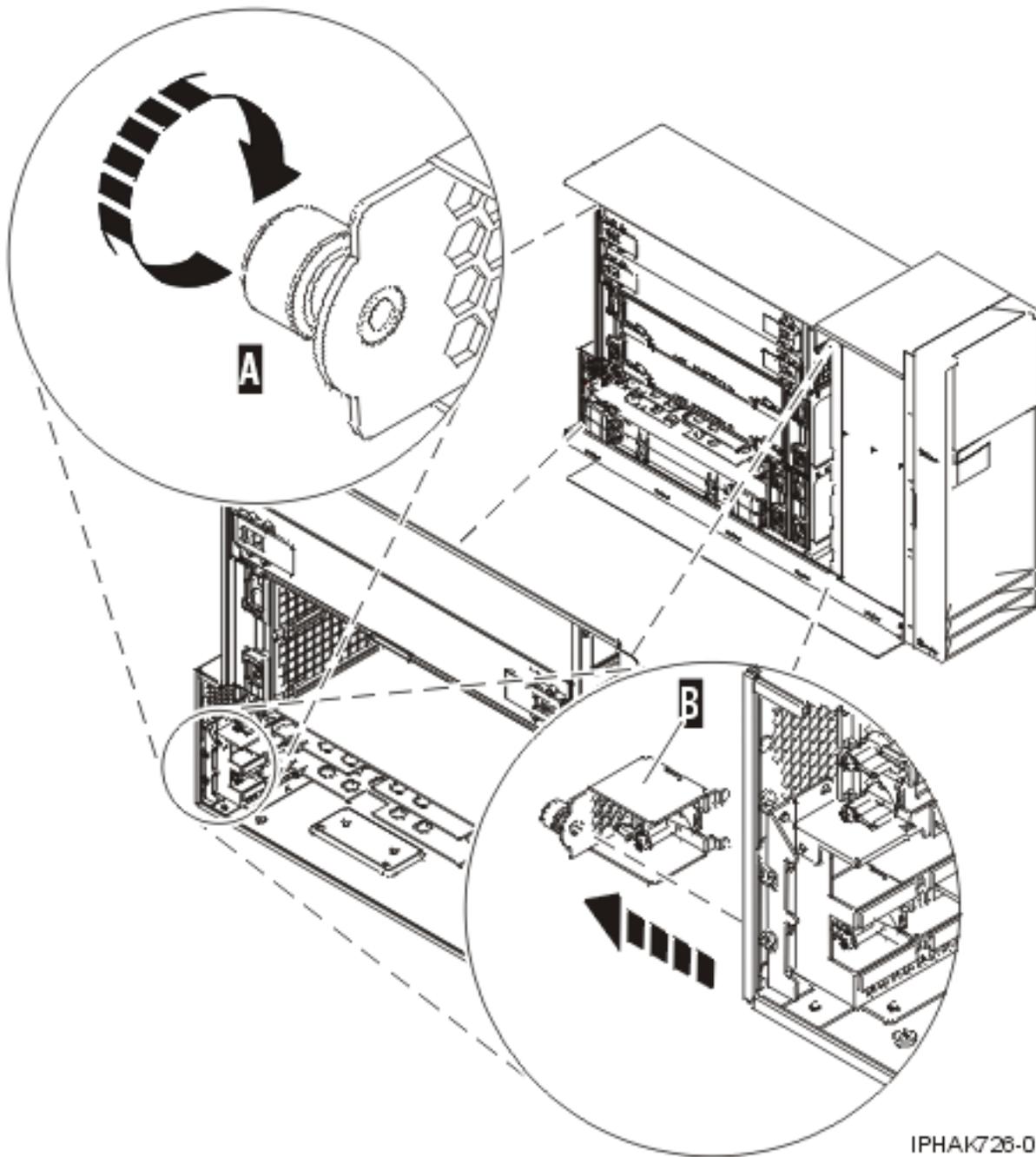


Figure 33. Model 550, 550Q, and 720 adapter-retaining bracket removal on rack-mounted system



IPHA1726-0

Figure 34. Model 550, 550Q, and 720 adapter-retaining bracket removal on stand-alone system

10. Unlatch the blue locking latches on the adapter assembly by pushing them together and pulling them up until they unlatch.
11. Carefully grasp the adapter assembly by its top edge, and align the adapter assembly with the slot and its connector on the system backplane.
12. Press the adapter assembly firmly into its connector A.

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

13. Push down evenly on both of the blue locking latches at the same time until the latches snap into place, indicating that the adapter assembly is seated correctly and locked into position B.

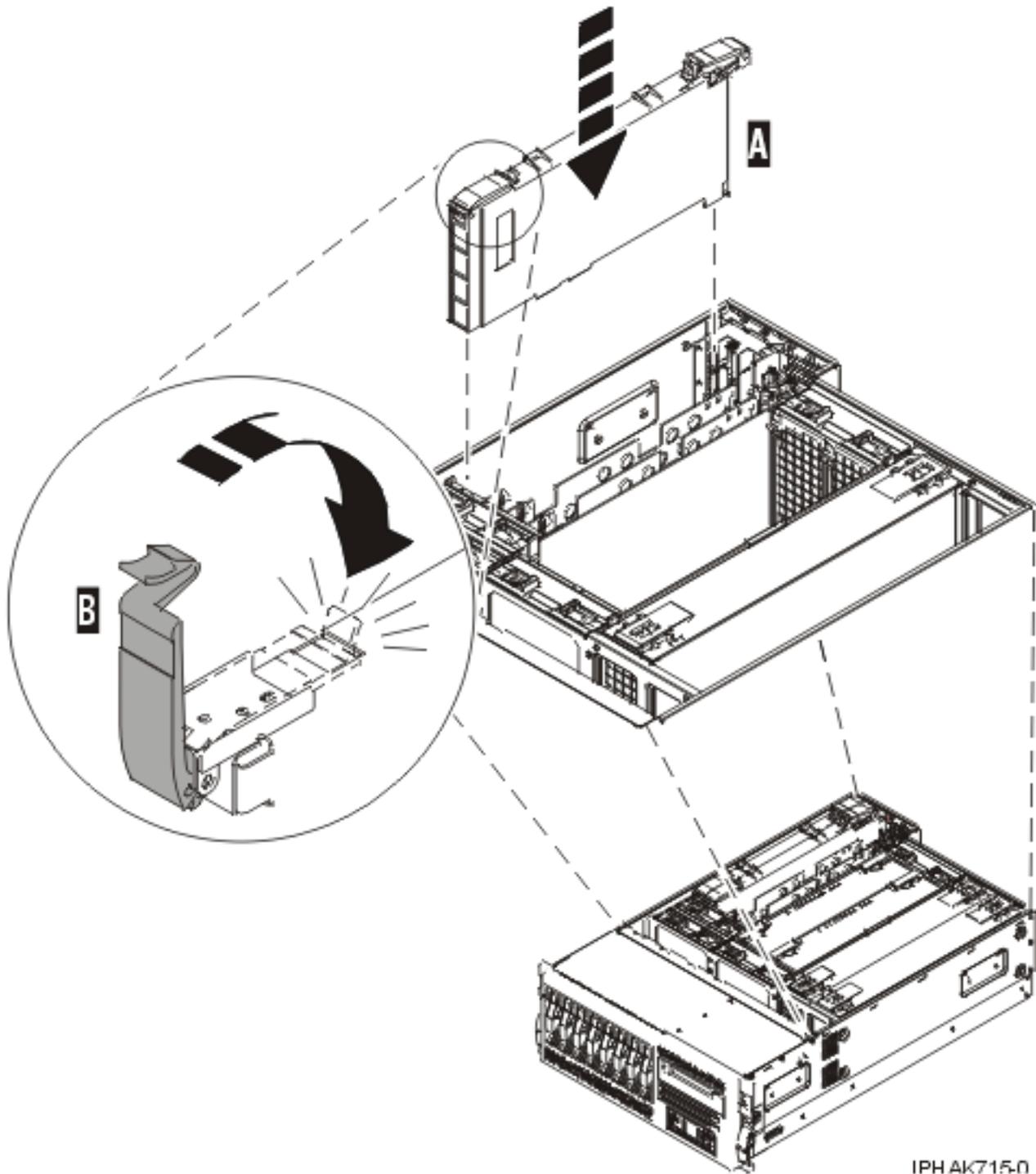
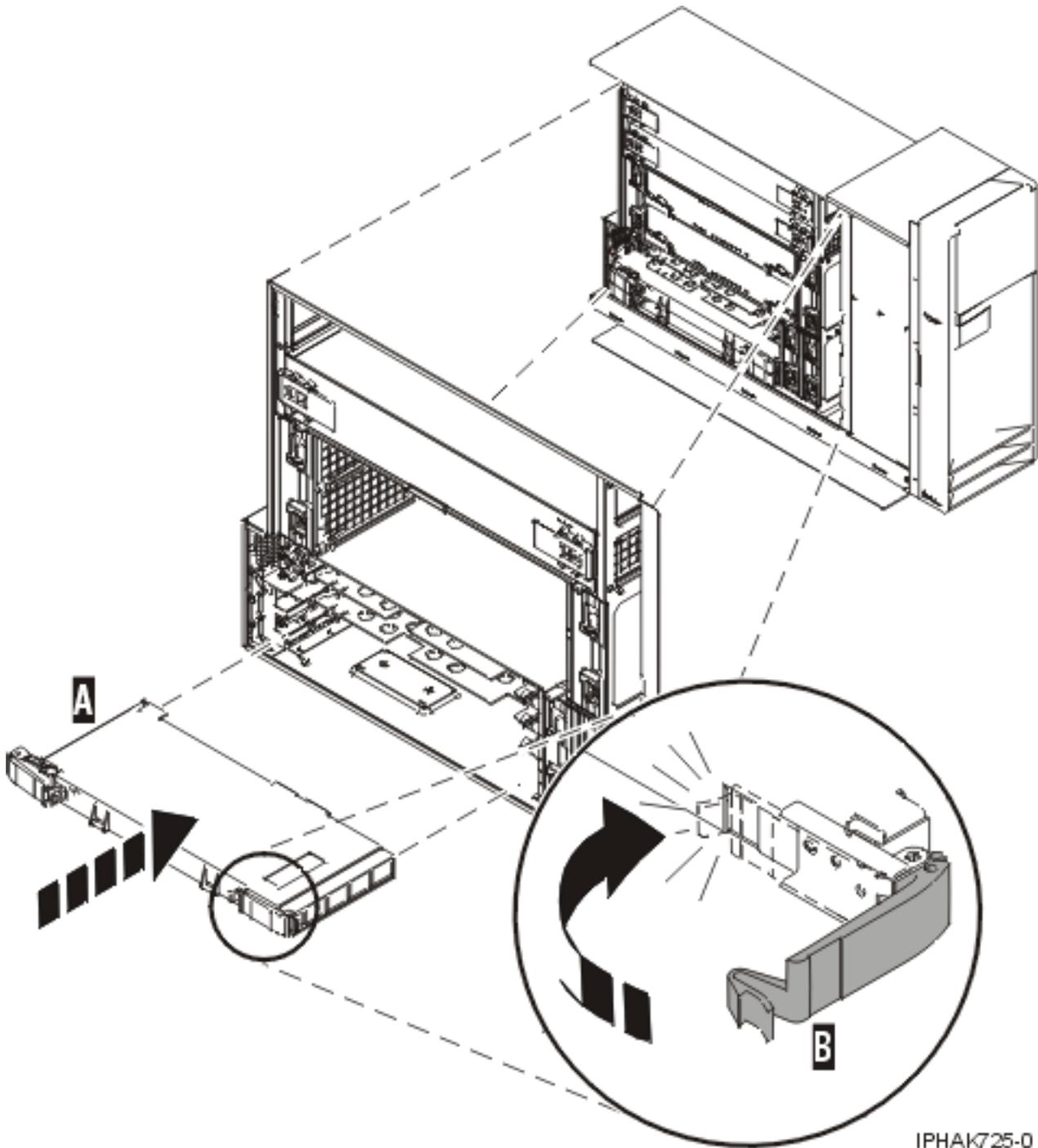


