

Power Systems

*Installing the IBM Power System E950
(9040-MR9)*



Note

Before using this information and the product it supports, read the information in [“Safety notices” on page v](#), [“Notices” on page 59](#), the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125-5823.

This edition applies to IBM® Power Systems servers that contain the POWER9™ processor and to all associated models.

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Safety notices

Safety notices may be printed throughout this guide:

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

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, safety information documentation is included in the publications package (such as in printed documentation, on DVD, or as part of the product) shipped with the product. The documentation 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 documentation. You should also refer to the safety information documentation any time you do not clearly understand any safety information in the U.S. English publications.

Replacement or additional copies of safety information documentation can be obtained by calling the IBM Hotline at 1-800-300-8751.

German safety information

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

Laser safety information

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

Laser compliance

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



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

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

- If IBM supplied the power cord(s), 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.
 - For AC power, disconnect all power cords from their AC power source.
 - For racks with a DC power distribution panel (PDP), disconnect the customer's DC power source to the PDP.
- When connecting power to the product ensure all power cables are properly connected.
 - For racks with AC power, 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.

- For racks with a DC power distribution panel (PDP), connect the customer's DC power source to the PDP. Ensure that the proper polarity is used when attaching the DC power and DC power return wiring.
- 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.
- Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.
- Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements.
- Do not continue with the inspection if any unsafe conditions are present.
- Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords, turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.



DANGER:

- 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. For AC power, remove the power cords from the outlets.
3. For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source.
4. Remove the signal cables from the connectors.
5. 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. For AC power, attach the power cords to the outlets.
5. For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP.
6. Turn on the devices.

Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)

(R001 part 1 of 2):



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 unless the earthquake option is to be installed.
- 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. In addition, do not lean on rack mounted devices and do not use them to stabilize your body position (for example, when working from a ladder).



- Stability hazard:
 - The rack may tip over causing serious personal injury.
 - Before extending the rack to the installation position, read the installation instructions.
 - Do not put any load on the slide-rail mounted equipment mounted in the installation position.
 - Do not leave the slide-rail mounted equipment in the installation position.
- Each rack cabinet might have more than one power cord.
 - For AC powered racks, be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
 - For racks with a DC power distribution panel (PDP), turn off the circuit breaker that controls the power to the system unit(s), or disconnect the customer's DC power source, 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. (R001 part 1 of 2)

(R001 part 2 of 2):



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 or if the rack is not bolted to the floor. 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 part 2 of 2)



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

- Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:
 - Remove all devices in the 32U position (compliance ID RACK-001 or 22U (compliance ID RR001) and above.
 - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.
 - Ensure that there are little-to-no empty U-levels between devices installed in the rack cabinet below the 32U (compliance ID RACK-001 or 22U (compliance ID RR001) level, unless the received configuration specifically allowed it.
- If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.
- If the rack cabinet you are relocating was supplied with removable outriggers they must be reinstalled before the cabinet is relocated.
- Inspect the route that you plan to take to eliminate potential hazards.
- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.
- Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.
- Do not use a ramp inclined at more than 10 degrees.
- When the rack cabinet is in the new location, complete the following steps:
 - Lower the four leveling pads.
 - Install stabilizer brackets on the rack cabinet or in an earthquake environment bolt the rack to the floor.
 - If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.
- If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.

(R002)

(L001)



DANGER: Hazardous voltage, current, or energy levels are present inside any component that has this label attached. Do not open any cover or barrier that contains this label. (L001)

(L002)

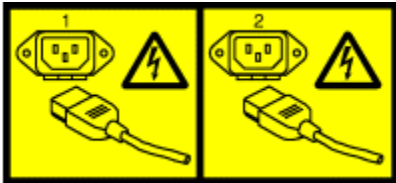


DANGER: Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack-mounted devices and do not use them to stabilize your body position (for example, when working from a ladder). Stability hazard:

- The rack may tip over causing serious personal injury.
- Before extending the rack to the installation position, read the installation instructions.
- Do not put any load on the slide-rail mounted equipment mounted in the installation position.
- Do not leave the slide-rail mounted equipment in the installation position.

(L002)

(L003)



or



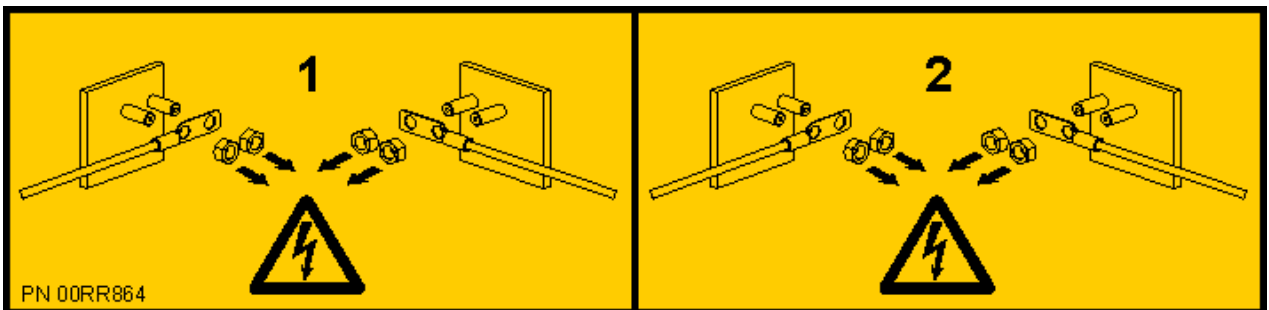
or



or



or



DANGER: Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

(L007)



CAUTION: A hot surface nearby. (L007)

(L008)



CAUTION: Hazardous moving parts nearby. (L008)

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. Although shining light into one end and looking into the other end of a disconnected optical fiber to verify the continuity of optic fibers may not injure the eye, this procedure is potentially dangerous. Therefore, verifying the continuity of optical fibers by shining light into one end and looking at the other end is not recommended. To verify continuity of a fiber optic cable, use an optical light source and power meter. (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)

(C030)



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

Do Not:

- Throw or immerse into water
- Heat to more than 100 degrees C (212 degrees F)
- Repair or disassemble

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C003)



CAUTION: Regarding IBM provided VENDOR LIFT TOOL:

- Operation of LIFT TOOL by authorized personnel only.

- LIFT TOOL intended for use to assist, lift, install, remove units (load) up into rack elevations. It is not to be used loaded transporting over major ramps nor as a replacement for such designated tools like pallet jacks, walkies, fork trucks and such related relocation practices. When this is not practicable, specially trained persons or services must be used (for instance, riggers or movers).
- Read and completely understand the contents of LIFT TOOL operator's manual before using. Failure to read, understand, obey safety rules, and follow instructions may result in property damage and/or personal injury. If there are questions, contact the vendor's service and support. Local paper manual must remain with machine in provided storage sleeve area. Latest revision manual available on vendor's web site.
- Test verify stabilizer brake function before each use. Do not over-force moving or rolling the LIFT TOOL with stabilizer brake engaged.
- Do not raise, lower or slide platform load shelf unless stabilizer (brake pedal jack) is fully engaged. Keep stabilizer brake engaged when not in use or motion.
- Do not move LIFT TOOL while platform is raised, except for minor positioning.
- Do not exceed rated load capacity. See LOAD CAPACITY CHART regarding maximum loads at center versus edge of extended platform.
- Only raise load if properly centered on platform. Do not place more than 200 lb (91 kg) on edge of sliding platform shelf also considering the load's center of mass/gravity (CoG).
- Do not corner load the platforms, tilt riser, angled unit install wedge or other such accessory options. Secure such platforms -- riser tilt, wedge, etc options to main lift shelf or forks in all four (4x or all other provisioned mounting) locations with provided hardware only, prior to use. Load objects are designed to slide on/off smooth platforms without appreciable force, so take care not to push or lean. Keep riser tilt [adjustable angling platform] option flat at all times except for final minor angle adjustment when needed.
- Do not stand under overhanging load.
- Do not use on uneven surface, incline or decline (major ramps).
- Do not stack loads.
- Do not operate while under the influence of drugs or alcohol.
- Do not support ladder against LIFT TOOL (unless the specific allowance is provided for one following qualified procedures for working at elevations with this TOOL).
- Tipping hazard. Do not push or lean against load with raised platform.
- Do not use as a personnel lifting platform or step. No riders.
- Do not stand on any part of lift. Not a step.
- Do not climb on mast.
- Do not operate a damaged or malfunctioning LIFT TOOL machine.
- Crush and pinch point hazard below platform. Only lower load in areas clear of personnel and obstructions. Keep hands and feet clear during operation.
- No Forks. Never lift or move bare LIFT TOOL MACHINE with pallet truck, jack or fork lift.
- Mast extends higher than platform. Be aware of ceiling height, cable trays, sprinklers, lights, and other overhead objects.
- Do not leave LIFT TOOL machine unattended with an elevated load.
- Watch and keep hands, fingers, and clothing clear when equipment is in motion.
- Turn Winch with hand power only. If winch handle cannot be cranked easily with one hand, it is probably over-loaded. Do not continue to turn winch past top or bottom of platform travel. Excessive unwinding will detach handle and damage cable. Always hold handle when lowering, unwinding. Always assure self that winch is holding load before releasing winch handle.
- A winch accident could cause serious injury. Not for moving humans. Make certain clicking sound is heard as the equipment is being raised. Be sure winch is locked in position before releasing handle. Read instruction page before operating this winch. Never allow winch to unwind freely.

Freewheeling will cause uneven cable wrapping around winch drum, damage cable, and may cause serious injury.

- This TOOL must be maintained correctly for IBM Service personnel to use it. IBM shall inspect condition and verify maintenance history before operation. Personnel reserve the right not to use TOOL if inadequate. (C048)

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

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

The equipment is suitable for installation in the following:

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

The intrabuilding ports of this equipment are suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of this equipment *must not* be metalically 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 metalically 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.

The dc-powered system is intended to be installed in a common bonding network (CBN) as described in GR-1089-CORE.

Installing the IBM Power System E950 (9040-MR9)

Learn how to install, cable, and set up your IBM Power® System E950 (9040-MR9) .

Installing a rack-mounted server

Use this information to learn about how to install a server into the rack.

Prerequisite for installing the IBM Power System E950 (9040-MR9)

Use the information in this section to understand the prerequisites required for installing the IBM Power System E950 (9040-MR9) .

The latest version of this document is maintained online. See [Installing the IBM Power System E950 \(9040-MR9\)](http://www.ibm.com/support/knowledgecenter/POWER9/p9eiw/p9eiw_950_kickoff.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9eiw/p9eiw_950_kickoff.htm).

Important:

- If you have a POWER9 processor-based 9040-MR9 system, and you are installing an EMX0 PCIe3 expansion drawer, the placement of your EMX0 PCIe3 expansion drawer in relation to your system is important. Consider the following requirements:
 - The EMX0 PCIe3 expansion drawer must be placed above a 9040-MR9 system when possible.
 - If you install an EMX0 PCIe3 expansion drawer below a 9040-MR9 system, the EMX0 PCIe3 expansion drawer must be placed at least 3 EIA units below the system so that the cable management bracket can function properly.

Note: This system is longer than most systems, and extends further into a rack.

If you are attaching copper cables (feature code ECCS) to connect to an I/O drawer and are installing the system into a T42 rack, ensure that you have installed the required rack extender (feature code ERG0). This will ensure that the rear door of the rack closes properly.

For more information about installing a rack extender, refer to the documentation provided with the extender.

Note: These systems require a minimum of three people to lift the system and install it into a rack. Because of the system's weight, it is recommended that you install the system into the rack between EIA units 1 and 29. It is recommended that you do not install the system above EIA unit 29. If you do install the system above EIA unit 29, a lift tool is required.

Note: If you're using the lift tool to install the server into the rack, use the instructions that were included with the lift tool.

Note: When you have finished using the installation tools, store them for future use.

Ensure that you have the following items before starting your installation:

- 4 mm Allen hand tool (included).
- T25 hex tool (included).
- Phillips screwdriver
- Flat-head screwdriver
- Box cutter
- Electrostatic discharge (ESD) wrist strap
- Rack with four Electronic industries Association (EIA) units (4U) of space

The following is a description of the screws that you will need for server installation:

- M3 screw (A)

- M5 x 12 screw (**B**)
- M5 x 16 screw (**C**)

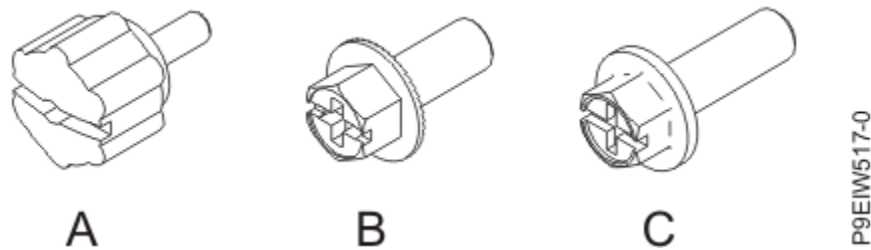


Figure 1. Screws needed for rack installation

You also need one of the following consoles:

- Hardware Management Console (HMC) version 9 release 9.2.0, or later
- Graphics monitor with keyboard and mouse.
- Teletype (TTY) monitor with keyboard

Completing inventory for your server

Use this information to complete inventory for your server.

About this task

To complete the inventory, complete the following steps:

Procedure

1. Verify that you received all the boxes you ordered.
2. Unpack the server components as needed.
3. Complete a parts inventory before you install each server component by following these steps:
 - a. Locate the inventory list for your server.
 - b. Ensure that you received all the parts that you ordered.

Note: Your order information is included with your product. You can also obtain the order information from your marketing representative or the IBM Business Partner.

If you have incorrect, missing, or damaged parts, consult any of the following resources:

- Your IBM reseller.
- IBM Rochester manufacturing automated information line at 1-800-300-8751 (United States only).
- The Directory of worldwide contacts website <http://www.ibm.com/planetwide>. Select your location to view the service and support contact information.

Attaching the lift handles to the chassis

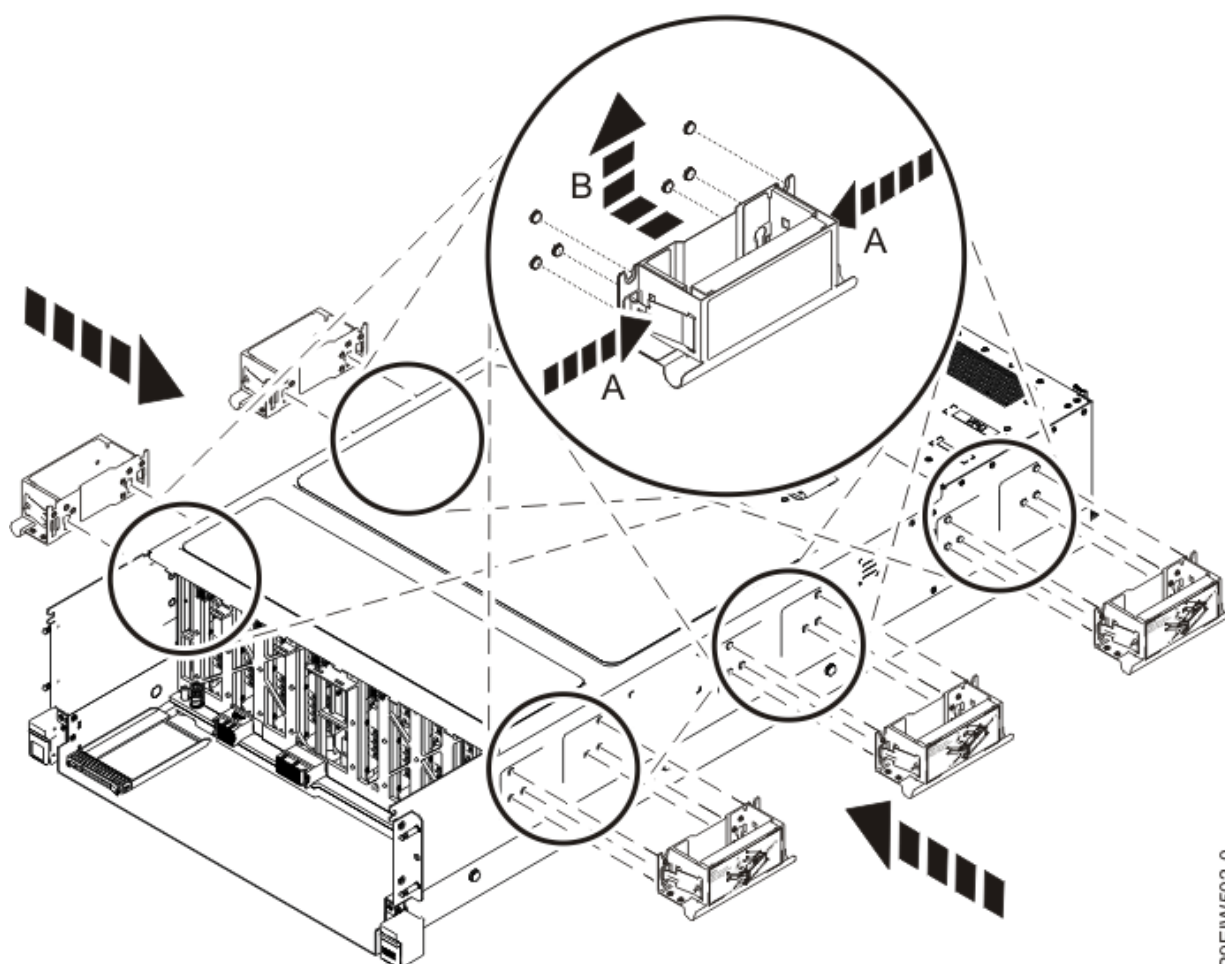
Attach the six lift handles to the chassis so that at least three people can lift the chassis onto the mounting hardware.

About this task

To attach the lift handles to the chassis, complete the following steps:

Procedure

1. Using both hands, press the latches on each side of the handle (**A**) using your index fingers.



P9E1W502-0

Figure 2. Installing the lift handles

2. Align the holes in the lift handles with the six pins on the chassis, and then lift the handle up (**B**), until the latches click into place.

Note: Ensure that all six pins are secured.

3. Repeat these steps for all six lift handles.

Installing the server into a rack

You must remove system chassis components so that a minimum of three people can lift it into the rack. Install the mounting hardware first, then remove components from the system chassis, and then lift the chassis into place.

Note: You must also attach the system-to-rail locking clips to each rail after placing the system onto the rails.

The following table lists the removal tasks you must perform so that you can lift the system and install it into the rack. The number of tasks you must perform is dependent on the number of people you have to install the rack.

Number of installers	Required removal tasks
3	<ul style="list-style-type: none"> • System fans • Front cover • Power supplies • PCIe adapters

Number of installers	Required removal tasks
	<ul style="list-style-type: none"> • Top cover • Memory risers
4 or more	<ul style="list-style-type: none"> • System fans • Front cover • Power supplies • PCIe adapters

Determining the location and attaching the mounting hardware to the rack

You might need to determine where to install the system in the rack, and install the mounting hardware. Use this procedure to complete this task.

About this task

Note: The system requires 4 EIA rack units (4U) of space.

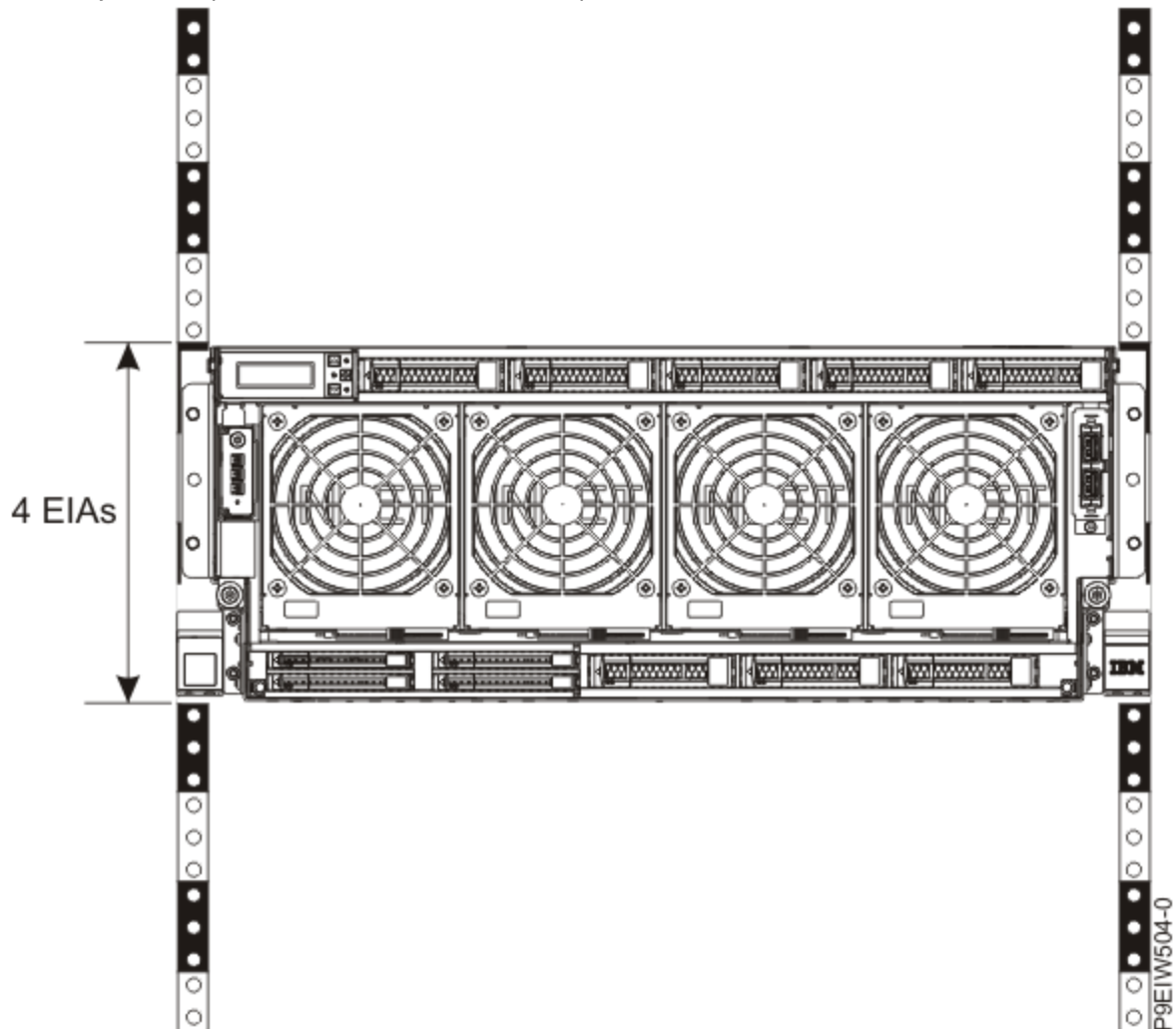


Figure 3. Rack with 4 EIA rack units (4U)

To install the rails into the rack, complete the following steps:

Procedure

1. Locate the left slide rail. The left mounting slide is stamped with an L identifier on the inside front location.
2. At the front of the rack, position the left slide rail (**C**) between the left-side front and rear rack EIA mounting standards as shown in [Figure 4 on page 5](#).
3. Insert the front slide flange locator studs into the front EIA mounting holes.

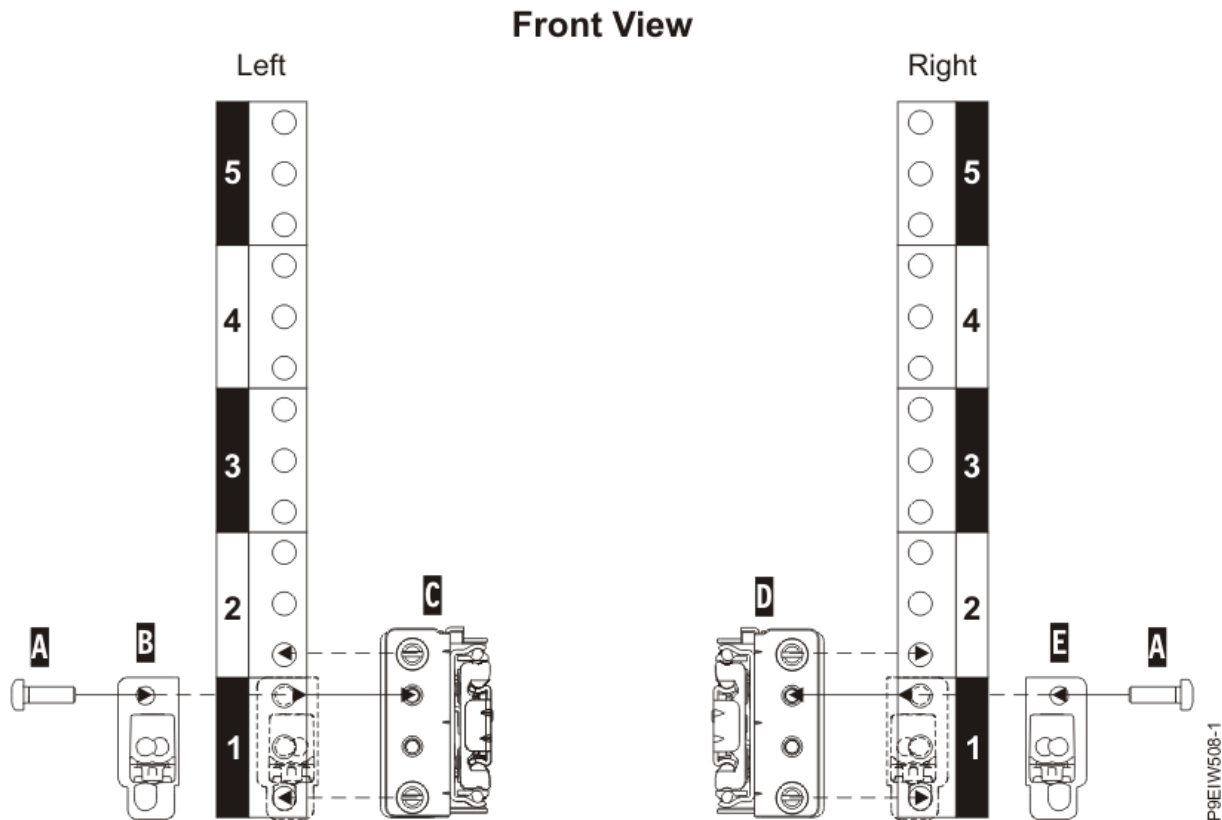


Figure 4. Attaching the slide rails at the front of the rack

4. Insert the rear slide flange locator studs on the slide rail into the rear EIA mounting holes.
 5. Position the slam-latch bracket (**B**) to cover the front EIA space of the slide rail as shown in [Figure 4 on page 5](#).
- Note:** Each side of the slam-latch bracket is marked with an **L** and an **R**. Ensure that you position the R side with the right side and the L side with the left side of the rack.
6. Attach the slam-latch bracket to the front rail flange with one M5 X 16 mm screw (**A**). Place the screw in the upper hole of the EIA rack unit as shown in the following figure.
 7. Repeat steps “1” on [page 5](#) through “6” on [page 5](#) for the right slide rail (**D**) as shown in [Figure 4 on page 5](#). The right slide rail is stamped with an R identifier on the inside front location.
 8. Move to the rear of the rack.
 9. Working from the rear of the rack, verify that the locator studs have been installed in the correct holes of the rear EIA vertical mounting standards. If necessary, reposition the slide rail, and close the mechanism to hold it into place.

