

Power Systems

*Installing the System and Ordered Parts
for the 8335-GTC*



Note

Before using this information and the product it supports, read the information in [“Safety notices” on page v](#), [“Notices” on page 55](#), 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.
- When performing a machine inspection: 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 attempt to switch power to the machine until all possible unsafe conditions are corrected. 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.
- 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 if provided, 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 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 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 2083 mm (30 x 82 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)



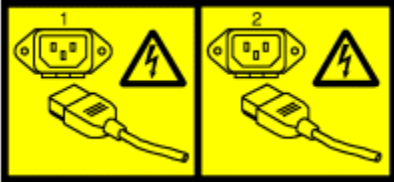
DANGER: Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack-mounted devices and do not use them to stabilize your body position (for example, when working from a ladder). Stability hazard:

- 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

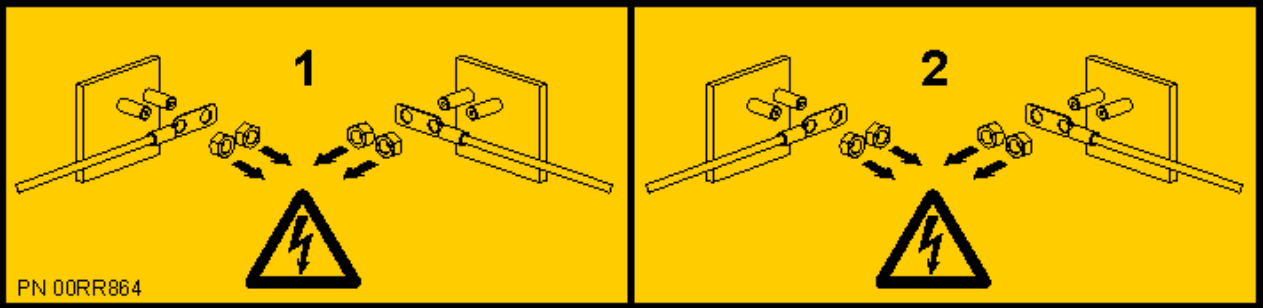



or



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

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

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

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

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

Installing and configuring the 8335-GTC

Use this information to install and configure POWER9 processor-based systems and to install customer-installable hardware features. This information also provides removal and replacement procedures for customer-replaceable hardware features, such as memory modules or fans.

Before you install a feature, ensure that the software that is required to support the feature is installed on the system. For information about software prerequisites, see the [Power Systems Prerequisites](https://www14.software.ibm.com/support/customer/ipt/home) website (<https://www14.software.ibm.com/support/customer/ipt/home>). If the required software is not installed, go to the [Fix Central](http://www.ibm.com/support/fixcentral/) website (<http://www.ibm.com/support/fixcentral/>) to download it, and then install it before you continue.

Installing these features is a customer task. You can complete this task yourself, or contact a service provider to complete the task for you. You might be charged a fee by the service provider for this service. See the International Information Bulletin for Customers - Installation of IBM Machines (Publication number: SC27-6601-00) that is available from the IBM Publications Center (<http://www-05.ibm.com/e-business/linkweb/publications/servlet/pbi.wss>). This bulletin provides a list of the key IBM system installation activities and a list of activities that might be billable.

Installing the 8335-GTC

Learn how to install, cable, and set up your server.

Prerequisite for installing the rack-mounted server

Learn about the prerequisites for installing the server.

Before you begin

Read the following documents before you install the server:

- The latest version of this document is maintained online, see [Installing the IBM Power® System AC922 \(8335-GTC, 8335-GTG, and 8335-GTH\) or IBM Power System AC922 \(8335-GTW and 8335-GTX\)](http://www.ibm.com/support/knowledgecenter/POWER9/p8eik/p8eik_install_kickoff.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p8eik/p8eik_install_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).

Procedure

Ensure that you have the following items before you start the installation:

- Phillips screwdriver
- Flat-head screwdriver
- Box cutter
- Electrostatic discharge (ESD) wrist strap
- Rack with two Electronic Industries Association (EIA) units (2U) of space

Completing inventory for your server

Use this information to complete inventory for your server.

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:

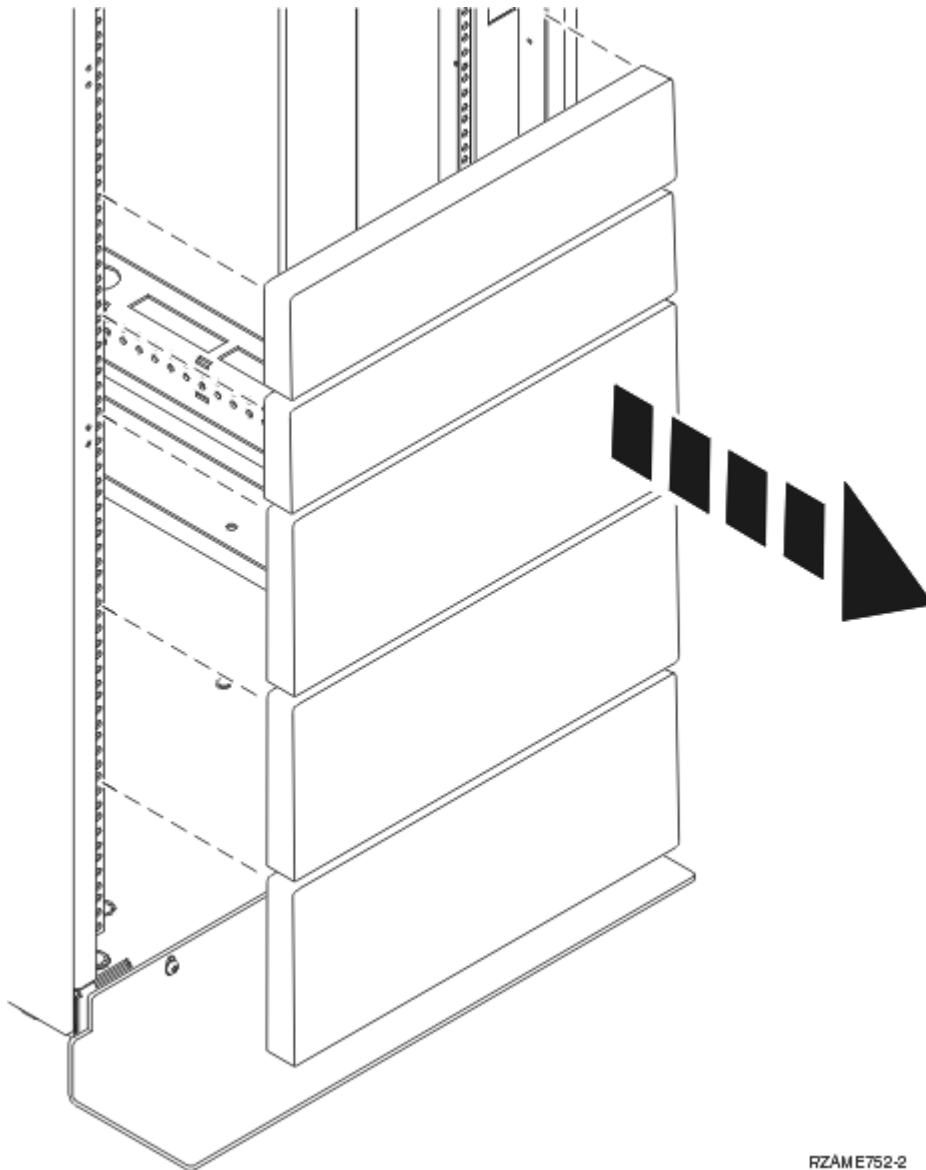
- Your IBM reseller.
- IBM Rochester manufacturing automated information line at 1-800-300-8751 (United States only).
- The Directory of worldwide contacts website <http://www.ibm.com/planetwide>. Select your location to view the service and support contact information.

Determining and marking the location in the rack

You might need to determine where to install the system unit into the rack.

Procedure

1. Read the [Rack safety notices](http://www.ibm.com/support/knowledgecenter/POWER9/p9hbf/p9hbf_racksafety.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hbf/p9hbf_racksafety.htm).
 2. Determine where to place the system unit in the rack. As you plan for installing the system unit in a rack, consider the following information:
 - Organize larger and heavier units into the lower part of the rack.
 - Plan to install system units into the lower part of the rack first.
 - Record the Electronic Industries Alliance (EIA) locations in your plan.
- Note:** The server is two EIA units high. An EIA unit is 44.55 mm (1.75 in.) in height. The rack contains three mounting holes for each EIA unit of height. This system unit, therefore, is 89 mm (3.5 in.) high and covers six mounting holes in the rack.
3. If necessary, remove the filler panels to allow access to the inside of the rack enclosure where you plan to place the system unit, as shown in [Figure 1 on page 3](#).



RZAME752-2

Figure 1. Removing the filler panels

4. Facing the front of the rack and working from the right side, use tape, a marker, or pencil to mark the lower hole of each EIA unit.
Mark the rack such that the mark can also be seen from the rear of the rack.
5. Mark the corresponding hole on the left side of the rack.
6. Go to the rear of the rack.
7. On the right side, find the EIA unit that corresponds to the bottom EIA unit marked on the front of the rack.
8. Mark the bottom EIA unit.
9. Mark the corresponding hole on the left side of the rack.

Installing the 8335-GTC, 8335-GTG, or 8335-GTH system by using slide rails

If you ordered the system with the slide rail option, use these procedures to install the system into the rack.

Attaching the slide rails to the rack

You might need to attach the mounting hardware to the rack. Use the procedure to complete this task. The information is intended to promote safety and reliable operation, and includes illustrations of the related hardware components and shows how these components relate to each other.

Procedure

1. Remove the screw from the rear of the rail (**3**). Align the two pins located on the rear of the slide rail with the top and bottom holes within the selected EIA unit that were previously marked. Pull the slide rail toward you to insert the two pins into the rack holes (**1**), and lower the slide rail down (**2**) to engage the hook feature on the top pin. Ensure that the two pins protrude through the rack holes before you proceed to the next step.
2. Move to the front of the rack. Push up on the locking tab (**1**) on the front of the rail, and pull out the front latch (**2**) at the front of the rail. See [Figure 2 on page 4](#).

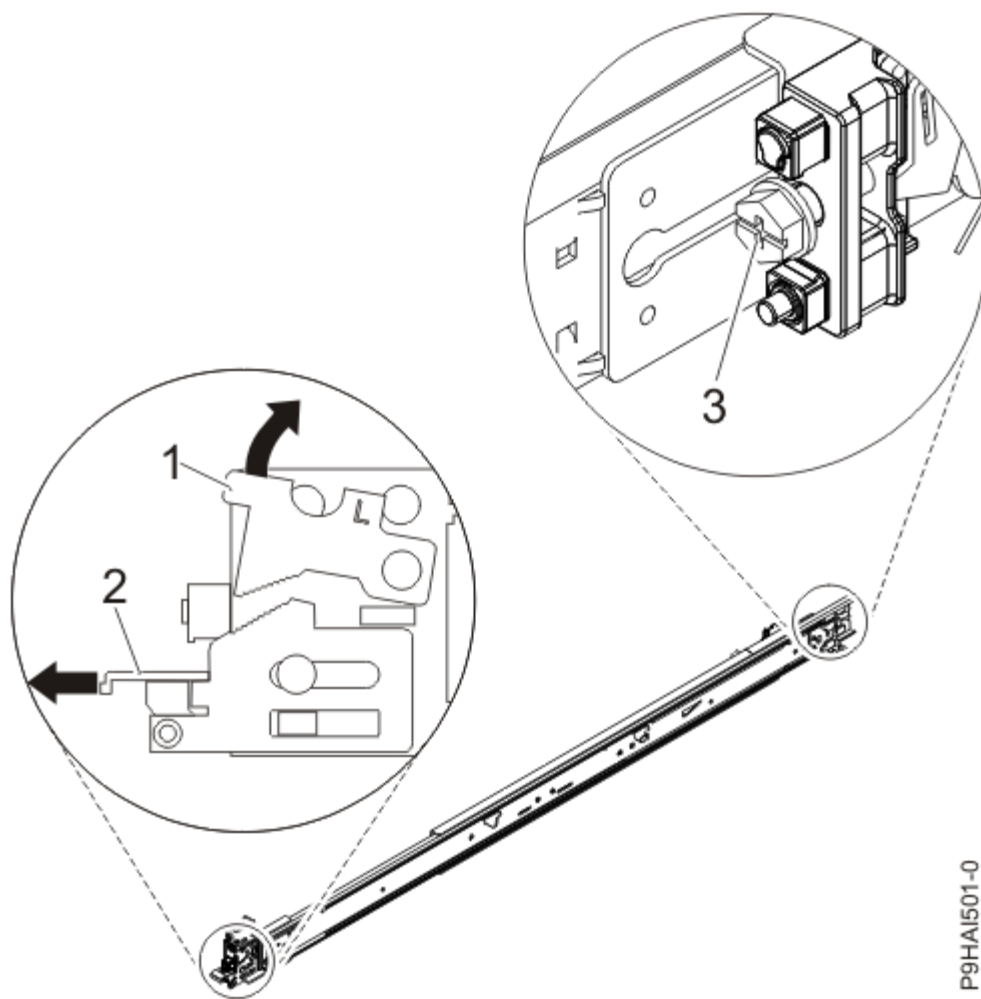


Figure 2. Opening the front latch and removing the rear screw

3. At the front of the rack, insert three pins on the front of the rail into the holes within the selected EIA unit that were previously marked. Lower the slide rail down (**1**) to engage the hook feature on the middle pin. See [Figure 3 on page 5](#).

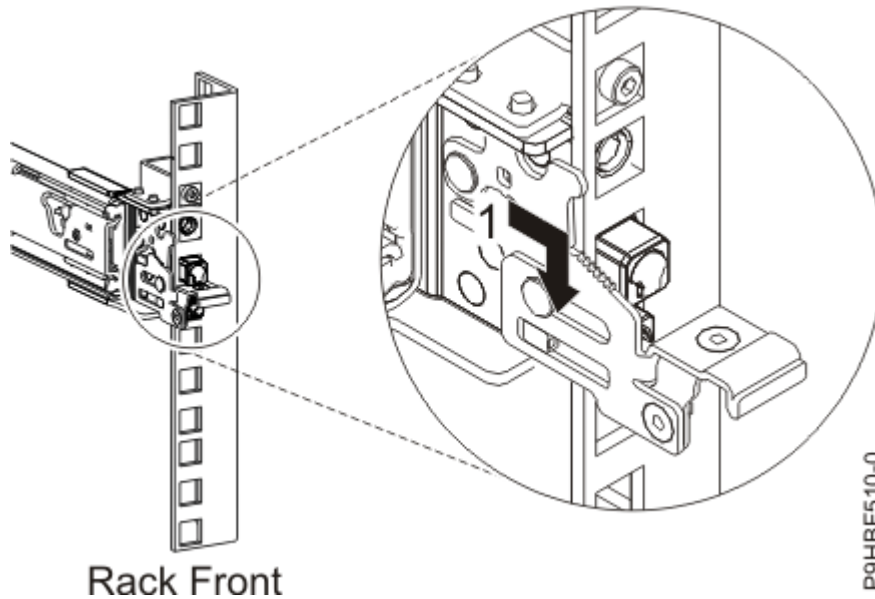


Figure 3. Inserting pins on the front rail of the rack

4. While you pull the slide rail forward, ensure that all three pins protrude through the rack holes, then push the front latch (2) all the way in. See [Figure 4](#) on page 5.

Note: If you must reposition the rail, release the front latch (2). Then, while you press the blue pin at the bottom of the latch, push the rail up and toward the rear to release the rail from the rack.

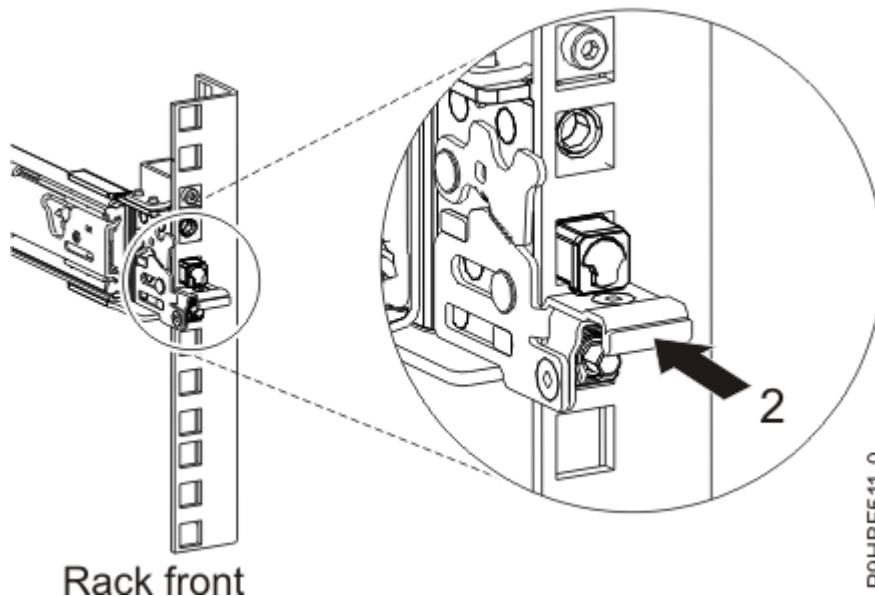


Figure 4. Latch seated on the front rail of the rack

5. Move to the rear of the rack. Install the screw (3) to secure the slide rail to the rack.
6. Repeat steps [“3”](#) on page 4 and [“4”](#) on page 5 for the right rail.