Figure 35. Model 550, 550Q, and 720 adapter installation on a rack-mounted system



IPHAK725-0

Figure 36. Model 550, 550Q, and 720 adapter installation on a stand-alone system

14. Replace the service access cover. For instructions, see “Install the service access cover on the model 285, 51x, 52x, 55x, 710, or OpenPower 720” on page 67.
15. If you are working on a rack-mounted system unit, ensure that the system cables are routed through the cable-management arm correctly.
16. Place the server or unit in the operating position. See “Place the rack-mounted system or expansion unit in the operating position” on page 74.
17. Reconnect all power and signal cables to their respective connectors.
18. Close the back rack door or the back system door.

46 System i and System p: Remote input/output (high-speed link) or GX Dual-port 4x HCA adapter

19. Start the system. See “Start the system or logical partition” on page 57.
20. Verify that the new resource is working correctly. For instructions, see “Verify the installed part” on page 79.

Model 570 RIO/HSL or GX Dual-port 4x HCA adapter

Learn more about the model 570 RIO/HSL or GX Dual-port 4x HCA adapter.

The following procedures describe the removal, replacement, and installation of the model 570 RIO/HSL or GX Dual-port 4x HCA adapter.

Replacing this feature is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

To set up your RIO/HSL or GX Dual-port 4x HCA cabling, see the Expansion unit topic.

Remove a model 570 RIO/HSL or GX Dual-port 4x HCA adapter

Learn more about removing a model 570 RIO/HSL or GX Dual-port 4x HCA adapter.

The following procedure describes the removal of the RIO/HSL or GX Dual-port 4x HCA adapter.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the RIO/HSL or GX Dual-port 4x HCA adapter. See “Remove a part using the Hardware Management Console” on page 76.

To remove the adapter on a system that is not managed by the HMC, complete the following steps:

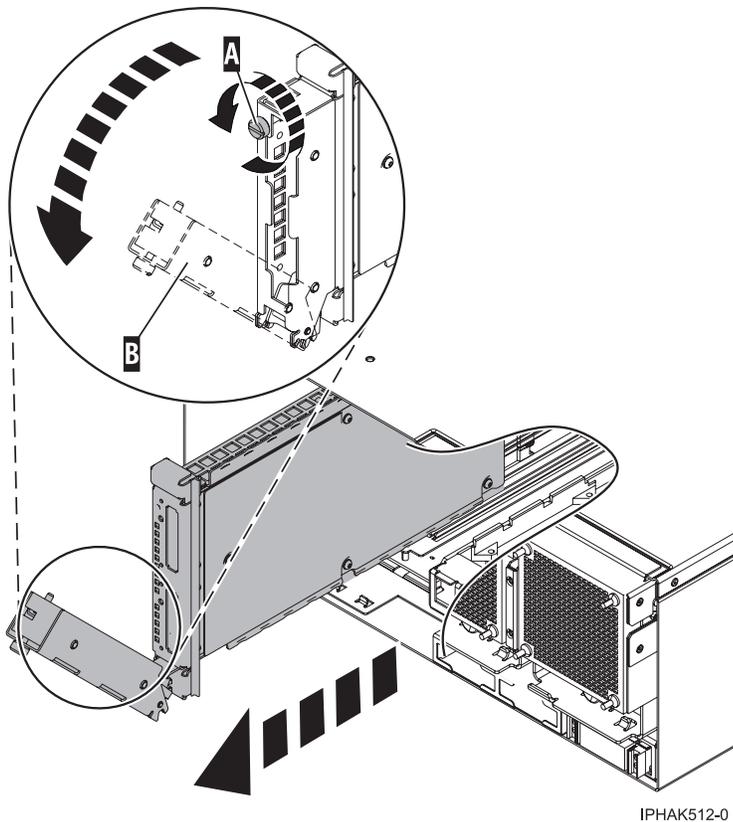
1. Perform the prerequisite tasks described in “Before you begin” on page 5.
2. Identify the failing part. For instructions, see “Identify a failing part” on page 85.
3. Stop the system. See “Stop the system or logical partition” on page 59.
4. Disconnect the power source from the system by unplugging the system.

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

5. If necessary, disconnect any cables connected to the adapter at the back of the system.
6. Attach the wrist strap.

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. Turn the thumbscrew **A** until the adapter is loose.
 8. Pull the handle **B** down.
 9. Slide the adapter out of the system.



IPHAK512-0

Figure 37. Removal of RIO/HSL or GX Dual-port 4x HCA adapter in a model 570

Replace a model 570 RIO/HSL or GX Dual-port 4x HCA adapter

Learn more about replacing a model 570 RIO/HSL or GX Dual-port 4x HCA adapter.

The following procedure describes the replacement of the model 570 RIO/HSL or GX Dual-port 4x HCA adapter.

If your system is managed by the HMC, use the HMC to complete the steps for replacing the adapter. See “Replace a part using the Hardware Management Console” on page 77.

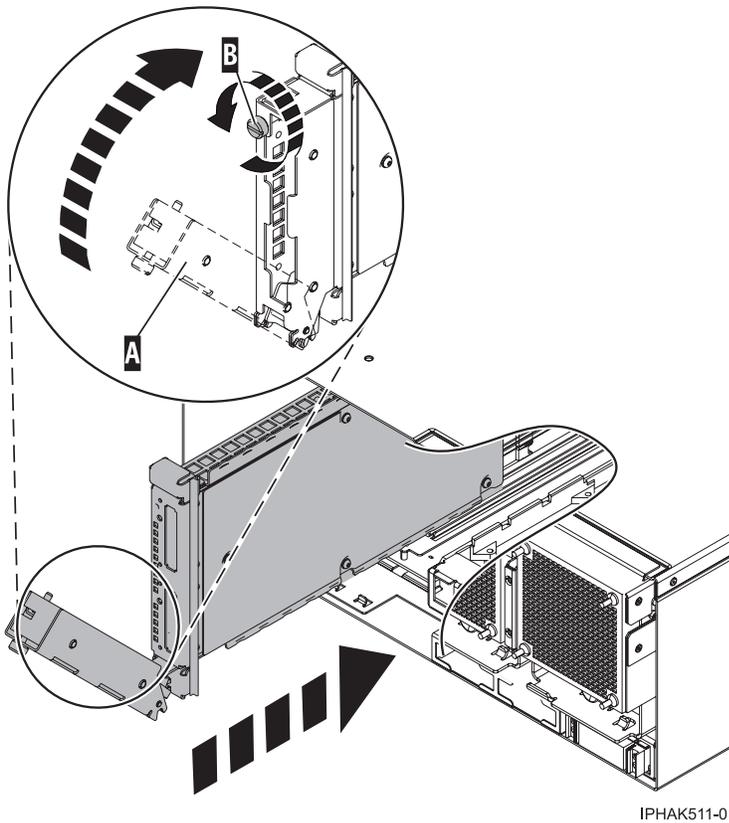
Attention: When you replace an adapter, you must review the LPAR partition and GUID offset settings. See “Installing a model 570 RIO/HSL or GX Dual-port 4x HCA adapter” in *Guide to Clustering systems using InfiniBand hardware*.

To replace the adapter on a system that is not managed by the HMC, complete the following steps:

1. Remove the adapter from the system unit. See “Remove a model 570 RIO/HSL or GX Dual-port 4x HCA adapter” on page 47.
2. Attach the wrist strap.

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. Align the adapter with the slot in the system.
 4. Slide the adapter into the system.
 5. Push the handle **A** up and toward the system until the handle stops against the adapter.
 6. Turn the thumbscrew **B** until tight.



IPHAK511-0

Figure 38. Model 570 RIO/HSL or GX Dual-port 4x HCA adapter replacement

7. Reconnect all power and signal cables to their respective connectors.
8. Close the back rack door.
9. Start the system. See “Start the system or logical partition” on page 57.
10. Verify that the new resource is working correctly. For instructions, see “Verify the installed part” on page 79.

Install a model 570 RIO/HSL or GX Dual-port 4x HCA adapter

Learn more about installing a model 570 RIO/HSL or GX Dual-port 4x HCA adapter.

The following procedure describes the installation of the model 570 RIO/HSL or GX Dual-port 4x HCA adapter.

If your system is managed by the HMC, use the HMC to complete the steps for installing the model 570 RIO/HSL or GX Dual-port 4x HCA adapter. See "Install a feature using the Hardware Management Console" on page 76.

Attention: When you install an GX Dual-port 4x HCA adapter, you can set the LPAR partition and GUID offset settings. See "Installing a model 570 RIO/HSL or GX Dual-port 4x HCA adapter" in *Guide to Clustering systems using InfiniBand hardware*.

To install the adapter on a system that is not managed by the HMC, complete the following steps:

1. Perform the prerequisite tasks as described in "Before you begin" on page 5.
2. Stop the system. See "Stop the system or logical partition" on page 59.
3. Disconnect the power source from the system by unplugging the system.

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

4. Open the back rack door.
5. Attach the wrist strap.

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 a PCI adapter is present in slot 6, remove the PCI adapter and relocate it to another slot. For instructions, see PCI adapters.
 7. Align the RIO/HSL or GX Dual-port 4x HCA adapter with the slot in the system.
 8. Slide the RIO/HSL or GX Dual-port 4x HCA adapter into the system.
 9. Push the handle **A** up and toward the system until the handle stops against the adapter.
 10. Turn the thumbscrew **B** until tight.