Rear View

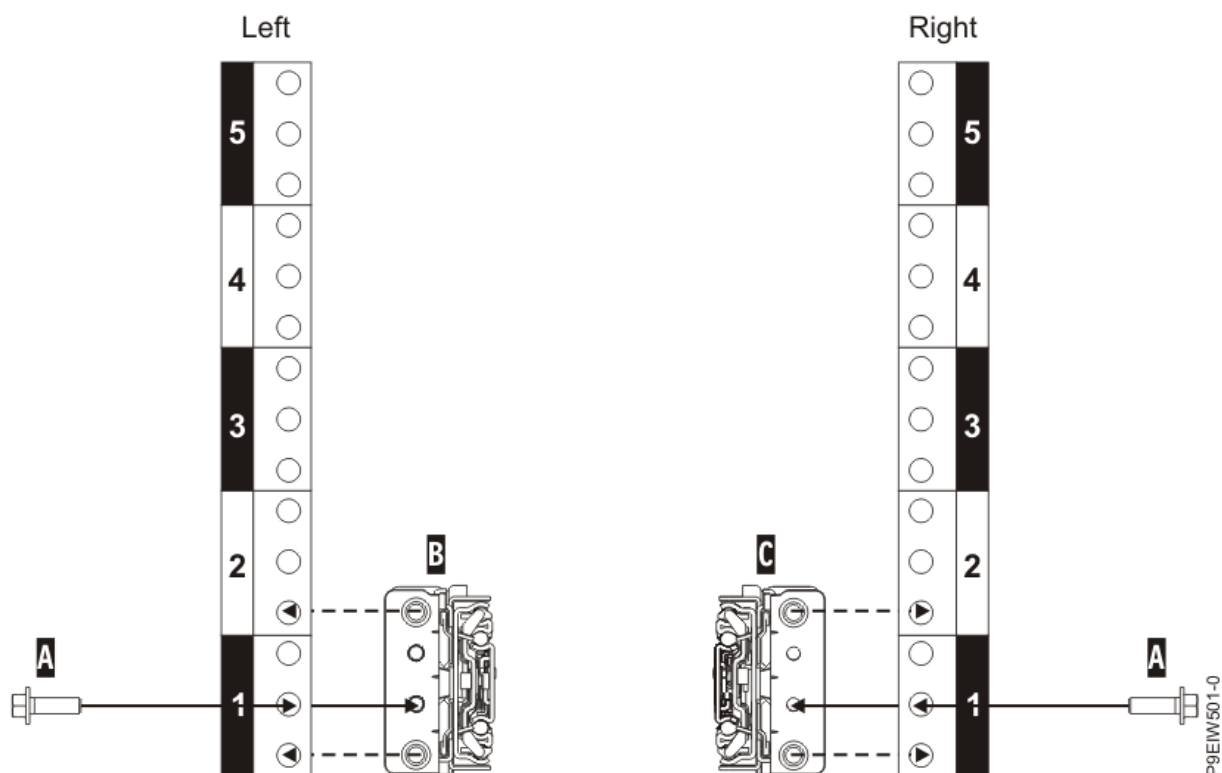


Figure 5. Attaching the slide rails at the rear of the rack

10. Attach the left slide rail (B) and right slide rail (C) with a M5x16mm screw (A) as shown in Figure 5 on page 6. Insert and tighten each screw into the threaded slide flange hole, located in the middle hole of the lowest EIA rack unit.

What to do next

Note: When you have finished using the installation tools, store them for future use.

Removing the shipping cover from the rear of the system chassis

You must remove the shipping cover from the rear of the system chassis.

About this task

To remove the shipping cover from the rear of the system chassis, complete the following tasks:

Procedure

1. Loosen the bolts on either end of the shipping cover.
2. Remove the shipping cover from the rear of the system.
3. If you plan to move the system later, store the shipping cover.

Removing components from the system chassis

Before you install the system into the rack, you must remove components from the chassis so that it's less heavy and easier to lift. If you have three people available to lift the system, you must complete all of the tasks, including the optional tasks. If you have four people to lift the system chassis, then you can skip the optional tasks.

About this task



Attention:

- Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
- When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used 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 an ESD 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.

The following table lists the removal tasks you must perform so that you can lift the system and install it into the rack. The number of tasks you must perform is dependent on the number of people you have to install the rack.

Number of installers	Required removal tasks
3	<ul style="list-style-type: none"> • System fans • Front cover • PCIe adapters • Power supplies • Top cover • Memory risers
4 or more	<ul style="list-style-type: none"> • System fans • Front cover • PCIe adapters • Power supplies

Removing the power supplies

Learn how to remove the power supplies.

Before you begin

Use tape, a marker, or a pencil to mark the location of each component that you remove. The marks are helpful as a reference when you replace each component.

About this task

To remove the power supplies, complete the following steps:

Procedure

1. Ensure that your wrist strap is attached to your wrist. If not, attach it now.
2. On the rear of the system, remove the SAS cables from the handle **(B)** of the power supply **(C)**.
3. Push the locking-tab **(A)** to the left, as shown in [Figure 6 on page 8](#).

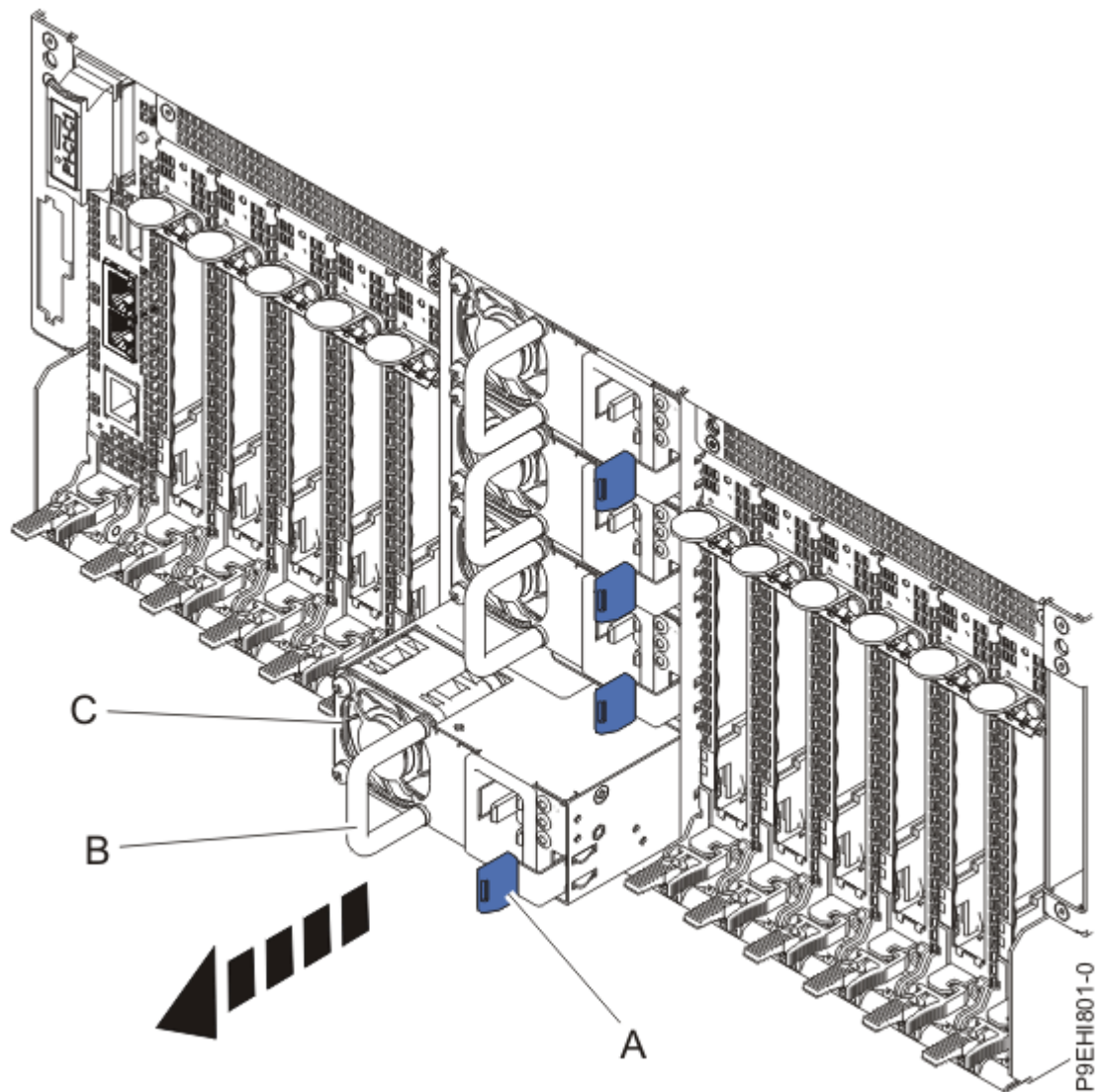


Figure 6. Removing a power supply from the rear of the system chassis

4. Using the handle **(B)**, pull the power supply away from the system, as shown in [Figure 6 on page 8](#).

Removing the PCIe adapters from the system chassis

To remove a PCIe adapter from the system, complete the steps in this procedure.

Before you begin

Use tape, a marker, or a pencil to mark the location of each component that you remove. The marks are helpful as a reference when you replace each component.

About this task

To remove the PCIe adapters, complete the following steps:

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the PCIe cassette from the slot:
 - a) Squeeze the latch lever **(A)** and press down on the latch **(B)** in the direction shown. This action pivots the cassette forward and releases the cassette from the slot.
 - b) Pull out the cassette from its slot.

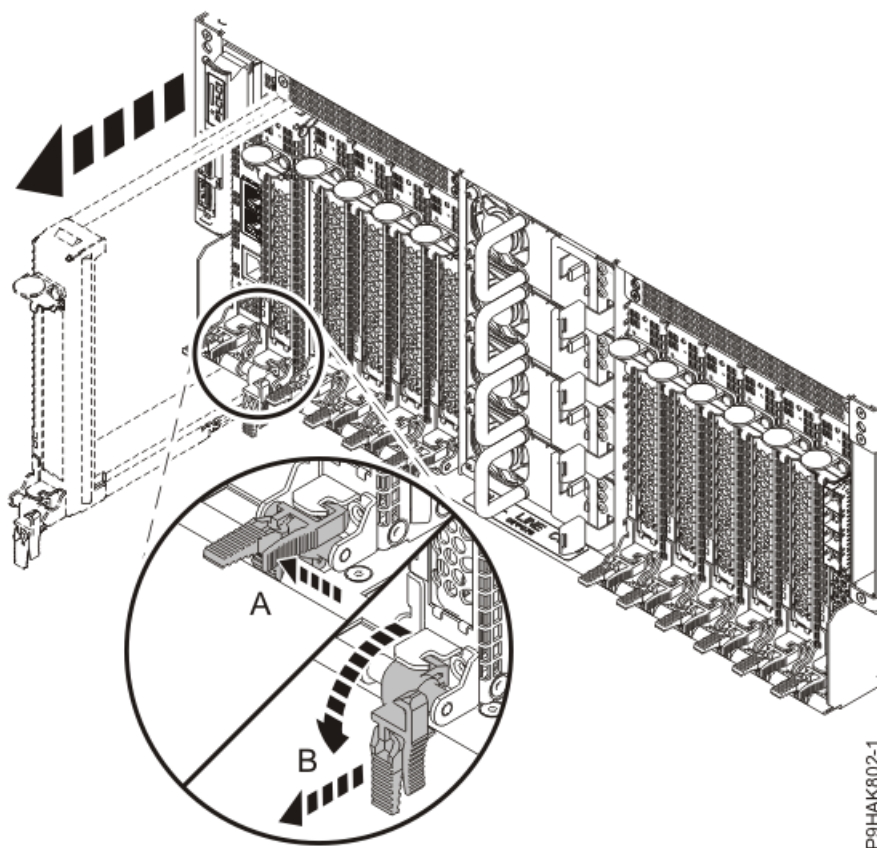


Figure 7. Removing a PCIe adapter cassette from the 9040-MR9 system

3. Choose from the following options:

- To remove a PCIe adapter from a cassette that has adapter retainers and strips, continue with step [“4”](#) on page 9.
- To remove a PCIe adapter from a cassette that doesn't have adapter retainers and strips, continue with step [“5”](#) on page 10.

4. If your cassette has two adapter retainers and strips, complete the following steps to remove a PCIe adapter from a cassette.

- a) Open the tailstock clamp **(A)** by rotating the clamp in the direction that is shown.
- b) Remove the adapter retainers **(B)** by rotating them in the direction that is shown and moving them all the way off the strips.
- c) Open the cassette by pressing and sliding the release bar **(C)** in the direction that is shown.
- d) Remove the PCIe adapter.

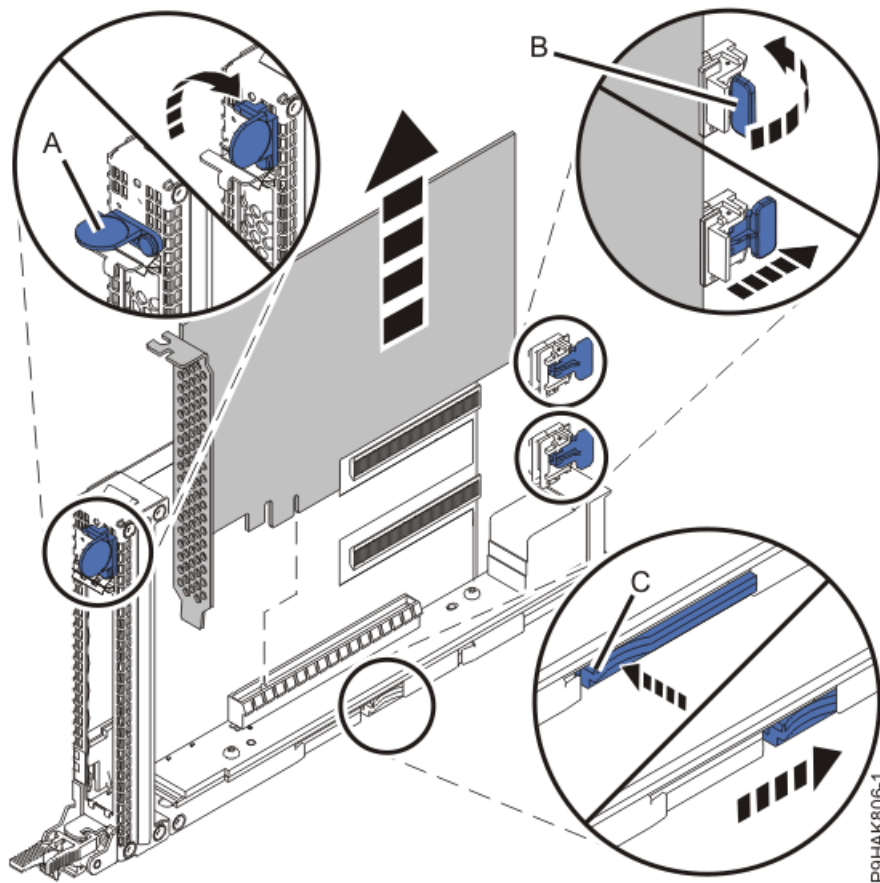


Figure 8. Removing a PCIe adapter from a cassette for the 9040-MR9 system

5. If your cassette doesn't have two adapter retainers and strips, complete the following steps to remove the PCIe adapter from the cassette.
 - a) Open the tailstock clamp **(A)** by rotating the clamp in the direction that is shown.
 - b) Open the cassette by pressing and sliding the release bar **(B)** in the direction that is shown.
 - c) Remove the PCIe adapter.

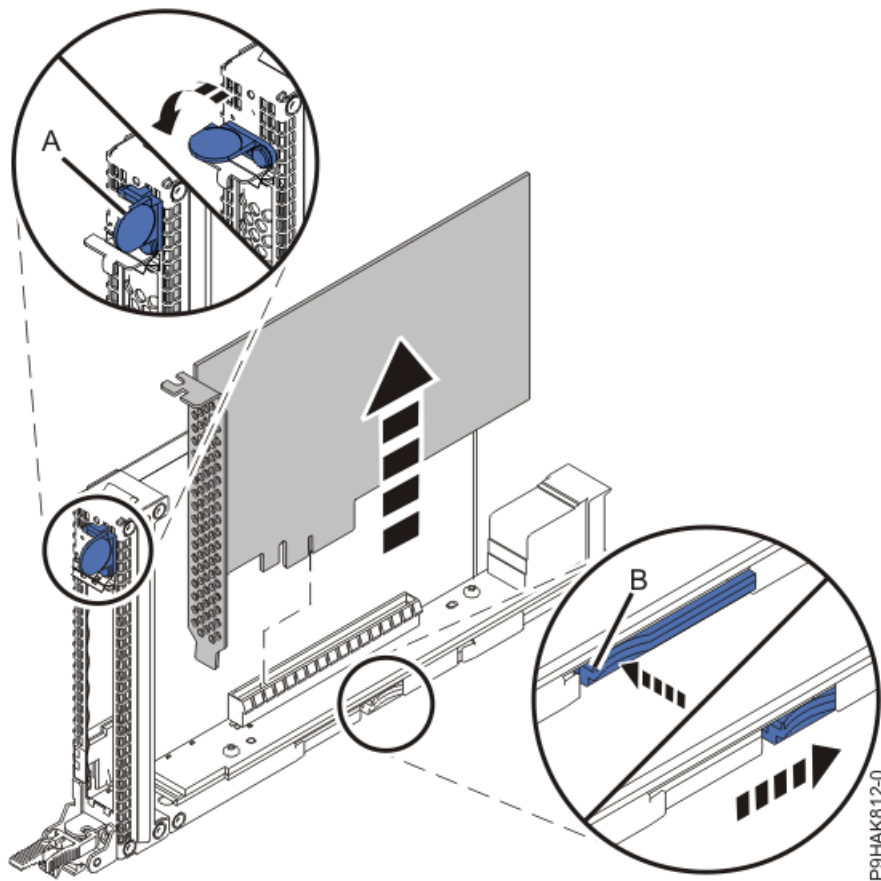


Figure 9. Removing a PCIe adapter from a cassette for the 9040-MR9 system

6. Place the removed adapter on an approved ESD surface.

Optional: Removing the front cover

Learn how to remove the front cover, if present.

About this task

To remove the front cover (if present), complete the following steps:

Procedure

1. Go to the front of the system chassis.
2. Place your fingers on the indentations **(B)** located on both sides of the cover, as shown in [Figure 10 on page 12](#).

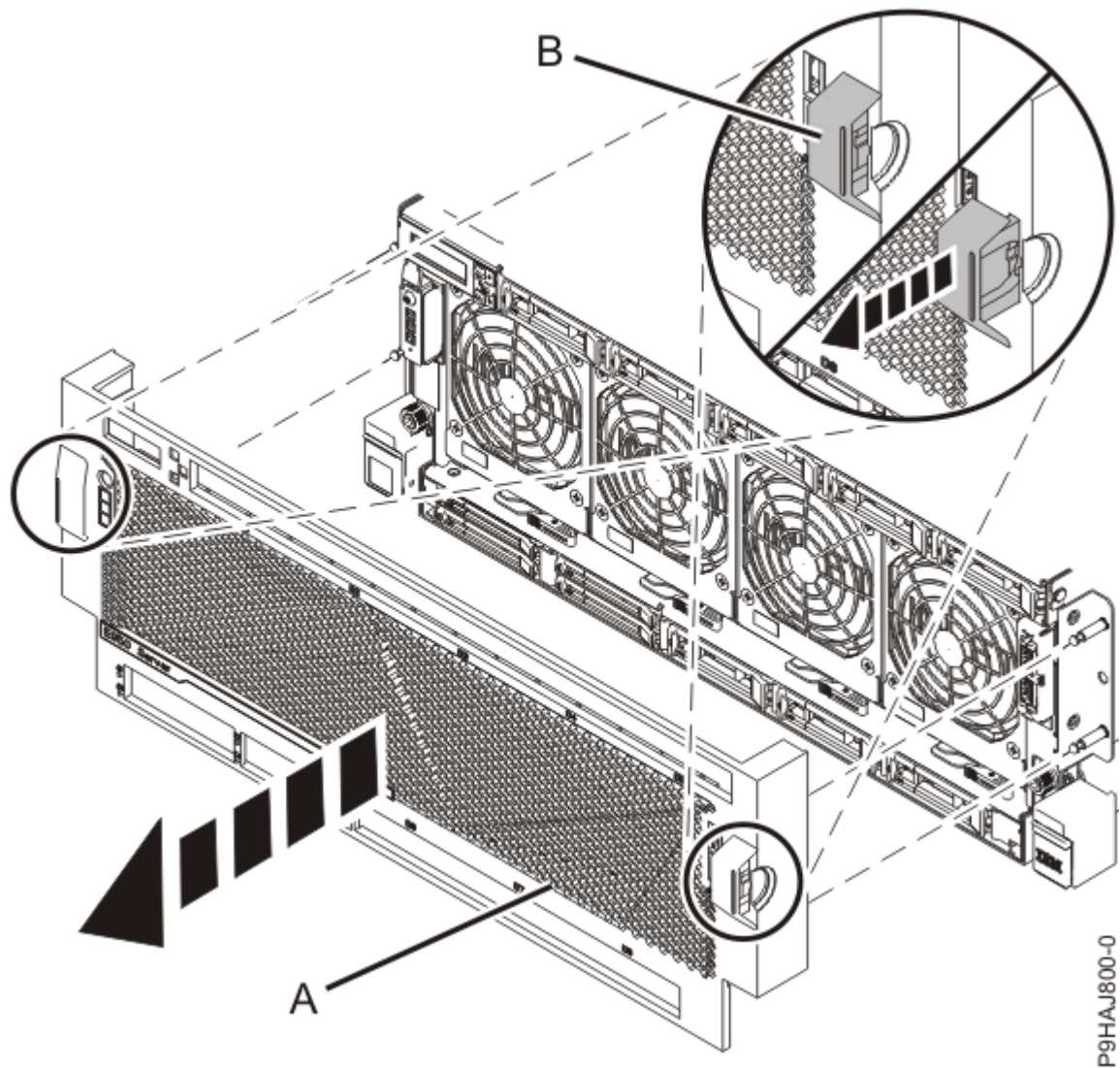


Figure 10. Removing the front cover

3. Pull the cover **(A)** away from the system, as shown in [Figure 10 on page 12](#).

Removing the system fans

Learn how to remove the system fans.

Before you begin

Use tape, a marker, or a pencil to mark the location of each component that you remove. The marks are helpful as a reference when you replace each component.

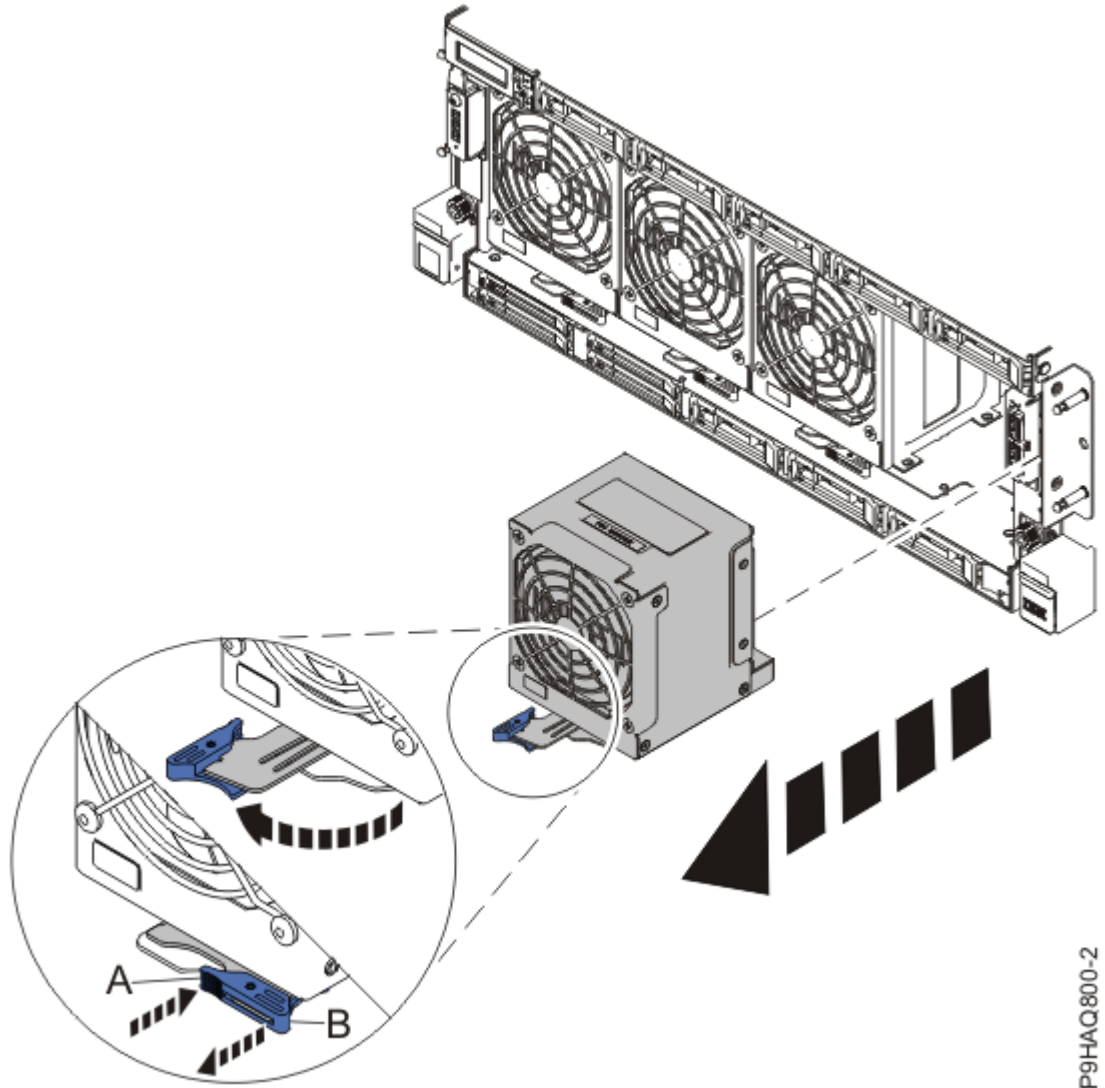
About this task

To remove the system fans, complete the following steps:

Procedure

1. Put your thumb against the latch **(A)**, and put your index finger against the latch **(B)**, as shown in [Figure 11 on page 13](#).
2. Push against the latch with your thumb and then pull out the latch with your index finger. This action releases the latch.
3. Rotate the fan handle in the direction that is shown in the following figure to unlock the fan from its slot.