Installing the 8335-GTC, 8335-GTG, or 8335-GTH system into the rack by using slide rails

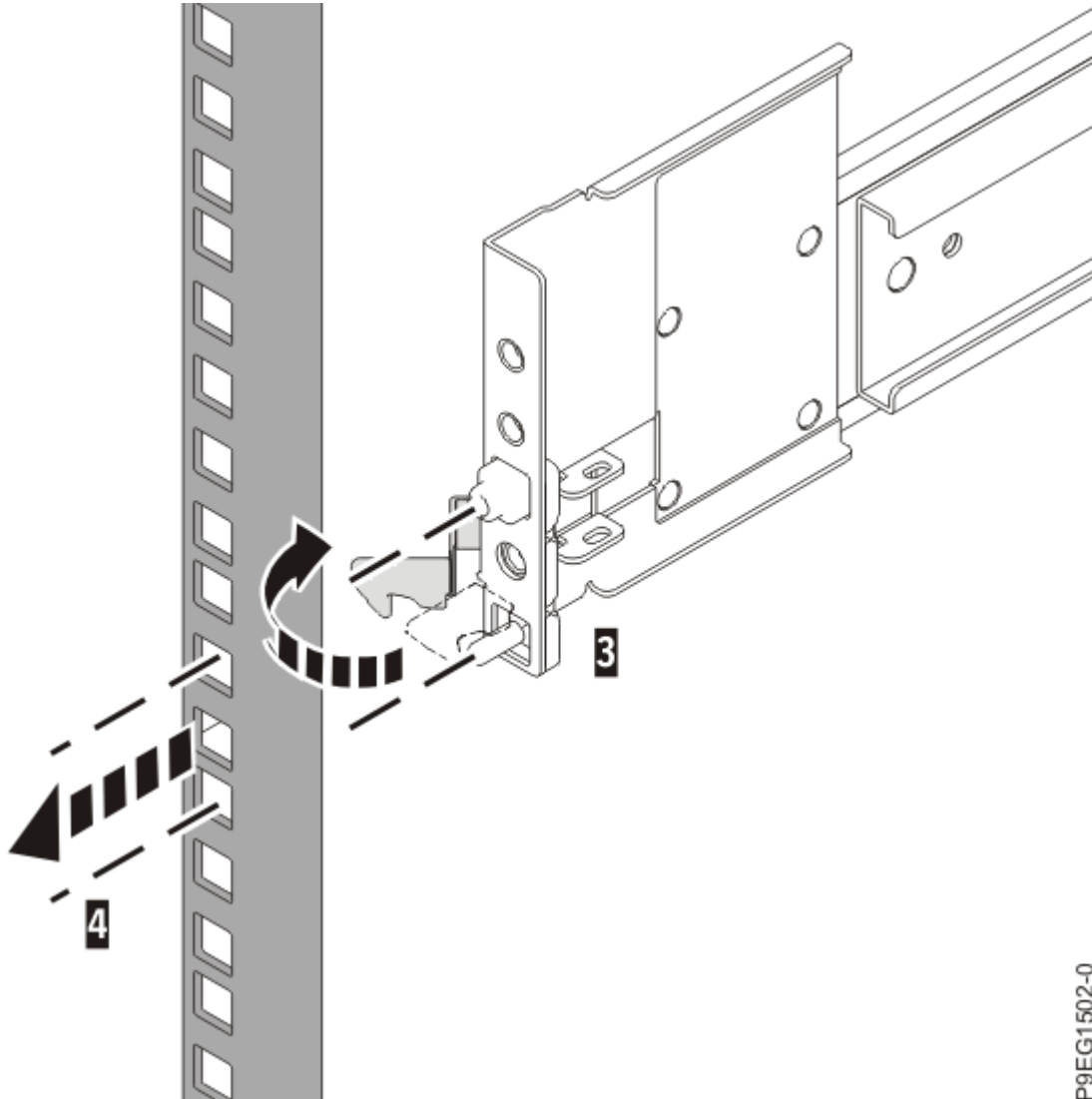
Learn how to install the system into the rack by using slide rails.

About this task

Note: This system requires two people to install the system into the rack.

Procedure

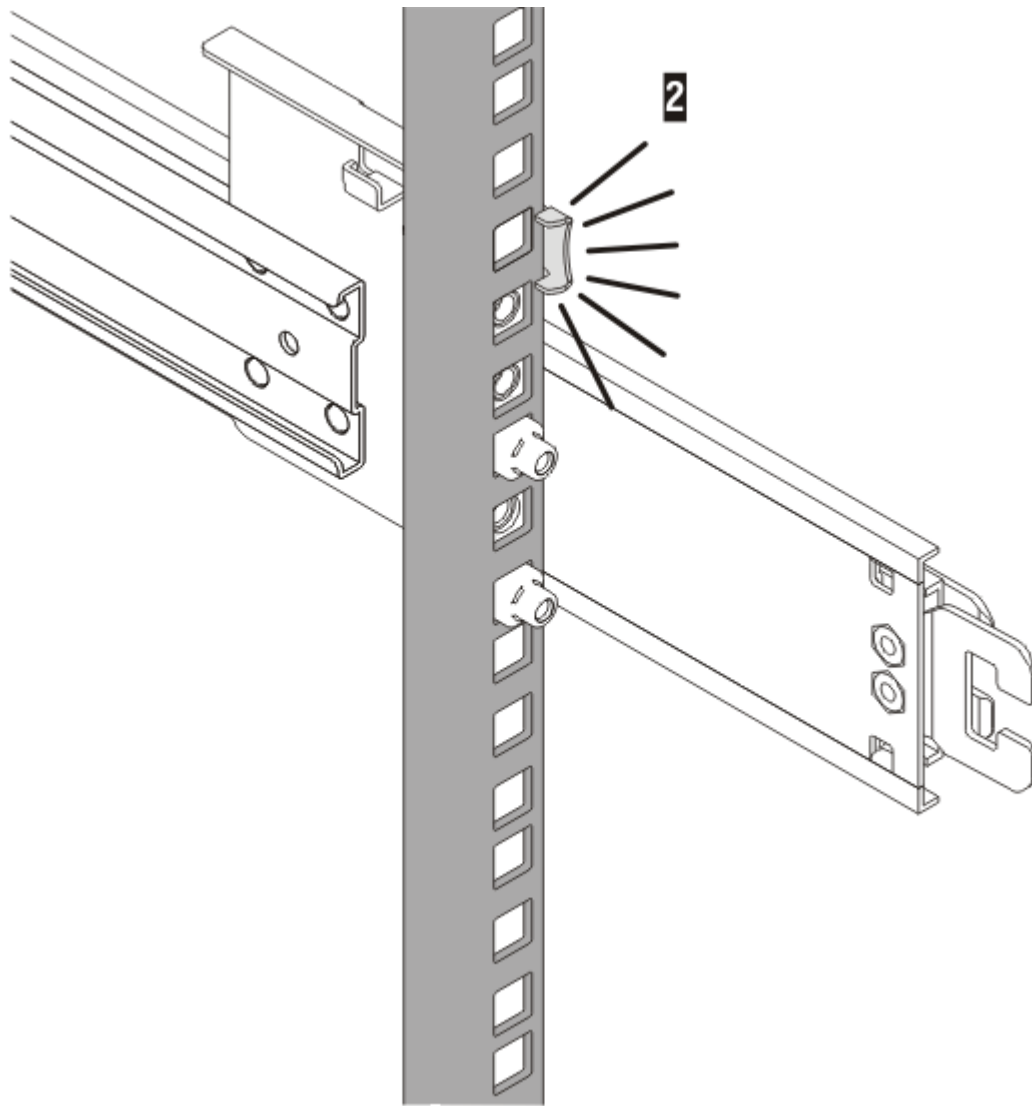
1. Remove the shipping cover on the rear and the front of the system, if present.
2. Extend the slide rails forward **(1)** until they click twice into place. Carefully lift the server and tilt it into position over the slide rails so that the rear nail heads **(2)** on the server line up with the rear slots **(3)** on the slide rails. Slide the server down until the rear nail heads slip into the two rear slots. Then, slowly lower the front of the server **(4)** until the other nail heads slip into the other slots on the slide rails. Ensure that the front latch **(5)** slides over the nail heads.



P9EG1502-0

Figure 5. Extending slide rails and aligning server nail heads with the slots on the rail

3. Lift the blue release latches **(1)** on the slide rails and push the server **(2)** all the way into the rack until it clicks into place. See [Figure 6](#) on page 7.



P9EG1501-0

Figure 6. Lifting the release latches and pushing the server into the rack

4. Install the screws on either side of the system to secure the system to the rack.
5. Attach the front cover to the front of the system.

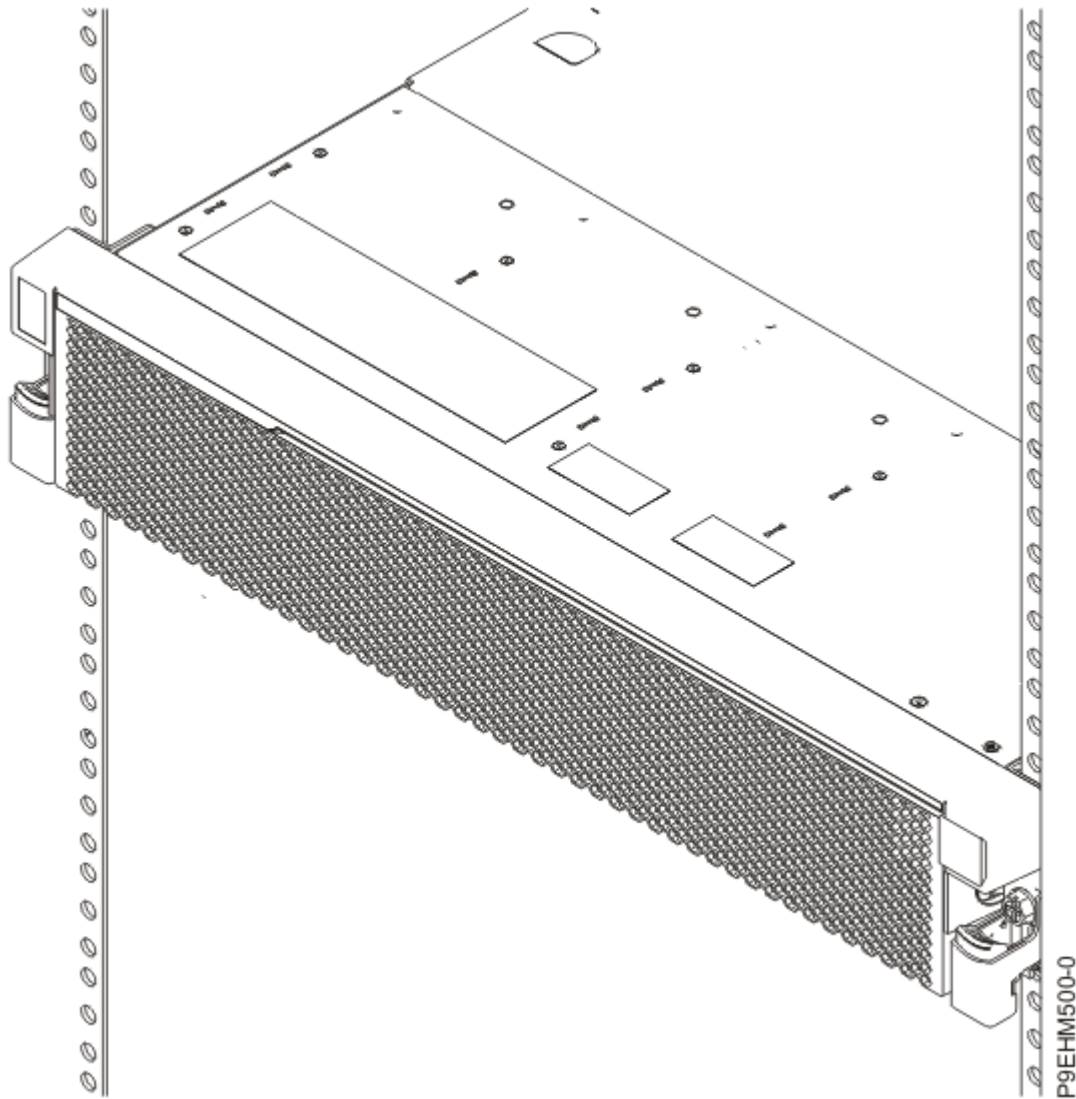


Figure 7. Completing the server installation in the rack

Installing the cable-management arm and connecting and routing power cables

The cable-management arm is used to efficiently route cables so that you have proper access to the rear of the system. After you install the cable-management arm, connect and route power cables.

About this task

Note: If you are installing more than one system now, install the cable-management arm after you install the other systems into the rack.

Procedure

1. Ensure that you have the following parts.
Refer to [Figure 8](#) on page 9.

Item Description

- A Support arm
- B Cable-management stop bracket

Item Description

- C Mounting bracket
- D Cable-management arm
- E Extension bracket

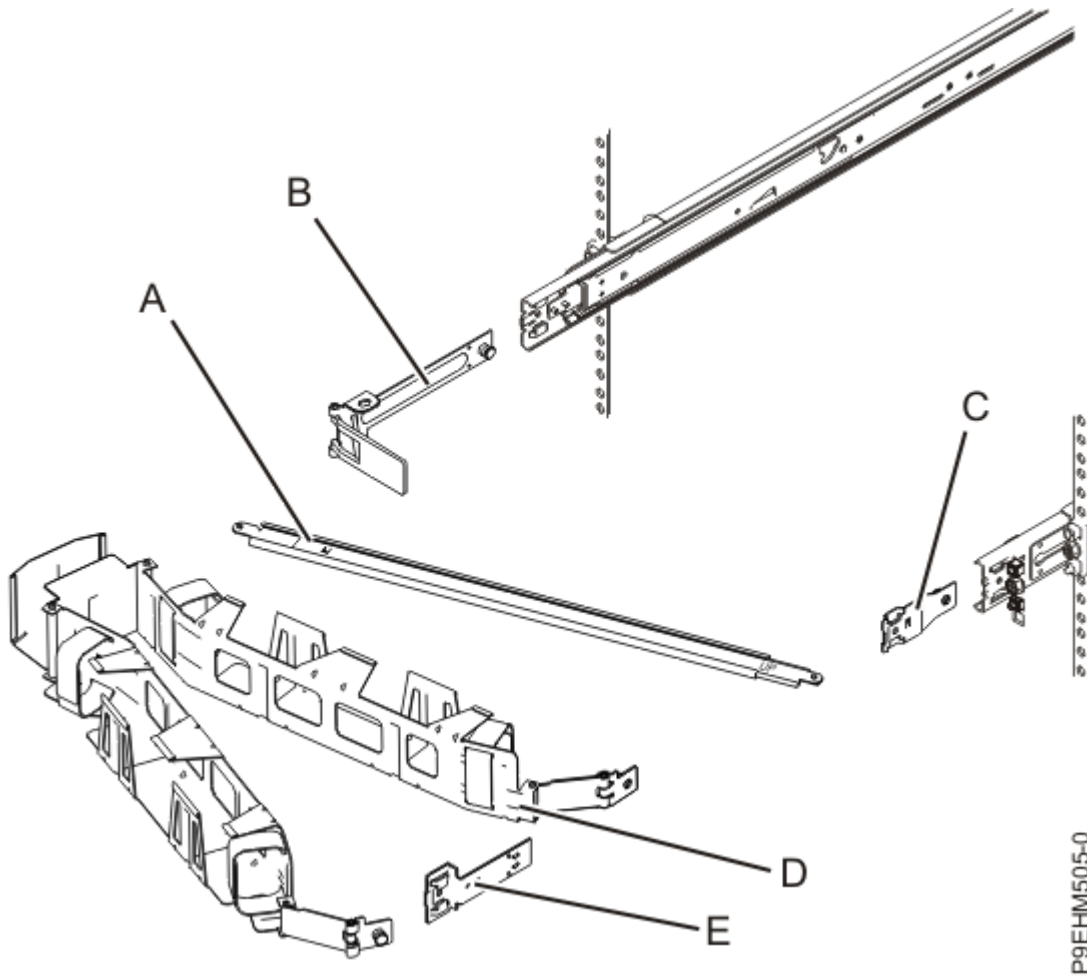


Figure 8. Relative positions of the parts of the cable-management arm before assembly

2. Connect one end of the support arm **(A)** to the right slide rail **(1)** so that you can swing the other end of the support arm toward the left side of the rack **(2)**.

See [Figure 9](#) on page 10.

Note: The support arm **(A)** is labeled UP and DOWN. Ensure that the side labeled UP is facing upward and to the right.

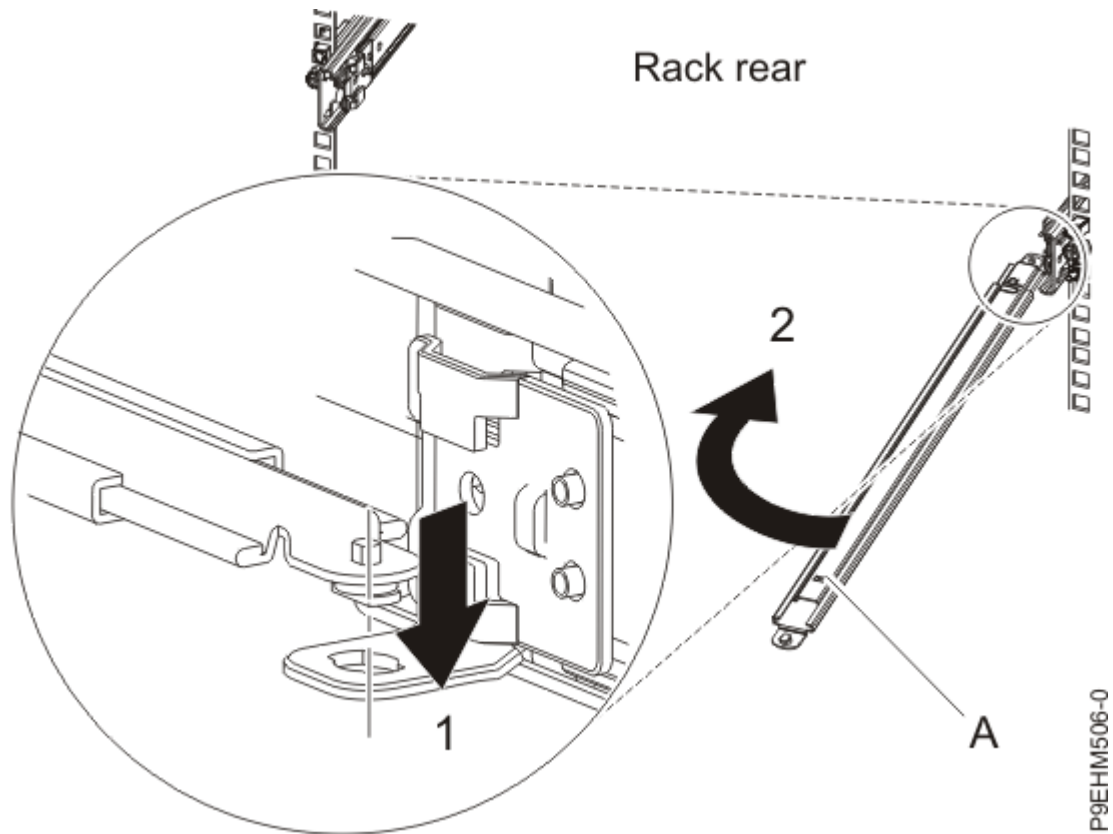


Figure 9. Connecting the support arm

3. Locate the hole at the bottom inside corner of the L-shaped cable-management stop bracket (**B**). Position the unattached end of the support arm so that the locking tab on the underside of its tip aligns with the bracket hole. Insert the tab into the hole (**1**) and turn the bracket (**2**) to secure it to the support arm. For details, see [Figure 10](#) on page 11.