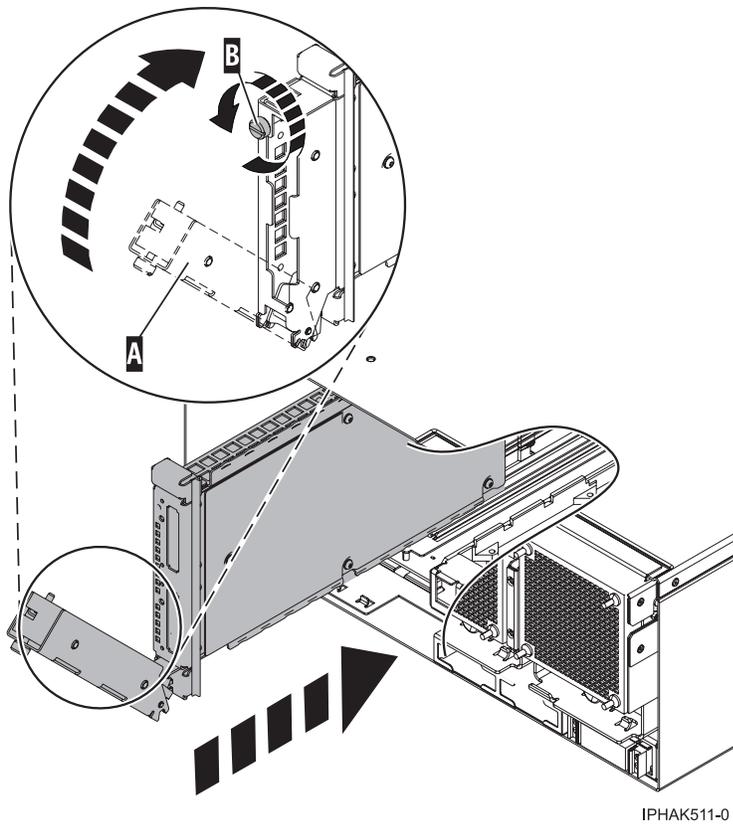


Figure 39. Model 570 RIO/HSL or GX Dual-port 4x HCA adapter installed in the system unit

11. Reconnect all power and signal cables to their respective connectors.
12. Close the back rack door.
13. Start the system. See “Start the system or logical partition” on page 57.
14. Verify that the new resource is working correctly. For instructions, see “Verify the installed part” on page 79.

Installing or replacing RIO/HSL adapters in expansion units

Learn more about installing or replacing RIO/HSL adapters in expansion units.

If you have any of the expansion units listed in the following table, you can install or replace RIO/HSL adapters.

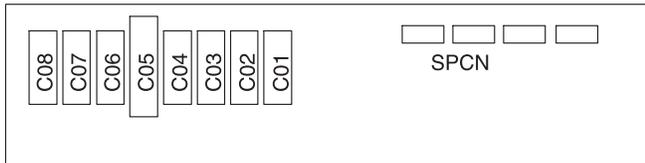
Table 6. Placement table for RIO/HSL adapter connectivity

Feature Code	Expansion Units					Description	Information
	0595	5095	5094	5294	8294		
6417	X	X	X	X	X	Enables existing HSL-connected and optical-HSL-connected expansion units to have the option of switching to copper HSL-2/RIO-G connectivity.	Required: HSL adapter slot in expansion unit.

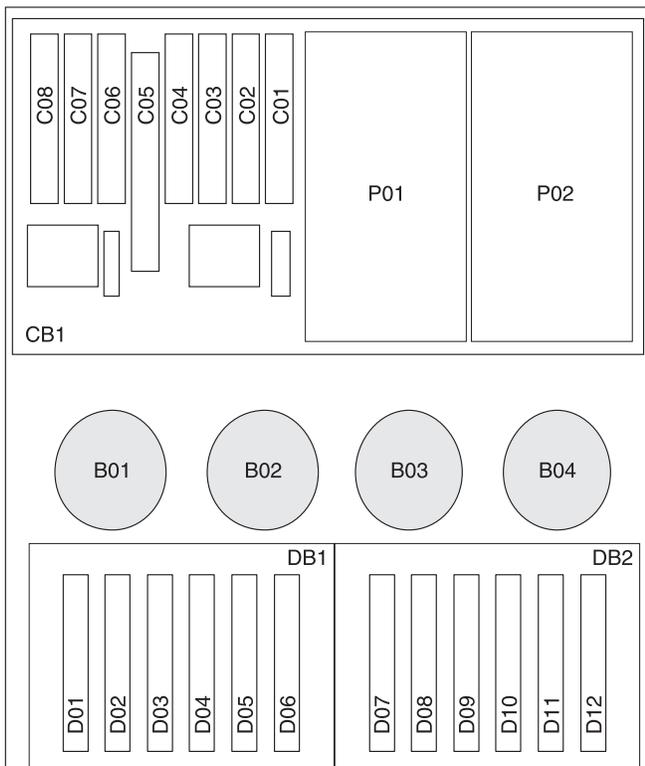
Expansion unit models 0595 and 5095 RIO/HSL adapter locations

Learn more about the expansion unit models 0595 and 5095 RIO/HSL adapter locations.

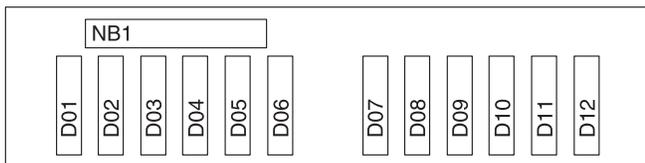
The expansion unit models 0595 and 5095 RIO/HSL adapters are located on the back of the system unit. The adapter is at location CB1-C05. See the following figures for the adapter locations:



Back



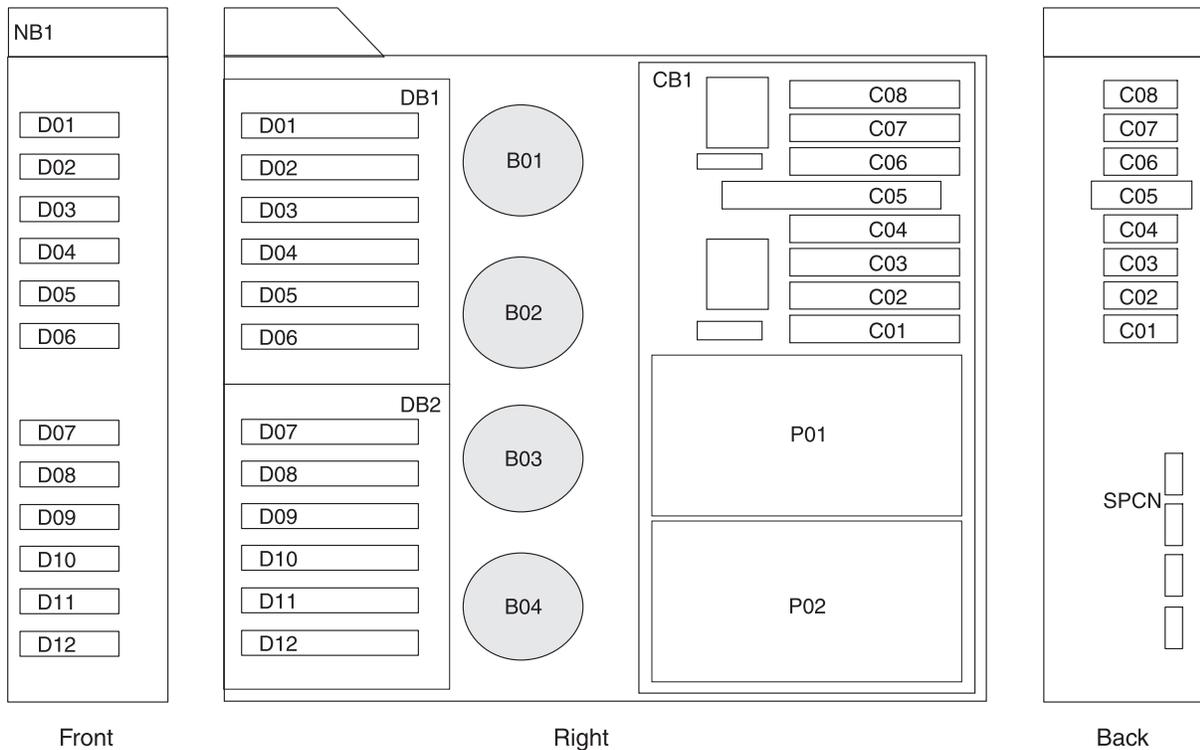
Top



Front

RZAR6601-2

Figure 40. 0595 expansion unit



RZAR6612-1

Figure 41. 5095 expansion unit

Expansion unit models 5094, 5294, and 8294 RIO/HSL adapter locations

Learn more about expansion unit models 5094, 5294, and 8294 RIO/HSL adapter locations.

The expansion unit models 5094, 5294 and 8294 RIO/HSL adapters are located on the back of the system unit. The adapter is at location CB1-C10. See the following figures for the adapter locations:

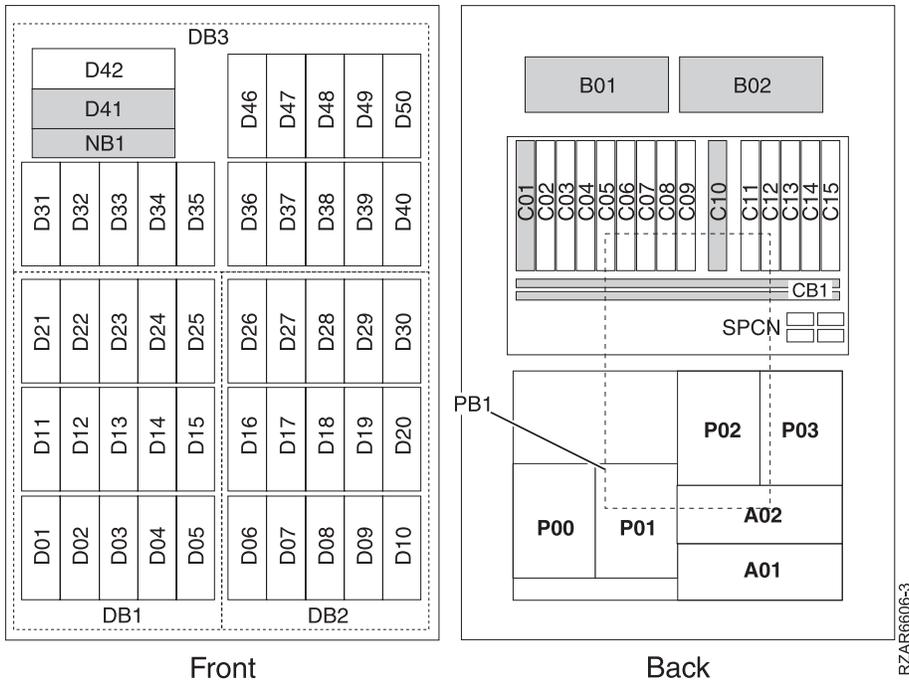


Figure 42. 5094, 5294, and 8294 expansion unit

RZAR6606-3

Related procedures

Before you begin

Understand prerequisites for installing, removing, or replacing features and parts.