4. Hold onto the fan handle. Use your hand to support the bottom of the fan and pull out the fan from its slot as shown in the following figure.



P9HAQ800-2

Figure 11. Removing the front fan

5. Repeat these steps for each of the system fans.

Optional: Removing the memory risers

If you only have three people available to lift the system, you must also remove the memory risers. Removing the memory risers makes the system chassis lighter so that three people are able to lift it into the rack. If you have four people available to lift the system, you can skip this step.

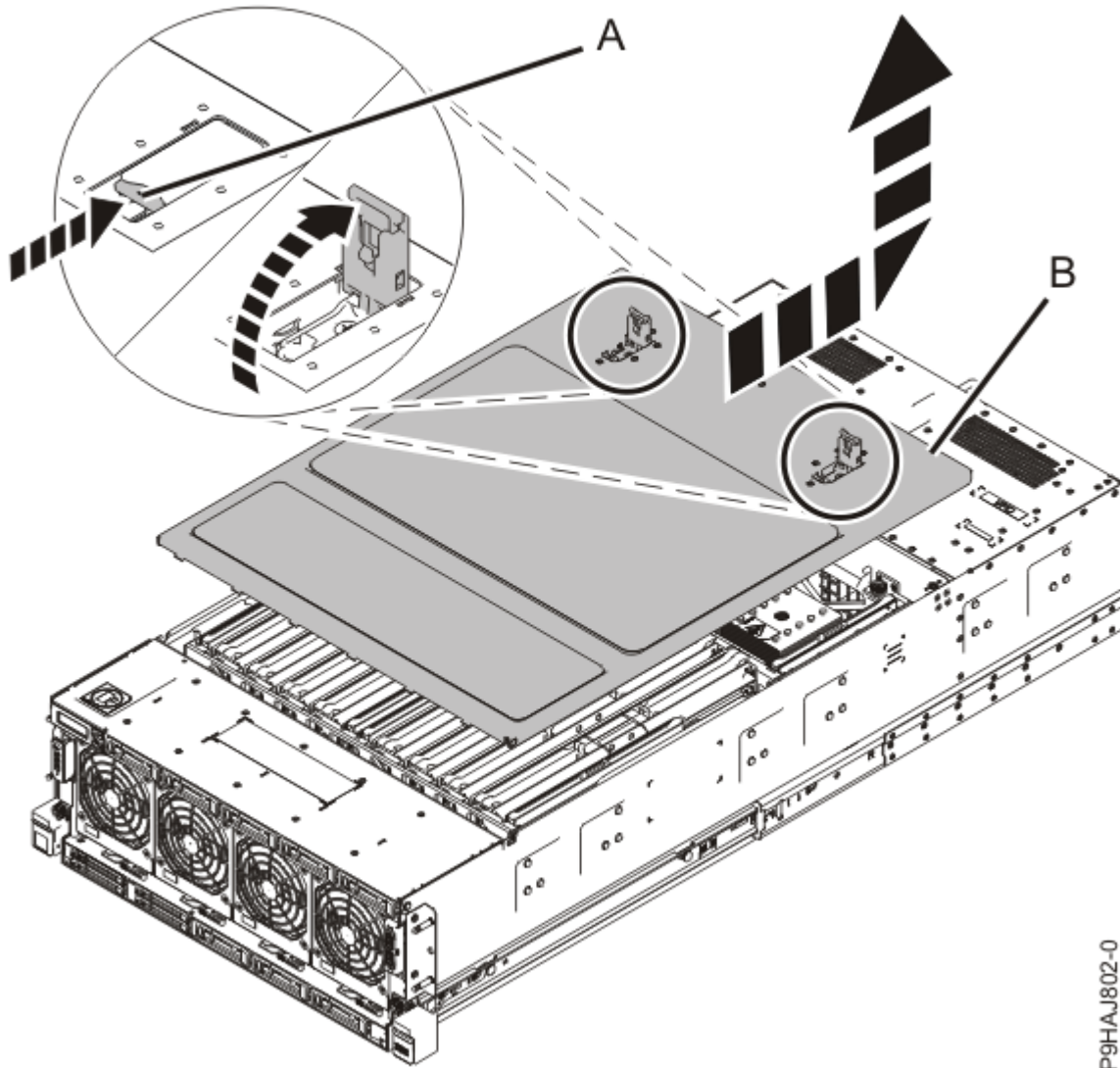
Before you begin

Use tape, a marker, or a pencil to mark the location of each component that you remove. The marks are helpful as a reference when you replace each component.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the service access cover.
 - a. Push the release latches **(A)** in the direction shown in [Figure 12 on page 14](#).

- b. Slide the cover **(B)** off the system unit as shown in [Figure 12 on page 14](#). When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

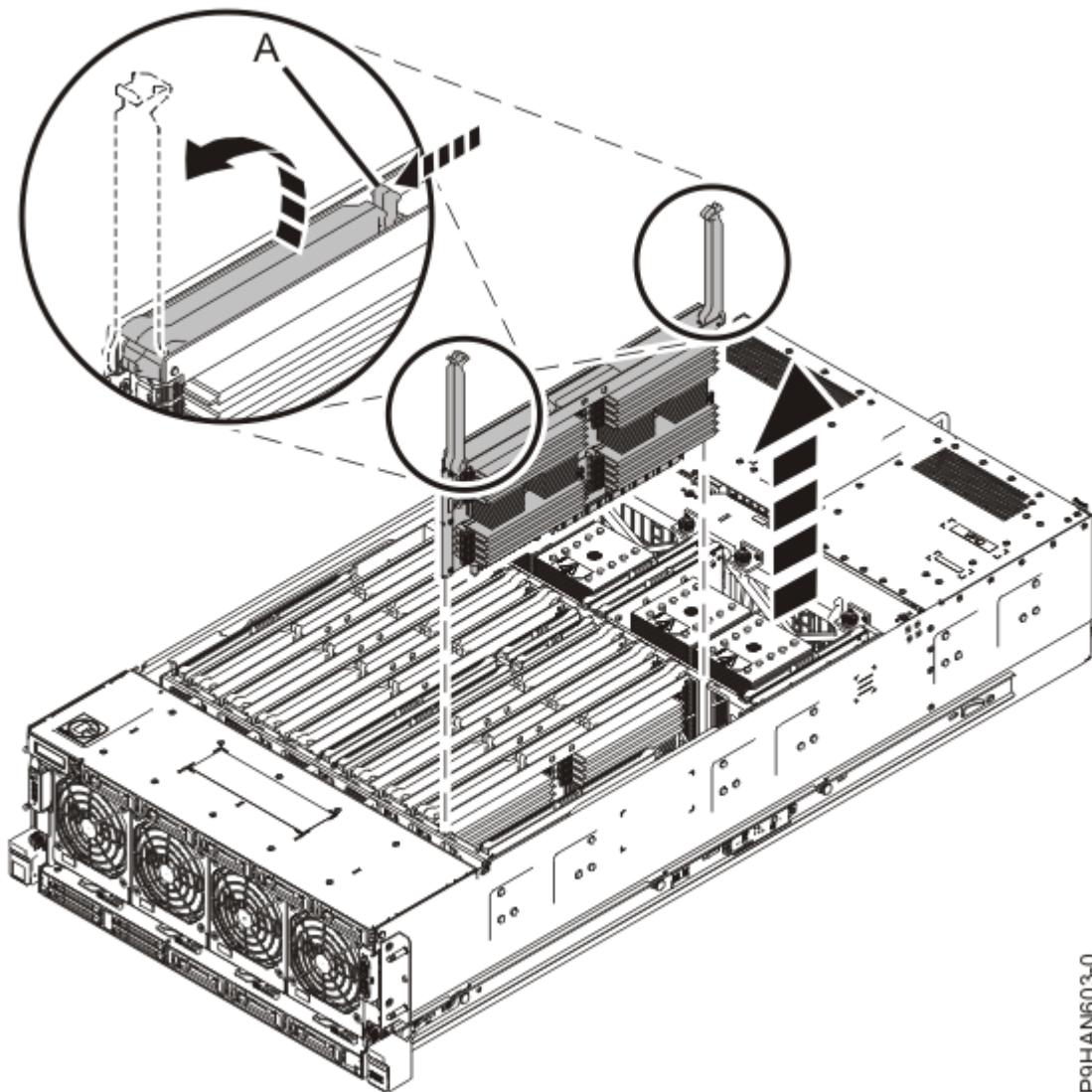


P9H4J802-0

Figure 12. Removing the service access cover

3. Remove the memory riser.

- Open the release latches **(A)** on the memory riser as shown in [Figure 13 on page 15](#).
Open the latches to the fully upright 90-degree position.
- Pull out the memory riser from the slot by holding onto the latches.



P9HAN603-0

Figure 13. Removing a memory riser

4. Repeat step “3” on page 14 for each installed memory riser.
5. If the removed part is used again, place the part on an electrostatic discharge (ESD) mat.

Installing the cable-management bracket

Install the cable management bracket to provide organization for the cables and cords connecting to the system.

About this task

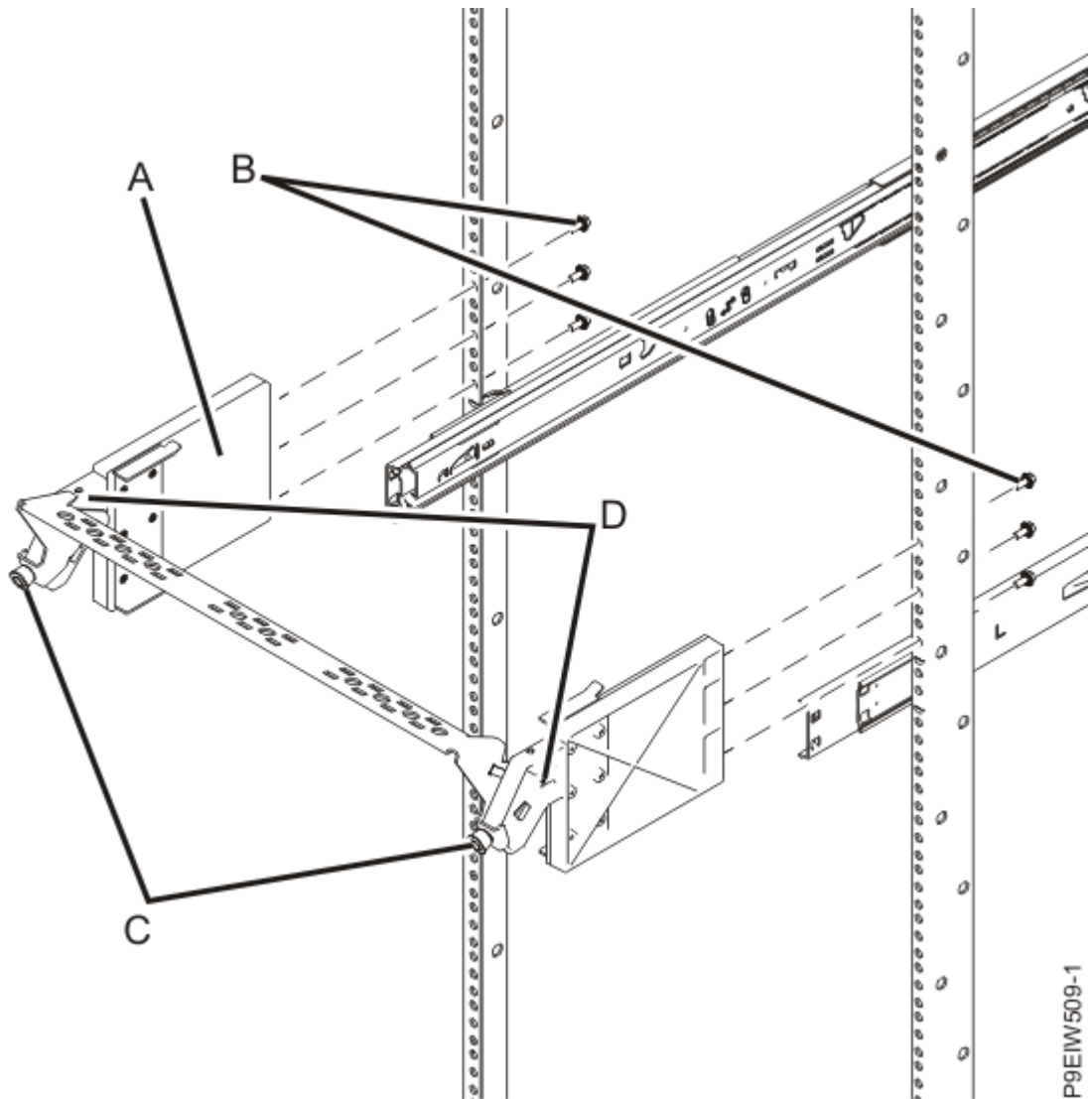
To install the cable management bracket, complete the following steps:

Procedure

1. Two cable management bars are included with the system. One bar is wider than the other. The wider bar is used in racks that have a shorter depth (like the 7014-T42 rack). The shorter bar is used in racks that have a longer depth (like the 7965-S42 rack). Choose the cable management bar that matches the depth of the rack that you have.
2. Each cable management bracket takes up three EIA units. Three screws are used to attach each side of the cable management bracket to the rack flange. Each screw goes in the middle hole of each of the three EIA rack units. The screws are installed on the inside of the rack flange. Using a sticker or pen,

mark the locations on the inside of the rack flange where the cable management bracket screws will be installed.

3. Assemble the cable management bracket by attaching the cable management bar to the cable management brackets, using two M3 screws (**D**), as shown in [Figure 14 on page 16](#).
4. Attach the cable management bracket to the rack. To attach the cable management bracket to the rack, complete the following steps:
 - a. At the rear of the rack, hold one side of the assembled cable management bracket (**A**) against the rack flange. Ensure that the bracket aligns with the locations that you marked in step “2” on [page 15](#).
 - b. From inside of the rack, install three screws (**B**) through the rack flanges and into the cable management bracket (**A**), as shown in [Figure 14 on page 16](#).
 - c. Repeat this step for the opposite side of the cable management bracket.
5. Adjust the cable management bracket according to your needs by pulling the thumbscrews (**C**) and tilting the bracket, as shown in [Figure 14 on page 16](#).



P9E1W509-1

Figure 14. Attaching the cable management bracket to the rack

Installing the system into the rack

Use the procedure in this section to install the depopulated system chassis into the rack.

About this task



CAUTION: This system requires at least three people to install the system into the rack. You must also attach the system-to-rail locking clips to each rail after installing the system onto the rails.

To install the system into the rack, complete the following steps:

Procedure

1. Extend the mounting hardware **(1)** as shown in [Figure 15 on page 17](#).

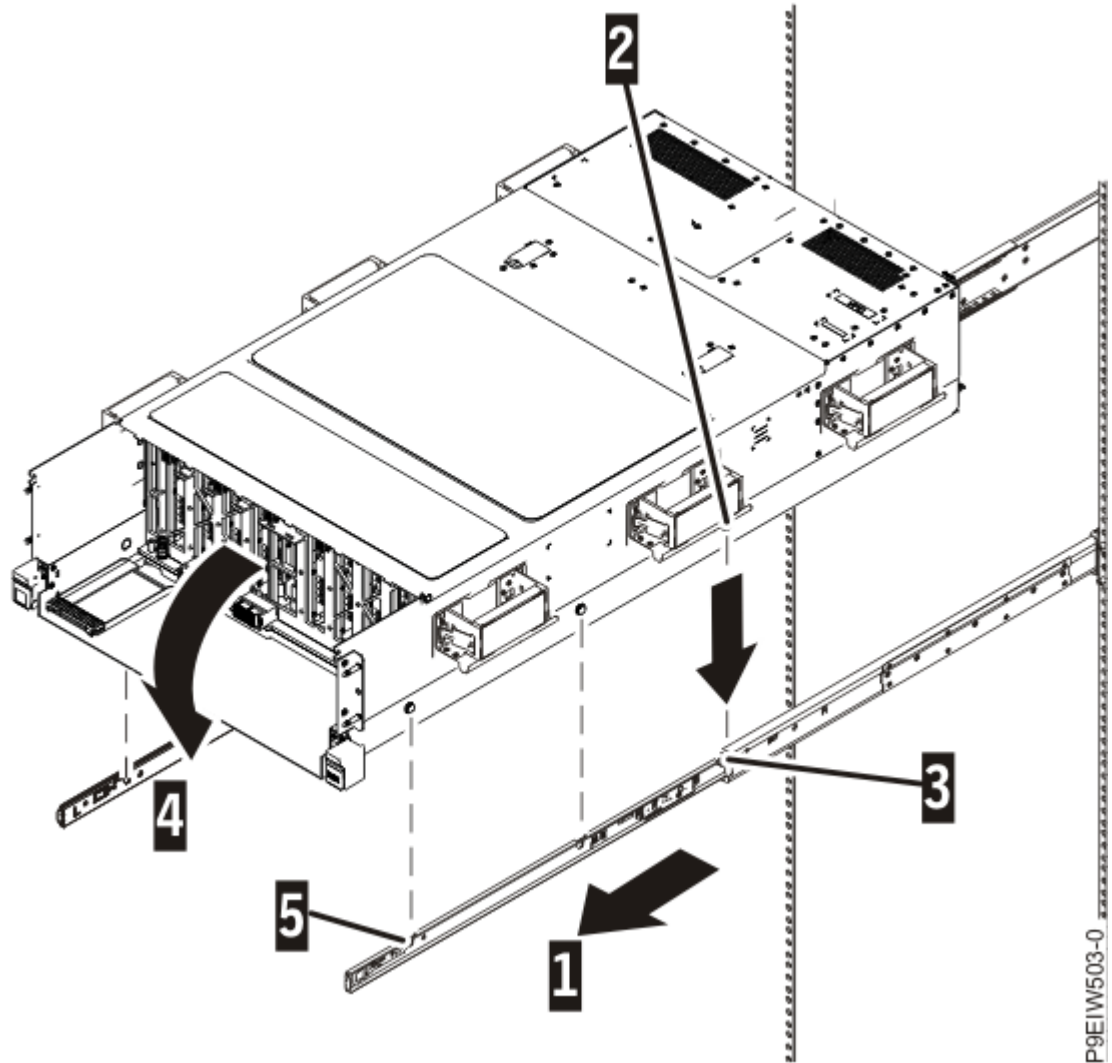
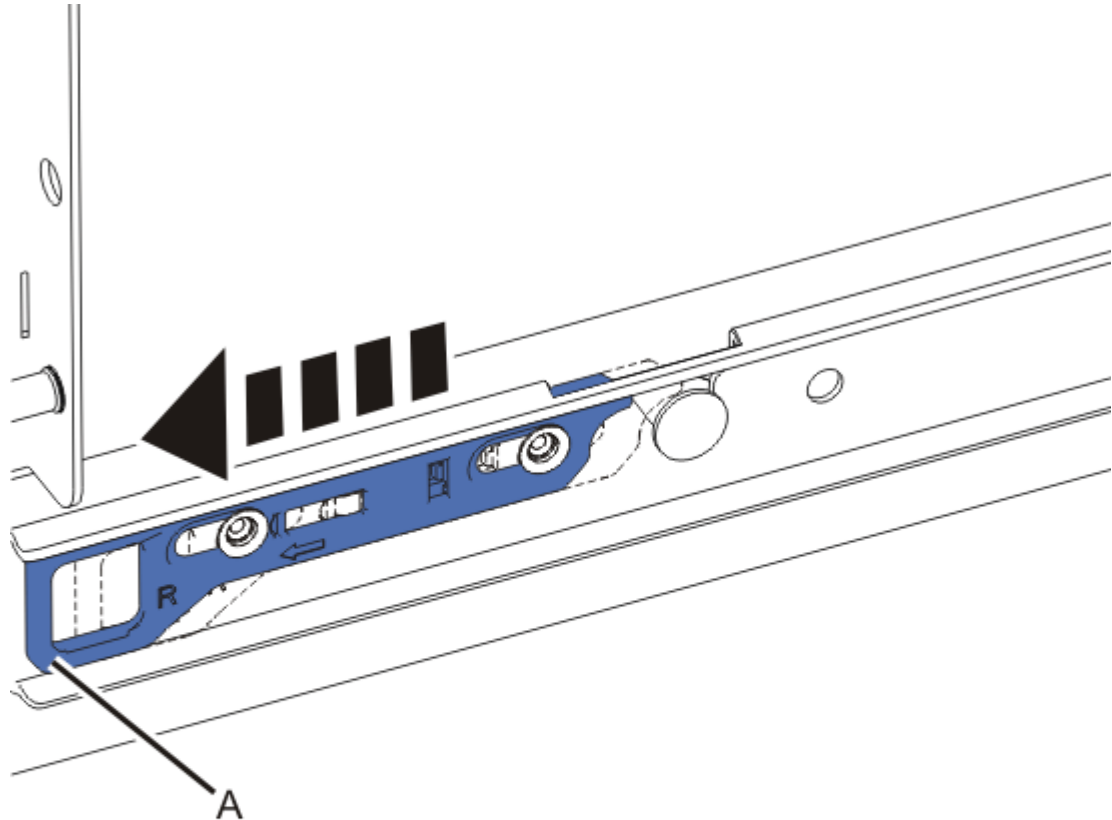


Figure 15. Installing the chassis onto the mounting hardware

2. Position one person in front of the system, one person on the left side of the system and one person on the right side of the system.
3. Using the lift handles, lift the chassis over the rails.
4. Tilt the front of the system up so that the rear chassis pins **(2)** insert into the rear holes on the mounting hardware **(3)**, as shown in [Figure 15 on page 17](#).
5. Tilt the front of the system down so that the chassis pins are inserted into the front **(4 and 5)** and middle holes in the mounting hardware, as shown in [Figure 15 on page 17](#).
6. Install the system-to-rail locking clips onto each rail.

To install the system-to-rail locking clips, complete the following tasks:

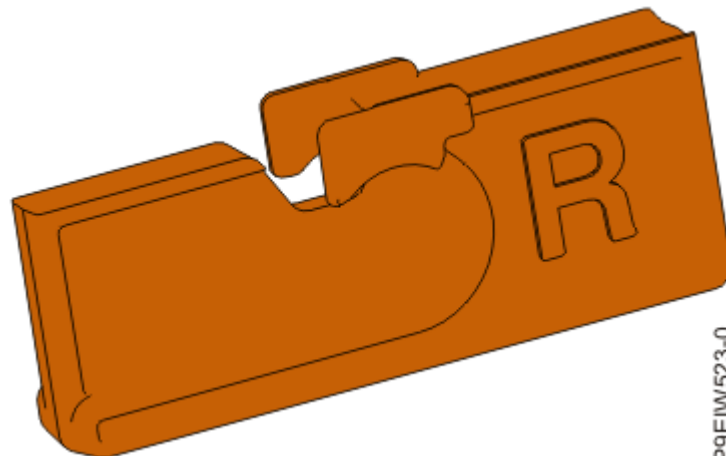
- a. On the right side of the rail, pull the blue latch marked **R (A)**.



P9EIW520-0

Figure 16. Pulling the blue rail latch

- b. Each side of each clip is stamped with an **L** and an **R**. For the right side of the rail, ensure that the side stamped **R** is facing outward.



P9EIW523-0

Figure 17. Right system-to-rail locking clip

c. While holding the blue latch **(A)**, rotate the clip **(B)** into the rail until it clicks into place.