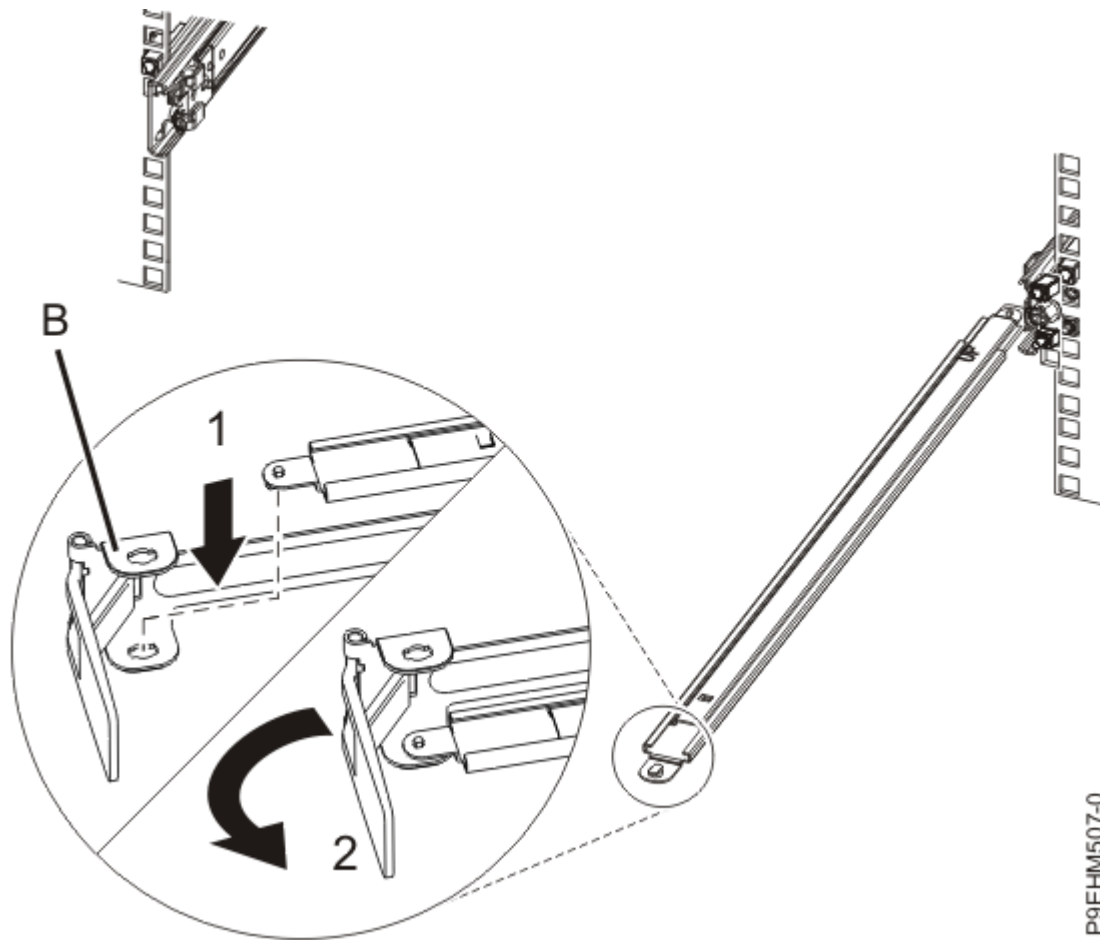
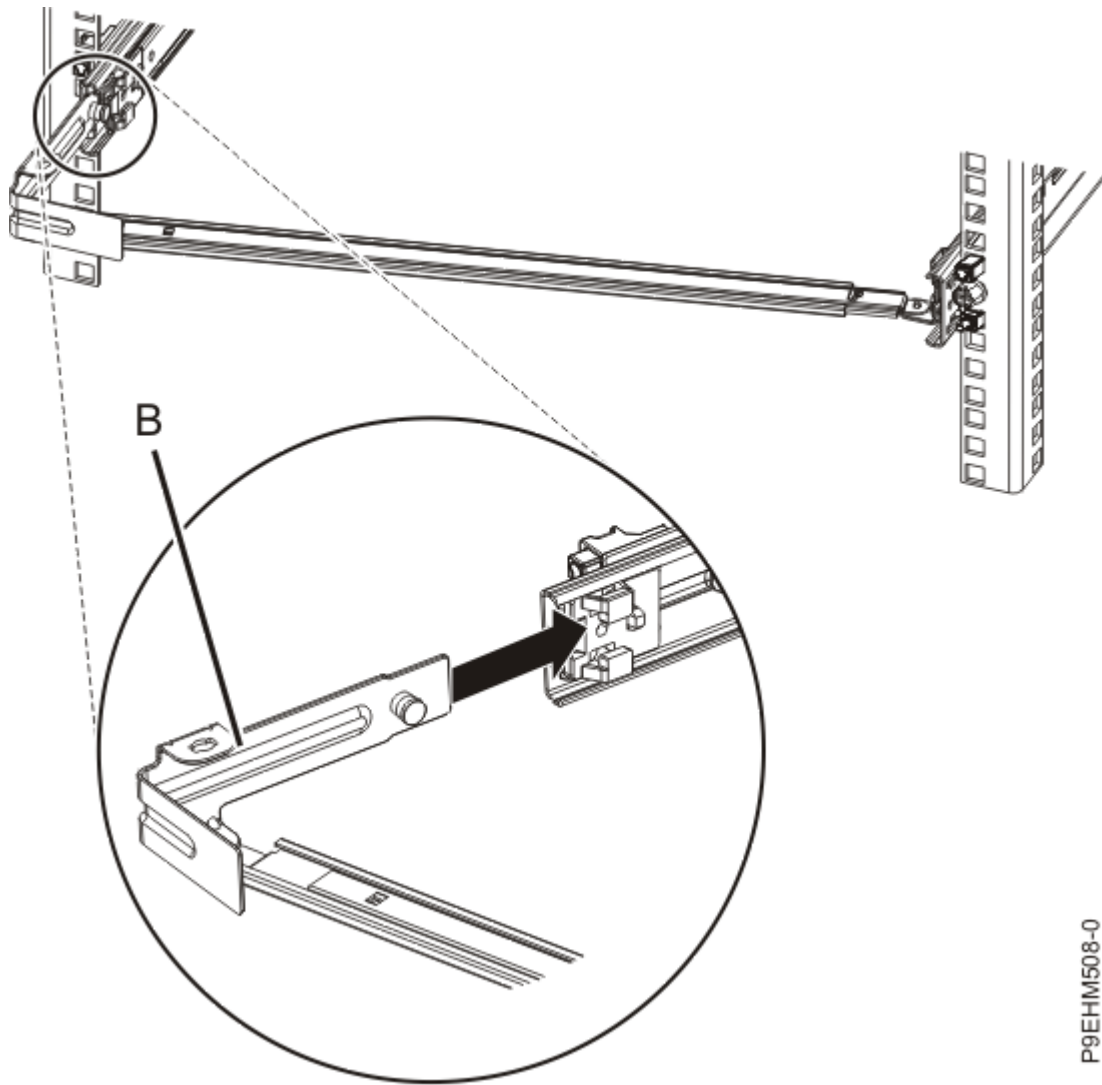


Figure 10. Securing the cable-management stop bracket to the support arm

4. Attach the cable-management stop bracket (**B**) to the slot on the inside of the left slide by sliding the stop bracket (**B**) into the slide rail until the spring-loaded pin snaps into place.



P9EHM508-0

Figure 11. Installing the mounting bracket into the slide rail

5. Slide the extension bracket **(E)** into the right slide rail until the spring-loaded pin snaps into place. For details, see [Figure 12 on page 13](#).

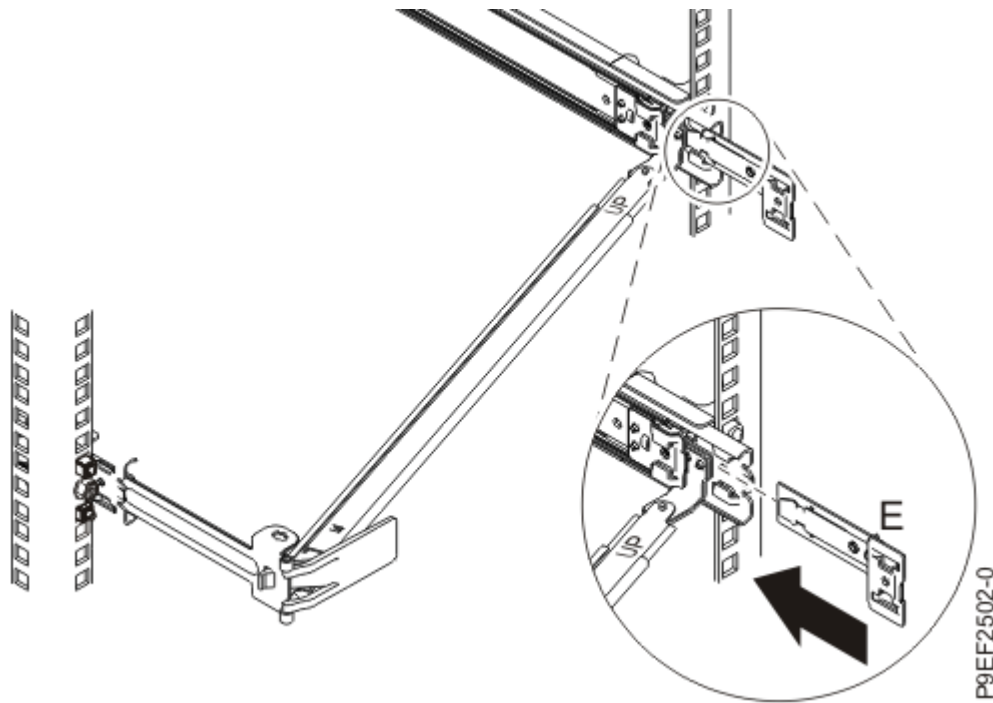


Figure 12. Installing the extension bracket into the slide rail

6. Attach the mounting bracket **(C)** to the slot on the inside of the right slide by sliding the mounting bracket **(C)** into the slide rail until the spring-loaded pin snaps into place. For details, see [Figure 13](#) on page 13.

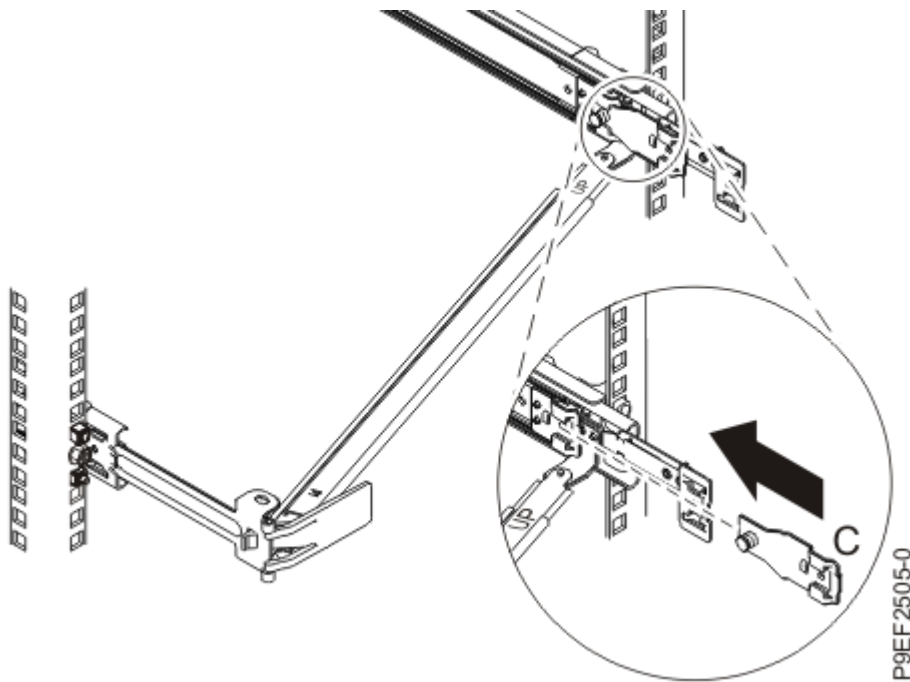
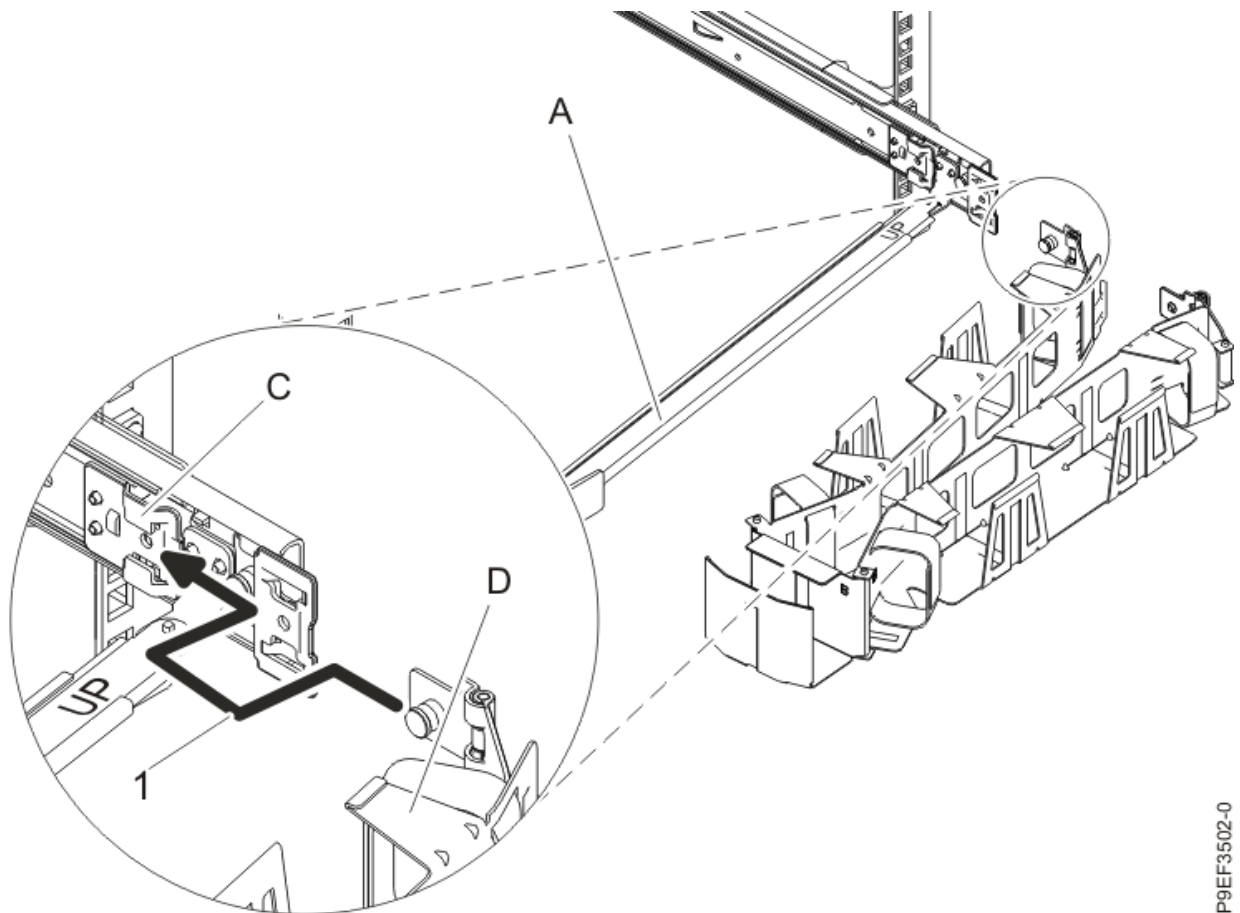


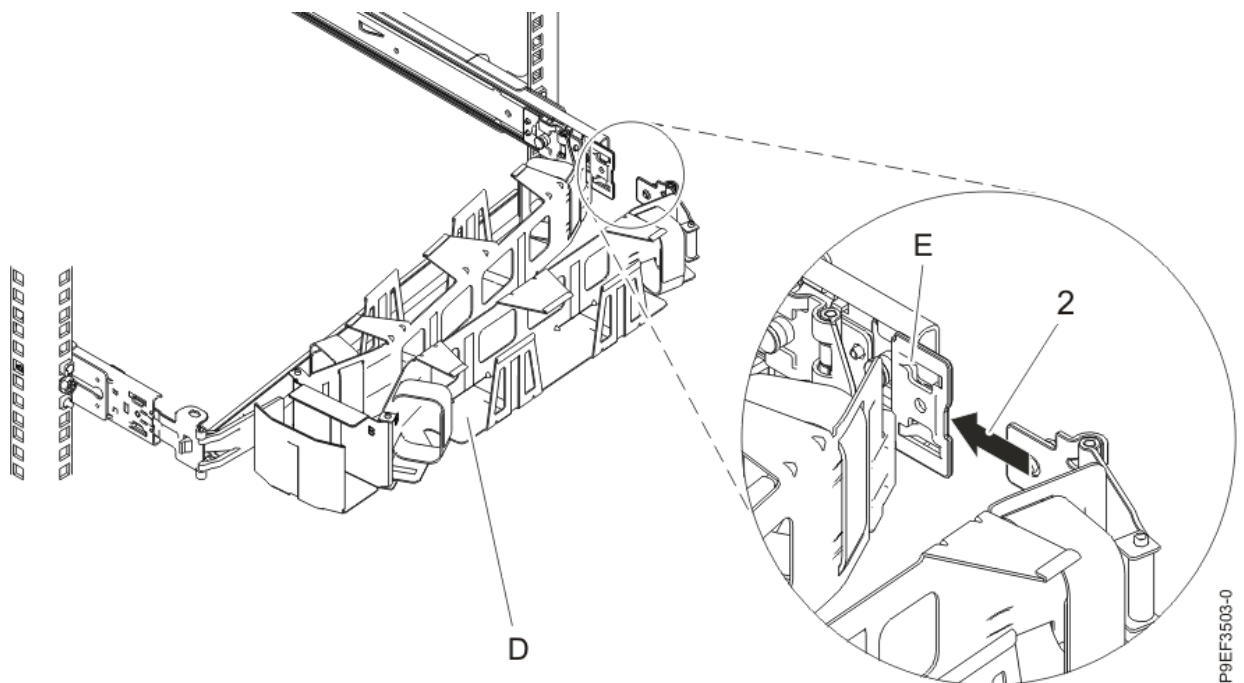
Figure 13. Installing the mounting bracket into the slide rail

7. Place the cable-management arm **(D)** on the support arm **(A)**. Slide the first cable-management arm tab into the slot on the mounting bracket **(C)**. Push the tab until the spring-loaded latch snaps into place. Slide the other cable-management arm tab into the extension bracket **(E)** on the outside of the right slide rail **(2)**. Push the tab until the spring-loaded latch snaps into place. For details, see [Figure 14](#) on page 14 and [Figure 15](#) on page 14.