DANGER

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

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

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

To Disconnect:

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

To Connect:

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

(D005)

DANGER

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

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



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

CAUTION

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

(R001)

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

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, wherever 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 terra-cotta on a part of the hardware indicates a touch point where you can grip the hardware to remove it from or install it in the system, open or close a latch, and so on. Terra-cotta might also indicate that the part can be removed and replaced with the system or logical partition power on.
 5. Ensure that you have access to a medium, flat-blade screwdriver.
 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 IBM reseller, or your next level of support.
 8. If you are installing new hardware in a logical partition, you need to understand and plan for the implications of partitioning your system. For information, see Logical Partitioning, and then return to these instructions.

Start or stop the system or logical partition

Learn how to start or stop a system or logical partition.

Start the system or logical partition

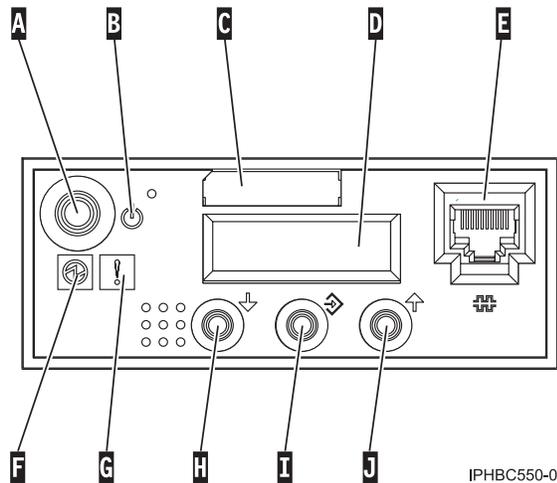
You might need to start a system or logical partition. You can use this procedure to start the system or logical partition.

Start a system that is not managed by a Hardware Management Console:

You can use the power button or the Advanced System Management Interface to start a system that is not managed by a Hardware Management Console.

To start a system that is not managed by a Hardware Management Console (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:
 - All system power cables are connected to a power source.
 - The power-on light **F**, as shown in the following figure, is slowly blinking.
 - The top of the display **D**, as shown in the following figure, shows 01 V=F.



Tip: The system attention light **G**, as shown in the previous figure, does not appear on the control panel on the model 570.

3. Press the power button **A**, as shown in the previous figure, on the control panel.

Note: On the OpenPower® 710 or model 9110-510, the power button is on the operations panel.

4. Observe the following after pressing the power button:
 - The power-on light begins to blink faster.
 - The system cooling fans are activated after approximately 30 seconds and begin to accelerate to operating speed.
 - Progress indicators, also referred to as checkpoints, appear on the control panel display while the system is being started. The power-on light on the control panel stops blinking and remains on, indicating that system power is on.

Tip: If pressing the power button does not start the system, use the following to start the system using the Advanced System Management Interface (ASMI).

- Set up access to the ASMI. For instructions, see [Accessing the ASMI](#).
- Start the system using the ASMI. For instructions, see [Powering the system on and off](#).

Start the system or logical partition using the Hardware Management Console:

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

For instructions on working with the HMC, see [Managing the Hardware Management Console](#). 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 or logical partition

Learn how to stop a system or logical partition.

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

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

Stop the system that is not managed by a Hardware Management Console:

You might need to stop the system to perform another task. Use these instructions to stop the system using the power button or Advanced System Management Interface.

The following procedure describes how to stop a system that is not managed by a Hardware Management Console (HMC).

After you stop the operating system, or if you need to use the control panel power button to power off the system see, Using the control panel power button to power off.

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.
3. 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. Write down the information displayed on the control panel if you are stopping your system due to an error or to make a repair. For more information, see Collecting reference codes and system information.

Stop the system

To stop a system, follow these steps:

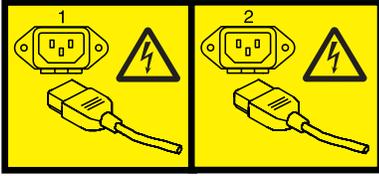
1. Log in to the system as a user with the authority to run the shutdown or pwrdownsys (Power Down System) command.
2. At the command line, enter one of the following commands:
 - If your system is running AIX, type **shutdown**.
 - If your system is running i5/OS, type **pwrdownsys *immed**.
 - If your system is running Linux, type **shutdown -h now**.

The command stops 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.

Important: The 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)



or



Stop the system or logical partition using the Hardware Management Console:

You can use the Hardware Management Console (HMC) user interface to stop the system or a logical partition. For instructions on stopping the system, see *Powering off the managed system*, or you can also find instructions at

Model 285, 52x, 55x, or OpenPower 720 door

You might need to remove and replace the front door of a stand-alone model. This section includes procedures so that you can perform this task.

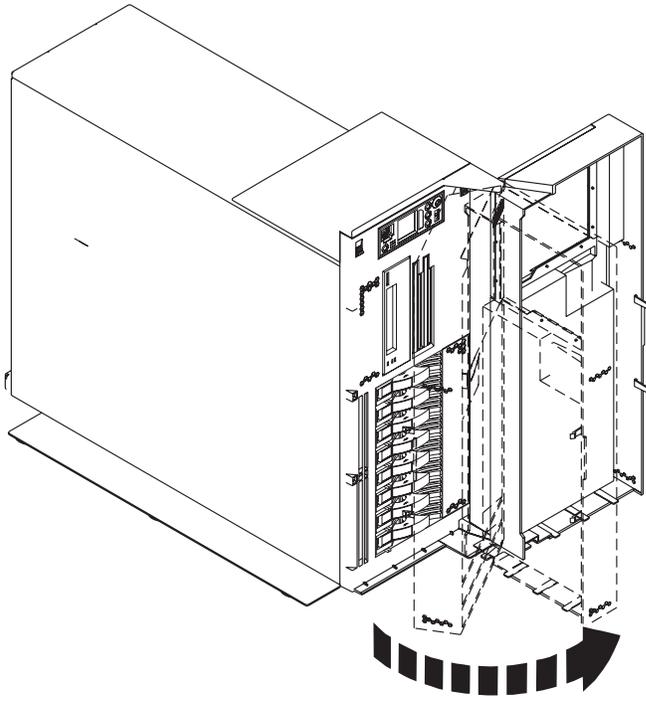
Remove the door from the model 285, 52x, 55x, or OpenPower 720

You might need to remove the door to access components or perform service. Use the procedure in this section to accomplish this task.

To remove the door from the model 285 or 9131-52A see, “Remove the door from the model 285 or 9131-52A” on page 61.

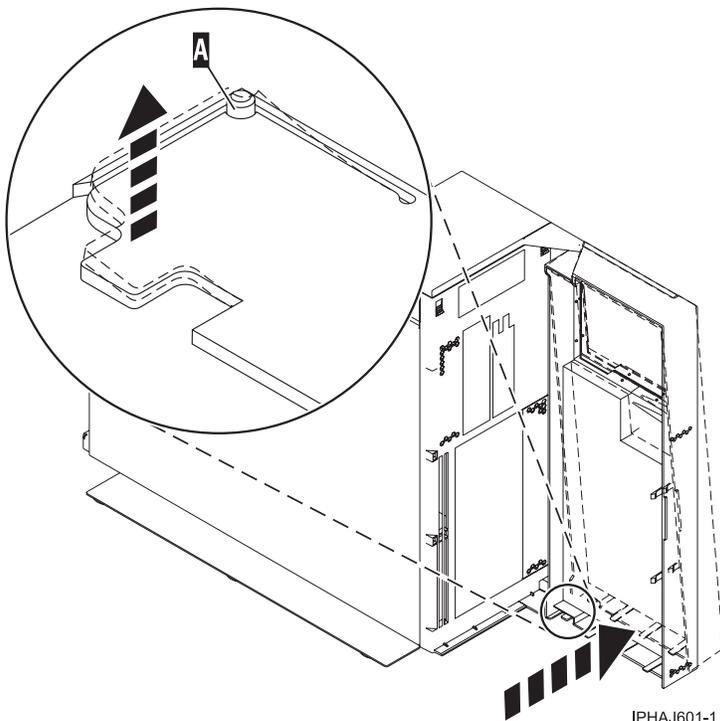
To remove the 52x, 55x, or OpenPower 720 door, do the following:

1. Open the front door by grasping the door handle and pulling the door out and away from the system unit as shown in the following figure.



IPHAJ602-0

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.



IPHAJ601-1

Remove the door from the model 285 or 9131-52A:

You might need to remove the door to access components or perform service. Use the procedure in this section to accomplish this task.

The model 285 or 9131-52A has two doors. The top door allows access to the media and the bottom allows access to the DASD. Use the following procedure for removing both doors.

1. Open the door that you want to remove and release the tab at the center hinge point as shown in the following figure.
 - a. Lift up the bottom tab at hinge **A** to release the top door.
 - b. Press down on the top tab at the hinge **A** to release the bottom door
2. Gently swivel the top back edge of the door forward until it releases from the system unit.

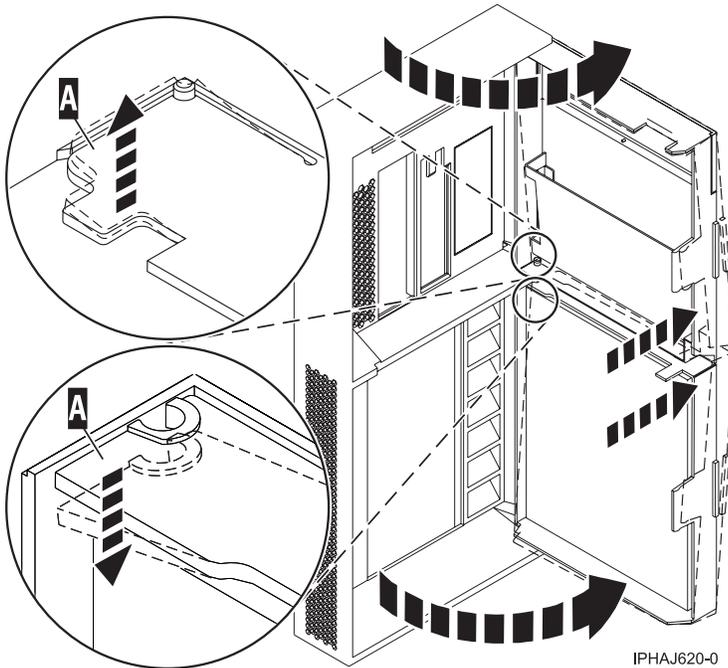


Figure 43. Removing the model 285 or 9131-52A door

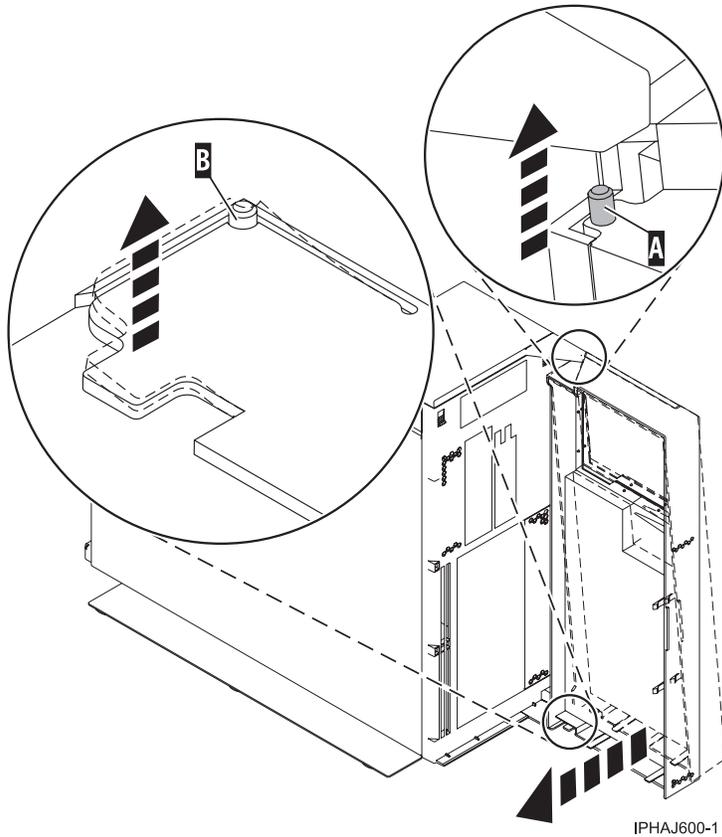
Install or replace the door on the model 285, 52x, 55x, or OpenPower 720

You might need to install the door after accessing components or performing service. Use the instructions in this section to accomplish this task.