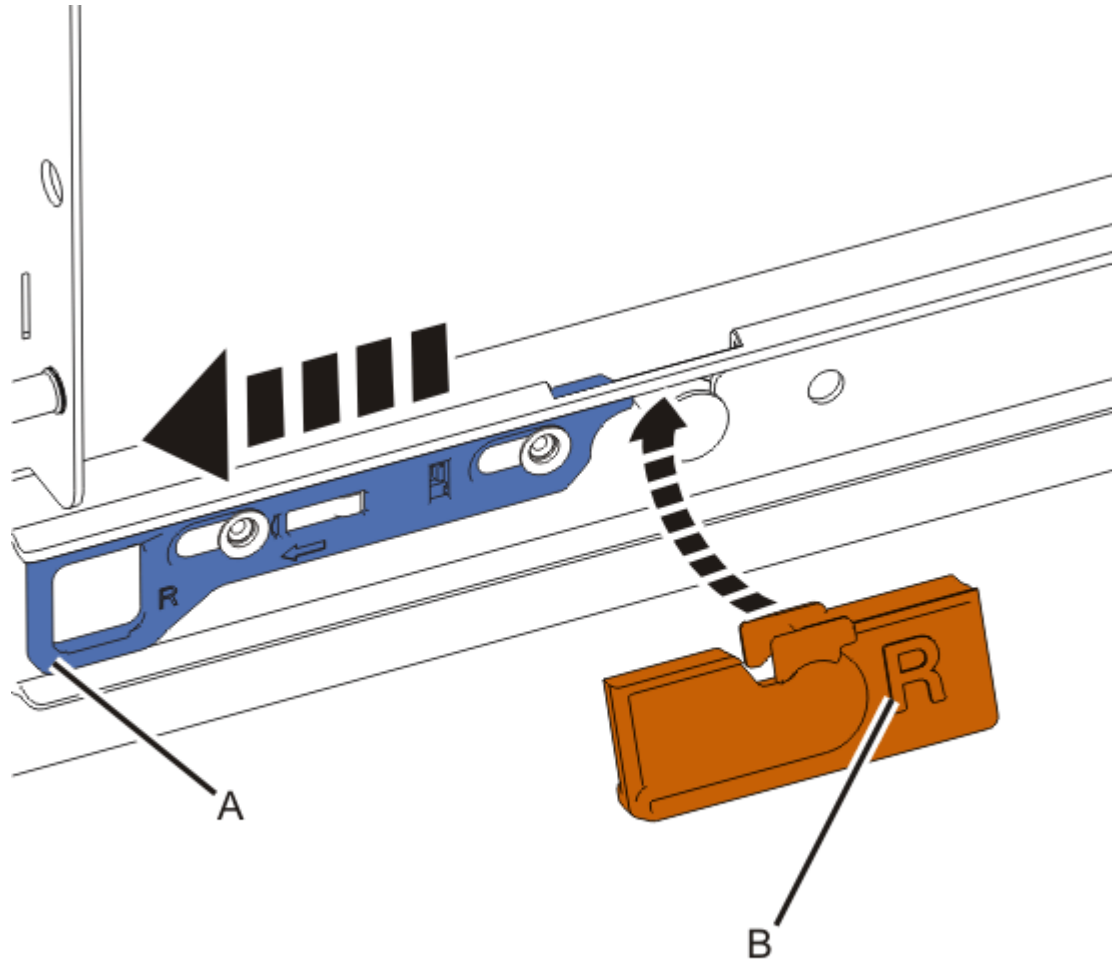
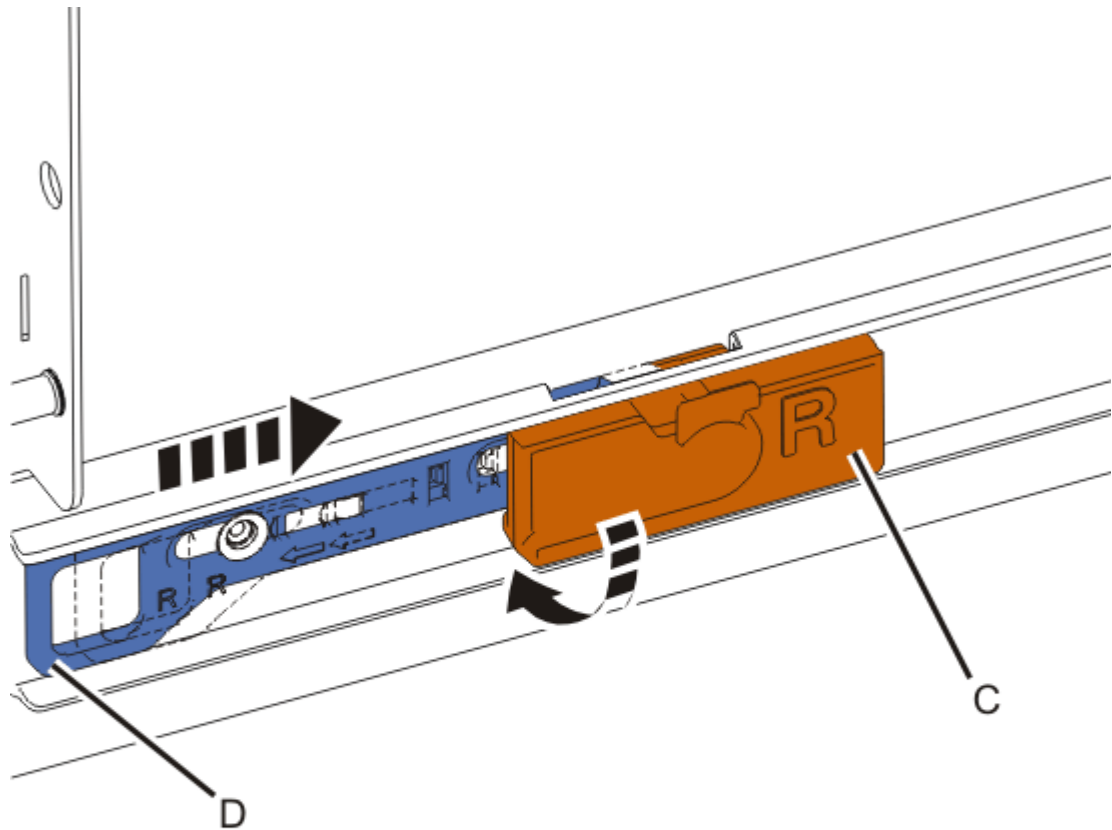


Figure 18. Installing the clip onto the rail

- d. Ensure that the clip **(C)** is flush with the rail and that the system chassis pin is seated in the clip, as shown in the following figure.
- e. Release the blue latch **(D)**.



P9E1W522-0

Figure 19. Releasing the blue latch

- f. Repeat these steps for the **L** slide rail, using the clip with the side stamped **L** facing outward.
7. Remove the lift handles that you installed on both sides of the chassis and store them for future use. Removal instructions are printed on each handle.
8. Continue with [“Replacing components into the system chassis”](#) on page 20.

Replacing components into the system chassis

After you have installed the chassis onto the rack rails, you must replace the components that you removed.

Optional: Replacing the memory risers and service access cover and pushing the system into the rack

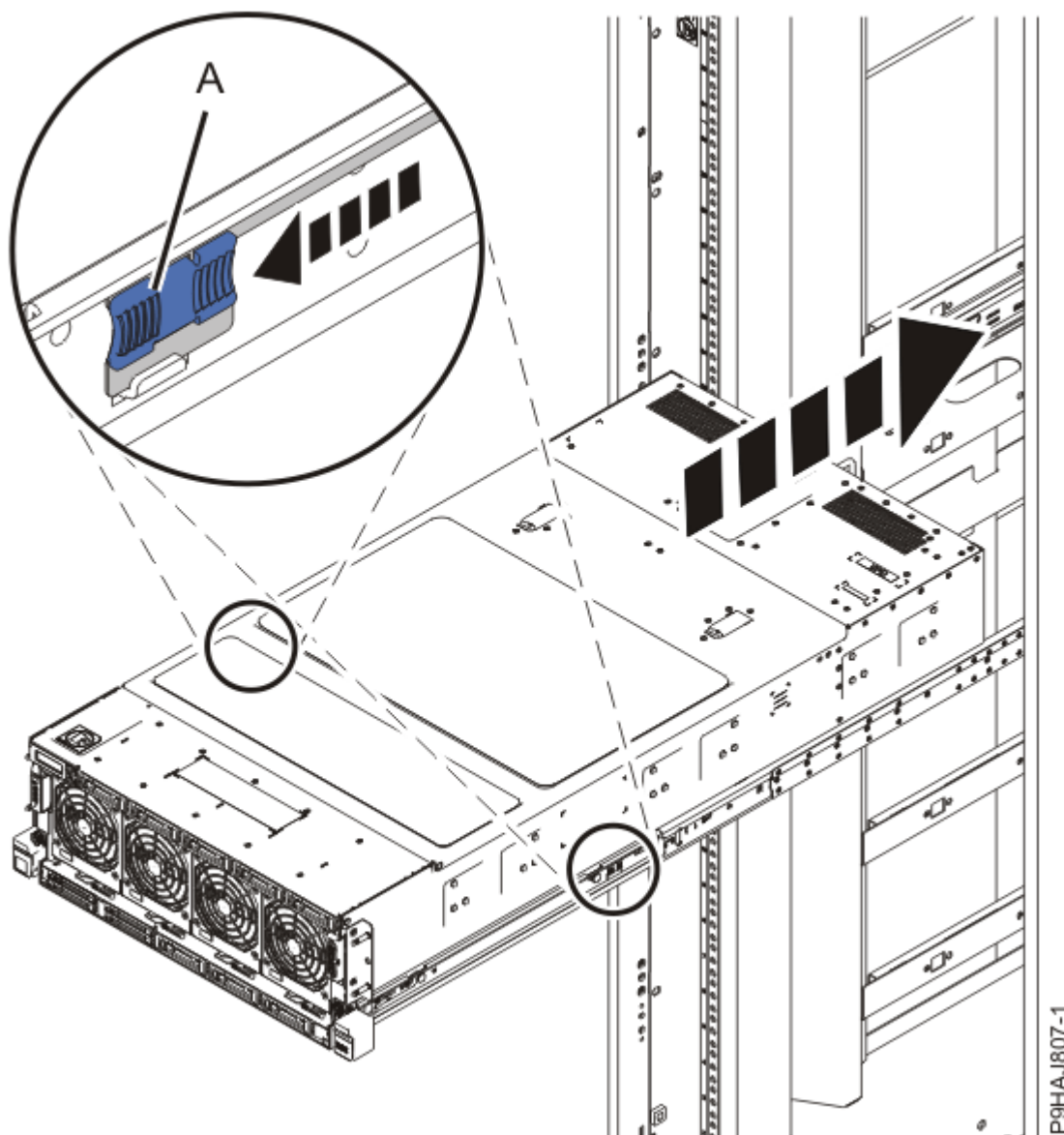
If you removed the memory risers, you must reinstall them into the system chassis.

Before you begin

To replace the memory risers, complete the following tasks:

Procedure

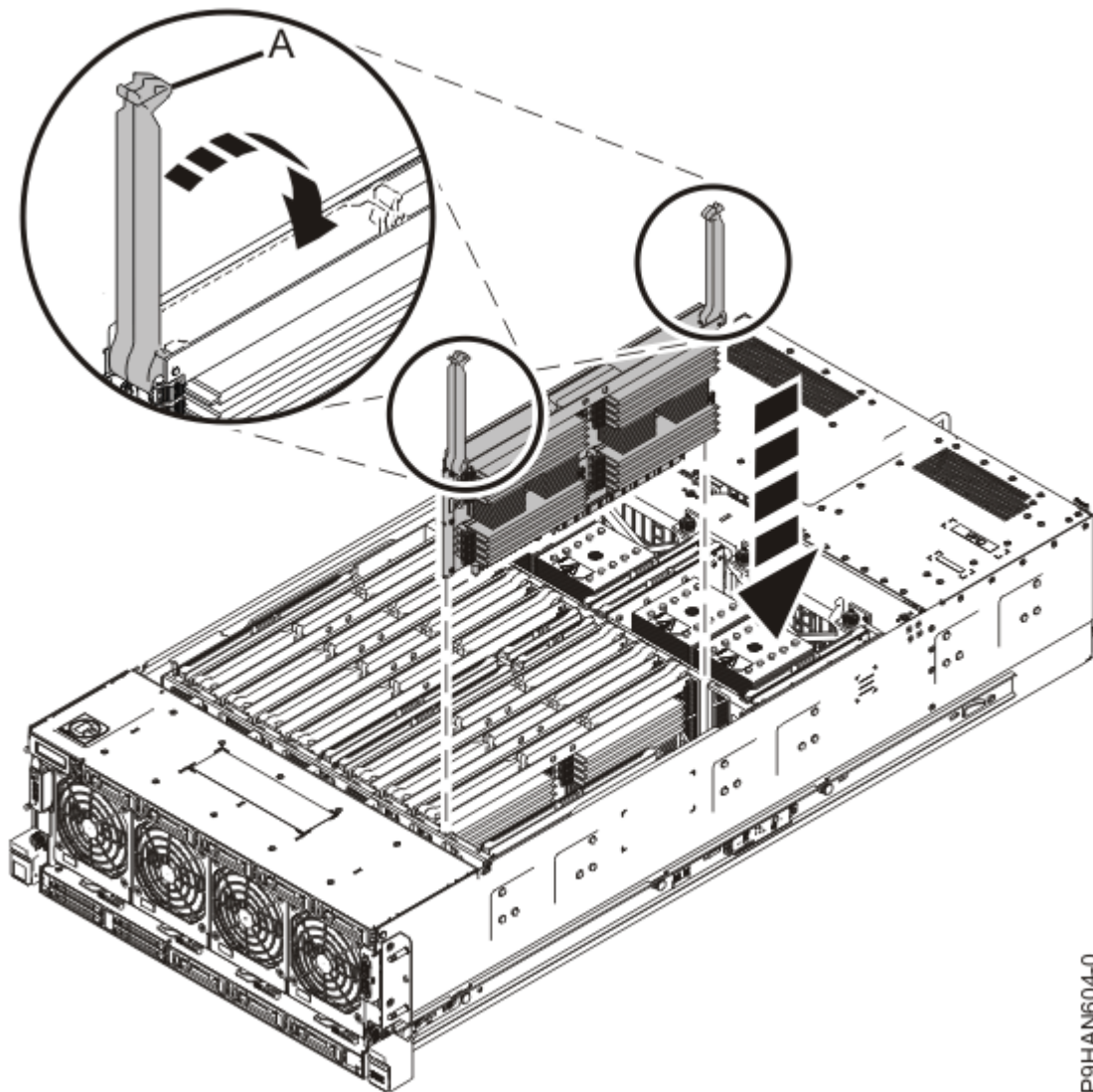
1. Move to the rear of the rack. To ensure that you have clearance when you push the system into the rack, tuck the SAS cables into the empty power supply slots.
2. Move to the front of the rack. Release the latches in the middle of the rails (**A**) and push the system halfway into the rack, as shown in [Figure 20](#) on page 21.



P9HJ807-1

Figure 20. Releasing the latches in the middle of the rails and pushing the system into the rack

3. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
4. To insert the memory riser, complete the following steps:
 - a) Ensure that the release latches **(A)** are fully open to a 90-degree angle as shown in [Figure 21 on page 22](#).
 - b) Align the memory riser with the connector.
 - c) Press the memory riser firmly into the connector.
 - d) Rotate the release latches into the closed position, and press the release latches down to ensure that the memory riser is fully seated into the connector.



P9HAN604-0

Figure 21. Inserting a memory riser

5. Repeat step [1](#) for each memory riser.
6. Replace the system service cover.
 - a) Slide the cover **(A)** onto the system unit as shown in [Figure 22 on page 23](#).
 - b) Close the release latches **(B)** by pushing it in the direction as shown in [Figure 22 on page 23](#).

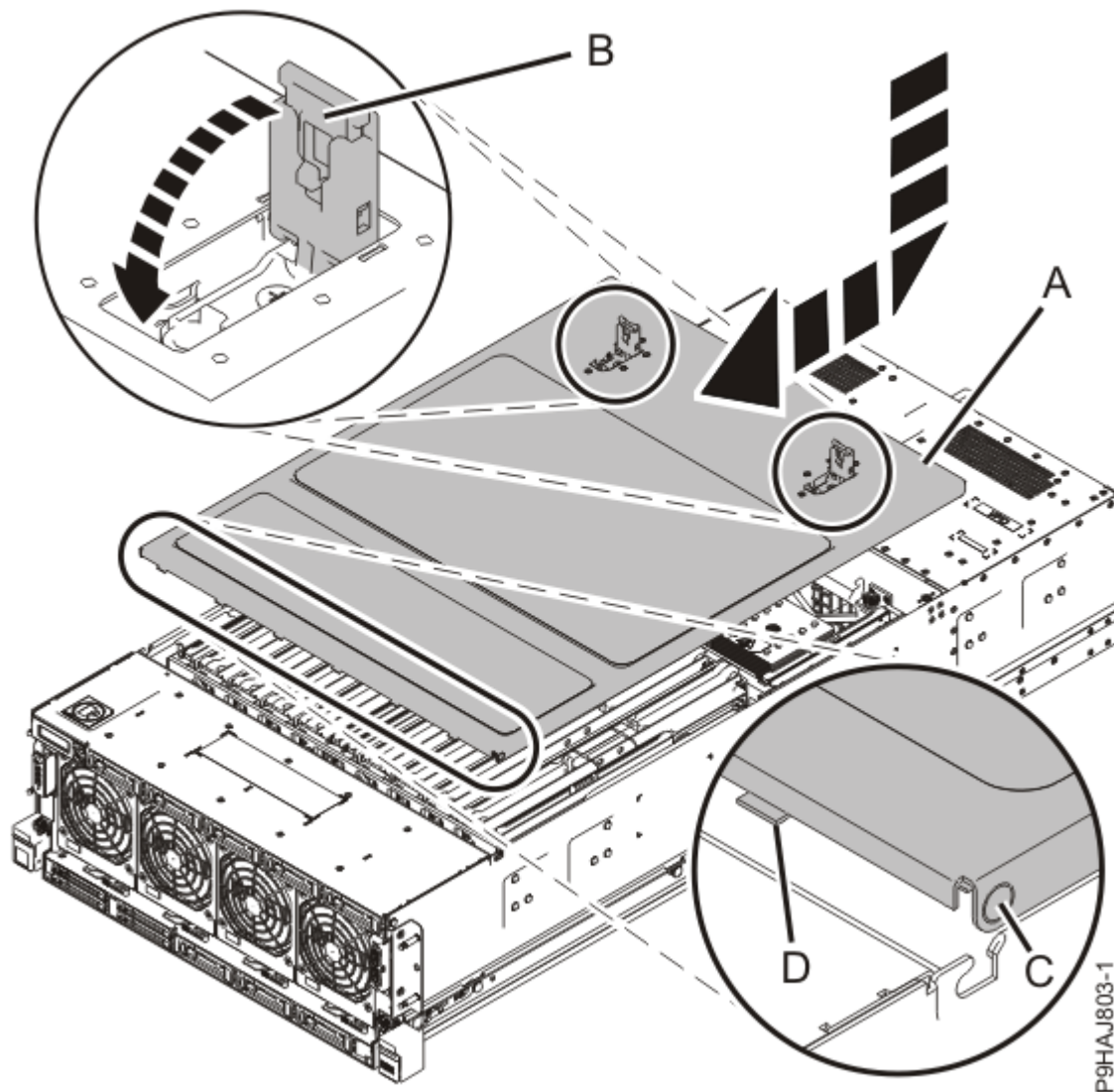


Figure 22. Installing the service access cover

7. Remove the system-to-rail locking clips that you installed.

To remove the system-to-rail locking clips, complete the following steps:

- a. On the right rail, pull the blue latch marked **R**.
 - b. While holding the blue latch, rotate the clip off of the rail.
 - c. Release the blue latch.
 - d. Repeat these steps to remove the system-to-rail locking clip on the left rail.
8. Release the latches in the middle of the rails (**A**) again and push the system the rest of the way into the rack.

Replacing the system fans

Learn how to replace the system fans in the front of the system chassis.

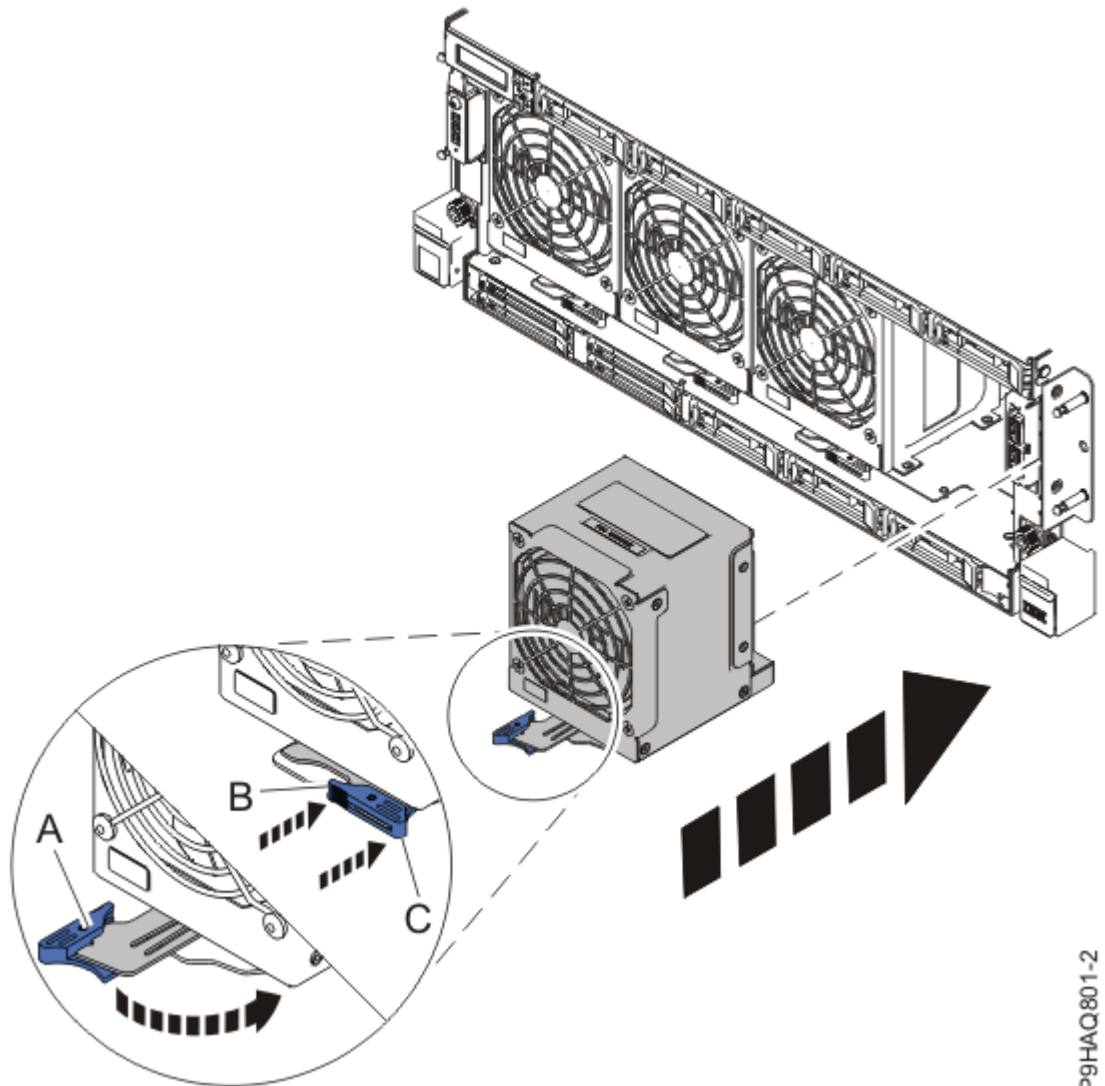
About this task

To replace the system fans, complete the following steps:

Procedure

1. Move to the front of the rack. Ensure that the fan handle (**A**) is rotated open in the direction shown in [Figure 23 on page 24](#).

2. Using your hand to support the bottom of the fan, align the fan with the fan slot and slide it into the system.
3. Rotate the fan handle (**A**) in the direction shown and then press the fan handle until the latch locks in place. See [Figure 23 on page 24](#).



P9HAQ801-2

Figure 23. Replacing a front fan

Replacing the front cover

Learn how to replace the front cover.

About this task

To install the front cover, complete the following steps:

Procedure

1. Move to the front of the rack.
2. Position the cover on the front of the system unit so that the four pins on the system match the four holes on the rear of the cover.
3. Press the tabs on the cover to snap the cover into position.

Replacing the PCIe adapters in the system chassis

Replace the PCIe adapters in the system chassis.

About this task

Procedure

1. Choose from the following options:

- To replace a PCIe adapter into a cassette that has adapter retainers and strips, continue with step [“4”](#) on [page 9](#).
- To replace a PCIe adapter into a cassette that does not have adapter retainers and strips, continue with step [“5”](#) on [page 10](#).

2. If your cassette has two adapter retainers with strips, complete the following steps to install or replace a PCIe adapter into the cassette:

- a) If the adapter retainers **(A)** haven't already been removed, remove the adapter retainers **(A)** by putting them in the open position and moving them all the way off the strips.
- b) Press and slide the release bar **(B)** to open the cassette.
- c) Place an ESD safety sheet **(C)** over the strips.

Note: You can use the ESD package that the new adapter was in. If necessary, cut it to size.

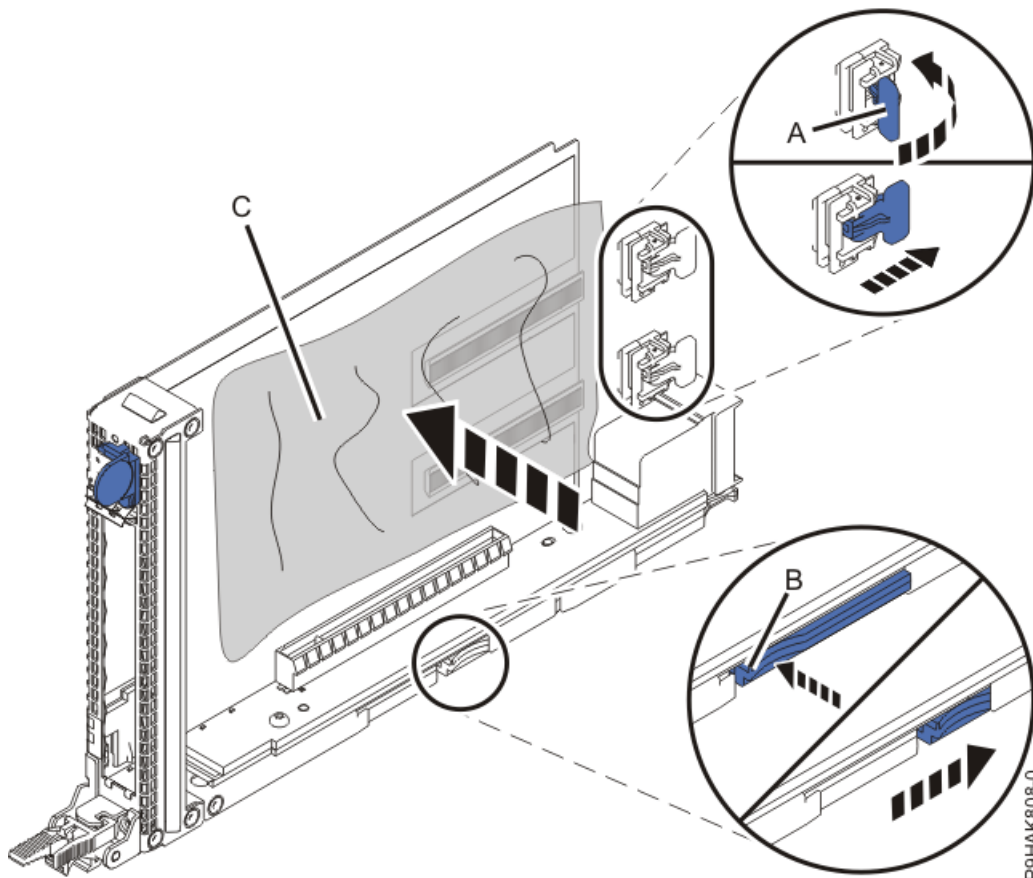


Figure 24. Placing an ESD safety sheet over the strips on the 9040-MR9 cassette

- d) Insert the adapter into the cassette.
- e) Press and slide the release bar **(A)** to close the cassette.
- f) Close the tailstock clamp **(B)** by rotating the clamp in the direction that is shown.
- g) Pull the ESD safety film **(C)** out.