P9EF3502-0

Figure 14. Sliding the cable-management arm tab into the mounting bracket slot



P9EF3503-0

Figure 15. Sliding the other cable-management arm tab into the extension bracket

8. To connect the power cables, complete the following steps:
- a. Plug the power cords into the power supplies.
 - b. Attach all cables to the rear of the server.

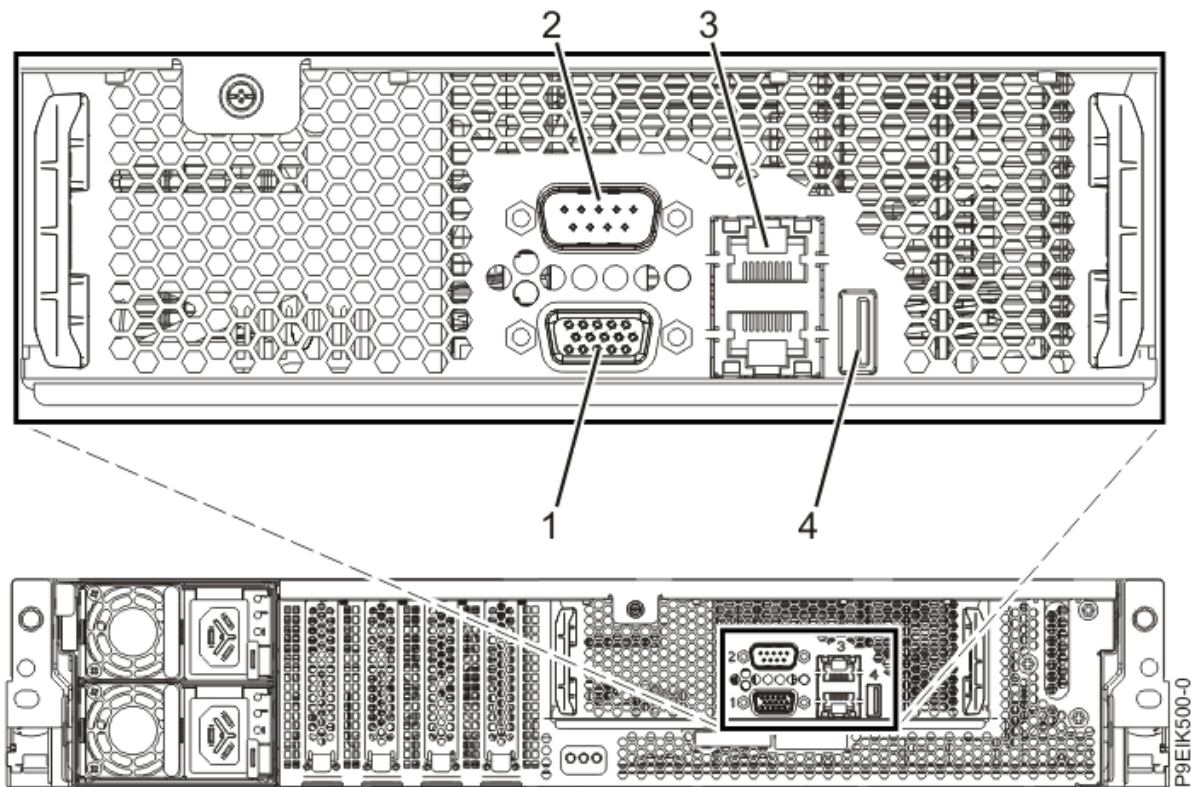


Figure 16. Rear view of the system with ports displayed

Identifier	Description
1	Video Graphics Array (VGA)
2	Intelligent Platform Management Interface (IPMI) serial
3	Ethernet. Use the top Ethernet port for the BMC/IPMI interface (as PHY0). Use the bottom Ethernet port for any direct operating system usage (as PHY1).
4	USB 3.0

c. Plug the system power cords and the power cords for any other attached devices into the alternating current (AC) power source.

9. Continue with [“Completing server setup”](#) on page 20.

Installing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system by using fixed rails

If you ordered the system with the fixed rail option, use these procedures to install the system into the rack by using fixed rails.

Attaching fixed rails to the rack

Learn how to install fixed rails to the rack

Before you begin

If your rack has square holes, you must install the conversion kit that was provided with fixed rails.

About this task

Note: The system requires 2 EIA rack units (2U) of space.

Procedure

1. Select the appropriate EIA location unit number for fixed rails. Each EIA location contains three holes for mounting hardware.
2. Install the pins onto the front or rear EIA support flanges, at the appropriate locations. The pins are used to secure the system to the rack.
3. Attach a spring to the outside of each fixed rail.
 - a. Attach the circle end of the spring around the stud on the rail.
 - b. Pulling on the spring, attach the hook end of the spring to the tab on the rail.
4. At the rear of the rack, align the bottom of the right rail with the bottom hole of the EIA unit selected, in the rear of the rack. The large locator pins fit into holes of the EIA location that is directly above the lowest EIA unit used.
5. At the front of the rack, align the locator pins into the holes of the EIA location directly above the lowest EIA unit used.
6. Install the spacer bracket between rear rail and the rack hole.
7. Repeat steps [“1” on page 16](#) through [“6” on page 16](#) for the left rail.
8. Secure both rails to the front EIA support flange by using two M5 x 16 mm screws. Install the screws through the pins that you attached.
9. Secure both rails to the rear EIA support flanges by using four M5 x 16 mm screws. Install the screws through the pins that you attached.

Installing the 8335-GTC, 8335-GTG, or 8335-GTH system into the rack by using fixed rails and connecting power cables

Learn how to install the system into the rack by using fixed rails and how to connect power cables.

About this task

Note: This system requires two people to install the system into the rack.

Procedure

1. Remove the shipping cover on the rear and the front of the system, if present.
2. Position one person on the left side of the system and one person on the right side of the system.
3. Complete the following steps:
 - a) Lift the system.
 - b) Tilt the system into position over the fixed rack rails.
 - c) Carefully lower the system until the rear of the system rests on the rails.
4. While one person is supporting the weight of the system, have the second person move to the front of the system and push the system all the way into the rack.
5. Install the screws on either side of the system to secure the system to the rack.

6. Attach the front cover to the front of the system.
See [Figure 17](#) on page 17.

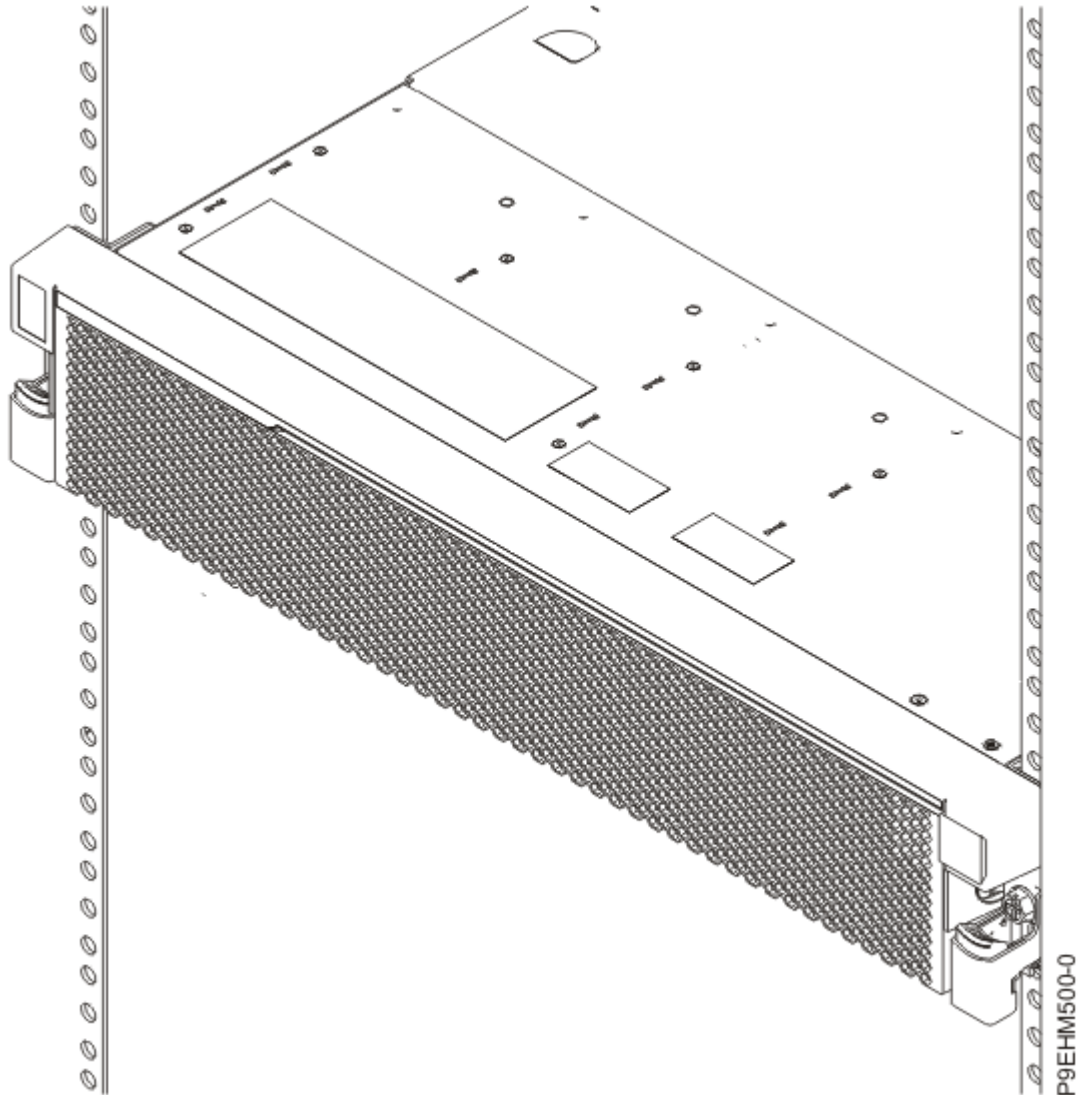


Figure 17. Installing the server in the rack

7. 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.
8. Attach all cables to the rear of the server.
9. Plug the system power cords and the power cords for any other attached devices into the AC power source.
10. Continue with [“Completing server setup”](#) on page 20.

Setting up a preinstalled server

Use this information to learn how to set up a server that is preinstalled in the rack.

Prerequisite for installing the rack-mounted server

Learn about the prerequisites for installing the server.

Before you begin

Read the following documents before you install the server:

- The latest version of this document is maintained online, see [Installing the IBM Power System AC922 \(8335-GTC, 8335-GTG, and 8335-GTH\) or IBM Power System AC922 \(8335-GTW and 8335-GTX\)](http://www.ibm.com/support/knowledgecenter/POWER9/p8eik/p8eik_install_kickoff.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p8eik/p8eik_install_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).

Procedure

Ensure that you have the following items before you start the installation:

- Phillips screwdriver
- Flat-head screwdriver
- Box cutter
- Electrostatic discharge (ESD) wrist strap
- Rack with two Electronic Industries Association (EIA) units (2U) of space

Completing inventory for your server

Use this information to complete inventory for your server.

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 and connecting water hoses and power cords for your preinstalled server

Before you set up a console, you must remove the shipping brackets and connect water hoses and power cords.

About this task

To remove the shipping bracket and connect power cords, do the following:

Procedure

1. Remove the screws that secure the shipping brackets to the chassis.
2. Connect the water hoses at the rear of the rack to the manifold, as shown in the following figure.

Ensure that you plug the male hose into the female manifold plug, and plug the female hose into the male manifold plug.



Attention: Before powering on the system, ensure that cooling water is circulating through the system.

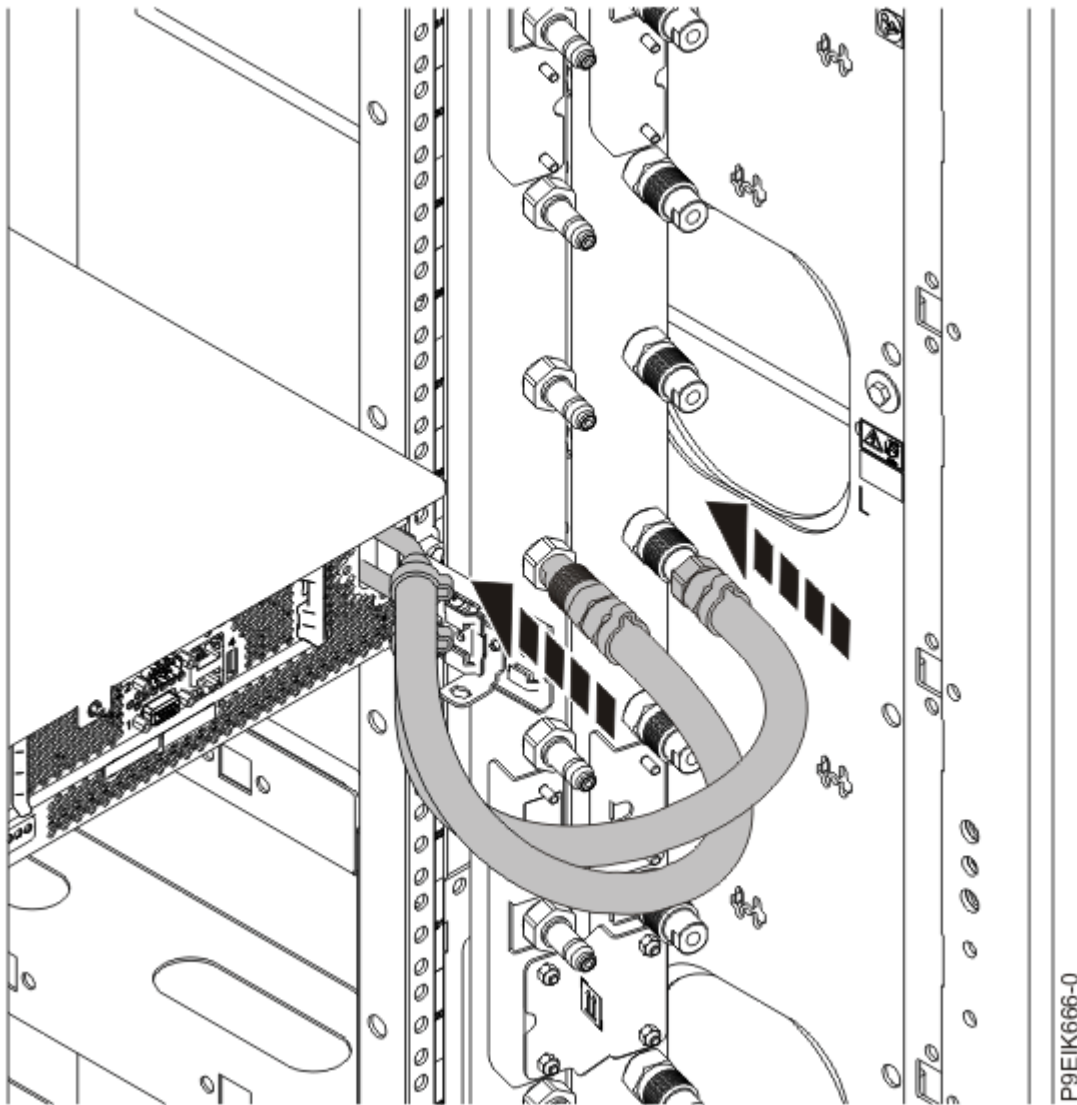


Figure 18. Connecting the water hoses

3. 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.

4. Attach all cables to the rear of the server.
5. Plug the system power cords and the power cords for any other attached devices into the AC power source.
6. Continue with [“Completing server setup”](#) on page 20.

Completing server setup

Learn how to complete server setup.

Before you begin

You might be required to set the thermal mode of the system to a setting other than the default setting, depending on your system, adapter, and cable type. For details, see [Determining and setting the thermal mode](#) (http://www.ibm.com/support/knowledgecenter/POWER9/p9ei3/p9ei3_thermal_mode.htm).

IBM® Power Systems™ servers use a baseboard management controller (BMC) for system service management, monitoring, maintenance, and control.

More information is available about OpenBMC, including the following topics:

- Downloading and installing the OpenBMC tool
- Configuring the BMC IP address
- Using basic BMC commands
- Managing the system by using the OpenBMC GUI

For more information, see [Managing OpenBMC-based systems](#) (http://www.ibm.com/support/knowledgecenter/POWER9/p9eih/p9eih_openbmc_kickoff.htm).

Note: For the 8335-GTG system, the BMC must be connected to the network to enable system firmware update and other service tasks.

Procedure

1. Connect your server to a VGA monitor and keyboard.
Only the 1024x768 at 60 Hz VGA setting is supported. Only up to a 3-meter cable is supported.
2. Go to [Getting fixes](#) (http://www.ibm.com/support/knowledgecenter/POWER9/p9ei8/p9ei8_fixes_kickoff.htm) and update the system firmware with the most recent level of firmware.
3. You can receive important technical information and updates for specific IBM Support tools and resources by subscribing to receive updates. To subscribe to receive updates, complete the following steps:
 - a. Go to the [IBM Support Portal](#).
 - b. Log in by using your IBM ID and password and click **Sign in**.
 - c. Click **Support notifications**.
 - d. Click **Browse for a product**.
 - e. Select **Power > Firmware**, find your machine type and model and click **Subscribe**.
 - f. Exit the **Browse for a product** screen.
 - g. Click **Delivery preferences** to set email preferences and click **Submit**.
 - h. Click **Edit** to select the types of documentation updates that you want to receive and click **Submit**.
4. You can install the Linux® operating system on bare metal systems, or on non-virtualized systems. For these systems, the operating system runs directly on the Open Power Abstraction Layer (OPAL) firmware.