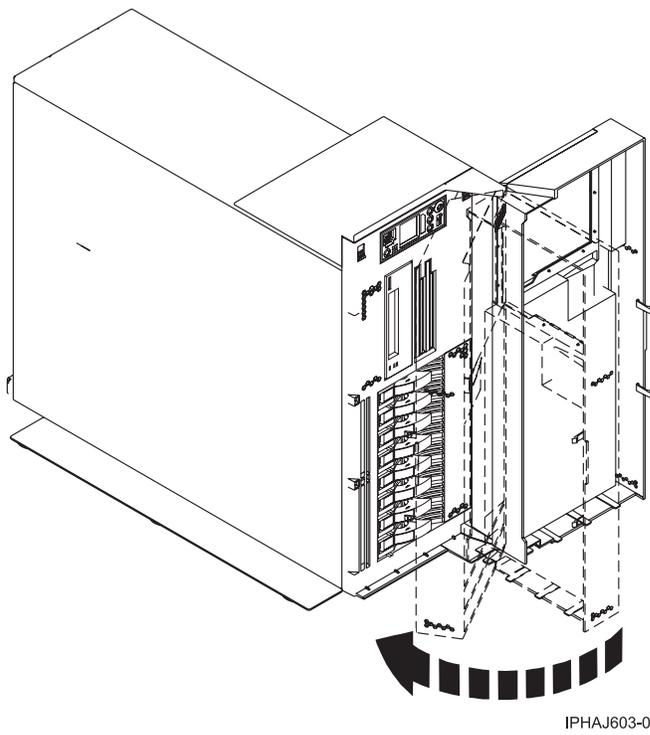
To install the model 285 or 9131-52A with acoustic feature front door see, “Install the door on the model 285 or 9131-52A” on page 63

To install the model 52x, 55x, or OpenPower 720 front door, do the following:

1. Set the door on the lower retaining post **B**, as shown in the following figure.
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 **A** into its matching slot.



4. Close the door.

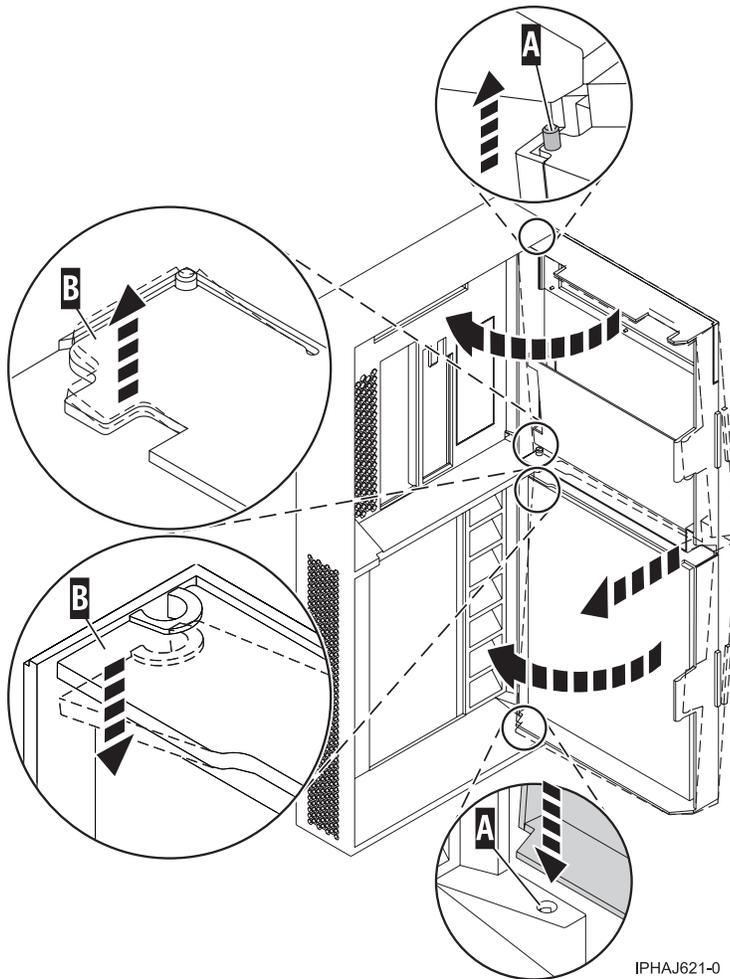


Install the door on the model 285 or 9131-52A:

You might need to install the door after accessing components or performing service. Use the instructions in this section to accomplish this task.

The model 285 or 9131-52A has two doors. The top door covers the media bays, and the bottom door covers the DASD bays.

1. Set the door into the retaining post A.



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Figure 44. Installing the model 285 door

2. Rotate the door toward the system unit.
3. Press down on the back edge of the door, and seat the post B into its matching slot.
4. Close the door.

Model 285, 51x, 52x, 55x, 710, or OpenPower 720 service access cover

You might need to remove and replace the service access cover to perform service or gain access to internal components. Use the instructions in this section to accomplish these tasks.

Remove the service access cover from the model 285, 51x, 52x, 55x, 710, or OpenPower 720

You might need to remove the service access cover to perform service or gain access to internal components. Use the instructions in this section to accomplish this task.

Tip: 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.

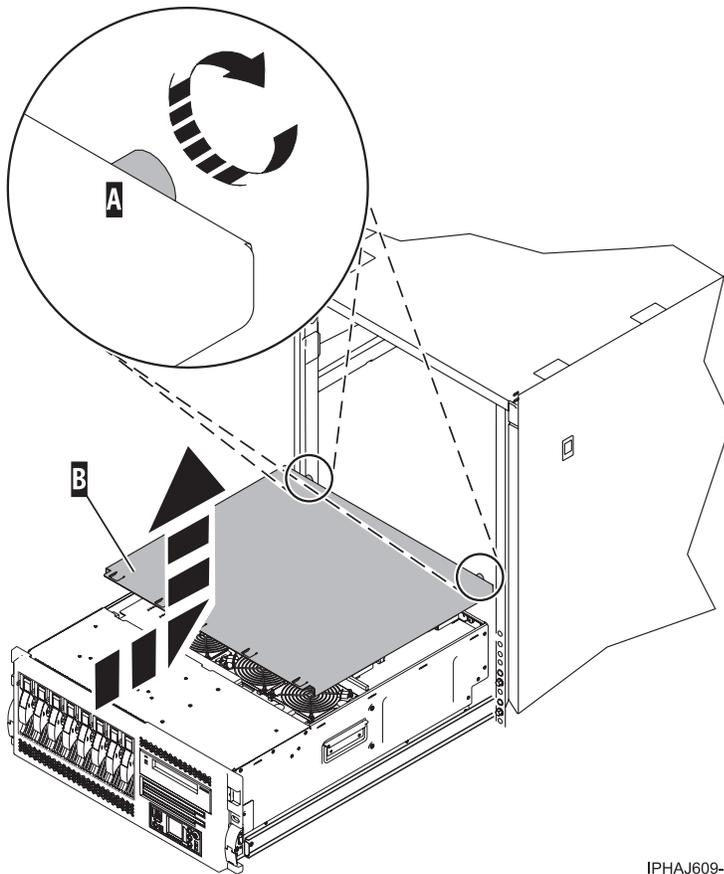
Remove the service access cover from the rack-mounted model 51x, 52x, 55x, 710, or OpenPower 720:

You might need remove the service access cover to perform service or gain access to internal components. Use the procedure in this section to accomplish this task.

To remove the service access cover from a rack-mounted model follow these steps:

1. "Place the rack-mounted system or expansion unit in the service position" on page 70.
2. Loosen the two thumbscrews located at the back of the cover.
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.



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Figure 45. Remove the service access cover