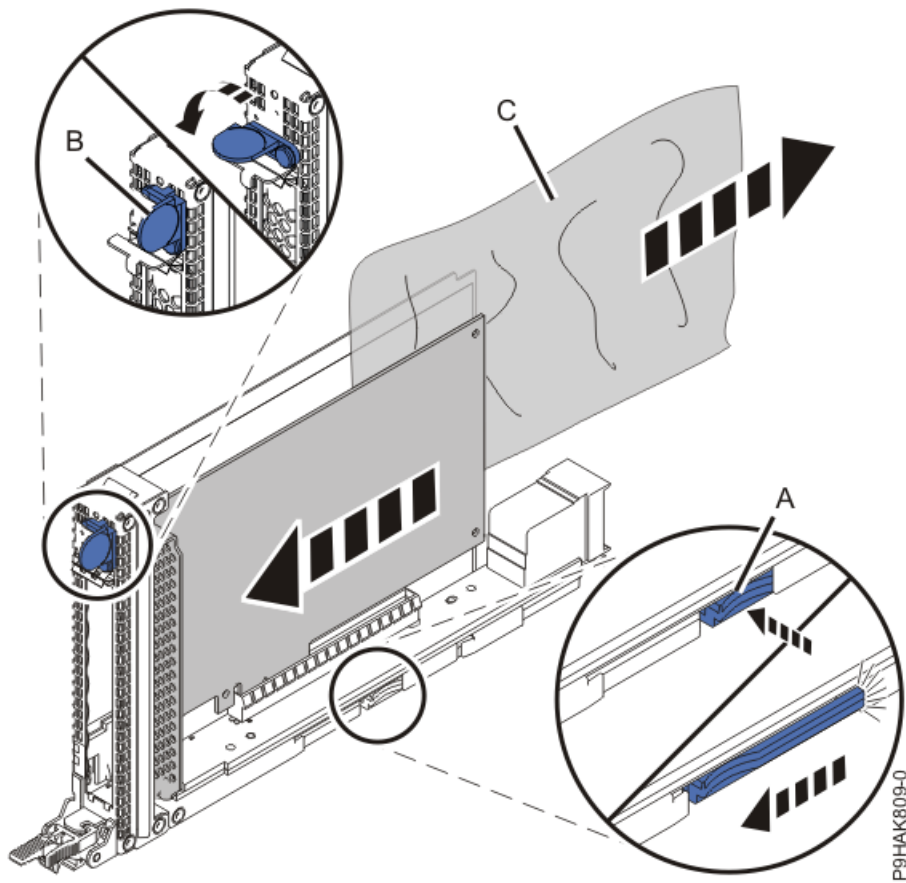
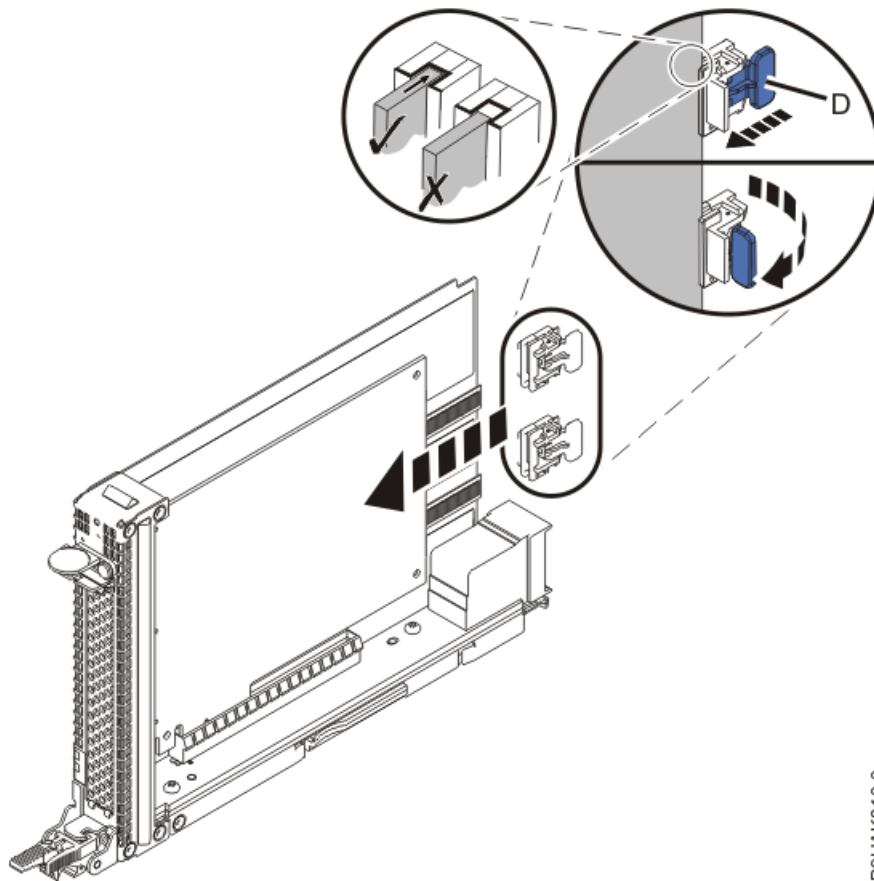


Figure 25. Installing an adapter in the cassette for the 9040-MR9 system

- h) With the adapter retainers (**D**) in the open position, slide the retainers onto the strips.
- i) Position the adapter retainers (**D**) so that they support the adapter and put them in the locked position by rotating them in the direction that is shown.

Note: Ensure that the adapter is secured in the adapter retainer channel.



P9HAK810-0

Figure 26. Securing an adapter with the adapter retainers for the 9040-MR9 system

3. If your cassette does not have the two adapter retainers and strips, complete the following steps to install or replace a PCIe adapter into the cassette:
 - a) Press and slide the release bar **(A)** to open the cassette.
 - b) Insert the adapter into the cassette.
 - c) Press and slide the release bar **(A)** to close the cassette.
 - d) Close the tailstock clamp **(B)** by rotating the clamp in the direction that is shown.

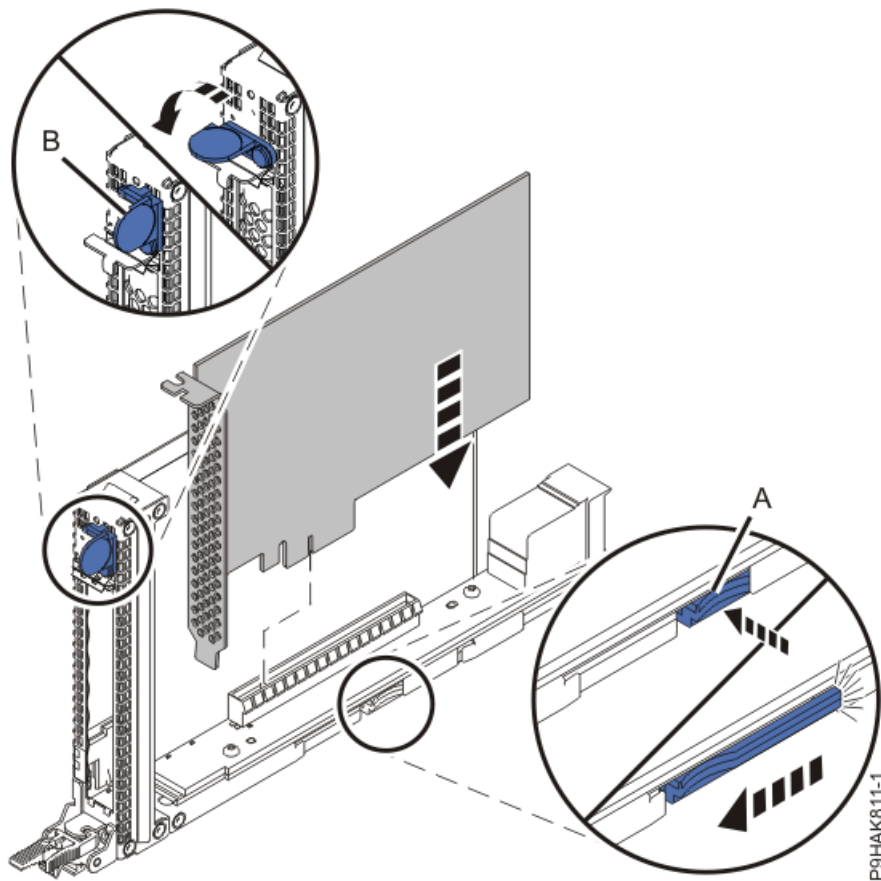


Figure 27. Installing an adapter in the cassette for the 9040-MR9 system

4. Slide the PCIe cassette into the slot by completing the following steps:



Attention:

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

- a) Align the cassette on the cassette rail in the cassette slot.
- b) Slide the cassette forward until the cassette is fully seated.
- c) To lock the cassette in its slot, squeeze the latch lever **(A)** toward the latch **(B)** and rotate the latch **(B)** in the direction that is shown.

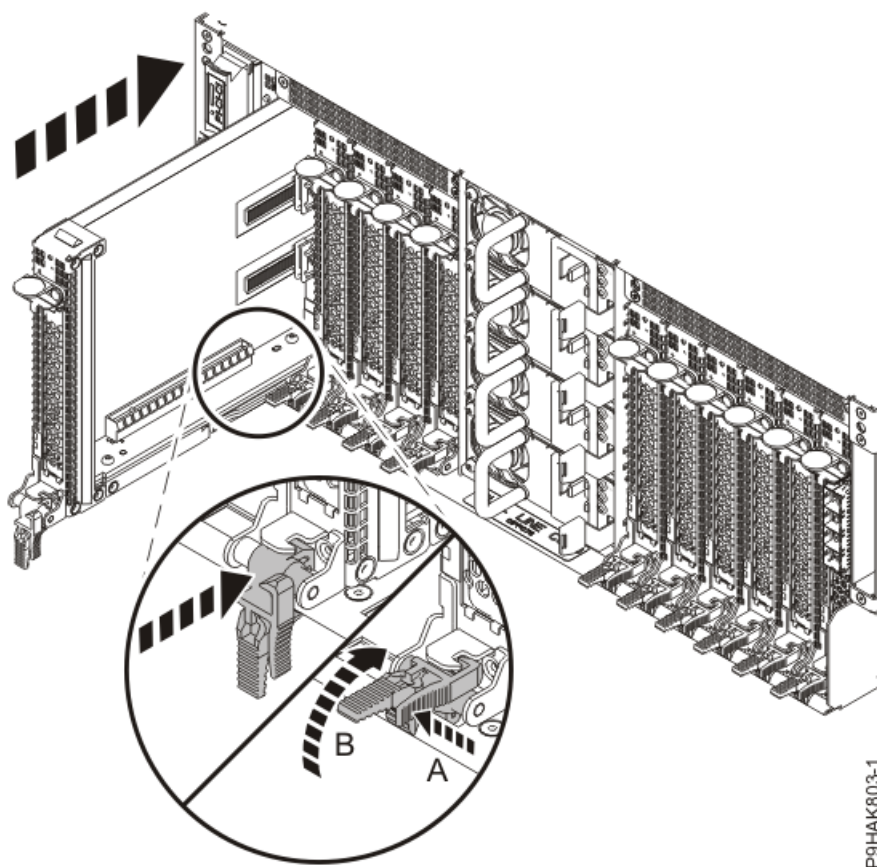


Figure 28. Installing a cassette in the 9040-MR9 system

5. Place the removed adapter on an approved ESD surface.

Replacing the power supplies

Learn how to replace the power supplies.

About this task

To replace the power supplies, complete the following steps:

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap attached. If not, attach it now.
2. Move to the rear of the rack.
3. Align the power supply with the bay and slide the power supply into the system until the latch locks in place, as shown in [Figure 29 on page 30](#).
4. Complete this task for each power supply that you removed.

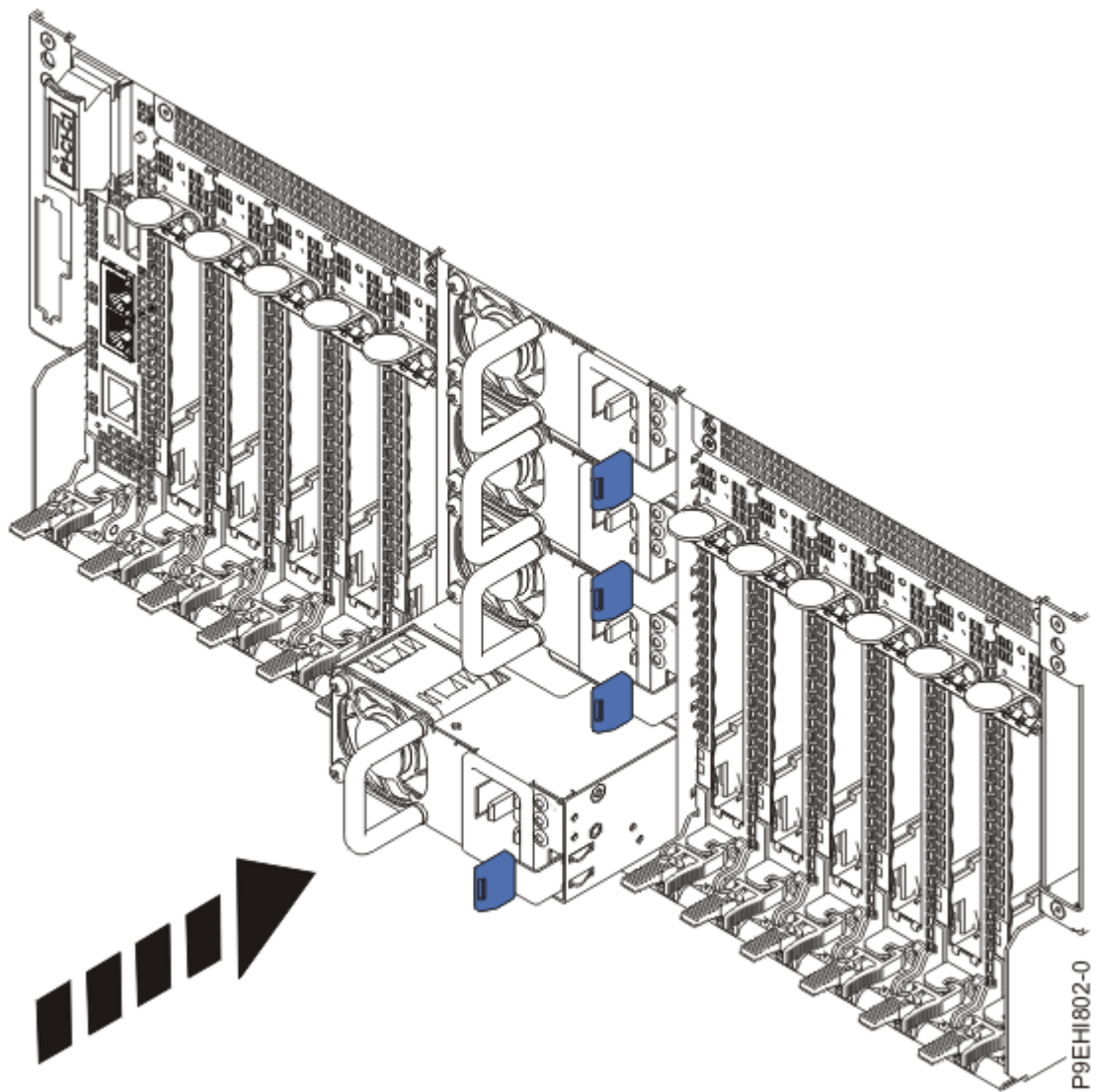


Figure 29. Replacing a power supply in the system

Optional: Connecting the SAS cables to the server

Learn how to connect the SAS cables to the server, if applicable.

About this task

To connect the SAS cables to the server, complete the following tasks:

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Using the labels on the cables, based on your configuration, insert the SAS cables into the PCIe cards as shown in the following figure.

Note: Don't remove the blue dust covers that cover some ports. The dust covers identify ports that shouldn't be used during SAS cable installation. Don't plug SAS cables into ports that are blocked by dust covers.

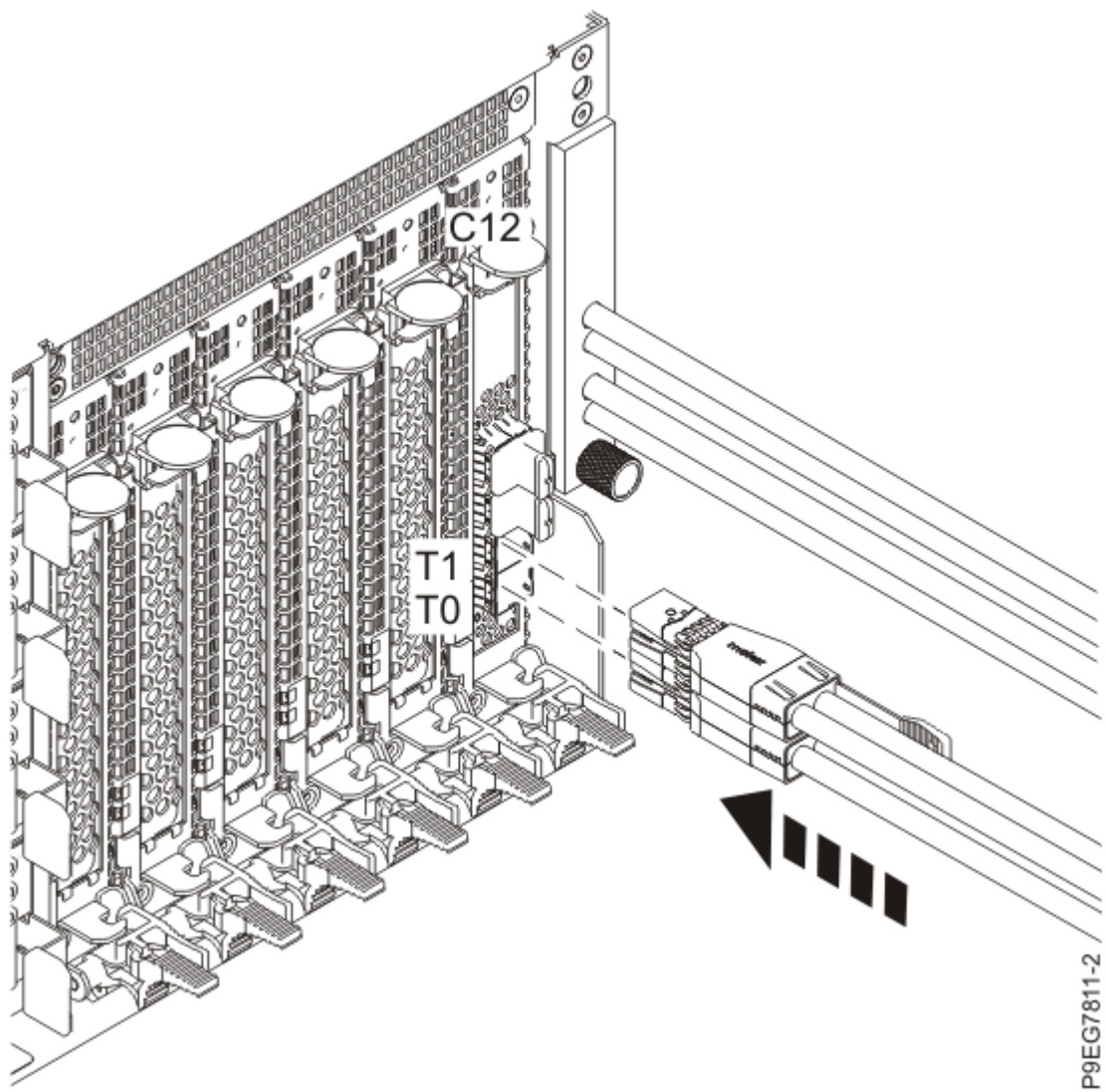


Figure 30. Plugging the SAS cables for the base configuration

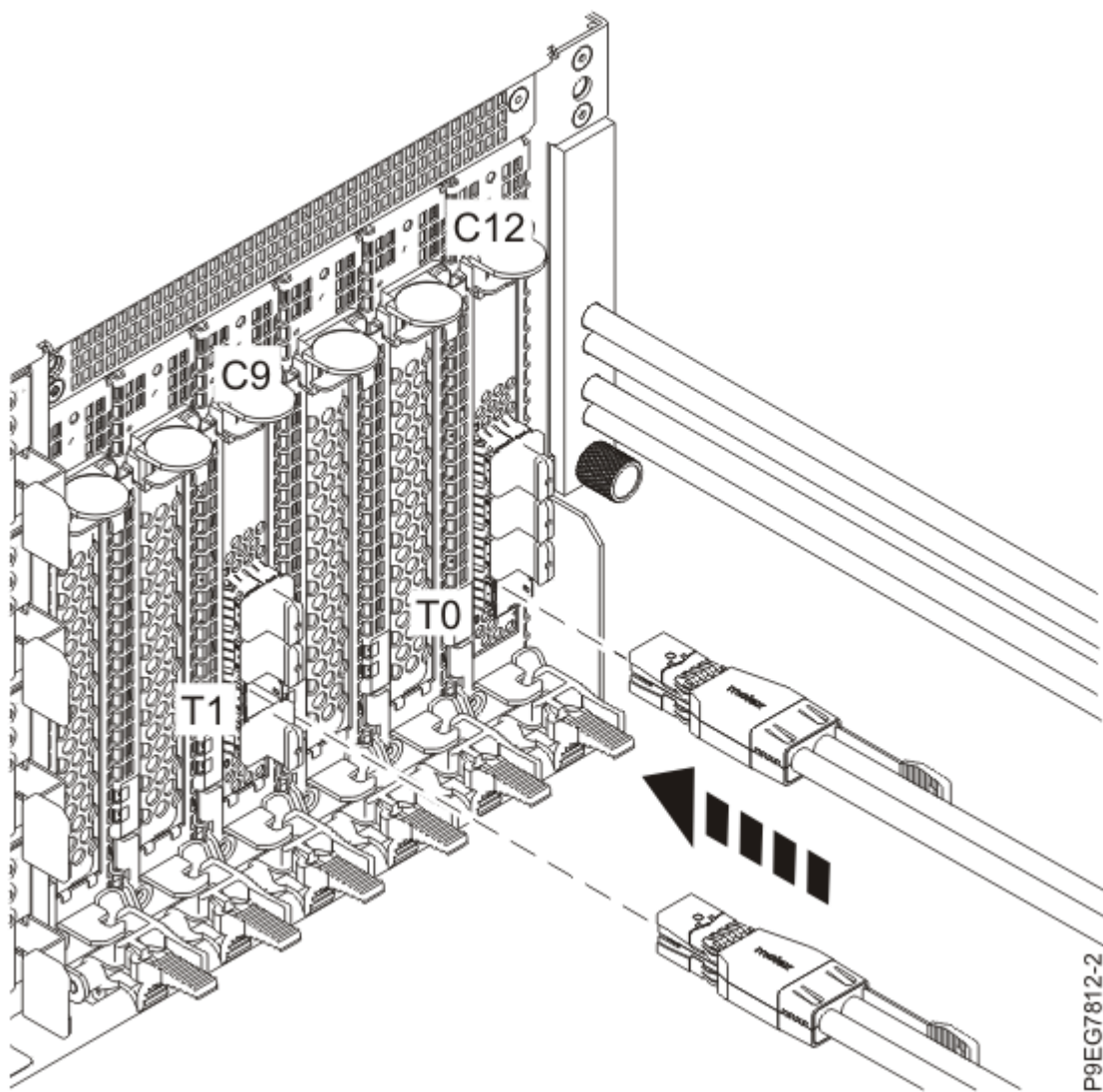


Figure 31. Plugging the SAS cables for the split configuration

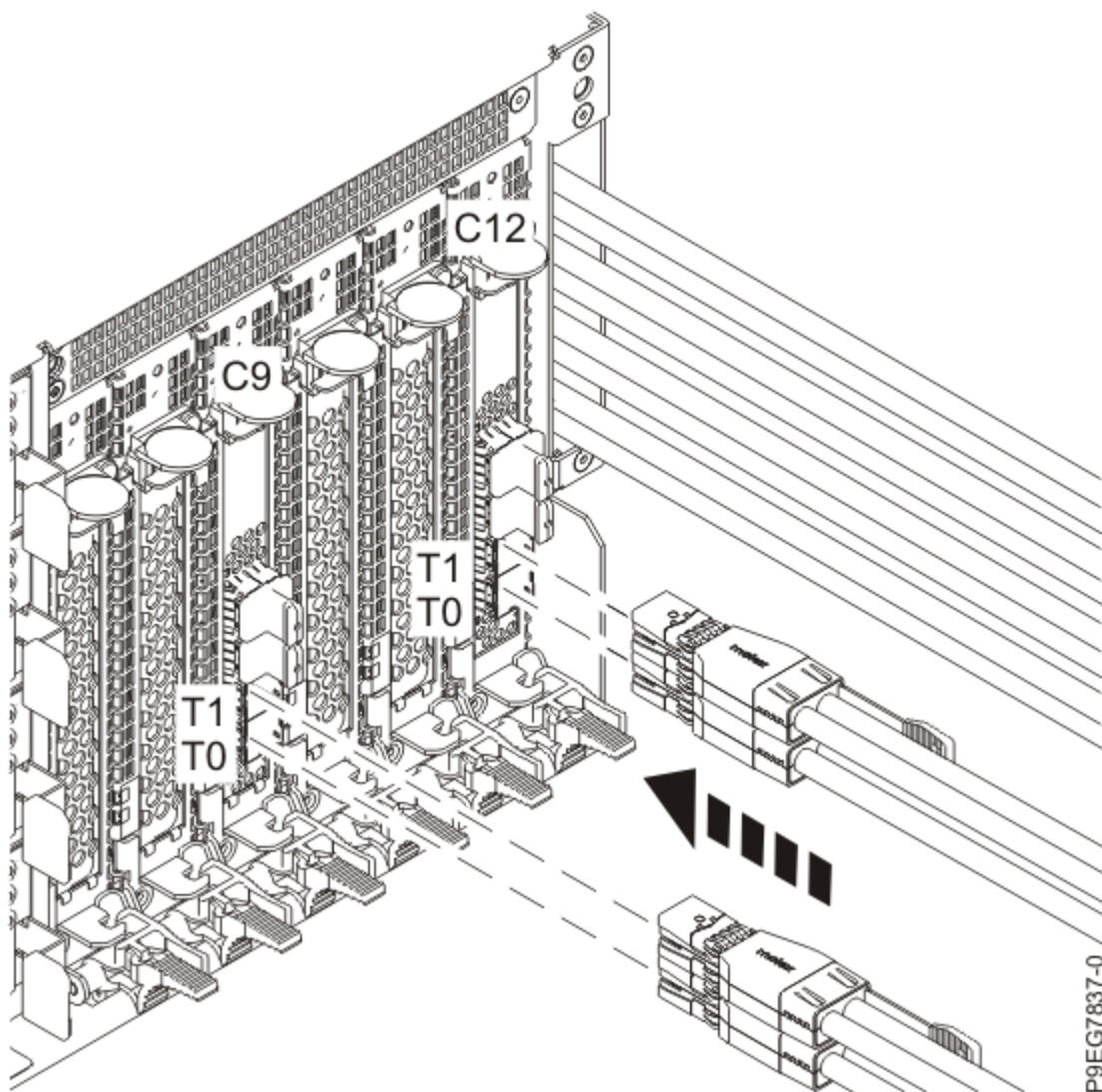


Figure 32. Plugging the SAS cables for an expanded function disk drive backplane

Cabling the server and setting up a console

Your console, monitor, or interface choices are guided by the tasks that you want to complete.