For more information about installing the Linux operating system on bare metal systems, see [Installing Linux on bare metal systems \(https://www.ibm.com/support/knowledgecenter/linuxonibm/liabw/liabw9kickoff.htm\)](https://www.ibm.com/support/knowledgecenter/linuxonibm/liabw/liabw9kickoff.htm).

Completing server setup

Learn how to complete server setup.

Before you begin

You might be required to set the thermal mode of the system to a setting other than the default setting, depending on your system, adapter, and cable type. For details, see [Determining and setting the thermal mode \(http://www.ibm.com/support/knowledgecenter/POWER9/p9ei3/p9ei3_thermal_mode.htm\)](http://www.ibm.com/support/knowledgecenter/POWER9/p9ei3/p9ei3_thermal_mode.htm).

IBM® Power Systems™ servers use a baseboard management controller (BMC) for system service management, monitoring, maintenance, and control.

More information is available about OpenBMC, including the following topics:

- Downloading and installing the OpenBMC tool
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Note: For the 8335-GTG system, the BMC must be connected to the network to enable system firmware update and other service tasks.

Procedure

1. Connect your server to a VGA monitor and keyboard.
Only the 1024x768 at 60 Hz VGA setting is supported. Only up to a 3-meter cable is supported.
2. Go to [Getting fixes \(http://www.ibm.com/support/knowledgecenter/POWER9/p9ei8/p9ei8_fixes_kickoff.htm\)](http://www.ibm.com/support/knowledgecenter/POWER9/p9ei8/p9ei8_fixes_kickoff.htm) and update the system firmware with the most recent level of firmware.
3. You can receive important technical information and updates for specific IBM Support tools and resources by subscribing to receive updates. To subscribe to receive updates, complete the following steps:
 - a. Go to the IBM Support Portal.
 - b. Log in by using your IBM ID and password and click **Sign in**.
 - c. Click **Support notifications**.
 - d. Click **Browse for a product**.
 - e. Select **Power > Firmware**, find your machine type and model and click **Subscribe**.
 - f. Exit the **Browse for a product** screen.
 - g. Click **Delivery preferences** to set email preferences and click **Submit**.
 - h. Click **Edit** to select the types of documentation updates that you want to receive and click **Submit**.
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For more information about installing the Linux operating system on bare metal systems, see [Installing Linux on bare metal systems \(https://www.ibm.com/support/knowledgecenter/linuxonibm/liabw/liabw9kickoff.htm\)](https://www.ibm.com/support/knowledgecenter/linuxonibm/liabw/liabw9kickoff.htm).

Common procedures for servicing or installing features in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn about the common procedures related to installing, removing, and replacing features in the system.

Before you begin

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

About this task

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



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

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard: 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.
- When performing a machine inspection: 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 attempt to switch power to the machine until all possible unsafe conditions are corrected. 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.
- 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 if provided, 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:

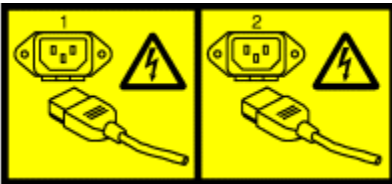
- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, 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)

(L003)



or



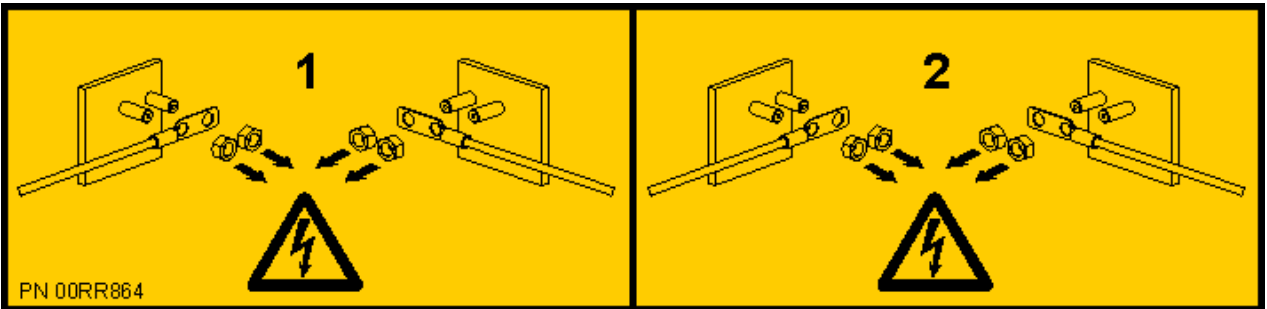
or




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)

(L005)



 **CAUTION:** Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in splattered metal, burns, or both. (L005)

Procedure

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

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

Blue on a part of the hardware indicates a touch point where you can grip the hardware to remove it from or install it in the system, open or close a latch, and so on.

5. Ensure that you have access to a medium flat-blade screwdriver, a Phillips screwdriver, and a pair of scissors.
6. If parts are incorrect, missing, or visibly damaged, do the following steps:
 - If you are replacing a part, contact the provider of your parts or next level of support.
 - If you are installing a feature, contact one of the following service organizations:
 - The provider of your parts or next level of support.
 - In the United States, the IBM Rochester Manufacturing Automated Information Line (R-MAIL) at 1-800-300-8751.

In countries and regions outside of the United States, see the [Directory of worldwide contacts](http://www.ibm.com/planetwide) (<http://www.ibm.com/planetwide>).

7. If you encounter difficulties during the installation, contact your service provider, your IBM reseller, or your next level of support.
8. For the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) systems, ensure that the top cover is on when the system is running for thermal performance.

Identifying the system that contains the part to replace

Learn how to determine which server or enclosure has the part you want to replace.

About this task

If the part does not have problem indicator LED, you need to use a troubleshooting program such as **impitool** to identify the issue.

LEDs on the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Use this information as a guide to the LEDs on the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system.

The LEDs indicate various system statuses. These LEDs are at the front (as shown in [Figure 19 on page 27](#) and [Figure 20 on page 27](#)) and at the rear of the system (as shown in [Figure 21 on page 28](#)).

- The green LED indicates the power status.
 - A constant light indicates full system power to the unit.
 - A flashing light indicates standby power to the unit.
- The blue LED is used to identify the system that requires service.
- The amber LED indicates a problem in the system. After a part is repaired, the amber LED takes a minute to turn off.

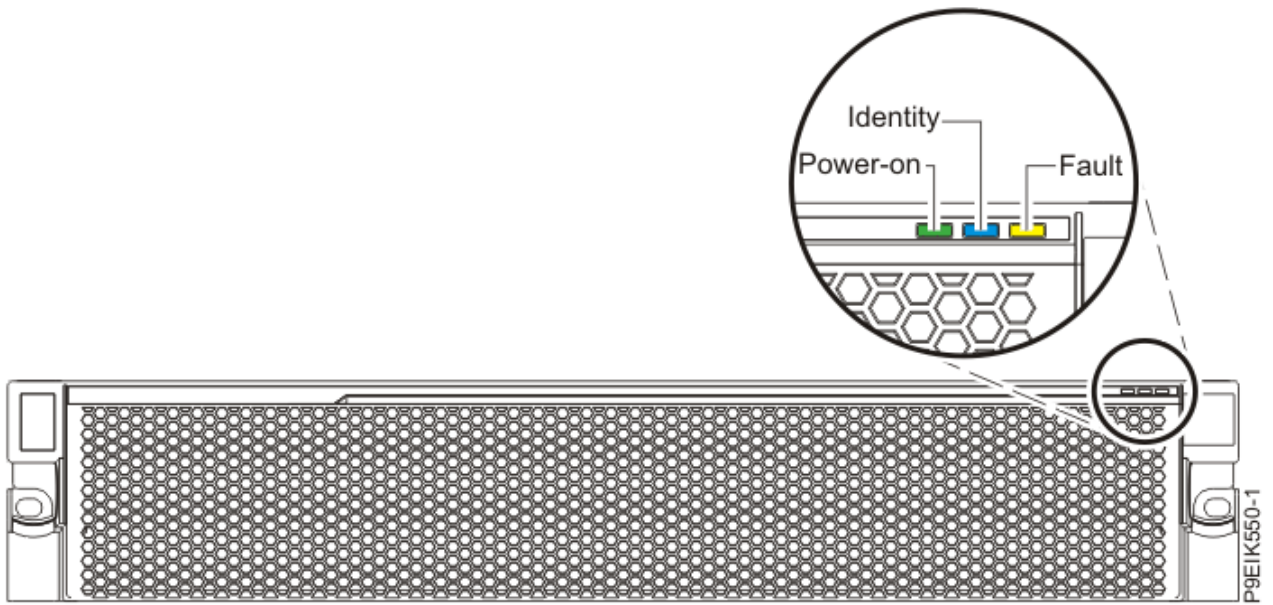


Figure 19. Front LEDs with bezel on

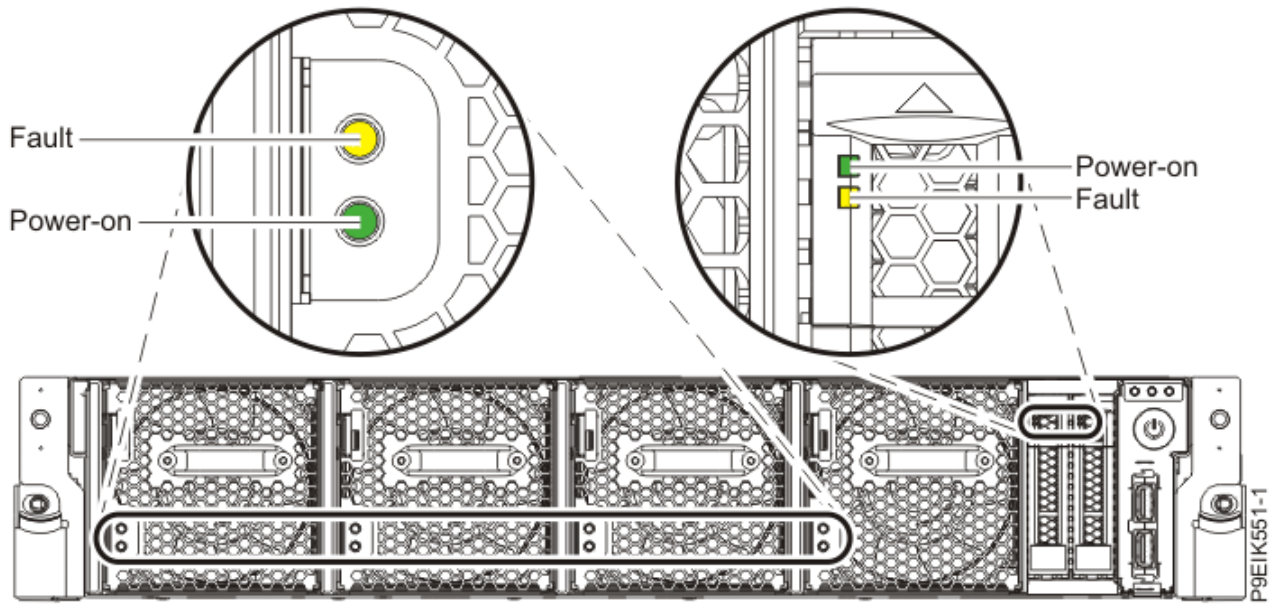


Figure 20. Front LEDs with bezel off

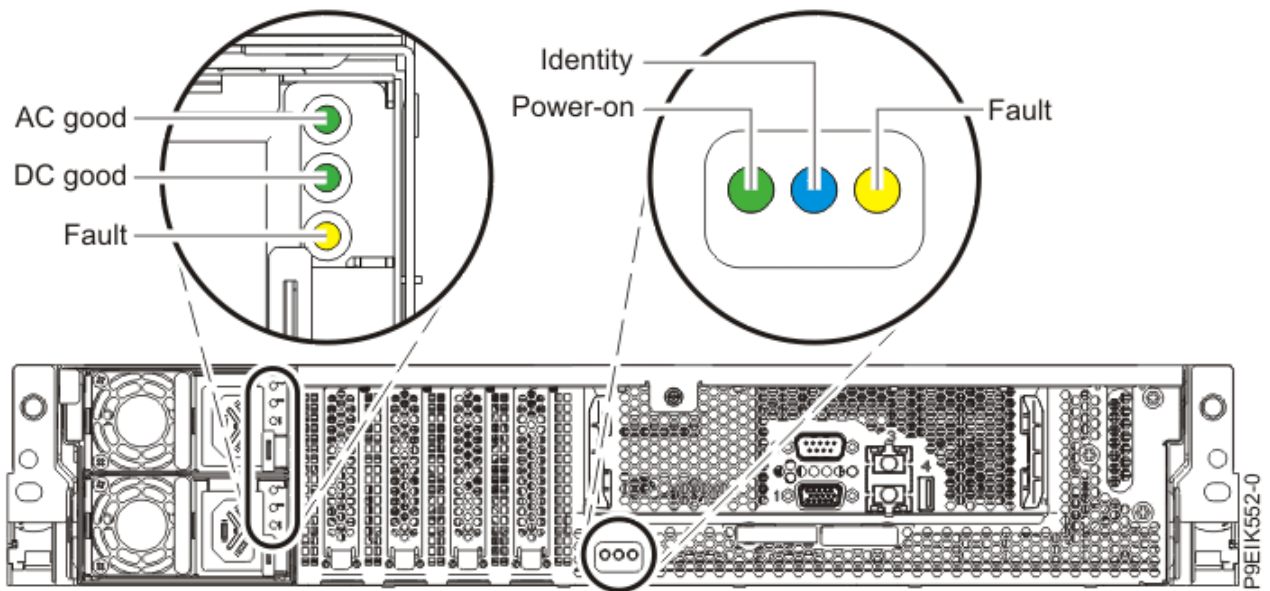


Figure 21. Rear LEDs

LED indicators are on the following parts:

- At the front of the system:
 - Disk drives (green LED indicates activity; amber LED indicates a problem).
 - Fans (green LED indicates activity; amber LED indicates a problem).
- At the rear of the system:
 - Backplane, near the rightmost PCIe slot port: Green, amber, and blue (same as on the front next to the power button).
 - Power supplies (Two green LEDs indicate AC and DC power; amber LED indicates a problem).

Identifying the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system that needs servicing

Learn how to turn on the blue identify LED to help you find the system that needs servicing.

Procedure

To activate the blue system identify LED, use the following command:

```
openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> chassis identify on
```

To turn off the blue system identify LED, use the following command:

```
openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> chassis identify off
```

To check the status of the blue system identify LED, use the following command:

```
openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> chassis identify status
```

Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts

To prepare the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system to remove and replace internal parts, complete the steps in this procedure.

Procedure

1. Complete the prerequisite tasks. For instructions, see [“Before you begin” on page 22](#).
2. Identify the part and the system that you need to work on. For instructions, see [“Identifying the system that contains the part to replace” on page 26](#).
3. If applicable, open the rack front door.
4. Attach the electrostatic discharge (ESD) wrist strap.

The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.



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. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.
5. Remove the front cover. For instructions, see [“Removing the front cover from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system” on page 39](#).

(L007)

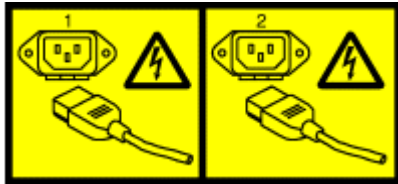


CAUTION: A hot surface nearby. (L007)

6. Stop the system. For instructions, see [“Stopping the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system” on page 36](#).
7. If applicable, open the rack door at the rear of the system.
8. Disconnect the power source from the system by unplugging the system. For instructions, see [“Disconnecting power cords from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system” on page 45](#).

Note: The system might be equipped with redundant power supply. Before you continue with this procedure, ensure that all power to your system is disconnected.

(L003)



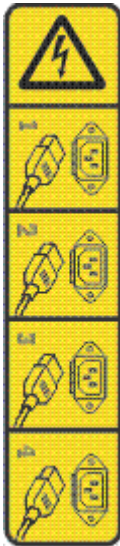
or



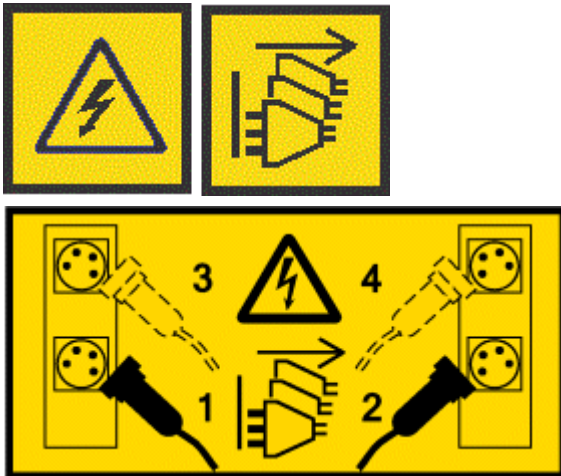
or

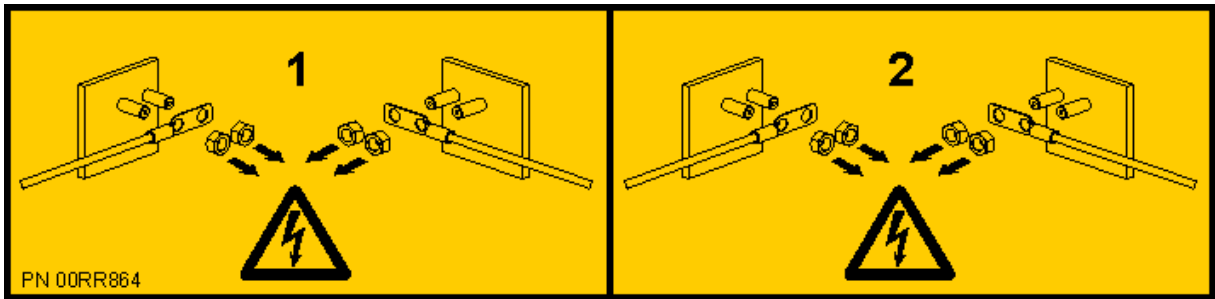


or



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)

(L005)



CAUTION: Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in splattered metal, burns, or both. (L005)

9. Remove the power supplies from the system as shown in [Figure 22 on page 32](#).
 - a) To release a power supply from its position in the system, pull the locking-tab **(A)** to the left.
 - b) Grasp the power supply handle with one hand, and pull the power supply **(B)** partially out of the system.
 - c) Place your other hand underneath the power supply and pull the power supply out of the system and place it on an ESD mat.
 - d) Repeat steps “9.a” on [page 31](#) - “9.c” on [page 31](#) for the other power supply.