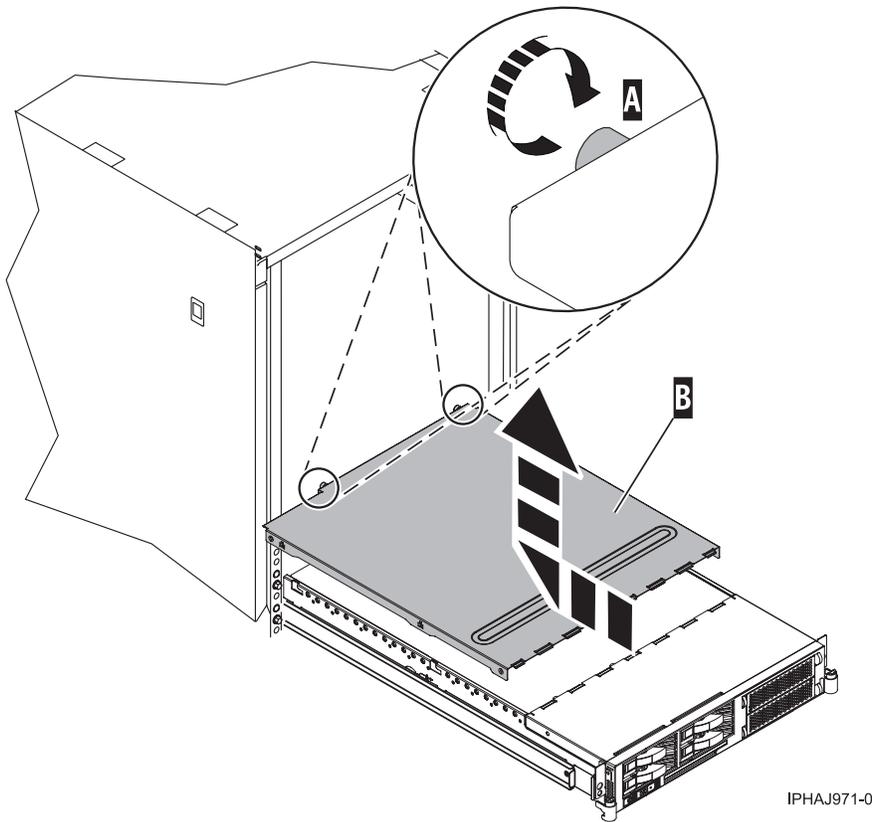


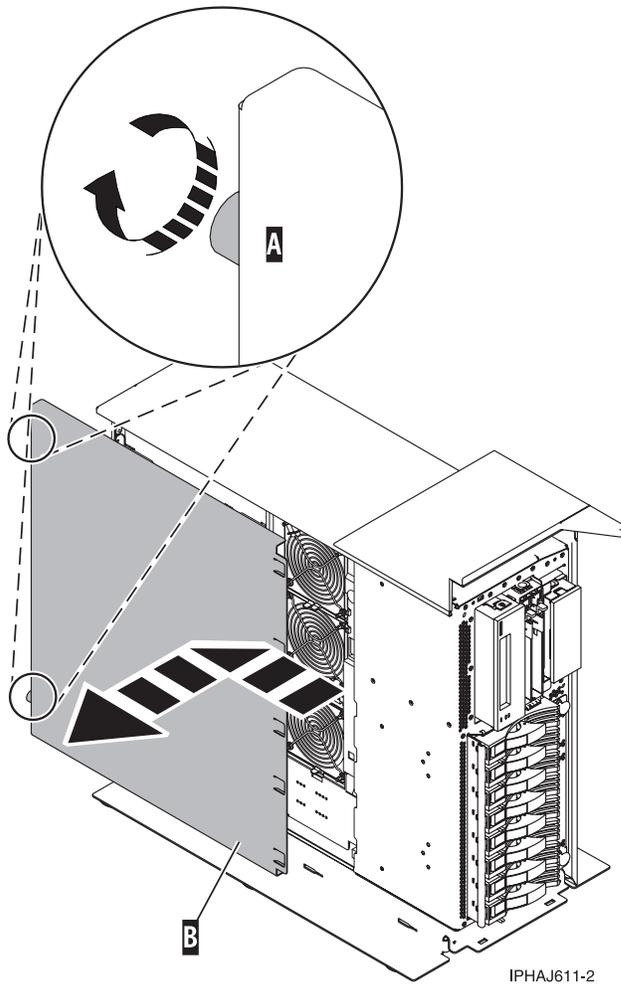
Figure 46. Remove the service access cover

Remove the service access cover from the stand-alone model 285, 52x, 55x, or OpenPower 720:

You might need remove the service access cove to perform service or gain access to internal components. Use the procedure in this section to accomplish this task.

To remove the service access cover from a stand-alone model do the following:

1. Loosen the two thumbscrews located at the back of the service access cover as shown in the following figure.



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 285, 51x, 52x, 55x, 710, or OpenPower 720

You might need to install the service access cover after performing service or accessing internal components. Use the instructions in this section to accomplish this task for your model.

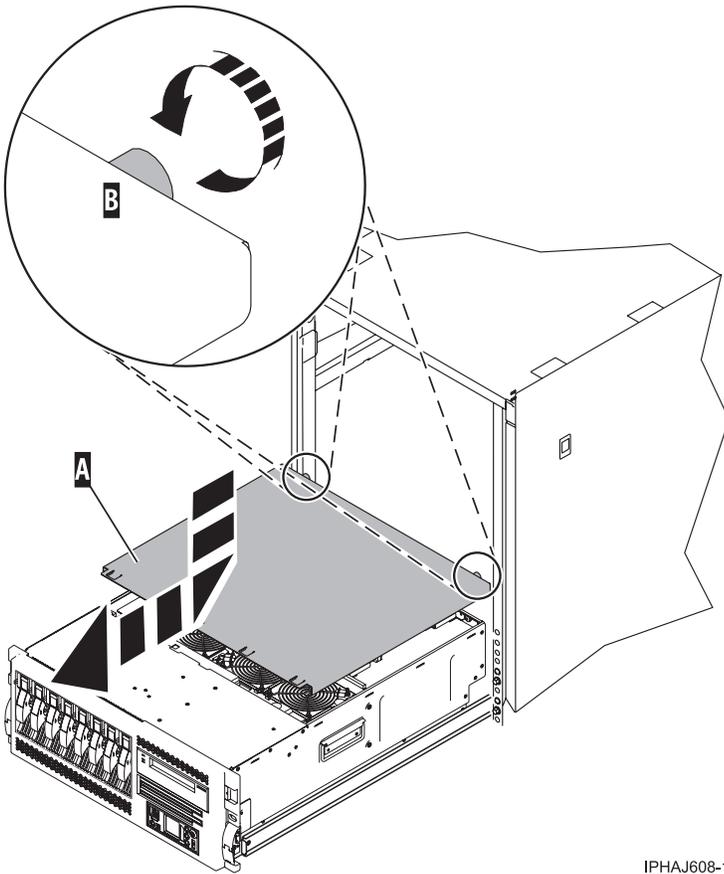
Install the service access cover on the rack-mounted model 51x, 52x, 55x, 710, or OpenPower 720:

You might need to install the service access cover after performing service or accessing internal components. Use the procedure in this section to perform this task.

To install the service access cover on a rack-mounted model refer to Figure 47 on page 68 and Figure 48 on page 69, and follow these steps:

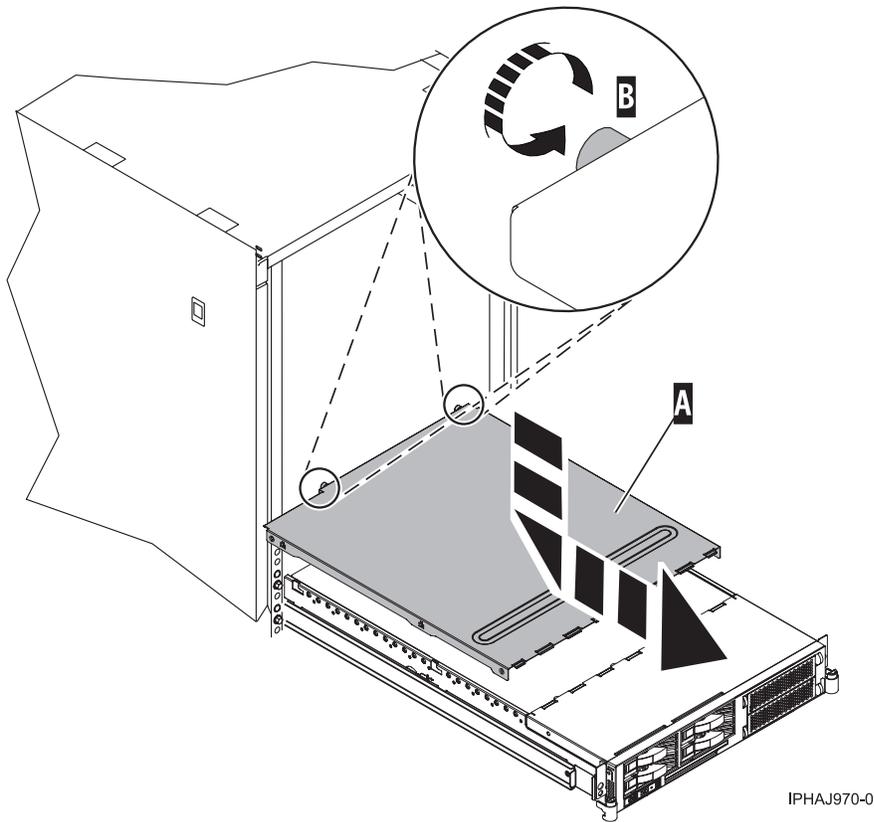
1. Place the service access cover **A** on the top of the system unit, approximately 25 mm (1 in.) from the front of the system unit.
2. Hold the service access cover against the system unit, and slide it toward the front of the system. Ensure that the fan LED cables do not get caught on the front edge 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.

3. Tighten the thumbscrews **B** located at the back of the cover.



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Figure 47. Install the service access cover on the rack-mounted model



IPHAJ970-0

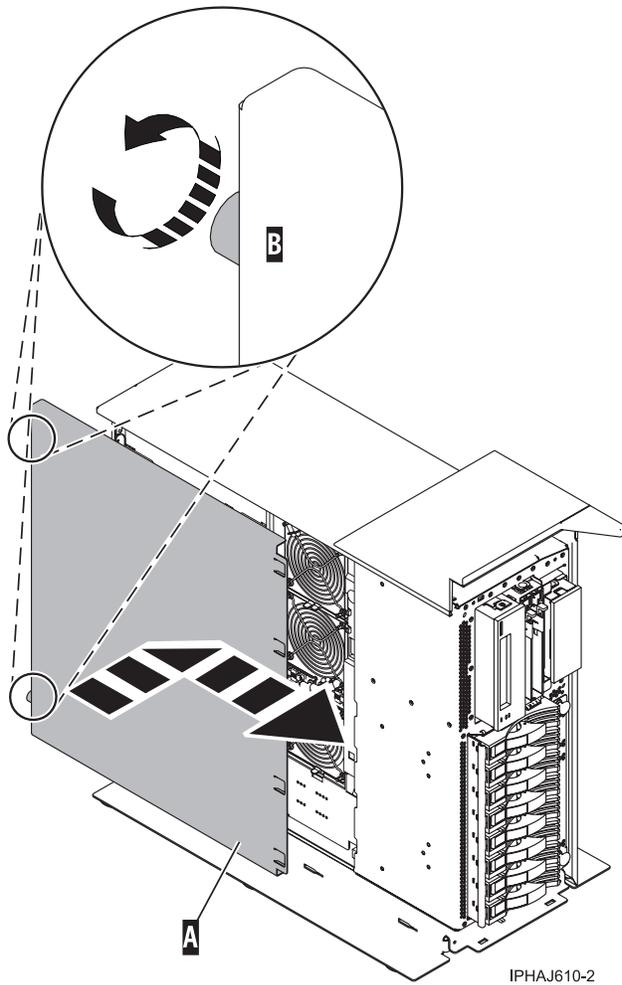
Figure 48. Install the service access cover on the rack-mounted model

Install the service access cover on the stand-alone model 285, 52x, 55x, or OpenPower 720:

You might need to install the service access cover after performing service or accessing internal components. Use the procedure in this section to perform this task.

To install the service access cover on a stand-alone model 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, as shown in the following figure.
2. Hold the service access cover against the system unit **A** and slide it toward the front of the system.
3. Tighten the two thumbscrews **B** located at the back of the cover.



Place the rack-mounted system or expansion unit in the service position or operating position

You might need to place a system or expansion unit into the service position or operating position to perform service or gain access to internal components. Use the instructions in this section to perform these tasks.

Place the rack-mounted system or expansion unit in the service position

You might need to perform service or gain access to internal components by placing the rack-mounted system or expansion unit in the service position. Use the procedure in this section to accomplish this task.