Determining which console to use

There are different console types available to manage this server. Learn more about the consoles that are available.

Go to the instructions for the applicable console, interface, or terminal in the following table.

Table 1. Available console types				
Console type	Operating system	Logical partitions	Cable required	Cabling setup instructions
ASCII terminal	AIX®, Linux®, or VIOS	Yes for VIOS, no for AIX and Linux	Serial cable equipped with a null modem	“Cabling the server with an ASCII terminal” on page 34
Hardware Management Console (HMC)	AIX, Linux, or VIOS	Yes	Ethernet (or cross-over cable)	“Cabling the server to the HMC” on page 35

Table 1. Available console types (continued)				
Console type	Operating system	Logical partitions	Cable required	Cabling setup instructions
Keyboard, video, and mouse (KVM)	Linux or VIOS	Yes	Business Monitor and USB cables equipped with KVM	“Cabling the server with keyboard, video, and mouse” on page 37

Cabling the server with an ASCII terminal

If you are not creating logical partitions, you can use an ASCII terminal to manage a server that is running the AIX, Linux, or VIOS operating systems. From the ASCII terminal, you can access the Advanced System Management Interface (ASMI) to complete more installation tasks.

About this task

The ASCII terminal is connected to the server through a serial link. The ASCII interface to the ASMI provides a subset of the web interface functions. The ASCII terminal for the ASMI interface is available only when the system is in the standby state. It is not available during the initial program load (IPL) or run time.

Note: If you are using a serial connection to the ASMI terminal, you must use a conversion cable. This cable (part number 46K5108) is used to convert the ASCII terminal 9-pin Dshell connector to an RJ45 serial port connector on the system. For information about the locations of the connectors on the system, see [Part locations and location codes](http://www.ibm.com/support/knowledgecenter/POWER9/p9ecs/p9ecs_locations.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9ecs/p9ecs_locations.htm).

To cable an ASCII terminal to the server, complete the following steps:

Procedure

1. Using a serial cable that is equipped with a null modem, connect the ASCII terminal to the serial port on the rear of the server.
2. Complete the following steps:
 - a. Plug the power cord into the power supply.

Note: If present, remove and discard any plug that covers the ports on the rear of the system. The port covers ensure that you are reminded about resetting the Administrator password of your managed system after the initial program load (IPL) completes.
 - b. Plug the system power cords and the power cords for any other attached devices into the power source.

Note: Confirm that the system is in standby mode. The green power status indicator on the front control panel is flashing, and the dc out indicator lights on the power supplies are flashing. If none of the indicators are flashing, check the power cord connections.
 - c. If your system uses a power distribution unit (PDU), complete the following steps:
 - 1) Connect the system power cords from the server and I/O drawers to the PDU with an IEC 320 type receptacle.
 - 2) Attach the PDU input power cord and plug it into the power source.
 - 3) If your system uses two PDUs for redundancy, plug E1 and E2 to **PDU A** and E3 and E4 to **PDU B**
3. Wait for the green light on the control panel to start flashing.
4. Ensure that your ASCII terminal is set to the following general attributes.

These attributes are the default settings for the diagnostic programs. Be sure that your terminal is set according to these attributes before proceeding to the next step.

Table 2. Default settings for the diagnostic programs				
General setup attributes	3151 /11/ 31/41 settings	3151 /51/ 61 settings	3161 /64 settings	Description
Line speed	19,200	19,200	19,200	Uses the 19,200 (bits per second) line speed to communicate with the system unit.
Word length (bits)	8	8	8	Selects 8 bits as a data word length (byte).
Parity	No	No	No	Does not add a parity bit and is used together with the word length attribute to form the 8-bit data word (byte).
Stop bit	1	1	1	Places a bit after a data word (byte).

5. Press a key on the ASCII terminal to allow the service processor to confirm the presence of the ASCII terminal.
6. When the login display appears for the ASMI, enter admin for the user ID and password.
7. Change the default password when you are prompted.
8. Press Enter until the server information appears.
You have completed the setup for an ASCII terminal, and have started the ASMI.
9. Continue with [“Completing the server setup without using an HMC” on page 40.](#)

Cabling the server to the HMC

The Hardware Management Console (HMC) controls managed systems, including the management of logical partitions, the creation of a virtual environment, and the use of capacity on demand. Using service applications, the HMC can also communicate with managed systems to detect, consolidate, and forward information to IBM service for analysis.

Before you begin

If you have not installed and configured your HMC, do so now. For instructions, see [Installation and configuration tasks \(http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_taskflow.htm\)](http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_taskflow.htm).

To manage POWER9 processor-based servers, the HMC must be at Version 9 Release 1, service pack 920. To view the HMC version and release, complete the following steps:

1. If your system was preinstalled with an operating system, you must exit MDC (manufacturing default configuration) mode so that you can open a console and access your operating system. To exit MDC mode, complete the following steps:
 - a. Select **Resources > All Systems**.
 - b. Select **System > Actions > View System Partitions**.
 - c. Under Properties, select **General Settings**.
 - d. Select **Power On Parameters** and set the Partition Start Policy to **User-Initiated**.
 - e. Under System Actions, select **Operations > Power On**.
 - f. Once the system is in the partition standby state and the default partition is in the Not Activated state, select the default partition and choose **Activate**.
2. In the navigation area, click **Updates**.
3. In the work area, view and record the information that appears in the HMC Code Level section, including the HMC version, release, Service Pack, build level, and base versions.

If you need to update your HMC version and release, see [Obtaining and applying machine code updates for the HMC with an Internet connection](http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_upgrades_enh.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_upgrades_enh.htm).

To cable the server to the HMC, complete the following steps:

Procedure

1. If you want to directly attach your HMC to the managed system, connect **Ethernet Connector 1** on the HMC to the **HMC1 (T3)** port on the managed system, as shown in [Figure 33 on page 36](#)

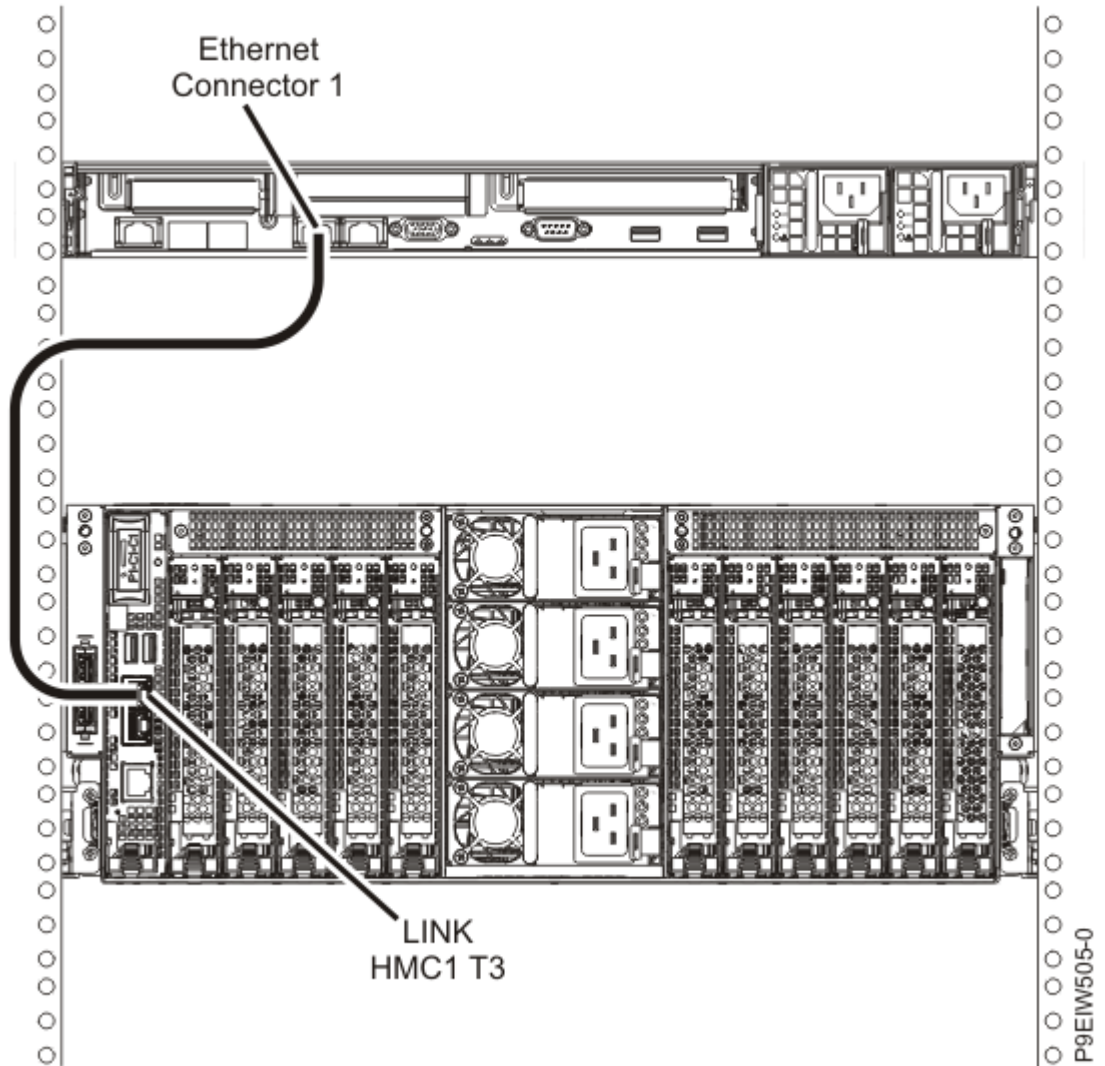


Figure 33. Directly attaching the HMC to the managed system

2. To learn how to connect an HMC to a private network so that it can manage more than one managed system, see [HMC network connections](#) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_netconhmc.htm).

Notes:

- You can also have multiple systems that are attached to a switch that is then connected to the HMC. For instructions, see [HMC network connections](#) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_netconhmc.htm).
- If you are using a switch, ensure that the speed in the switch is set to **Autodetection**. If the server is directly attached to the HMC, ensure the Ethernet adapter speed on the HMC is set to

Autodetection. For information about how to set media speeds, see [Setting the media speed \(http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_lanmediaspeed_enh.htm\)](http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_lanmediaspeed_enh.htm).

3. If you're connecting a second HMC to your managed server, connect it to the Ethernet port that is labeled **HMC2 (T4)** on the managed server.
4. Continue with [“Cabling the server and connecting expansion units” on page 37](#).

Cabling the server with keyboard, video, and mouse

Before you start the system, you might need to connect the keyboard, video, and mouse to the system, if a graphics card is present.

About this task

To connect the keyboard, video, and mouse, complete the following steps:

Procedure

1. Locate the graphics card and USB ports at the rear of the system. The USB ports are located next to slot 1 on the rear I/O cage.

Note: The USB ports on the FSP2 card aren't used for keyboard and mouse connection.

2. Connect the monitor cable to the graphics card.
3. Connect a keyboard and mouse to the blue USB 3.0 ports.
4. Power on the console.
5. Continue with [“Cabling the server and connecting expansion units” on page 37](#).

Cabling the server and connecting expansion units

Learn how to cable the server and to connect expansion units.

About this task

To cable the server and to connect expansion units, complete the following steps:

Procedure

1. Complete the following steps:

- a. Plug the power cords into the power supplies.

Note: If a plug is covering a port that you need to use on the rear of the system, remove and discard it. The port covers ensure that you are reminded that you must reset the Administrator password on your managed system upon initial system IPL.

- b. Route the power cords and other cables on the cable-management arm.
- c. Attach all cables to the rear of the server.
- d. Secure the cord and cables with cable ties or hook-and-loop fasteners.

Note: If your system uses two PDUs for redundancy, plug E1 and E2 to **PDU A** and E3 and E4 to **PDU B**. If your system uses four PDUs for redundancy, plug each power supply to a separate PDU.

- e. Plug the system power cords and the power cords for any other attached devices into the power source.
- f. If your system uses a power distribution unit (PDU), complete the following steps:
 - 1) Connect the system power cords from the server and I/O drawers to the PDU with the power cords that were included with the system.
 - 2) Attach the PDU input power cord and plug it into the power source.
 - 3) Confirm that the system is in standby mode. The green power status indicator on the front control window is flashing, and the dc out indicator lights on the power supplies are flashing. If none of the indicators are flashing, check the power cord connections.

2. If you have an expansion unit that you need to install, install it now. For information about connecting enclosures and expansion units, see [Enclosures and expansion units](http://www.ibm.com/support/knowledgecenter/POWER9/p9ham/p9ham_kickoff.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9ham/p9ham_kickoff.htm).

Completing the server setup

Learn about the tasks you must complete to set up your managed system.

Select from the following options:

- [“Completing the server setup by using an HMC” on page 38](#)
- [“Completing the server setup without using an HMC” on page 40](#)

Completing the server setup by using an HMC

Perform these tasks to complete the server setup by using a Hardware Management Console (HMC). You can also begin to use virtualization to consolidate multiple workloads onto fewer systems to increase server use, and to reduce cost.

Before you begin

To manage POWER9(tm) processor-based systems, the HMC must be at version 9 release 9.2.0, or later.

About this task

To complete the server setup by using an HMC, complete the following steps:

Note: After power has been applied to the system, wait for 10 - 15 minutes for the connection to the HMC to be established.

Procedure

1. Change the managed system passwords by completing the following steps:

For more information about setting passwords for the managed system by using the HMC, see [Setting passwords for the managed system](http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_setpassword_enh.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_setpassword_enh.htm).

2. Update the time of day on the managed system by using the Advanced System Management Interface (ASMI).

To access ASMI by using the HMC, complete the following steps:

- a. In the contents area, select the managed system.
- b. Select **Actions > View All Actions > Launch Advanced System Management (ASM)**.
- c. Log on to the ASMI by using the administrator user ID and password.
- d. Select **System Config > Time of Day**.
- e. Adjust the time of day.
- f. Select **Save Settings**.

3. Control speculative execution by using the ASMI to address the "Spectre" and "Meltdown" vulnerabilities.

To control speculative execution by using the ASMI to address the Spectre and Meltdown vulnerabilities, complete the following steps:

- a. In the ASMI interface, select **System Configuration > Speculative Execution Control**.
- b. Choose the control option that you want to use. For more information about Speculative Execution Control, see [Protecting your POWER9 servers against the “Spectre” and “Meltdown” vulnerabilities](http://www.ibm.com/support/knowledgecenter/POWER9/p9hby/p9hby_speculative_execution_control.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hby/p9hby_speculative_execution_control.htm).

4. Check the firmware level on the managed system.

- a. In the navigation area, click **Updates**.

- b. In the contents area, select the managed system.
 - c. Select **Actions > Updates > Change Licensed Internal Code > for the Current Release**.
 - d. Select **View system information** and then click **OK**.
 - e. In the Specify LIC Repository window, select **None - Display current values** and then click **OK**.
 - f. Record the level that appears in the **EC Number** field and the **Activated Level** field. For example, if the **EC Number** is 01EM310 and the **Activated Level** is 77, the firmware level is 01EM310_77.
5. Compare your installed firmware level with available firmware levels. If necessary, update your firmware levels.
 - a. Compare your installed firmware level with available firmware levels. For more information, see the Fix Central website (<http://www.ibm.com/support/fixcentral>) .
 - b. If necessary, update your managed system firmware levels. In the navigation area, select **Updates**.
 - c. In the contents area, select your managed system.
 - d. Click **Change Licensed Internal Code for the current release**.
6. To power on a managed system, complete the following steps:
 - a. In the contents area, select the managed system.
 - b. Select **Actions > View All Actions > Power Management**.
 - c. Select the power on options that you want to use and click **OK**.
7. Configure and manage virtual resources. For instructions, see [Getting started with PowerVM®](http://www.ibm.com/support/knowledgecenter/POWER9/p9eew/p9eew_kickoff.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9eew/p9eew_kickoff.htm).
8. Create partitions using templates.
 - If you are creating new partitions, you can use the templates that are on your HMC. For more information, see [Accessing the template library](http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_accessing_template_library.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_accessing_template_library.htm).
 - If you have existing partitions on another system, you can capture those configurations, save it to the template library and deploy the partition template. For more information, see [Partition templates](http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_partition_template_concept.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_partition_template_concept.htm).
 - If you want to use an existing template from another source, you can import that and use it. For more information, see [Importing a partition template](http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_import_partition_template.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_import_partition_template.htm).
9. If your system was preinstalled with an operating system, you must exit MDC (manufacturing default configuration) mode so that you can open a console and access your operating system. To exit MDC mode, complete the following steps:
 - a. Select **Resources > All Systems**.
 - b. Select **System > Actions > View System Partitions**.
 - c. Under Properties, select **General Settings**.
 - d. Select **Power On Parameters** and set the Partition Start Policy to **User-Initiated**.
 - e. Under System Actions, select **Operations > Power On**.
 - f. Once the system is in the partition standby state and the default partition is in the Not Activated state, select the default partition and choose **Activate**.
10. Install an operating system and update the operating system.
 - Install the AIX operating system. For instructions, see [Installing AIX](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installaix.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installaix.htm).
 - Install the Linux operating system. For instructions, see [Installing Linux](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installlinux.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installlinux.htm).
 - Install the VIOS operating system. For instructions, see [Installing VIOS](http://www.ibm.com/support/knowledgecenter/POWER9/p9hch/p9hch_installvios.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hch/p9hch_installvios.htm).

- Install the IBM i operating system. For instructions, see [Installing the IBM i operating system](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_ibmi.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_ibmi.htm).

11. You have now completed the steps to install your server.

Completing the server setup without using an HMC

If you do not have an Hardware Management Console (HMC), use this procedure to complete the server setup.

About this task

To complete the server setup without using a management console, complete the following steps:

Procedure

1. To check the firmware level on the managed system and the time of day, complete the following steps:
 - a. Access the Advanced System Management Interface (ASMI). For instructions, see [Accessing the ASMI without an HMC](http://www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm).
 - b. On the ASMI Welcome pane, note the existing level of server firmware in the upper-right corner under the copyright statement.
 - c. Update the time of day. In the navigation area, expand **System Configuration**.
 - d. Click **Time of Day**. The content pane displays a form that shows the current date (month, day, and year) and time (hours, minutes, and seconds).
 - e. Change the date value, the time value, or both, and click **Save settings**.

2. Control speculative execution by using the ASMI to address the "Spectre" and "Meltdown" vulnerabilities.

To control speculative execution by using the ASMI to address the Spectre and Meltdown vulnerabilities, complete the following steps:

- a. In the ASMI interface, select **System Configuration > Speculative Execution Control**.
 - b. Choose the control option that you want to use. For more information about Speculative Execution Control, see [Protecting your POWER9 servers against the "Spectre" and "Meltdown" vulnerabilities](http://www.ibm.com/support/knowledgecenter/POWER9/p9hby/p9hby_speculative_execution_control.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hby/p9hby_speculative_execution_control.htm).
3. To start a system, complete the following steps:
 - a. Open the front door of the managed system.
 - b. Press the power button on the control panel.

The power-on light begins to flash faster.

- a. The system cooling fans are activated after approximately 30 seconds and begin to accelerate to operating speed.
- b. Progress indicators appear on the control panel display while the system is being started.
- c. The power-on light on the control panel stops flashing and remains on, indicating that the system is powered on.

For instructions, see [Starting a system that is not managed by an HMC](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/startsysnohmc.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/startsysnohmc.htm).

4. Install an operating system and update the operating system.
 - Install the AIX operating system. For instructions, see [Installing AIX](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installaix.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installaix.htm).
 - Install the Linux operating system. For instructions, see [Installing Linux](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installlinux.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installlinux.htm).
 - Install the VIOS operating system. For instructions, see [Installing VIOS](http://www.ibm.com/support/knowledgecenter/POWER9/p9hch/p9hch_installvios.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hch/p9hch_installvios.htm).

- Install the IBM i operating system. For instructions, see [Installing the IBM i operating system](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_ibmi.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_ibmi.htm).
5. Update the system firmware.
- For instructions to get firmware fixes through the AIX or Linux operating system, see [Getting server firmware fixes through AIX or Linux without a management console](http://www.ibm.com/support/knowledgecenter/POWER9/p9ha5/fix_firm_no_hmc_aix.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9ha5/fix_firm_no_hmc_aix.htm).
 - If you're using VIOS, see [Updating the Virtual I/O Server](http://www.ibm.com/support/knowledgecenter/POWER9/p9hb1/p9hb1_vios_managing Updating.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hb1/p9hb1_vios_managing Updating.htm).
6. You have now completed the steps to install your server.

Setting up a preinstalled server

Use this information to learn about setting up a server that is preinstalled in a rack.

About this task

Note: When you set up a preinstalled IBM Power System E950 (9040-MR9) system, you must install the following parts into the system chassis:

- Fans
- Power supplies

The power supplies and fans are provided in a separate box.

You must also connect the Serial Attached SCSI (SAS) cables to the PCIe cards on the rear of the system.

Preparing to set up your preinstalled server

Use the information to understand the prerequisites that are required for setting up the preinstalled server.

About this task



Attention:

- Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
- When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used 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 an ESD 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.

You might need to read the following documents before you begin to install the server:

- [Installing the IBM Power System E950 \(9040-MR9\) and IBM Power System H950 \(9225-50H\)](http://www.ibm.com/support/knowledgecenter/POWER9/p9eiw/p9eiw_950_kickoff.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9eiw/p9eiw_950_kickoff.htm).
- To plan your server installation, see [Planning for the system](http://www.ibm.com/support/knowledgecenter/POWER9/p9ia4/p9ia4_90x_kickoff.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9ia4/p9ia4_90x_kickoff.htm).
- If you are using a Hardware Management Console (HMC), see [Update the Hardware Management Console](http://www.ibm.com/support/knowledgecenter/POWER9/p9eh6/p9eh6_updatehmc.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9eh6/p9eh6_updatehmc.htm).

Consider the following prerequisites before you install the server:

Procedure

1. Ensure that you have the following items before you start your installation:
 - Phillips screwdriver
 - Flat-head screwdriver
 - Wire cutter
2. Ensure that you have one of the following consoles:
 - Hardware Management Console (HMC):
The HMC must be at Version 9 Release 9.2.0, or later.
 - Graphic monitor with keyboard and mouse.
 - Teletype (tty) monitor with keyboard.

Completing inventory for your preinstalled server

Use this information to complete inventory for your server.

About this task

To complete the inventory, complete the following steps:

Procedure

1. Verify that you received all the boxes you ordered.
2. Unpack the server components as needed.
3. Complete a parts inventory before you install each server component by following these steps:
 - a. Locate the inventory list for your server.
 - b. Ensure that you received all the parts that you ordered.

Note: Your order information is included with your product. You can also obtain the order information from your marketing representative or the IBM Business Partner.

If you have incorrect, missing, or damaged parts, consult any of the following resources:

- Your IBM reseller.
- IBM Rochester manufacturing automated information line at 1-800-300-8751 (United States only).
- The Directory of worldwide contacts website <http://www.ibm.com/planetwide>. Select your location to view the service and support contact information.

Removing the shipping bracket

You must remove the shipping bracket before cabling the server.

About this task

To remove the shipping bracket, complete the following step:

Procedure

Remove the six screws that attach the shipping bracket to the chassis. If you plan to move your system, store the shipping bracket.

Optional: Connecting the SAS cables to the server

Learn how to connect the SAS cables to the server, if applicable.

About this task

To connect the SAS cables to the server, complete the following tasks:

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Using the labels on the cables, based on your configuration, insert the SAS cables into the PCIe cards as shown in the following figure.

Note: Don't remove the blue dust covers that cover some ports. The dust covers identify ports that shouldn't be used during SAS cable installation. Don't plug SAS cables into ports that are blocked by dust covers.