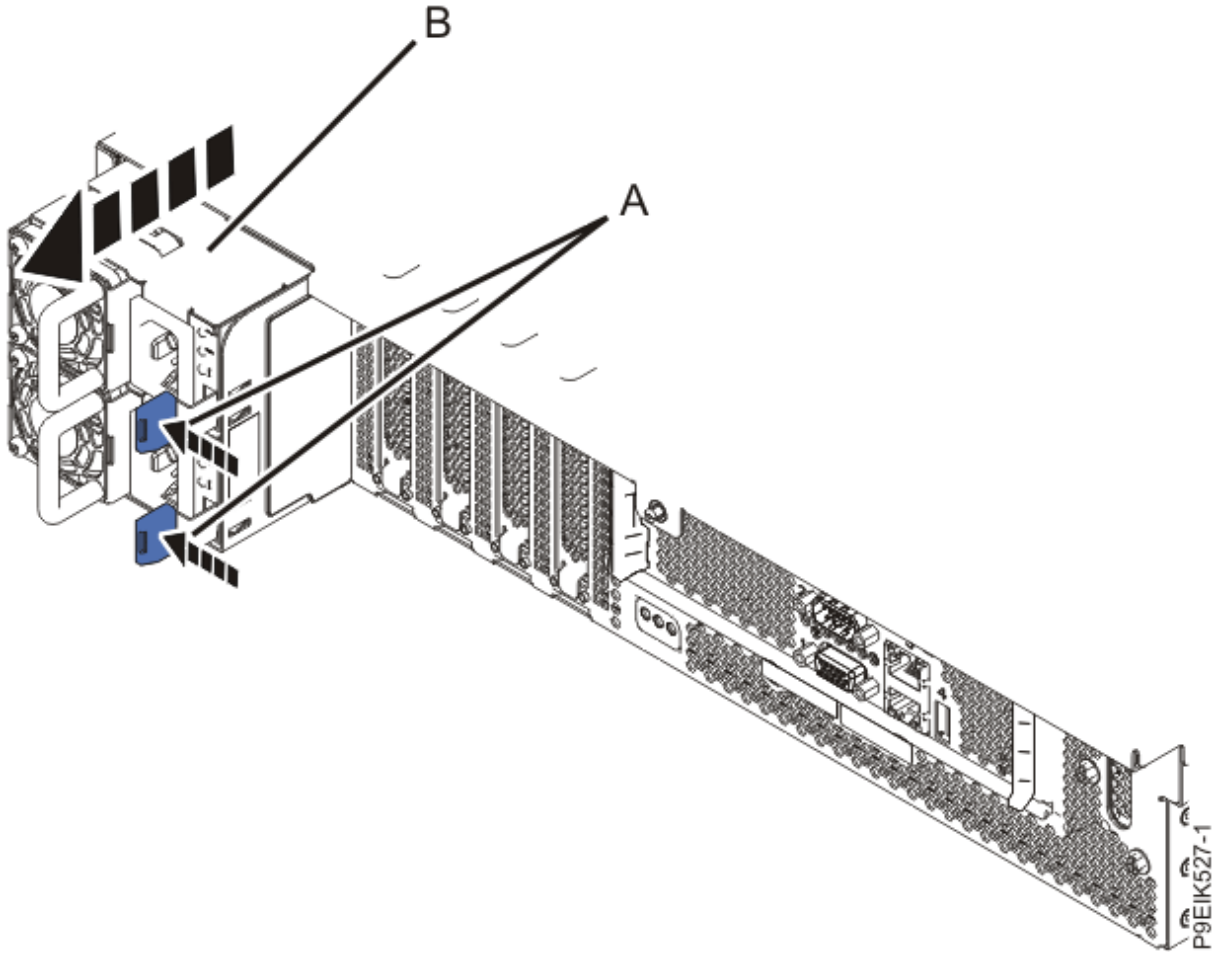


Figure 22. Removing the power supplies from the system

10. Place the system into the service position. For instructions, see [“Placing an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system into the service position”](#) on page 40.



CAUTION: Do not place any object on top of a rack-mounted device unless that rack-mounted device is intended for use as a shelf. (R008)

(L012)



CAUTION: Pinch hazard. (L012)

11. Remove the service access cover. For instructions, see [“Removing the service access cover from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system”](#) on page 37.

Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts

To prepare the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system for operation after you remove and replace internal parts, complete the steps in this procedure.

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. Replace the service access cover. For instructions, see [“Installing the service access cover on an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system”](#) on page 38.
3. Place the system into the operating position. For instructions, see [“Placing an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system into the operating position”](#) on page 42.

(L012)



CAUTION: Pinch hazard. (L012)



Attention: For a water-cooled system, before you power on the system, ensure that cooling water is circulating through the system.

4. Replace the power supplies as shown in [Figure 23 on page 34](#).
 - a) Place your other hand underneath the power supply.
 - b) Align the power supply **(A)** with the bay with the fan to the left.
 - c) Slide the power supply into the system until the latch **(B)** locks in place.
 - d) Repeat steps [“4.a” on page 33](#) - [“4.c” on page 33](#) for the other power supply.

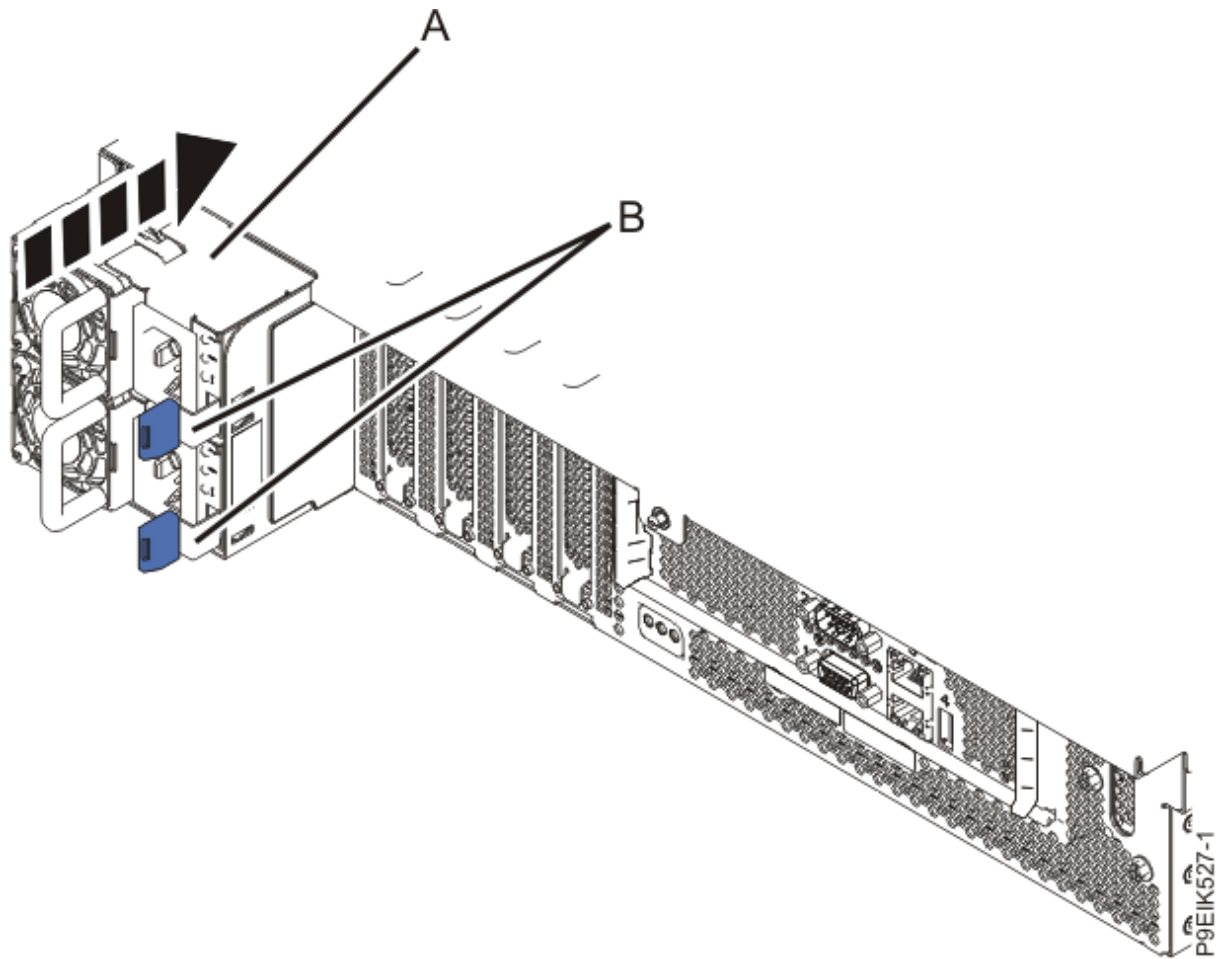


Figure 23. Replacing the power supplies in the system

5. Reconnect the power cords to the power supplies.
For instructions, see [“Connecting power cords to an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system”](#) on page 48.
6. If applicable, close the rack door at the rear of the system.
7. Start the system. For instructions, see [“Starting the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system”](#) on page 35.
8. If the BMC card was replaced continue to the next step, otherwise go to step [“12”](#) on page 35.
9. Configure the BMC IP address.
For instructions, see [Configuring the BMC IP address \(www.ibm.com/support/knowledgecenter/POWER9/p9eih/p9eih_configuring_bmc_ip.htm\)](http://www.ibm.com/support/knowledgecenter/POWER9/p9eih/p9eih_configuring_bmc_ip.htm).
10. Enter the network settings that you recorded earlier.
For instructions, see [Network settings \(www.ibm.com/support/knowledgecenter/POWER9/p9eih/p9eih_openbmc_networksetting.htm\)](http://www.ibm.com/support/knowledgecenter/POWER9/p9eih/p9eih_openbmc_networksetting.htm).
11. Complete the following steps to ensure that **fieldmode** is set to **true**:
 - a. Logon to the BMC by using Secure Socket Shell (SSH).
 - b. Run the following command:


```
fw_printenv fieldmode
```
 - c. Is the output of the command **fieldmode=true**?
 - **Yes:** Continue with step [“12”](#) on page 35.
 - **No:** Continue with step [“11.d”](#) on page 35.

d. Run the following command:

```
fw_setenv fieldmode true
```

12. Replace the front cover. For instructions, see “[Installing the front cover on an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system](#)” on page 40.

13. If applicable, close the rack front door.

14. Verify the installed part.

See [Verifying a repair \(www.ibm.com/support/knowledgecenter/POWER9/p9ei3/p9ei3_verifyrepair.htm\)](http://www.ibm.com/support/knowledgecenter/POWER9/p9ei3/p9ei3_verifyrepair.htm).

Starting and stopping the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn how to start and stop the IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system to perform a service action or system upgrade operation.

Starting the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

You use the power button to start the system.

About this task



Attention: For safety, airflow purposes and thermal performance, the service access cover must be installed and fully seated before powering on the system on.



Attention: For a water-cooled system, before you power on the system, ensure that cooling water is circulating through the system.

You can use this procedure to power on the system; or you can use a console to power on the system.

Procedure

1. Open the front rack door, if necessary.
2. Before you press the power button, ensure that the power supplies are connected to the system unit and verify the following items:
 - All system power cables are connected to a power source.
 - The power-on LED as shown in [Figure 24 on page 36](#), is flashing. A flashing light indicates standby power to the unit.
3. Press the power button that is shown in [Figure 24 on page 36](#).

The power-on light stops flashing and remains on, indicating that the system power is on. The system cooling fans first run at a high speed, and after approximately 30 seconds, return to operating speed.

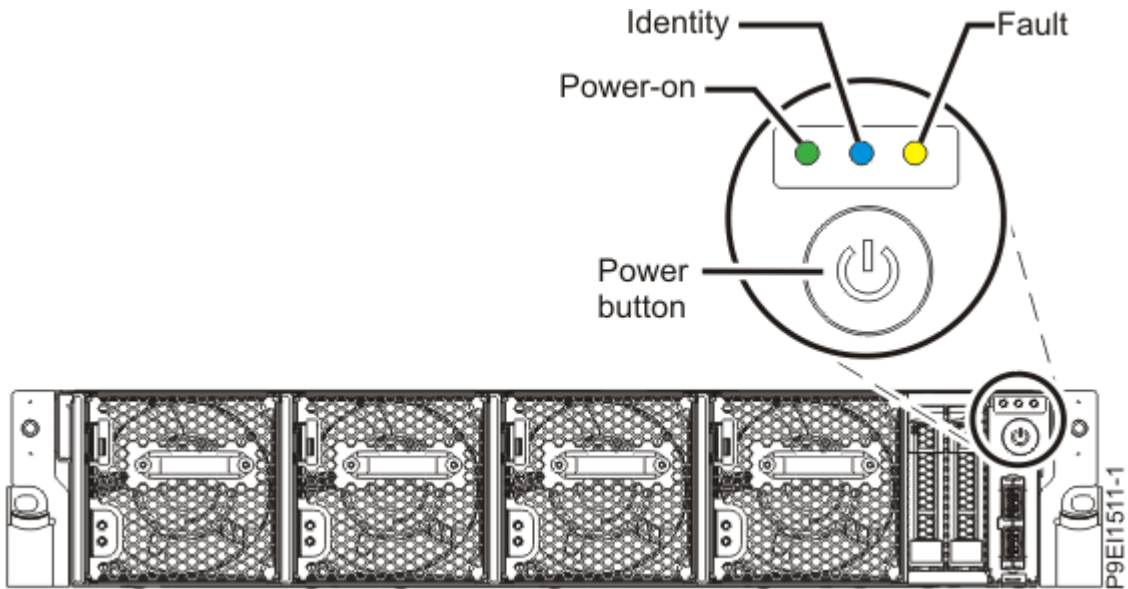


Figure 24. Power button

What to do next

If you press the power button and the system does not start, contact your next level of support or your service provider.

Stopping the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

You can use the power button or a command to stop the system.

Procedure

- You can press and hold the power button to stop and power off the system.

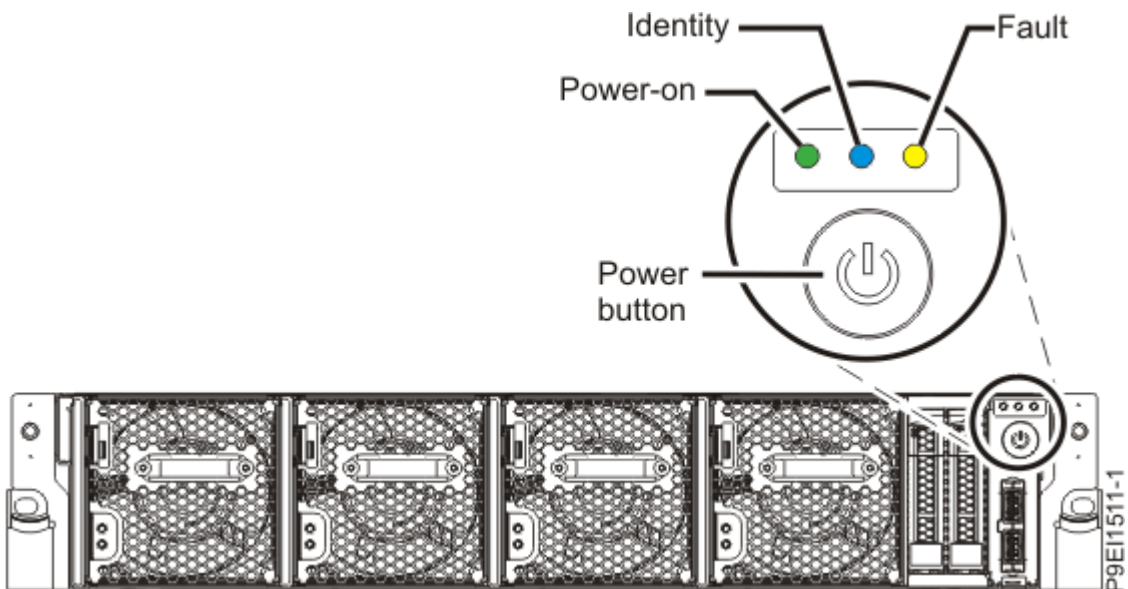


Figure 25. Power button

- You can use the Linux **shutdown** command to stop and power off the system.

For example, the following command shuts down the system in 10 minutes and sends the message "Repairs coming" to the users.

```
shutdown -P +10 "Repairs coming"
```

The -P setting instructs the system to shut down and then power off. The + indicates the time in minutes before the shutdown occurs.

Sensor status

You can check the sensor status to quickly determine the general health of the system without using the event codes.

To view the sensor status, use the following command:

```
openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> fru status
```

To view the sensor status and any corresponding event codes, use the following command:

```
openbmctool -U <username> -P <password> -H <BMC IP address or BMC host name> fru status -v
```

Sensors that have a status of **present** and **functional** do not require a service action. Sensors that have a status of **present** and **not functional** require a service action.

Some occurrences of errors in the system might not appear in the sensor status. After you view the sensor status, look for event codes to determine whether a service action is required.

Removing and replacing covers on an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn how to remove and replace the covers for an IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system so that you can access the hardware parts or service the system.

Removing the service access cover from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove the service access cover, complete the steps in this procedure.