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.

DANGER

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

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

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

To Disconnect:

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

To Connect:

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

(D005)

DANGER

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

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



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

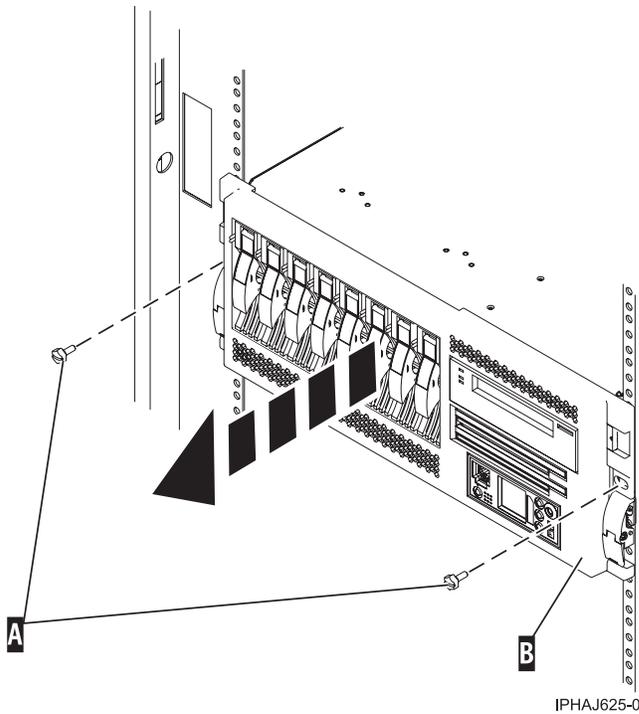
CAUTION

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

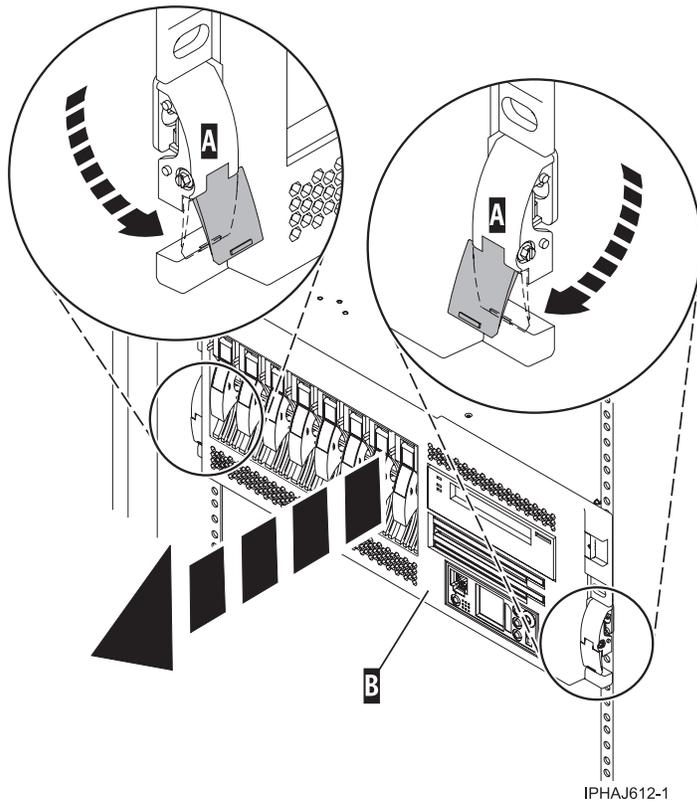
(R001)

To place the rack-mounted system or expansion unit into the service position, follow these steps:

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.



3. Release the rack latches A on both the left and right sides as shown in the following figure.



4. Review the following note, and then slowly pull the system or expansion unit out from the rack until the rails are fully extended and locked.

Note:

- 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.
- 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.
- Ensure the rails are fully extended. 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

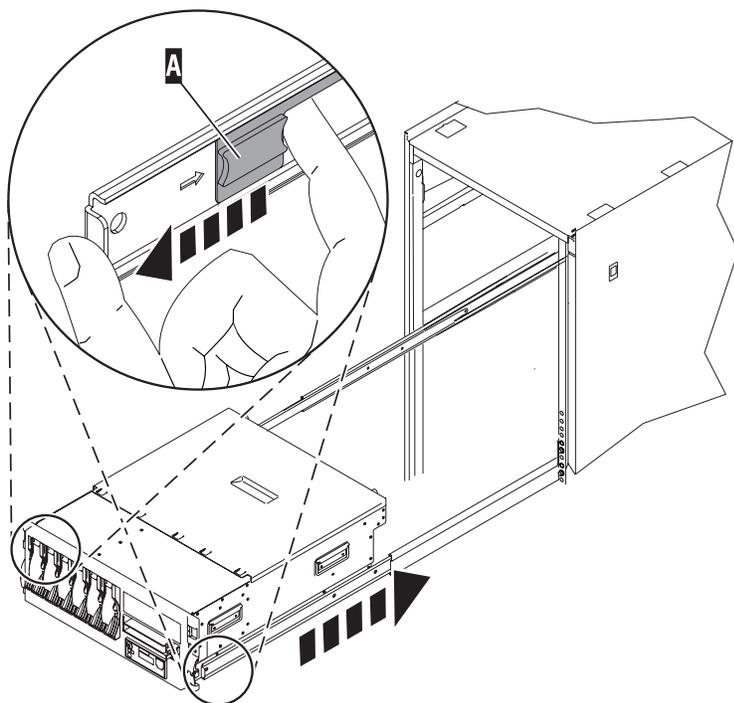
You might need to place the rack-mounted system or expansion unit in the operating position to make the unit available for use. Use the instructions in this section to accomplish this task.

Tip: 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:

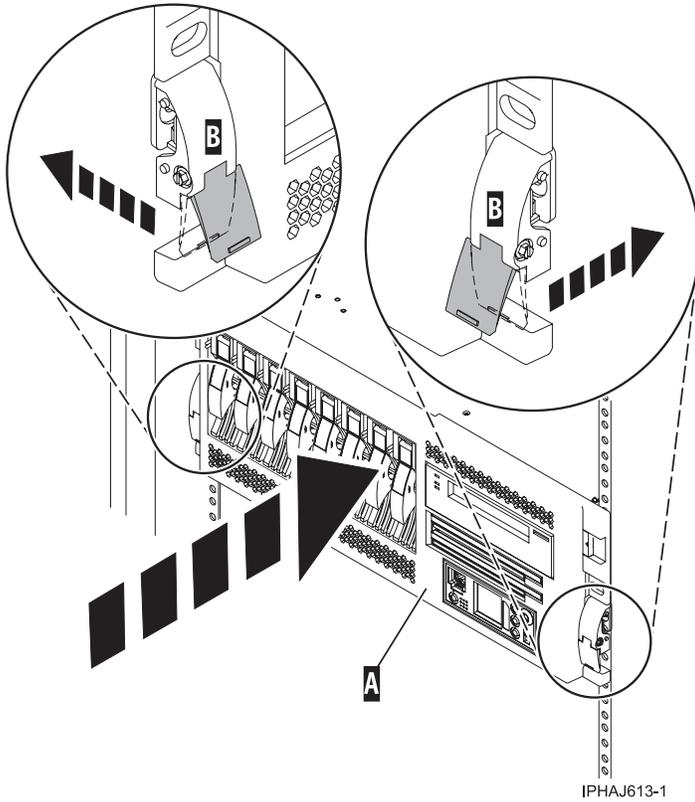
1. Simultaneously release the blue rail safety latches **A**, located near the front of each rail, and push the system or expansion unit into the rack as shown in the following figure.

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.

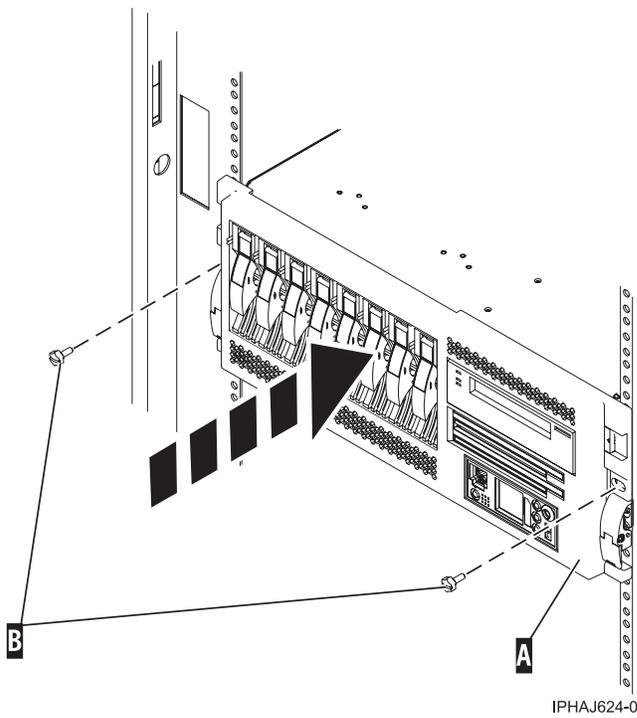


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- a. Both rack latches **B** should lock into position as shown in the following figure.



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.

Install a feature using the Hardware Management Console

You might need to use the Hardware Management Console to install a feature. Use the procedure in this section to perform this task.

- If you are using if you are using an HMC with Version 6 or earlier use the following steps 1
 - If you are using a an HMC with Version 7 or later use the steps in the next section “Install a feature using the HMC Version 7 or later”
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, highlight system or unit into which you are installing a feature.
 7. Click **Selected**.
 8. From the Selected menu, select **Add FRU**.
 9. In the **Enclosure type** field, select the system or expansion unit into which you are installing a feature.
 10. In the FRU types for selected enclosure, select the feature you are installing.
 11. Click **Next**.
 12. 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.

Install a feature using the HMC Version 7 or later

1. In the navigation area, expand **Systems Management**.
2. Expand **Servers**.
3. Select the managed system you will install the part in.
4. In the Tasks area expand **Serviceability**.
5. Expand **Hardware**.
6. Select **Add FRU**.
7. In the **Add/Install/Remove Hardware** window select the system or enclosure into which you are installing the feature.
8. Select the type of feature you are installing from the menu and click **Next**
9. Select the location code for where you will install the feature and click **Add**.
10. Once the FRU is in pending actions click **Launch Procedure** and follow the instructions to install the feature.

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

Remove a part using the Hardware Management Console

You might need to use the Hardware Management Console to facilitate removing a part from your managed system. Use the procedure in this section to accomplish this task.

- If you are using if you are using an HMC with Version 6 or earlier use the following steps 1 on page 77.

- If you are using a an HMC with Version 7 or later use the steps in the next section “Remove a part using the HMC Version 7 or later.”

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 part you 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.

Remove a part using the HMC Version 7 or later

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

Note: The HMC might open external instructions for removing the part. If so, follow these instructions to remove the part.

Replace a part using the Hardware Management Console

You might need to use the Hardware Management Console to replace a part in your managed system. Use the procedure in this section to accomplish this task.