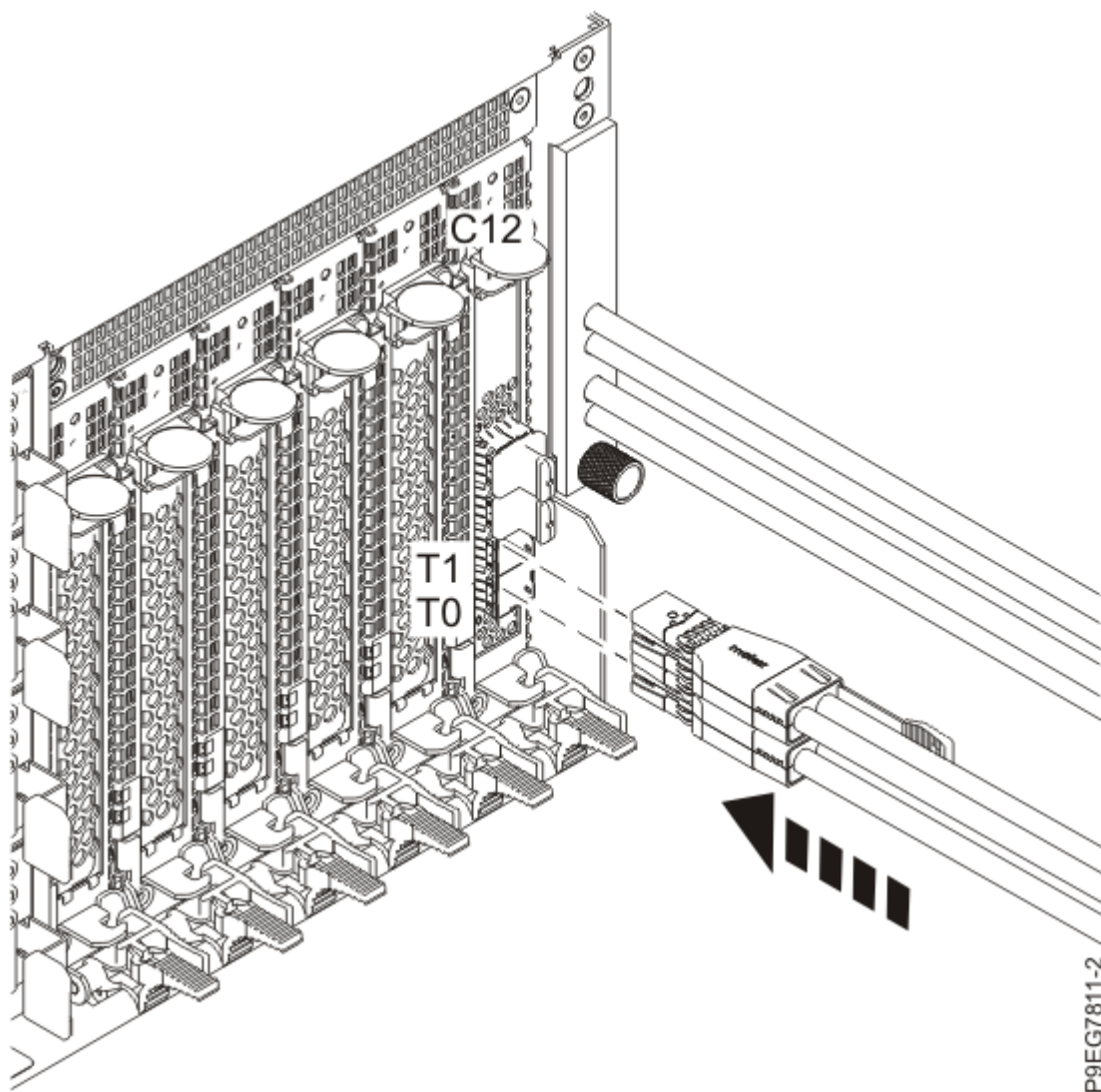


Figure 34. Plugging the SAS cables for the base configuration

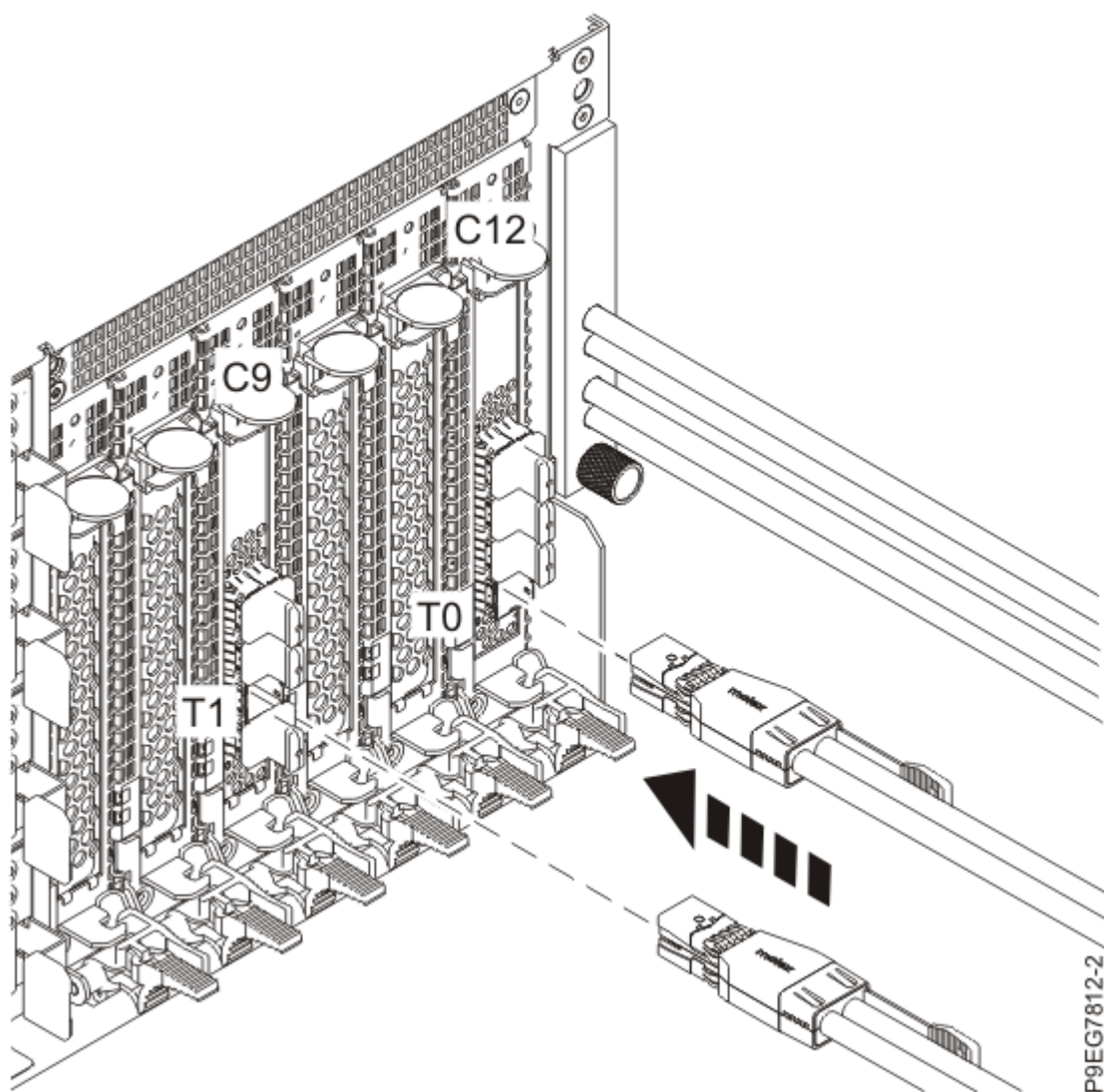


Figure 35. Plugging the SAS cables for the split configuration

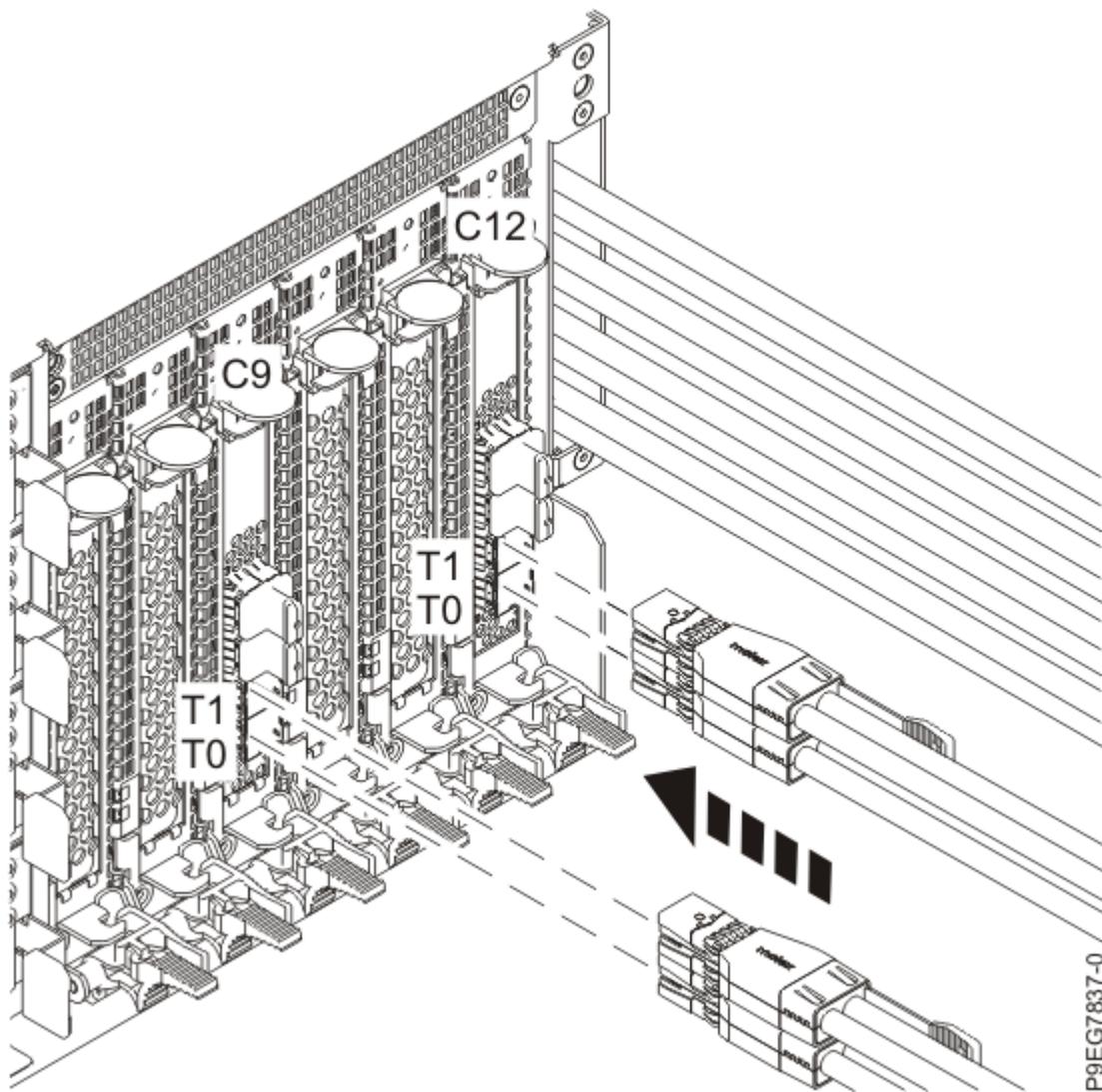


Figure 36. Plugging the SAS cables for an expanded function disk drive backplane

Installing the system fans

When the system comes preinstalled in a rack, you must install the system fans into the system chassis. Learn how to install the system fans in the front of the system chassis.

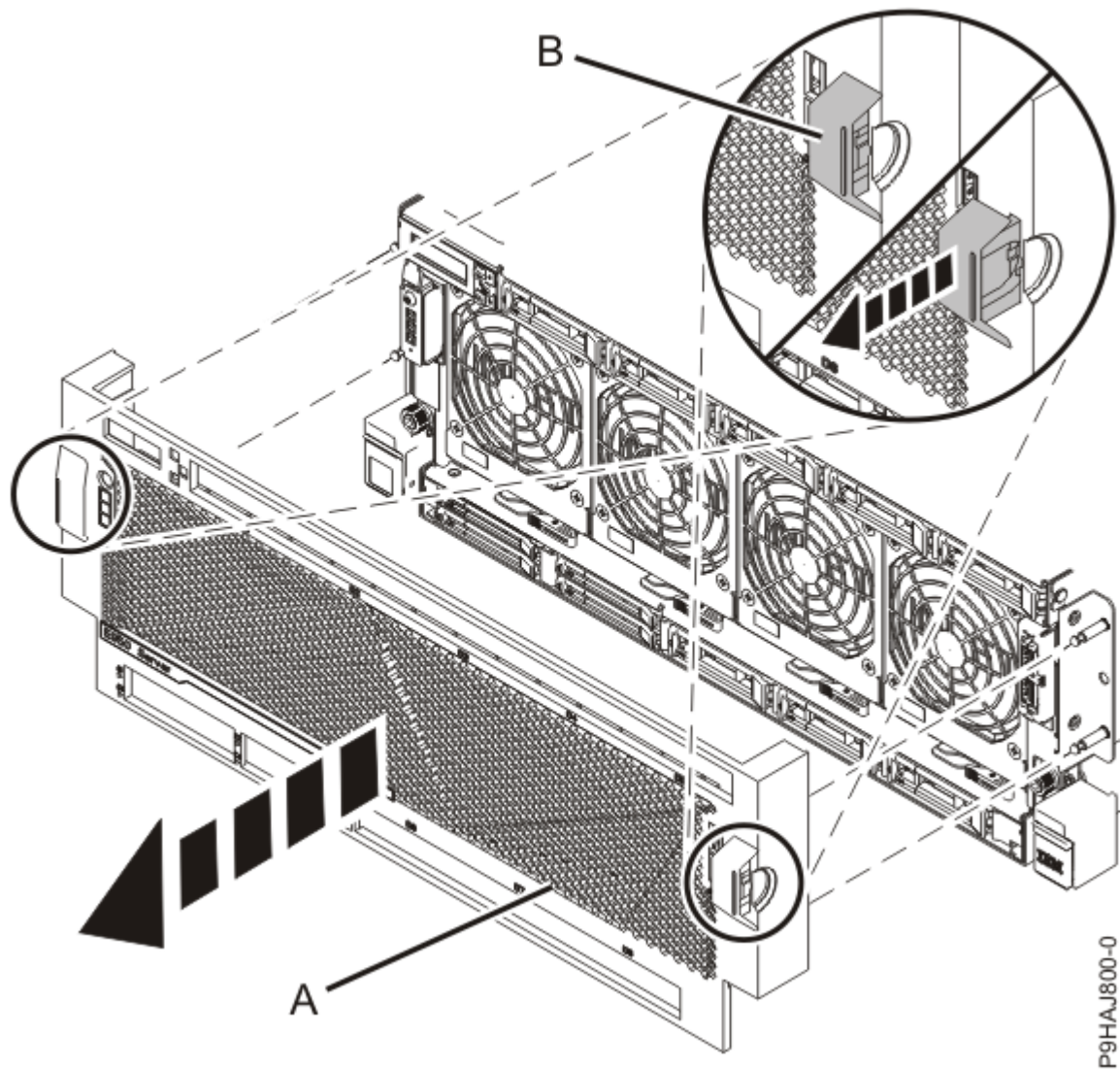
About this task

To install the system fans, complete the following steps:

Procedure

1. Move to the front of the rack. Remove the front bezel from the system. The front bezel blocks access to the system fan slots in the system chassis.

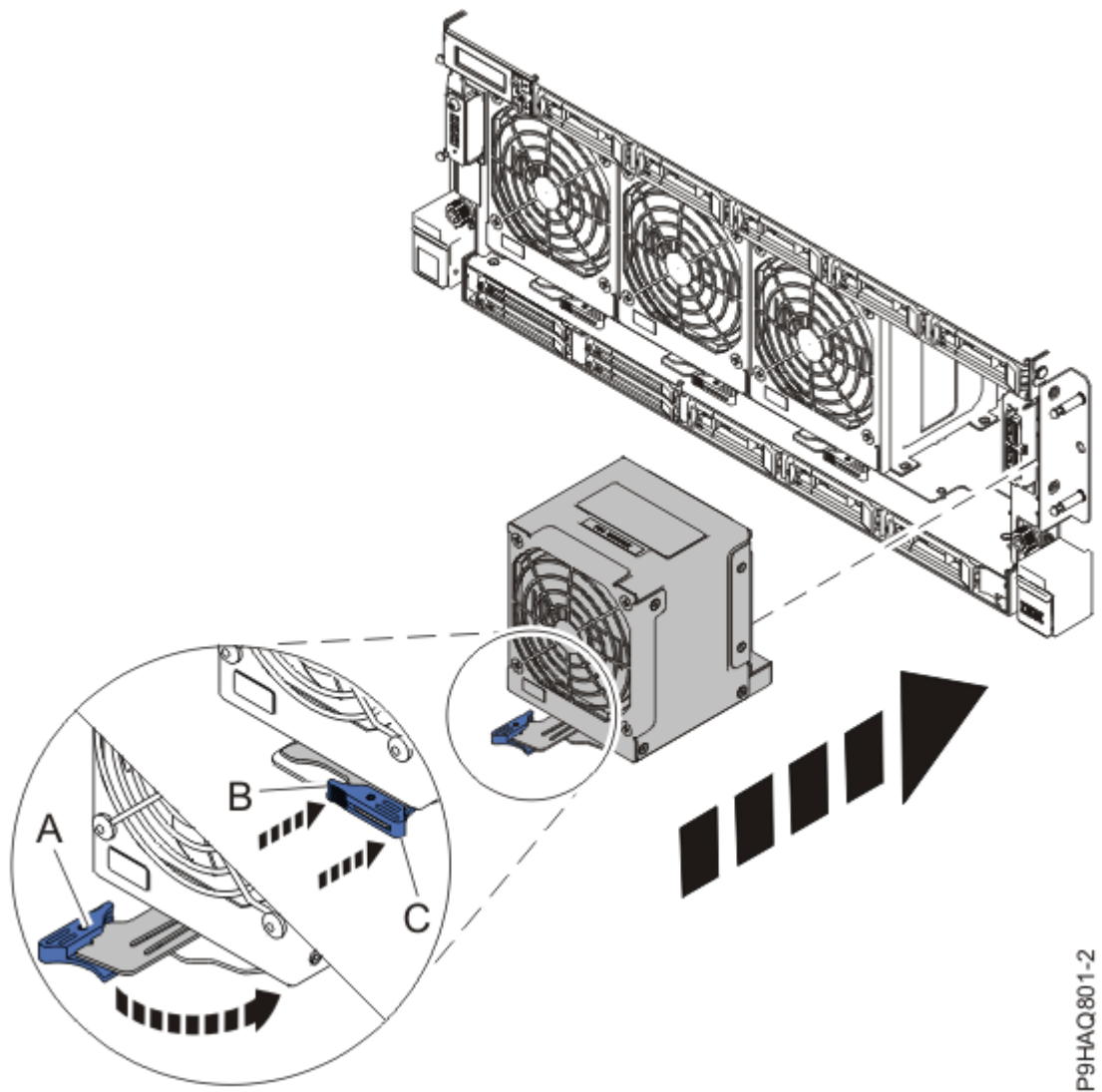
Place your fingers on the indentations and pull the latches (**B**) located on both sides of the cover as shown in the following figure. Pull the cover (**A**) away from the system.



P9HAJ800-0

Figure 37. Removing the front bezel

2. Ensure that the fan handle (A) is rotated open in the direction shown in [“Installing the system fans”](#) on page 45.
3. Using your hand to support the bottom of the fan, align the fan with the fan slot and slide it into the system.
4. Rotate the fan handle (A) in the direction shown and then press the fan handle until the latch locks in place. See [“Installing the system fans”](#) on page 45.



P9HAQ801-2

Figure 38. Installing a front fan

5. Perform these tasks for each fan provided with the system.
6. Replace the system bezel.

Position the cover (A) on the front of the system unit as shown in the following figure, so that the four pins (B) on the system match the four holes at the rear of the cover. Press the tabs (C) to snap the cover into position.

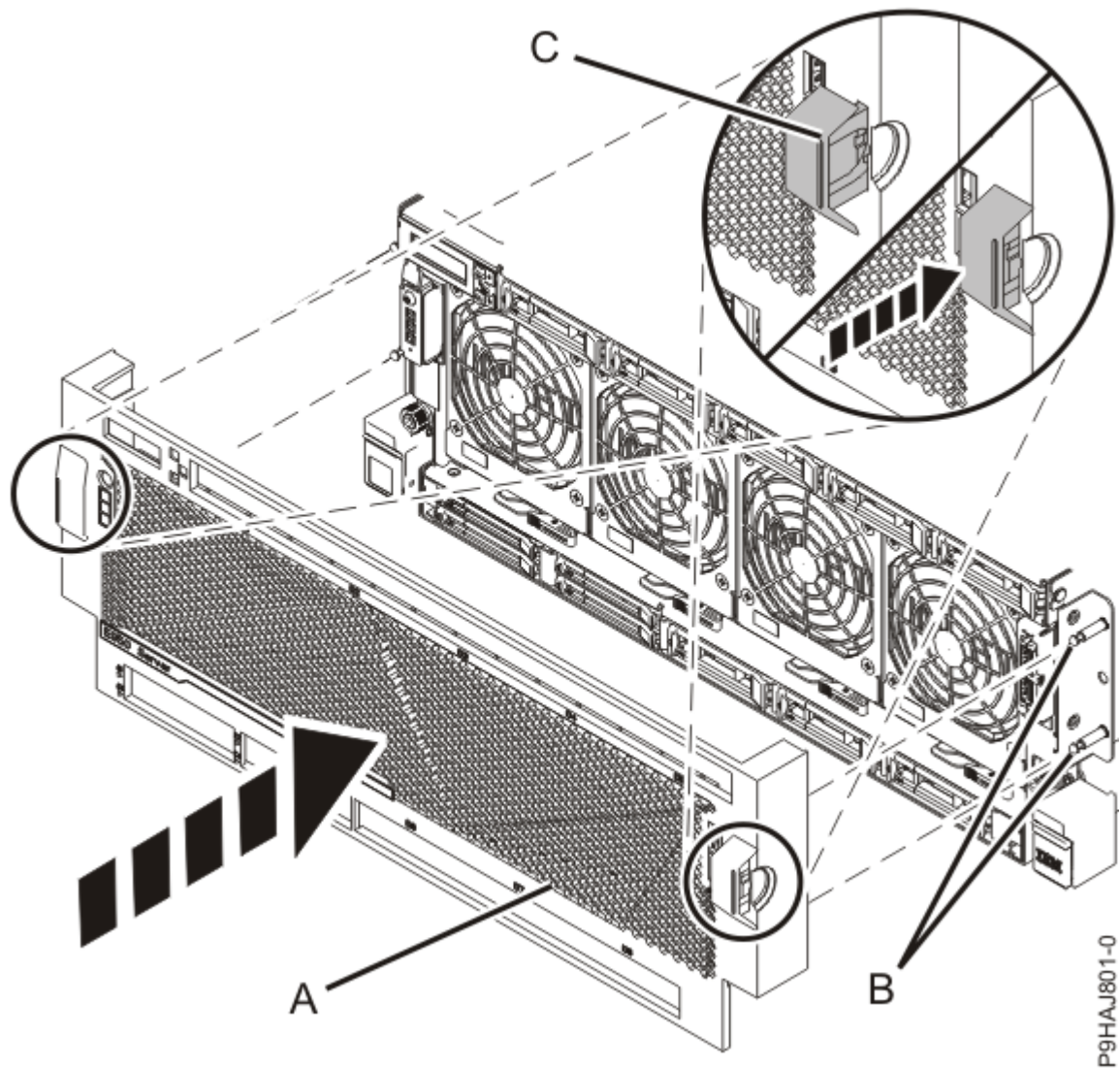


Figure 39. Replacing the front bezel

Installing the power supplies and cabling the system

When your system comes preinstalled in a rack, you must install the power supplies into the system chassis and then cable the system. Learn how to install the power supplies.

About this task

To install the power supplies, complete the following steps:

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap attached. If not, attach it now.
2. Move to the rear of the rack.

Note: Follow the packaging instructions to determine the correct placement of each power supply.

3. Align the power supply with the bay and slide the power supply into the system until the latch locks in place, as shown in the following figure.

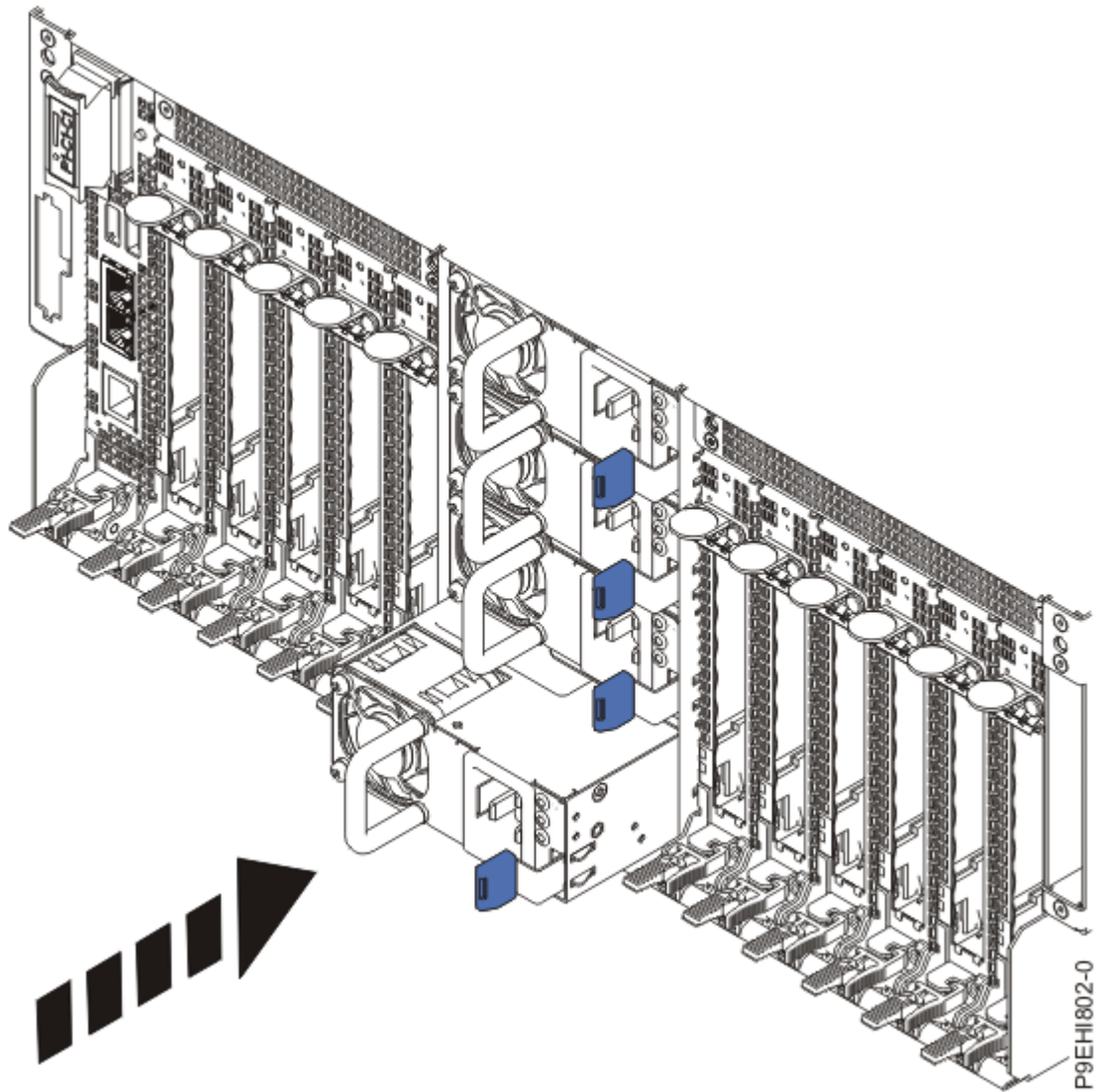
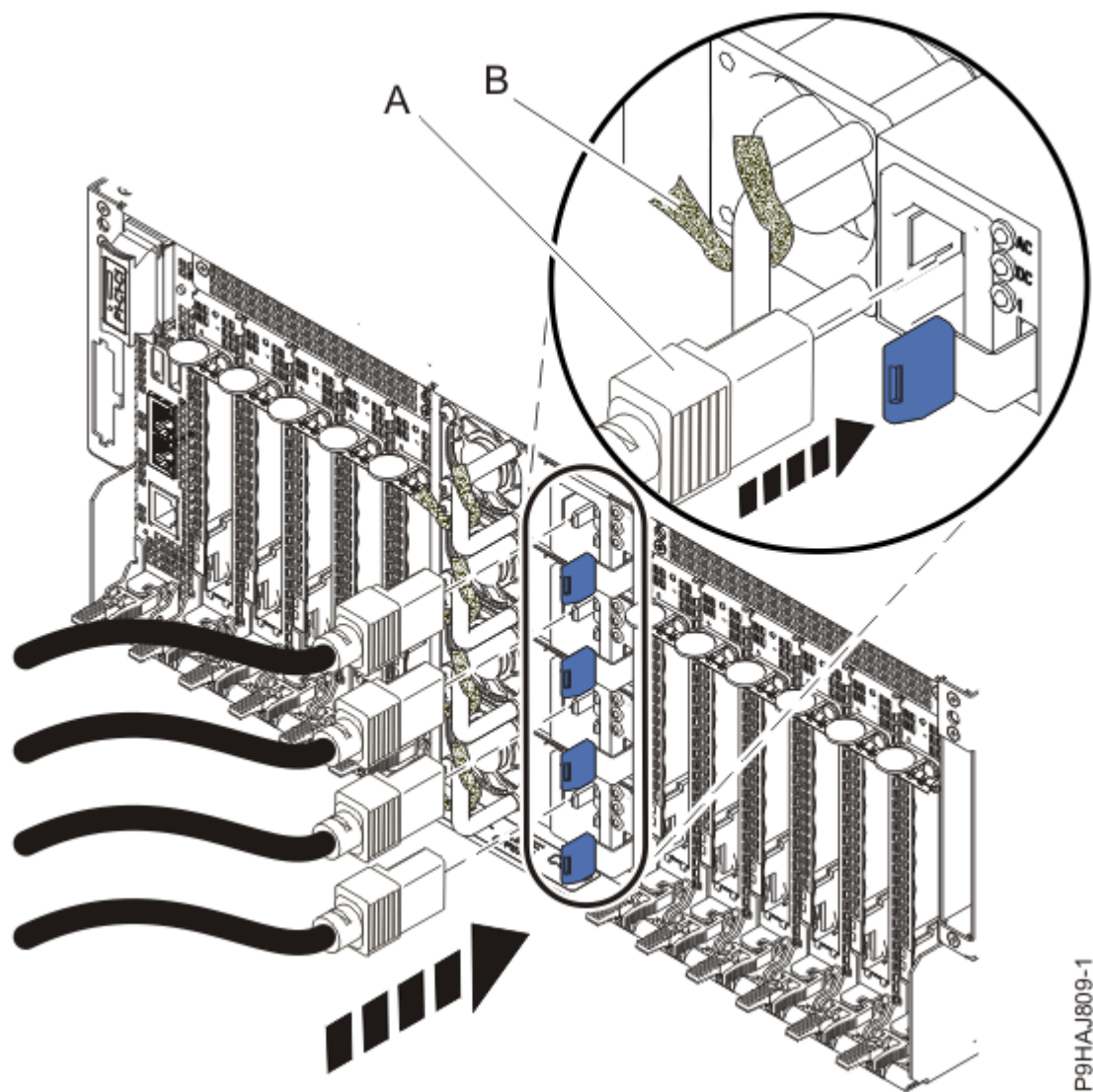