Procedure

1. Ensure that you removed both power supplies from the system.

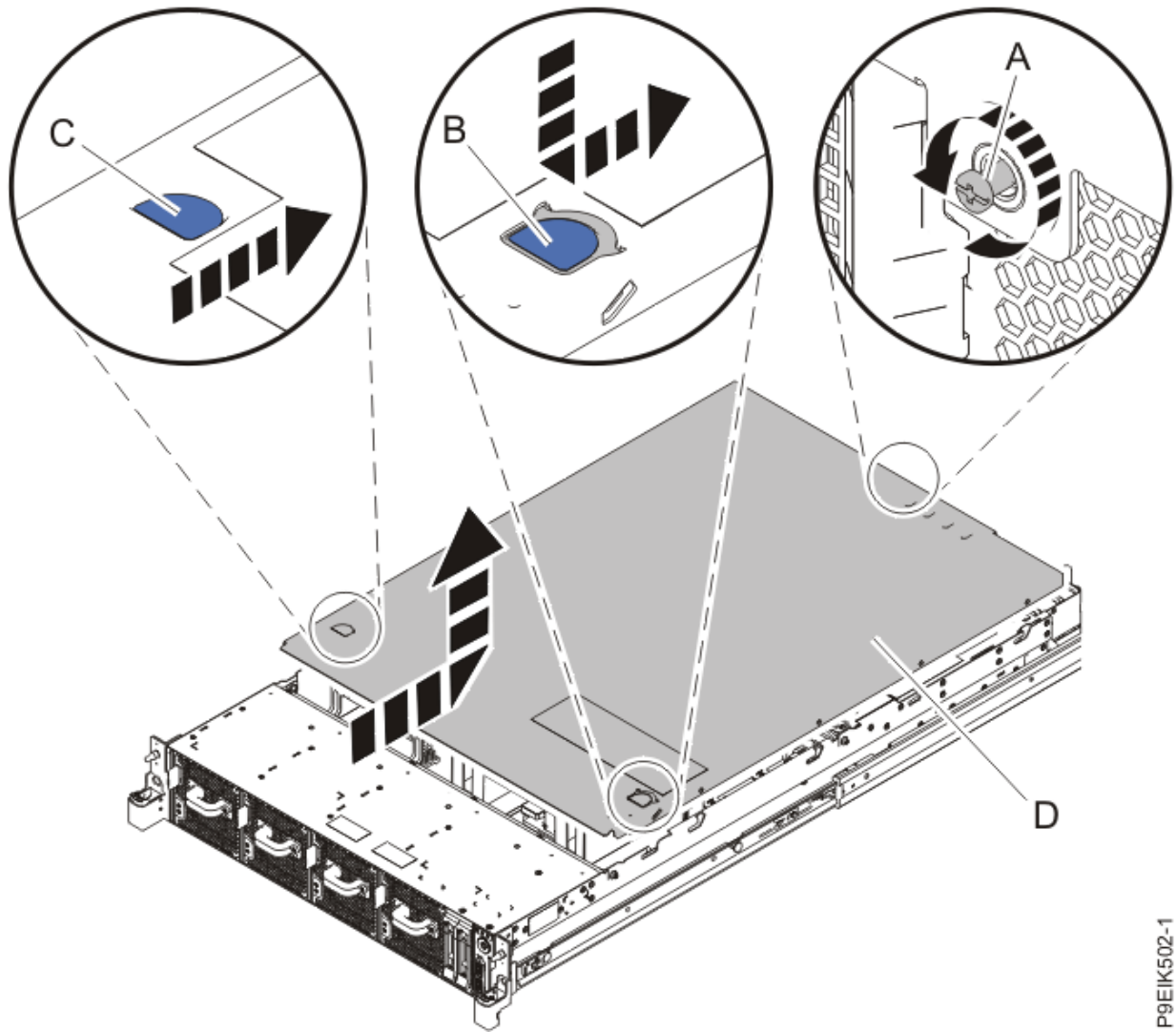
For instructions, see [“Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts” on page 29.](#)

(L005)



CAUTION: Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in splattered metal, burns, or both. (L005)

2. At the rear of the system, loosen the cover screw **(A)** that fastens the cover to the chassis.



P9EIK502-1

Figure 26. Removing the cover

3. While you press down on latch (B) and touch point (C), slide the cover (D) towards the rear of the system unit. When the front of the service access cover clears the upper frame ledge, lift the cover up and off the system unit.



Attention: For proper cooling and airflow, replace the cover before you power on the system.

Installing the service access cover on an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To replace the service access cover, complete the steps in this procedure.

About this task



Attention: For safety, airflow purposes and thermal performance, the service access cover must be installed and fully seated before powering on the system on.

Procedure

1. Place the cover (A) on the system unit such that the alignment pins on the cover are aligned to the slots on the chassis. Slide the cover to the front of the system until the blue release latch (B) locks in to place as shown in [Figure 27 on page 39](#).

2. Fasten the cover screw (C) at the rear of the cover.

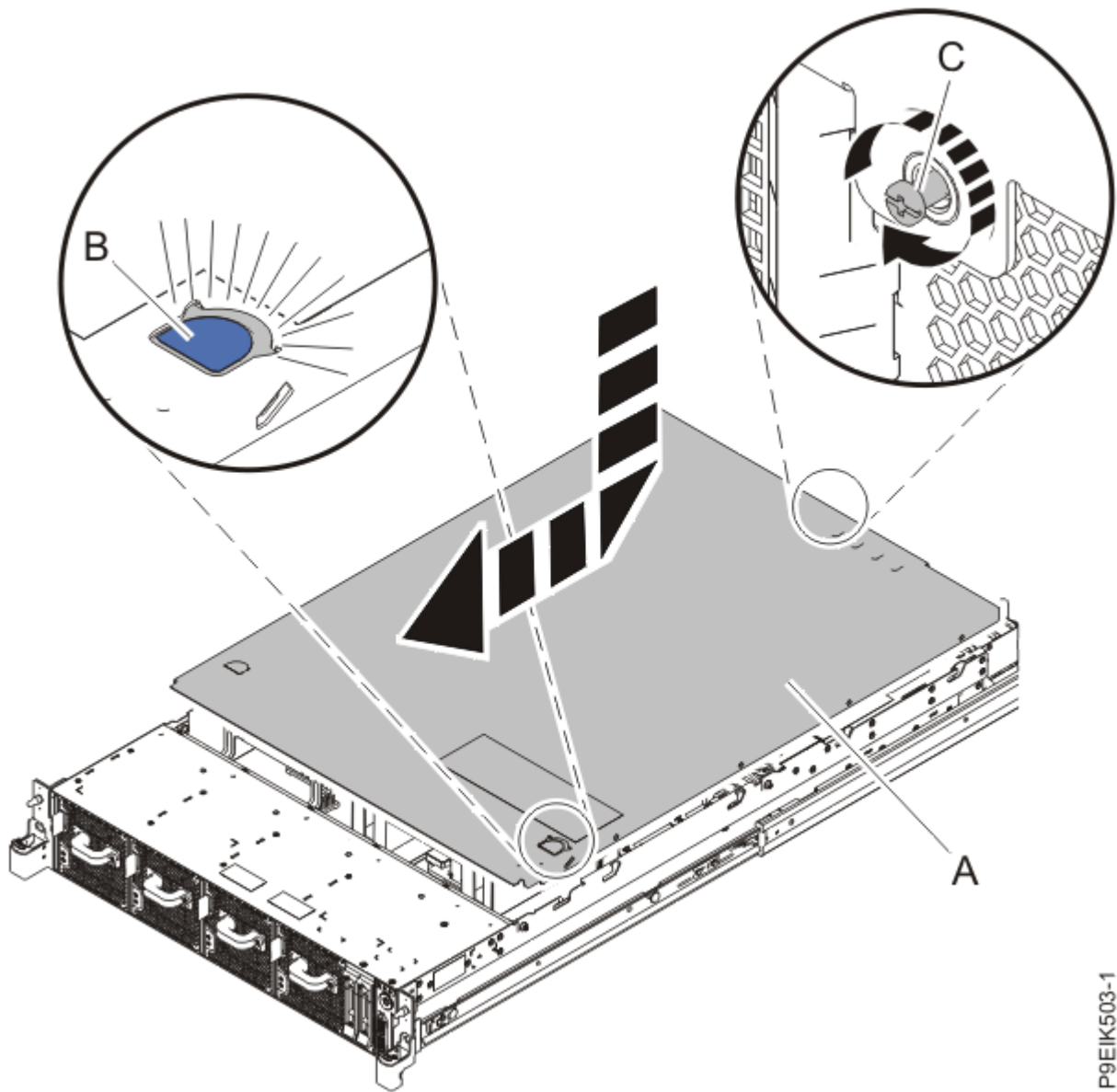


Figure 27. Installing the cover

Removing the front cover from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To remove the front cover, complete the steps in this procedure.

Procedure

1. If necessary, open the front rack door.
2. 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.
3. If applicable, remove the screws that are on both sides of the cover to disengage the cover from the system unit.
4. Pull the cover away from the system.

P9EIK503-1

Installing the front cover on an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To replace the front cover, complete the steps in this procedure.

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. Position the cover on the front of the system unit so that the pins on the system match the holes at the rear of the cover.
3. Press the cover on to the system unit such that the pins engage with the holes and the cover is firmly seated in place.
4. If applicable, replace the screws on each side of the cover to secure the system to the rack.
5. Close the front rack door.

Service and operating positions for the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Learn how to place on an IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system into the service or operating position.

Placing an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system into the service position

To place a system into the service position, complete the steps in this procedure.

About this task

Pick the proper type of rails for your system:

- [“Slide rails” on page 40](#)
- [“Fixed rails” on page 41](#)

Slide rails

Use this procedure when your system is installed using slide rails.

Before you begin

Notes:

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

Procedure

1. Remove the screws on either side of the system that secure the system to the rack.
2. Push down the front latches **(A)** that secure the system unit to the rack.

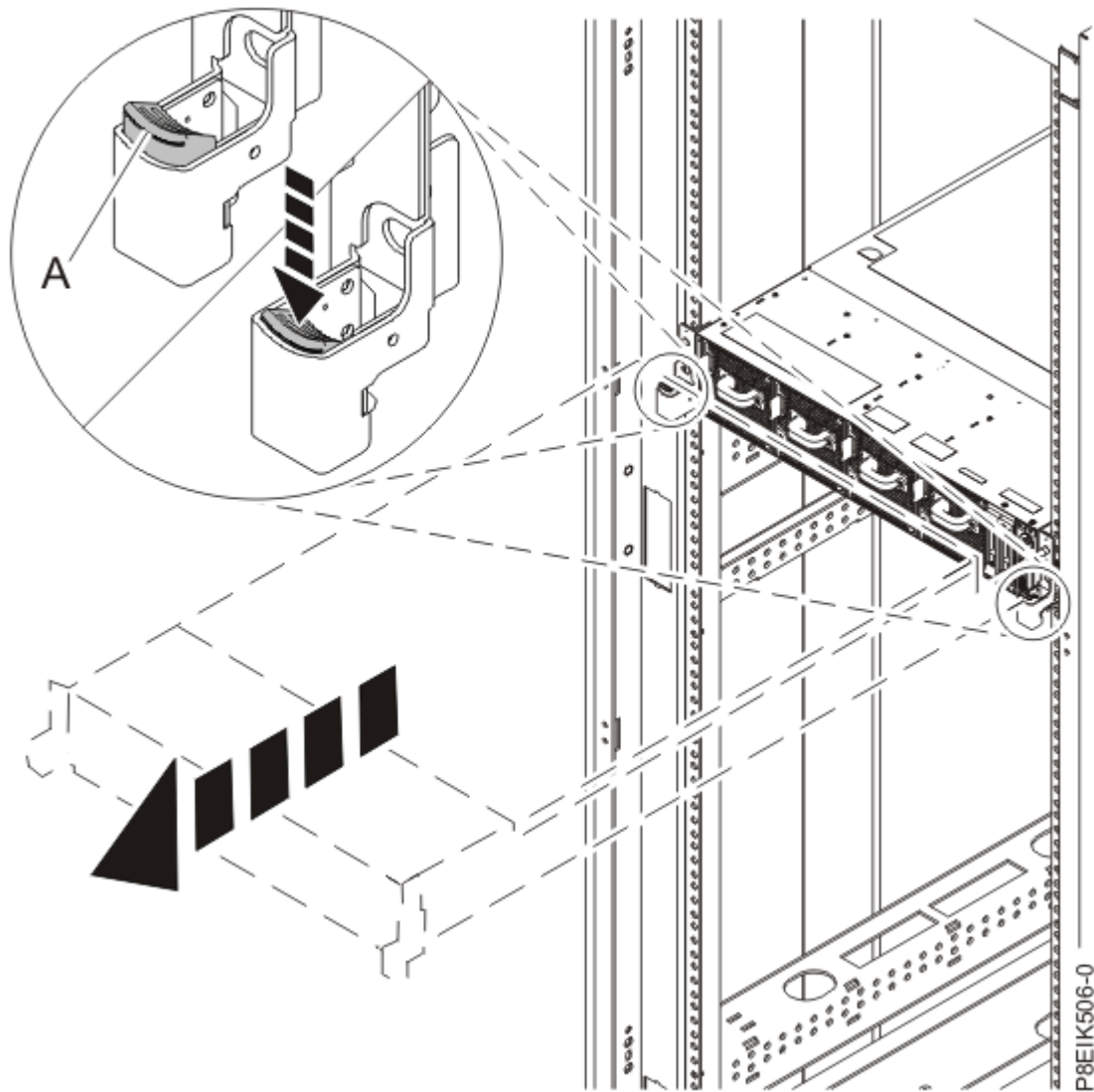


Figure 28. Placing the system into the service position

3. Pull the system unit out of the rack.

Fixed rails

Use this procedure when your system is installed using fixed rails.

Before you begin



CAUTION: This system requires two people to remove the system from the rack. Do not begin this procedure unless physical assistance is available to remove the system from the rack.

Note: When you place the system into the service position, you must ensure that all stability plates are firmly installed to prevent the rack from toppling. Ensure that only one system unit is removed at a time.

Procedure

1. Label and disconnect the cables at the rear of the system unit.
2. For a water-cooled system, label and disconnect the water hoses at the manifold. Pull the coupling toward you to disconnect the water hoses as shown in [Figure 29 on page 42](#).

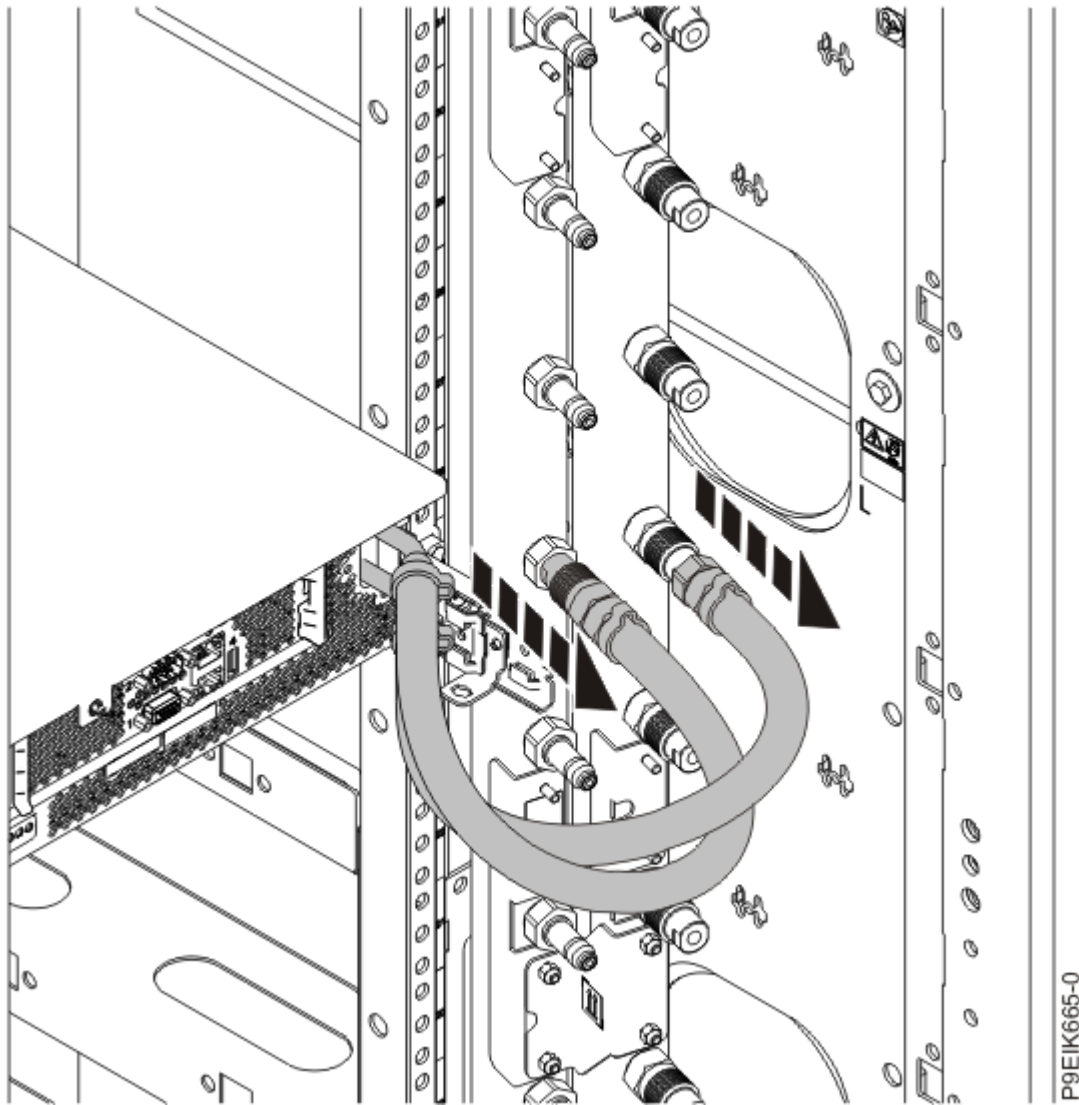


Figure 29. Disconnecting the water hoses

3. Remove the screws on either side of the system that secure the system to the rack.
4. While one person is supporting the weight of the front of the system, have the second person move to the rear of the system and push the system partially out of the rack.
5. Position one person on the left side of the system and one person on the right side of the system.
6. Tilt and lift the system from the rails.
7. Carefully set the system on a table with an appropriate ESD surface.

Placing an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system into the operating position

To place a system into the operating position, complete the steps in this procedure.

About this task

Pick the proper type of rails for your system:

- [“Slide rails” on page 43](#)
- [“Fixed rails” on page 44](#)

Slide rails

Use this procedure when your system is installed using slide rails.

Before you begin

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

Procedure

1. Unlock the blue rail safety latches (**A**) by lifting them upward.
2. Align the system unit on to the rails and push the system unit back into the rack until both release latches lock into position.

See [Figure 30 on page 43](#).