To use the Hardware Management Console Version 6 or earlier, follow these steps, 1

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.

Exchange a part using the HMC Version 7

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

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

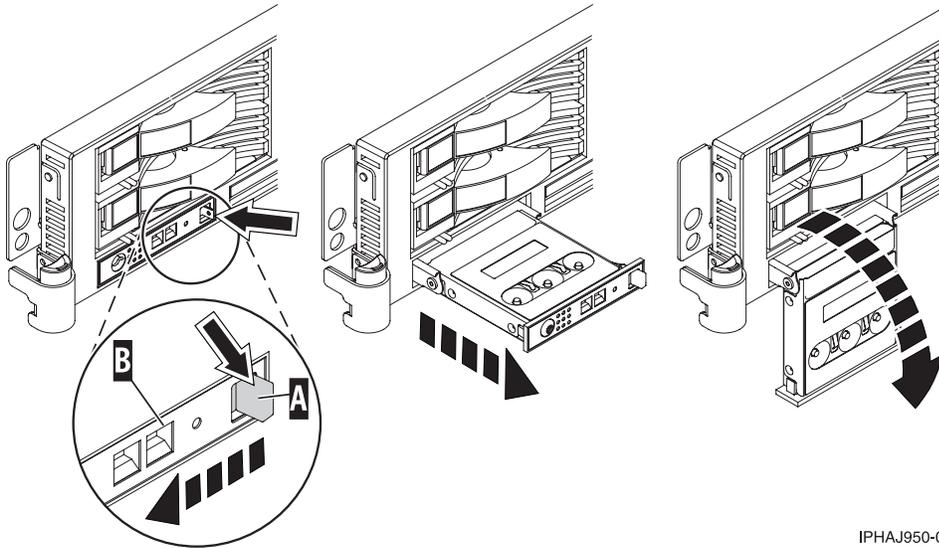
Gain access to the model 51x and OpenPower 710 control panels

Since only part of the control panel is visible from the front of the server, you can use this procedure to gain access to all of the control panel's features, including the display.

Because only part of the 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, complete the following steps:

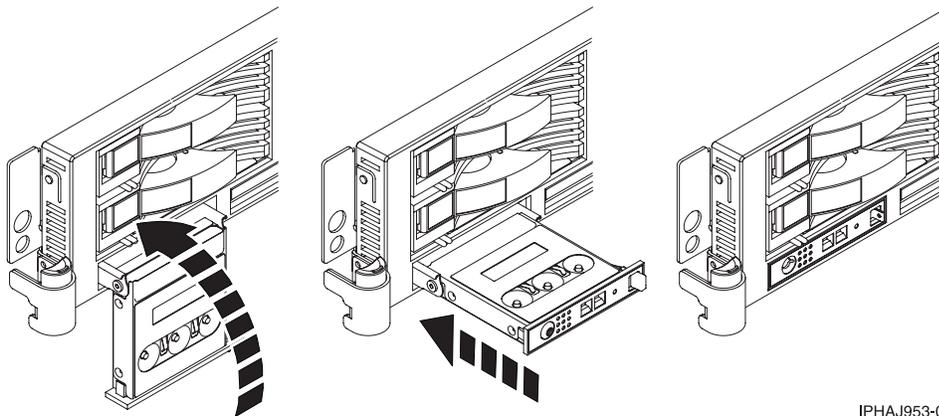
1. Press inward on the spring-loaded tab **A** located on the right side of the control panel **B** so that it pops out slightly, as shown in the following figure.



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Figure 49. Gain access to the 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, as shown in the following figure.



IPHAJ953-0

Figure 50. Close the control panels

Verify the installed part

Use the instructions in this section to learn how to verify a newly installed or replaced part on your system, logical partition, or expansion unit by selecting the appropriate procedure for the operating system or console.

Verify an installed feature or replaced part on an AIX system or logical partition

If you installed feature or replaced a part you might want to use the tools in AIX to verify that the feature or part is recognized by the system or logical partition. Use the procedure in this section to accomplish this task.

To verify the operation of a newly installed feature or replacement part, select the appropriate procedure:

- Verify the installed feature using AIX
- Verifying the replaced part using AIX

Verify the installed feature 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. Select **Commit**, and wait until the diagnostic programs run to completion, responding to any prompts that appear.
7. Did the diagnostics run to completion and display the message No trouble was found?
 - **No:** If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. You can learn more about these codes in Reference codes. 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.
 - **Yes:** The new device is installed correctly. Exit the diagnostic programs and return the system to normal operations.

Verify 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 concurrent (hot-swap) service operation?
 - No:** Go to step 2.
 - Yes:** Go to step 5 on page 81.
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.
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. You can learn more about these codes in the Reference codes. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system does not start or you have no login prompt, see: Problems with loading and starting the operating system.

If the system is partitioned, note the logical partition in which you replaced the part. Contact your service provider for assistance.
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 on page 81.

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. Test the part by doing the following:
- 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. Select **All Resources**, or select the diagnostics for the individual part to test only the part you replaced, and any devices that are attached to the part you replaced. 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.
- Tip:** This action changes the indicator light for the part from the fault state to the normal state.
Go to step 9 on page 82
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 on page 82
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 reseal 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-alone eServer diagnostics from a Network Installation Management server
 - Changing service indicators with the ASMI menus

Verify the presence of an installed part on an i5/OS system or logical partition

If you have installed a new feature or part, verify that the system recognizes the feature or part by using the i5/OS system service tools. Use the procedure in this section to accomplish this task.

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 87.
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)

If you have installed a new part, use the instructions in this section to learn how to verify that the system recognizes the part.

To verify the newly installed or replaced part, choose one of the following:

Verify an installed part using the eServer stand-alone diagnostics:

If you have installed or replaced a part, verify that the system recognizes the new part. Use the procedure in this section to accomplish this task.

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:

1. Stop all jobs and applications and then stop the operating system on the system or logical partition.
2. Remove all tapes, diskettes, and CD-ROM.
3. Turn off the system unit power. The next step boots the server or logical partition from the 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)

If you have installed or replaced a part, use the Hardware Management Console (HMC) to update your HMC records after you have completed a service action on your server. Use the procedure in this section to accomplish this task. 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

If you have installed or replaced a part, verify that the system recognizes the new part and turn off the failing part indicator light. Use the procedure in this section to accomplish this task using the Advanced System Management Interface (ASMI).

For information on accessing up the ASMI, refer to Accessing the Advanced System Management Interface

Use the instructions from Changing service indicators to turn off the indicator light.

Identify a failing part

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

Identify a failing part on an AIX system or logical partition

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

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

You might need to use AIX tools, before activating the indicator light, to locate a part that is failing. Use the procedure in this section to accomplish this task.

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. Select this row in the table and press Enter.
7. Choose **Commit**. The details of this log entry are shown.
8. Record the location information and the SRN value shown near the end of the entry.
9. Exit to the command line.

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” on page 86.

Activate the indicator light for the failing part:

You might need to use the indicator light to help you physically locate a part. Use the procedure in this section to accomplish this task.

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. Select **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

You might need to activate or deactivate the indicator light using i5/OS to assist in locating a failing part. Use the instructions in this section to accomplish these tasks.

Activate the failing-part indicator light:

You might need to search the service action log for an entry that matches the time, reference code, or resource of a problem, and then activate the indicator light for a failing part. Use the procedure in this section to accomplish this task.

1. Signed on to an i5/OS session, **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 a 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.

Remember: 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 problem occurred.
8. Search for an entry that matches one or more conditions of the problem:
 - Reference code
 - Resource
 - Date and 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.

Tip: 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.

Deactivate the failing-part indicator light:

If you turned on the indicator light during a removal and replacement procedure, turn it off to complete that procedure. Use the instructions in this section to accomplish this task.

1. 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

Use the instructions in this section to learn how to identify a failing part using one of a number of methods on a system or logical partition running Linux.

Locate a failing part and activate the indicator light:

If the service aids have been installed on a system or logical partition running Linux, you can use the instructions in this section to locate the failing part, and then activate the indicator light for that part.

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

If you do not know the location code of the failing part, use the instructions in this section to locate the failing part.

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 a system reference code (SRC).
4. Record the location information.

Activate the indicator light for the failing part:

If you know the location code of the failing part, activate the indicator light to help you locate which part to replace. Use the procedure in this section to accomplish this task.

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 you complete a removal and replacement procedure, use this task 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. Substitute 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:

If the operating system is stopped or if you need to stop the system or logical partition to replace the failing part, use the procedure in this section to identify a failing part.

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:

- If this server is directly attached to another server or attached to a network, be sure communications with the other servers are stopped.
- Ensure that no other activity is running on the logical partition. Stand-alone eServer diagnostics require use of all of the logical partition resources. No other activity can be running on the logical partition.
- You must have access to the system console to use stand-alone eServer diagnostics.

To use stand-alone diagnostics from a CD-ROM, follow these steps:

1. Stop all jobs and applications, and then stop the operating system on the system or logical partition.
2. Remove all tapes, diskettes, and CD-ROM.
3. Turn off the system unit power.

Note: The next step starts 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 startup device on the server or logical partition on which you are working, follow these steps:

- a. Access the Advanced System Management Interface (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 or Linux logical partition mode boot list.
 - e. Click **Save settings** and power on the system. 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 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 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.

Tip: 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.

Identify a failing part using the Advanced System Management Interface

If the Linux operating system is running on the system or logical partition, use the procedure in this section to identify a failing part.

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 to *Accessing 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*.

Appendix. Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products successfully.

The following list includes the major accessibility features:

- Keyboard-only operation
- Interfaces that are commonly used by screen readers
- Keys that are tactilely discernible and do not activate just by touching them
- Industry-standard devices for ports and connectors
- The attachment of alternative input and output devices

IBM and accessibility

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European Community contact:
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E-mail: tjahn@de.ibm.com

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

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IBM Taiwan Contact Information:

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台灣國際商業機器股份有限公司
台北市松仁路7號3樓
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Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

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

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

Electromagnetic Interference (EMI) Statement - Russia

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать
радиопомехи, для снижения которых необходимы
дополнительные меры

Class B Notices

The following Class B statements apply to model 9111-520 (stand-alone version), 9131-52A (stand-alone version), 7047-185 and the 9111-285.

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.

Industry Canada Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe B respecte est conforme à la norme NMB-003 du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EC Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to 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 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.

European Community contact:
IBM Technical Regulations
Pascalstr. 100, Stuttgart, Germany 70569
Tele: 0049 (0)711 785 1176
Fax: 0049 (0)711 785 1283
E-mail: tjahn@de.ibm.com

VCCI Statement - Japan

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

The following is a summary of the VCCI Japanese statement in the box above.

This is a Class B 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.

IBM Taiwan Product Service Contact Information

台灣IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거 지역에서는 물론 모든 지역에서 사용할 수 있습니다.

Radio Protection for Germany

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse B EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse B ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der IBM gesteckt/eingebaut werden.

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse B.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

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

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse B.



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