Figure 40. Installing a power supply in the system

4. Complete this task for each power supply that was provided with the server.
5. Ensure that each of the group of power supplies is cabled for redundancy. To maintain redundancy, you must plug the power cables from one power distribution unit (PDU) into the upper two power supply positions. You must plug the power cables from the other PDU into the lower two power supply positions.
6. Plug the power cords into the power supplies (A). See [Figure 41 on page 50](#).
Note: If a plug is covering a port that you need to use on the rear of the system, remove and discard it. The port covers ensure that you are reminded that you must reset the Administrator password on your managed system upon initial system IPL.
7. Route the power cords and other cables on the cable-management bracket. For power redundancy, ensure that power supplies 1 and 2 are routed to one PDU, and that power supplies 3 and 4 are routed to the second PDU.
8. Attach the cord and cables with cable ties or hook-and-loop fasteners (B), as shown in [Figure 41 on page 50](#).



P9HAJ809-1

Figure 41. Plugging in the power cords and securing the cables with fasteners

9. If you have a disk drive enclosure or expansion drawer that came preinstalled in this rack, use the documentation supplied with these options. For information about connecting enclosures and expansion units, see [Enclosures and expansion units](http://www.ibm.com/support/knowledgecenter/POWER9/p9ham/p9ham_kickoff.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9ham/p9ham_kickoff.htm).
10. Attach the PDU input power cord and plug it into the power source.

Cabling the server and setting up a console

Your console, monitor, or interface choices are guided by whether you create logical partitions, which operating system you install in your primary partition, and whether you install a Virtual I/O Server (VIOS) in one of your logical partitions.

Determining which console to use

There are different console types available to manage this server. Learn more about the consoles that are available.

Go to the instructions for the applicable console, interface, or terminal in the following table.

<i>Table 3. Available console types</i>				
Console type	Operating system	Logical partitions	Cable required	Cabling setup instructions
ASCII terminal	AIX, Linux, or VIOS	Yes for VIOS, no for AIX and Linux	Serial cable equipped with a null modem	“Cabling the server with an ASCII terminal” on page 51
Hardware Management Console (HMC)	AIX, Linux, or VIOS	Yes	Ethernet (or cross-over cable)	“Cabling the server to the HMC” on page 52
Keyboard, video, and mouse (KVM)	Linux or VIOS	Yes	Monitor and USB cables equipped with KVM	“Cabling the server with keyboard, video, and mouse” on page 54

Cabling the server with an ASCII terminal

If you are not creating logical partitions, you can use an ASCII terminal to manage a server that is running the AIX, Linux, or VIOS operating systems. From the ASCII terminal, you can access the Advanced System Management Interface (ASMI) to complete more installation tasks.

About this task

The ASCII terminal is connected to the server through a serial link. The ASCII interface to the ASMI provides a subset of the web interface functions. The ASCII terminal for the ASMI interface is available only when the system is in the standby state. It is not available during the initial program load (IPL) or run time.

Note: If you are using a serial connection to the ASMI terminal, you must use a conversion cable. This cable (part number 46K5108) is used to convert the ASCII terminal 9-pin Dshell connector to an RJ45 serial port connector on the system. For information about the locations of the connectors on the system, see [Part locations and location codes](http://www.ibm.com/support/knowledgecenter/POWER9/p9ecs/p9ecs_locations.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9ecs/p9ecs_locations.htm).

To cable an ASCII terminal to the server, complete the following steps:

Procedure

1. Using a serial cable that is equipped with a null modem, connect the ASCII terminal to the serial port on the rear of the server.
2. Complete the following steps:

- a. Plug the power cord into the power supply.

Note: If present, remove and discard any plug that covers the ports on the rear of the system. The port covers ensure that you are reminded about resetting the Administrator password of your managed system after the initial program load (IPL) completes.

- b. Plug the system power cords and the power cords for any other attached devices into the power source.

Note: Confirm that the system is in standby mode. The green power status indicator on the front control panel is flashing, and the dc out indicator lights on the power supplies are flashing. If none of the indicators are flashing, check the power cord connections.

- c. If your system uses a power distribution unit (PDU), complete the following steps:

- 1) Connect the system power cords from the server and I/O drawers to the PDU with an IEC 320 type receptacle.
- 2) Attach the PDU input power cord and plug it into the power source.

- 3) If your system uses two PDUs for redundancy, plug E1 and E2 to **PDU A** and E3 and E4 to **PDU B**
3. Press a key on the ASCII terminal to allow the service processor to confirm the presence of the ASCII terminal.
4. When the login display appears for the ASMI, enter admin for the user ID and password.
5. Change the default password when you are prompted.
6. Press Enter until the server information appears.

You have completed the setup for an ASCII terminal, and have started the ASMI.

7. Continue with [“Completing the server setup without using an HMC” on page 56.](#)

Cabling the server to the HMC

The Hardware Management Console (HMC) controls managed systems, including the management of logical partitions, the creation of a virtual environment, and the use of capacity on demand. Using service applications, the HMC can also communicate with managed systems to detect, consolidate, and forward information to IBM service for analysis.

Before you begin

If you have not installed and configured your HMC, do so now. For instructions, see [Installation and configuration tasks](http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_taskflow.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_taskflow.htm).

The HMC must be at Version 9 Release 9.2.0, or later. To view the HMC version and release, complete the following steps:

1. In the navigation area, click **Updates**.
2. In the work area, view and record the information that appears in the HMC Code Level section, including the HMC version, release, Service Pack, build level, and base versions.

If you need to update your HMC version and release, see [Obtaining and applying machine code updates for the HMC with an Internet connection](http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_upgrades_enh.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_upgrades_enh.htm).

To cable the server to the HMC, complete the following steps:

Procedure

1. If you want to directly attach your HMC to the managed system, connect **Ethernet Connector 1** on the HMC to the **HMC1 (T3)** port on the managed system.

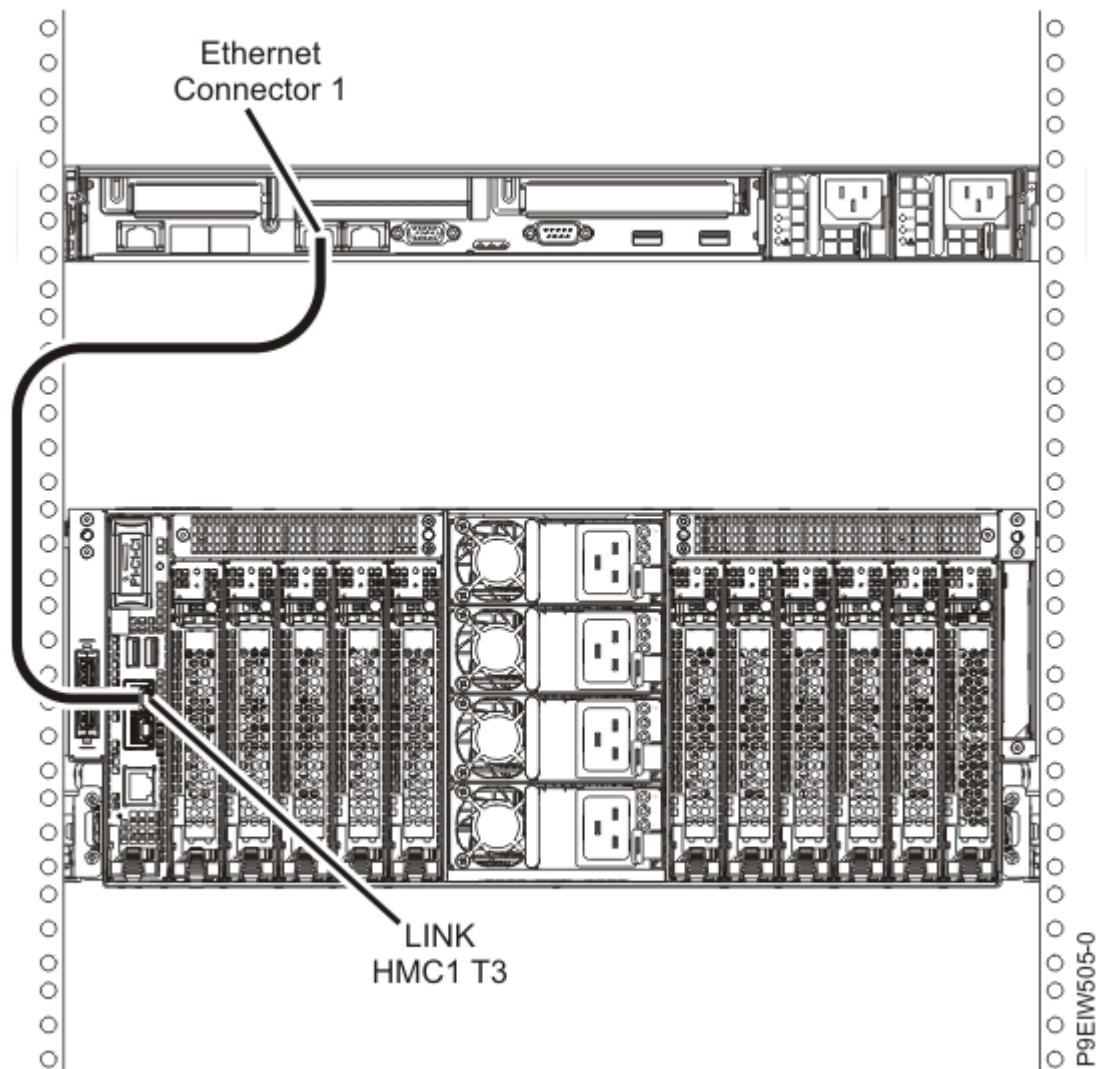


Figure 42. Directly attaching the HMC to the managed system

2. To learn how to connect an HMC to a private network so that it can manage more than one managed system, see [HMC network connections](http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_netconhmc.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_netconhmc.htm).

Notes:

- You can also have multiple systems that are attached to a switch that is then connected to the HMC. For instructions, see [HMC network connections](http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_netconhmc.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_netconhmc.htm).
 - If you are using a switch, ensure that the speed in the switch is set to **Autodetection**. If the server is directly attached to the HMC, ensure the Ethernet adapter speed on the HMC is set to **Autodetection**. For information about how to set media speeds, see [Setting the media speed](http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_lanmediaspeed_enh.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_lanmediaspeed_enh.htm).
3. If you're connecting a second HMC to your managed server, connect it to the Ethernet port that is labeled **HMC2 (T4)** on the managed server.
 4. Continue with "Routing cables through the cable-management bracket and connecting expansion units" on page 54.

Cabling the server with keyboard, video, and mouse

Before you start the system, you might need to connect the keyboard, video, and mouse to the system, if a graphics card is present.

About this task

To connect the keyboard, video, and mouse, complete the following steps:

Procedure

1. Locate the graphics card and USB ports at the rear of the system. The USB ports are located next to slot 1 on the rear I/O cage.

Note: The USB ports on the FSP2 card aren't used for connecting the keyboard and mouse.

2. Connect the monitor cable to the graphics card.
3. Connect a keyboard and mouse to the blue USB 3.0 ports.
4. Power on the console.
5. Continue with [“Cabling the server and connecting expansion units”](#) on page 37.

Routing cables through the cable-management bracket and connecting expansion units

Use this procedure to route cables through the cable-management bracket and to connect expansion units.

About this task

To route cables through the cable-management bracket and to connect expansion units, complete the following steps:

Procedure

1. Route the console cable on the cable management bracket.
2. Connect expansion units that were included with the system. For more information, see the expansion unit installation documentation that was included with the system. Complete the tasks associated with connecting a preinstalled expansion unit or disk drive enclosure, then return to this document to complete your server setup.
3. Continue with [“Completing the server setup”](#) on page 54.

Completing the server setup

Learn about the tasks you must complete to set up your managed system.

Select from the following options:

- [“Completing the server setup by using an HMC”](#) on page 54
- [“Completing the server setup without using an HMC”](#) on page 56

Completing the server setup by using an HMC

Perform these tasks to complete the server setup by using a Hardware Management Console (HMC). You can also begin to use virtualization to consolidate multiple workloads onto fewer systems to increase server use, and to reduce cost.

Before you begin

To manage POWER9 processor-based systems, the HMC must be at version 9 release 9.2.0, or later.

About this task

To complete the server setup by using an HMC, complete the following steps:

Note: After you power on the system, wait for 10 - 15 minutes for the connection to the HMC to be established.

Procedure

1. Change the managed system passwords by completing the following steps:
For more information about setting passwords for the managed system by using the HMC, see [Setting passwords for the managed system](http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_setpassword_enh.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hai/p9hai_setpassword_enh.htm).
2. Update the time of day on the managed system by using the Advanced System Management Interface (ASMI).
To access ASMI by using the HMC, complete the following steps:
 - a. In the contents area, select the managed system.
 - b. Select **Actions > View All Actions > Launch Advanced System Management (ASM)**.
 - c. Log on to the ASMI by using the administrator user ID and password.
 - d. Select **System Config > Time of Day**.
 - e. Adjust the time of day.
 - f. Select **Save Settings**.
3. Control speculative execution by using the ASMI to address the "Spectre" and "Meltdown" vulnerabilities.
To control speculative execution by using the ASMI to address the Spectre and Meltdown vulnerabilities, complete the following steps:
 - a. In the ASMI interface, select **System Configuration > Speculative Execution Control**.
 - b. Choose the control option that you want to use. For more information about Speculative Execution Control, see [Protecting your POWER9 servers against the "Spectre" and "Meltdown" vulnerabilities](http://www.ibm.com/support/knowledgecenter/POWER9/p9hby/p9hby_speculative_execution_control.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hby/p9hby_speculative_execution_control.htm)
4. Check the firmware level on the managed system.
 - a. In the navigation area, click **Updates**.
 - b. In the contents area, select the managed system.
 - c. Select **Actions > Updates > Change Licensed Internal Code > for the Current Release**.
 - d. Select **View system information** and then click **OK**.
 - e. In the Specify LIC Repository window, select **None - Display current values** and then click **OK**.
 - f. Record the level that appears in the **EC Number** field and the **Activated Level** field. For example, if the **EC Number** is 01EM310 and the **Activated Level** is 77, the firmware level is 01EM310_77.
5. Compare your installed firmware level with available firmware levels. If necessary, update your firmware levels.
 - a. Compare your installed firmware level with available firmware levels. For more information, see the [Fix Central website](http://www.ibm.com/support/fixcentral) (<http://www.ibm.com/support/fixcentral>) .
 - b. If necessary, update your managed system firmware levels. In the navigation area, select **Updates**.
 - c. In the contents area, select your managed system.
 - d. Click **Change Licensed Internal Code for the current release**.
6. To power on a managed system, complete the following steps:
 - a. In the contents area, select the managed system.
 - b. Select **Actions > View All Actions > Power Management**.
 - c. Select the power on options that you want to use and click **OK**.
7. Configure and manage virtual resources. For instructions, see [Getting started with PowerVM](http://www.ibm.com/support/knowledgecenter/POWER9/p9eew/p9eew_kickoff.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9eew/p9eew_kickoff.htm).

8. If your system was preinstalled with an operating system, you must exit MDC (manufacturing default configuration) mode so that you can open a console and access your operating system. To exit MDC mode, complete the following steps:
 - a. Select **Resources > All Systems**.
 - b. Select **System > Actions > View System Partitions**.
 - c. Under Properties, select **General Settings**.
 - d. Select **Power On Parameters** and set the Partition Start Policy to **User-Initiated**.
 - e. Under System Actions, select **Operations > Power On**.
 - f. Once the system is in the *partition standby* state and the default partition is in the *Not Activated* state, select the default partition and choose **Activate**.

For more information about starting a system or logical partition by using the HMC, see [Starting a system or logical partition by using the HMC](#).

9. Create partitions using templates.
 - If you are creating new partitions, you can use the templates that are on your HMC. For more information, see [Accessing the template library](http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_accessing_template_library.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_accessing_template_library.htm).
 - If you have existing partitions on another system, you can capture those configurations, save it to the template library and deploy the partition template. For more information, see [Partition templates](http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_partition_template_concept.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_partition_template_concept.htm).
 - If you want to use an existing template from another source, you can import that and use it. For more information, see [Importing a partition template](http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_import_partition_template.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9efc/p9efc_import_partition_template.htm).
10. Install an operating system and update the operating system.
 - Install the AIX operating system. For instructions, see [Installing AIX](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installaix.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installaix.htm).
 - Install the Linux operating system. For instructions, see [Installing Linux](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installlinux.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installlinux.htm).
 - Install the VIOS operating system. For instructions, see [Installing VIOS](http://www.ibm.com/support/knowledgecenter/POWER9/p9hch/p9hch_installvios.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hch/p9hch_installvios.htm).
 - Install the IBM i operating system. For instructions, see [Installing the IBM i operating system](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_ibmi.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_ibmi.htm).
11. You have now completed the steps to install your server.

Completing the server setup without using an HMC

If you do not have an Hardware Management Console (HMC), use this procedure to complete the server setup.

About this task

To complete the server setup without using a management console, complete the following steps:

Procedure

1. Attach the server to the rack using the screws that were provided with your system.
2. To check the firmware level on the managed system and the time of day, complete the following steps:
 - a. Access the Advanced System Management Interface (ASMI). For instructions, see [Accessing the ASMI without an HMC](http://www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm).
 - b. On the ASMI Welcome pane, note the existing level of server firmware in the upper-right corner under the copyright statement.

- c. Update the time of day. In the navigation area, expand **System Configuration**.
 - d. Click **Time of Day**. The content pane displays a form that shows the current date (month, day, and year) and time (hours, minutes, and seconds).
 - e. Change the date value, the time value, or both, and click **Save settings**.
3. To start a system, complete the following steps:
 - a. Open the front door of the managed system.
 - b. Press the power button on the control panel.

The power-on light begins to flash faster.

- a. The system cooling fans are activated after approximately 30 seconds and begin to accelerate to operating speed.
- b. Progress indicators appear on the control panel display while the system is being started.
- c. The power-on light on the control panel stops flashing and remains on, indicating that the system is powered on.

For instructions, see [Starting a system that is not managed by an HMC](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/startsysnohmc.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/startsysnohmc.htm).

4. Install an operating system and update the operating system.
 - Install the AIX operating system. For instructions, see [Installing AIX](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installaix.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installaix.htm).
 - Install the Linux operating system. For instructions, see [Installing Linux](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installlinux.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_installlinux.htm).
 - Install the VIOS operating system. For instructions, see [Installing VIOS](http://www.ibm.com/support/knowledgecenter/POWER9/p9hch/p9hch_installvios.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hch/p9hch_installvios.htm).
 - Install the IBM i operating system. For instructions, see [Installing the IBM i operating system](http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_ibmi.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/p9hdx_ibmi.htm).
5. Update the system firmware.
 - For instructions to get firmware fixes through the AIX or Linux operating system, see [Getting server firmware fixes through AIX or Linux without a management console](http://www.ibm.com/support/knowledgecenter/POWER9/p9ha5/fix_firm_no_hmc_aix.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9ha5/fix_firm_no_hmc_aix.htm).
 - If you're using VIOS, see [Updating the Virtual I/O Server](http://www.ibm.com/support/knowledgecenter/POWER9/p9hb1/p9hb1_vios_managing Updating.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hb1/p9hb1_vios_managing Updating.htm).
6. You have now completed the steps to install your server.

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Accessibility features for IBM Power Systems servers

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

Overview

The IBM Power Systems servers include the following major accessibility features:

- Keyboard-only operation
- Operations that use a screen reader

The IBM Power Systems servers use the latest W3C Standard, WAI-ARIA 1.0 (www.w3.org/TR/wai-aria/), to ensure compliance with US Section 508 (www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards) and Web Content Accessibility Guidelines (WCAG) 2.0 (www.w3.org/TR/WCAG20/). To take advantage of accessibility features, use the latest release of your screen reader and the latest web browser that is supported by the IBM Power Systems servers.

The IBM Power Systems servers online product documentation in IBM Knowledge Center is enabled for accessibility. The accessibility features of IBM Knowledge Center are described in the [Accessibility](http://www.ibm.com/support/knowledgecenter/doc/kc_help.html#accessibility) section of the IBM Knowledge Center help (www.ibm.com/support/knowledgecenter/doc/kc_help.html#accessibility).

Keyboard navigation

This product uses standard navigation keys.

Interface information

The IBM Power Systems servers user interfaces do not have content that flashes 2 - 55 times per second.

The IBM Power Systems servers web user interface relies on cascading style sheets to render content properly and to provide a usable experience. The application provides an equivalent way for low-vision users to use system display settings, including high-contrast mode. You can control font size by using the device or web browser settings.

The IBM Power Systems servers web user interface includes WAI-ARIA navigational landmarks that you can use to quickly navigate to functional areas in the application.

Vendor software

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Related accessibility information

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TTY service
800-IBM-3383 (800-426-3383)
(within North America)

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The following Class A statements apply to the IBM servers that contain the POWER9 processor and its features unless designated as electromagnetic compatibility (EMC) Class B in the feature information.

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CAN ICES-3 (A)/NMB-3(A)

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This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

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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 2014/30/EU in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC Richtlinie 2014/30/EU) für Geräte der Klasse A

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

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
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Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 / EN 55032 Klasse A.

Japan Electronics and Information Technology Industries Association (JEITA) Notice

(一社) 電子情報技術産業協会 高調波電流抑制対策実施
要領に基づく定格入力電力値: Knowledge Centerの各製品の
仕様ページ参照

This statement applies to products less than or equal to 20 A per phase.

高調波電流規格 JIS C 61000-3-2 適合品

This statement applies to products greater than 20 A, single phase.

高調波電流規格 JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。

- 回路分類 : 6 (単相、P F C回路付)
- 換算係数 : 0

This statement applies to products greater than 20 A per phase, three-phase.

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- 回路分類 : 5 (3相、P F C回路付)
- 換算係数 : 0

Japan Voluntary Control Council for Interference (VCCI) Notice

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VCCI-A

Korea Notice

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

People's Republic of China Notice

声 明

此为 A 级产品,在生活环境中,
该产品可能会造成无线电干扰。
在这种情况下,可能需要用户对其
干扰采取切实可行的措施。

Russia Notice

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

Taiwan Notice

警告使用者：

此為甲類資訊技術設備，
於居住環境中使用時，可
能會造成射頻擾動，在此
種情況下，使用者會被要
求採取某些適當的對策。

IBM Taiwan Contact Information:

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

United States Federal Communications Commission (FCC) Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. 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 and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:
International Business Machines Corporation
New Orchard Road
Armonk, NY 10504
Contact for FCC compliance information only: fccinfo@us.ibm.com

Class B Notices

The following Class B statements apply to features designated as electromagnetic compatibility (EMC) Class B in the feature installation information.

When attaching a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices supplied with the monitor.

Canada Notice

CAN ICES-3 (B)/NMB-3(B)

European Community and Morocco Notice

This product is in conformity with the protection requirements of Directive 2014/30/EU of the European Parliament and of the Council on the harmonization 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.

German Notice

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

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022/ EN 55032 Klasse B ein.

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

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC Richtlinie 2014/30/EU) für Geräte der Klasse B

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

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
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Technical Relations Europe, Abteilung M456
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取扱説明書に従って正しい取り扱いをして下さい。

VCCI-B

Taiwan Notice

台灣IBM 產品服務聯絡方式：
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台北市松仁路7號3樓
電話：0800-016-888

United States Federal Communications Commission (FCC) Notice

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 and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

International Business Machines Corporation
New Orchard Road
Armonk, New York 10504
Contact for FCC compliance information only: fccinfo@us.ibm.com

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