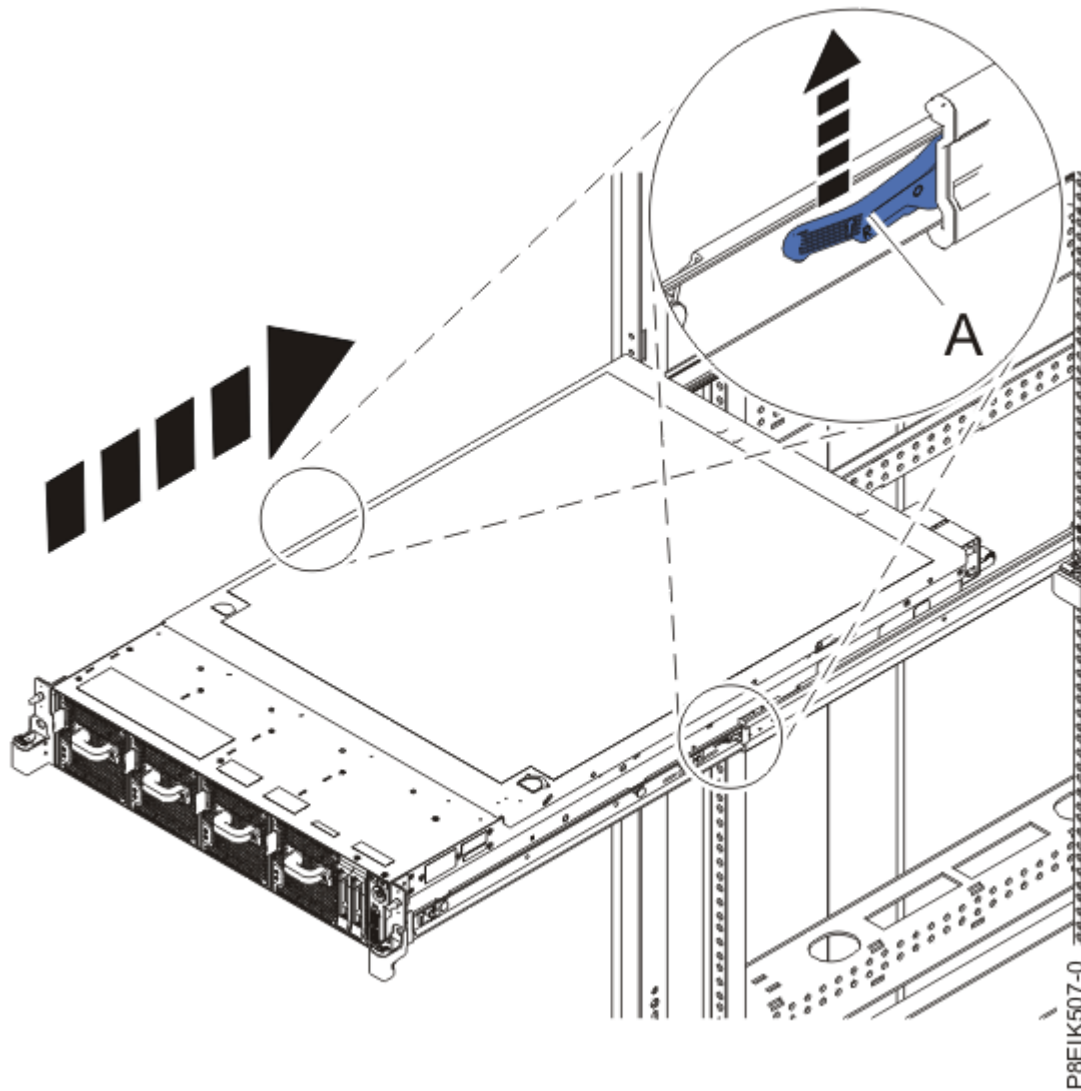


Figure 30. Placing the system into the operating position

3. Replace the screws on either side of the system that secure the system to the rack.

Fixed rails

Use this procedure when your system is installed using fixed rails.

Before you begin



CAUTION: This system requires two people to replace the system into the rack. Do not begin this procedure unless physical assistance is available to replace the system into the rack.

Note: When you place the system into the operating position, you must ensure that all stability plates are firmly installed to prevent the rack from toppling. Ensure that only one system unit is replaced at a time.

Procedure

1. Position one person on the left side of the system and one person on the right side of the system.
2. Lift the system.
3. Tilt the system into position over the fixed rack rails.
4. Carefully lower the system until the rear of the system rests on the rails.
5. While one person is supporting the weight of the system, have the second person move to the front of the system and push the system all the way into the rack.
6. Using your labels, reconnect the cables at the rear of the system unit.
7. For a water-cooled system, connect the water hoses at the rear of the rack to the manifold, as shown in the following figure.

Ensure that you plug the male hose into the female manifold plug, and plug the female hose into the male manifold plug.



Attention: Before powering on the system, ensure that cooling water is circulating through the system.

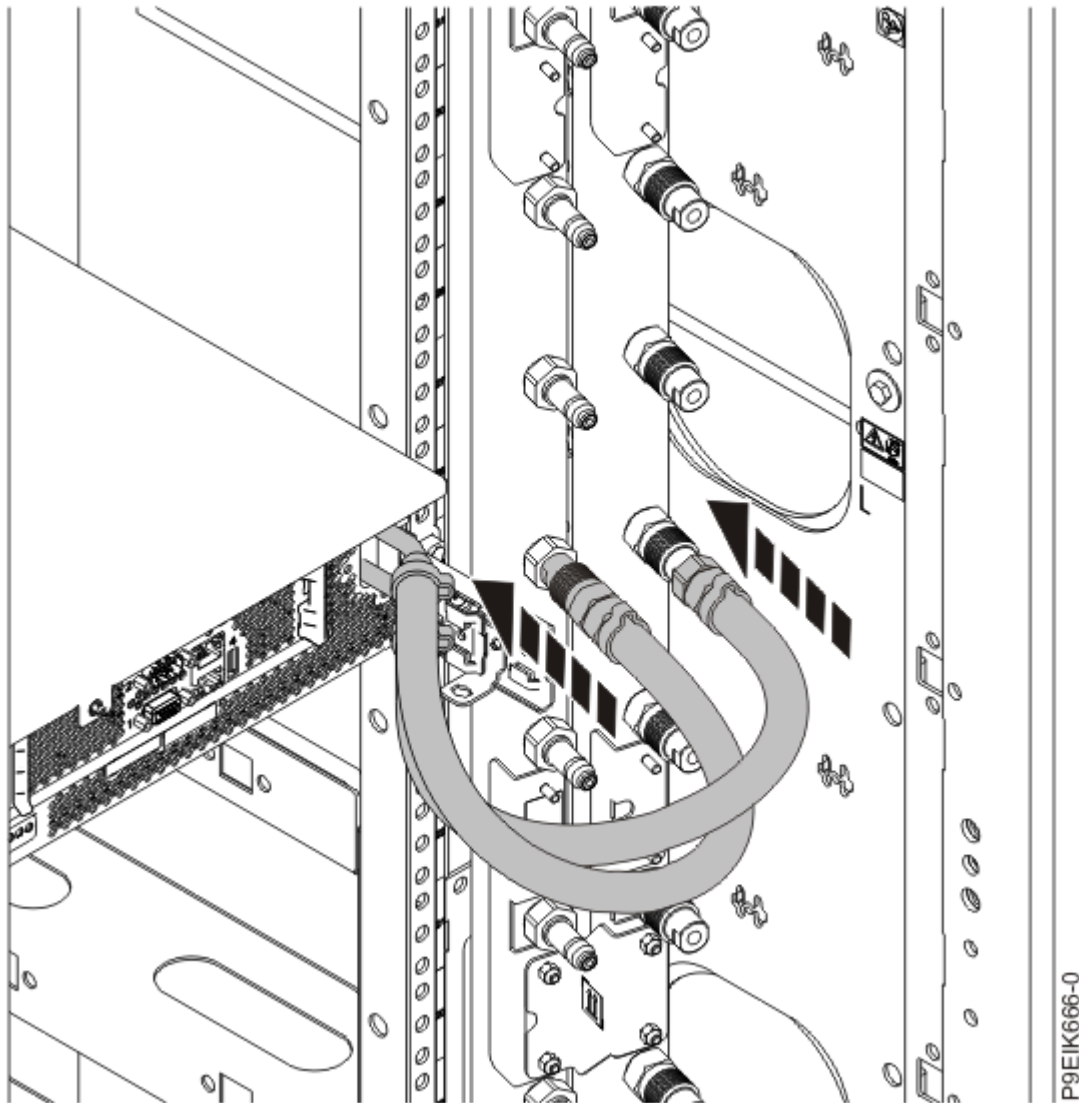


Figure 31. Connecting the water hoses

8. Replace the screws on either side of the system that secure the system to the rack.

Removing and replacing power cords in the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

Find information about removing and replacing power cords in an IBM Power System AC922 (8335-GTC, 8335-GTG, and 8335-GTH) or IBM Power System AC922 (8335-GTW and 8335-GTX) system.

Disconnecting power cords from an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To disconnect a power cord, complete the steps in this procedure.

Procedure

1. Open the rear rack door on the system unit that you are servicing.
2. Identify the system unit that you are servicing in the rack.
3. Label and disconnect the power cords from the power supply handle.

Unfasten the hook-and-loop fastener that ties the power cord to the power supply handle. Note how the power is looped; you need to make that same loop when you reattach the power cords.

Figure 32 on page 46 and Figure 33 on page 47 shows how to loop the cables.

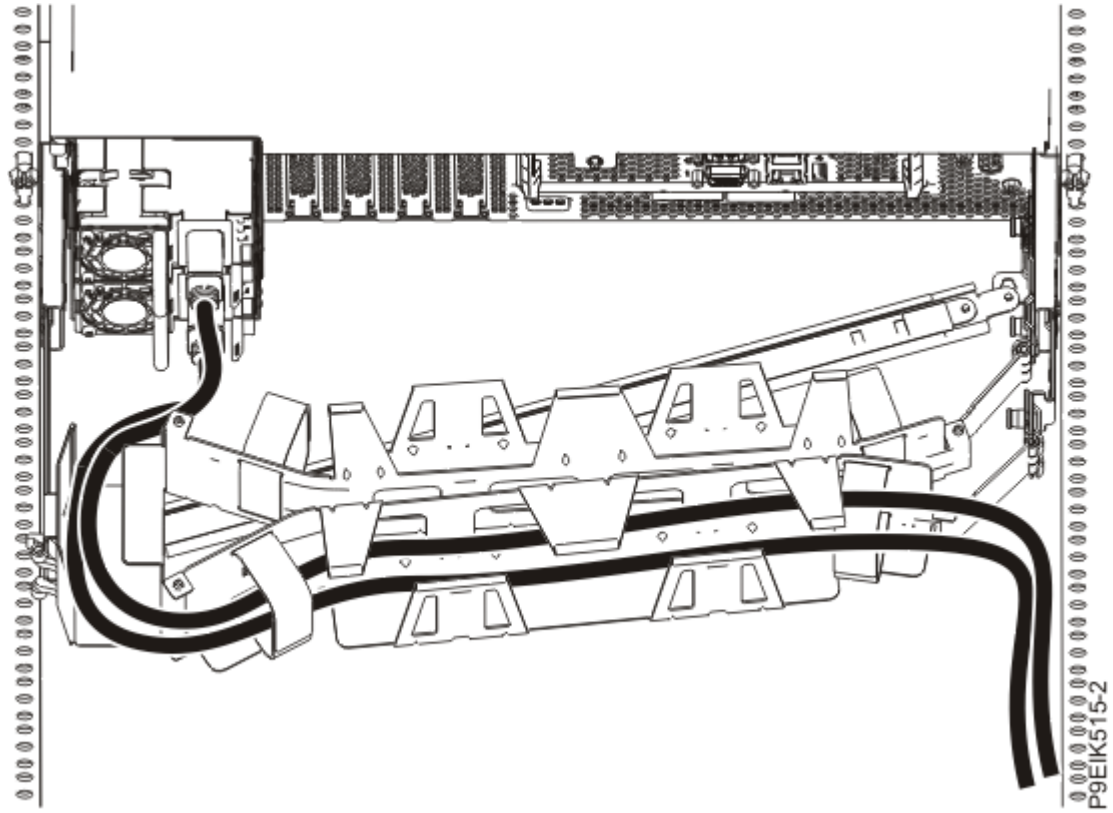


Figure 32. Routing the power cord loop in the cable management arm

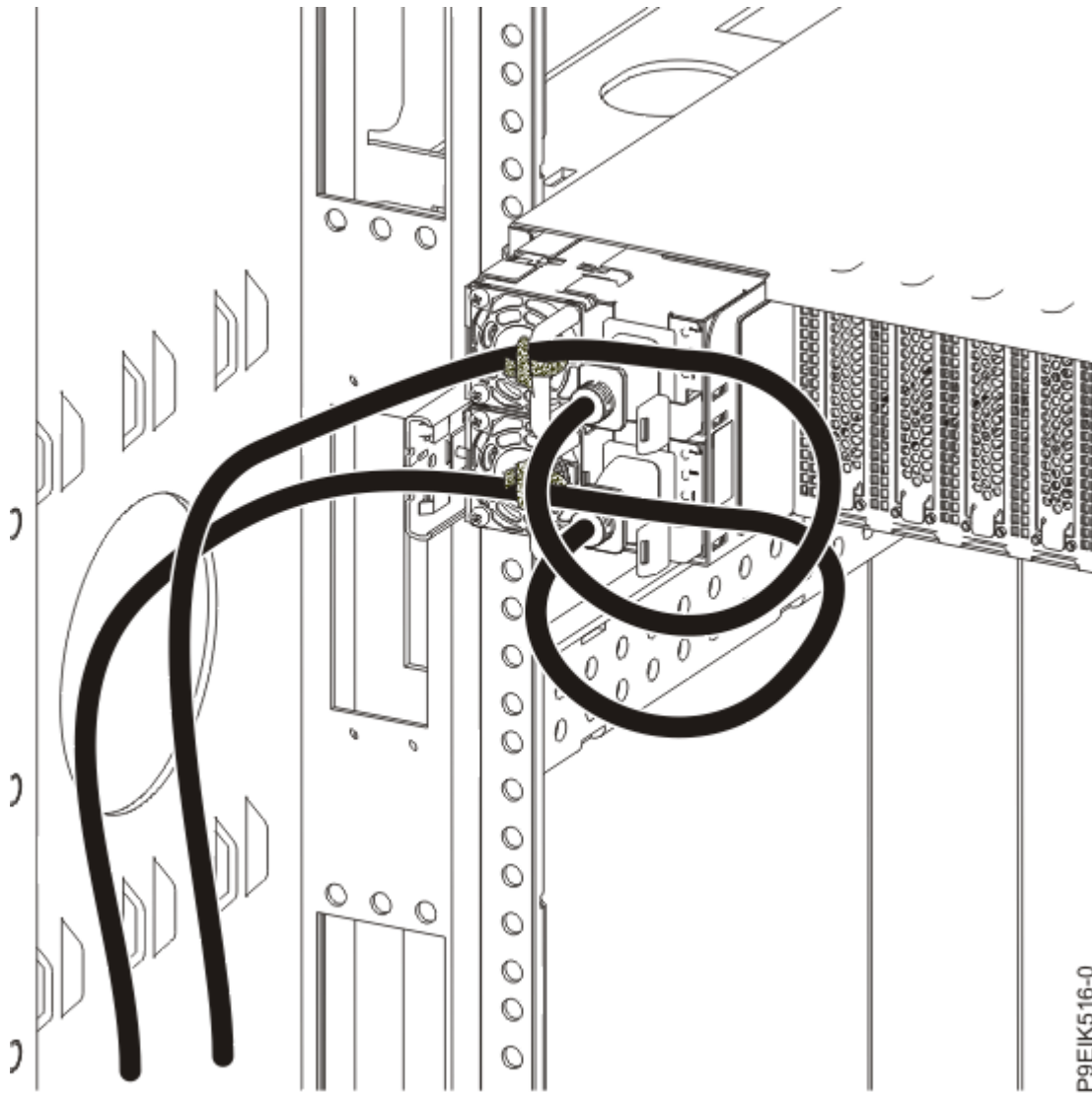


Figure 33. Power cord loop with sidewall routing

4. Disconnect the power cords from the system unit as shown in [Figure 34](#) on page 48.

Note: This system might be equipped with two or more power supplies. If the removing and replacing procedures require the power to be off, then ensure that all the power sources to the system are disconnected.

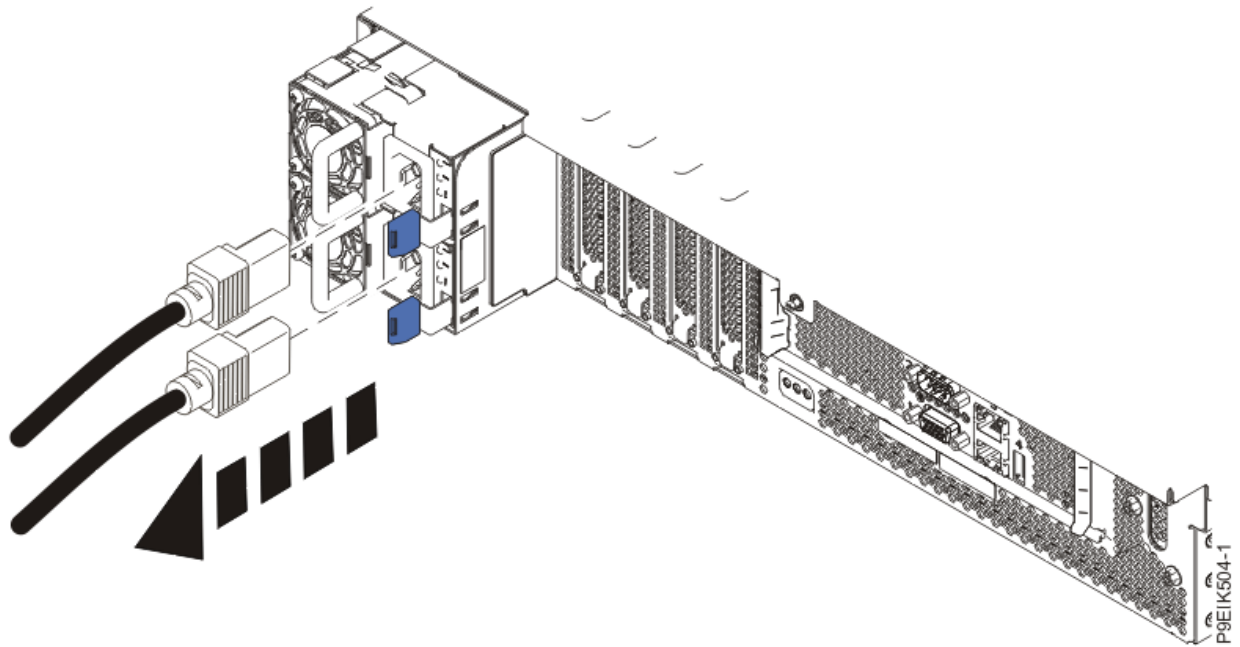


Figure 34. Removing the power cords from the system

Connecting power cords to an 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system

To connect a power cord, complete the steps in this procedure.

Procedure

1. Open the rear rack door on the system unit that you are servicing.
2. Using your labels, reconnect the power cords to the system unit as shown in [Figure 35](#) on page 48.

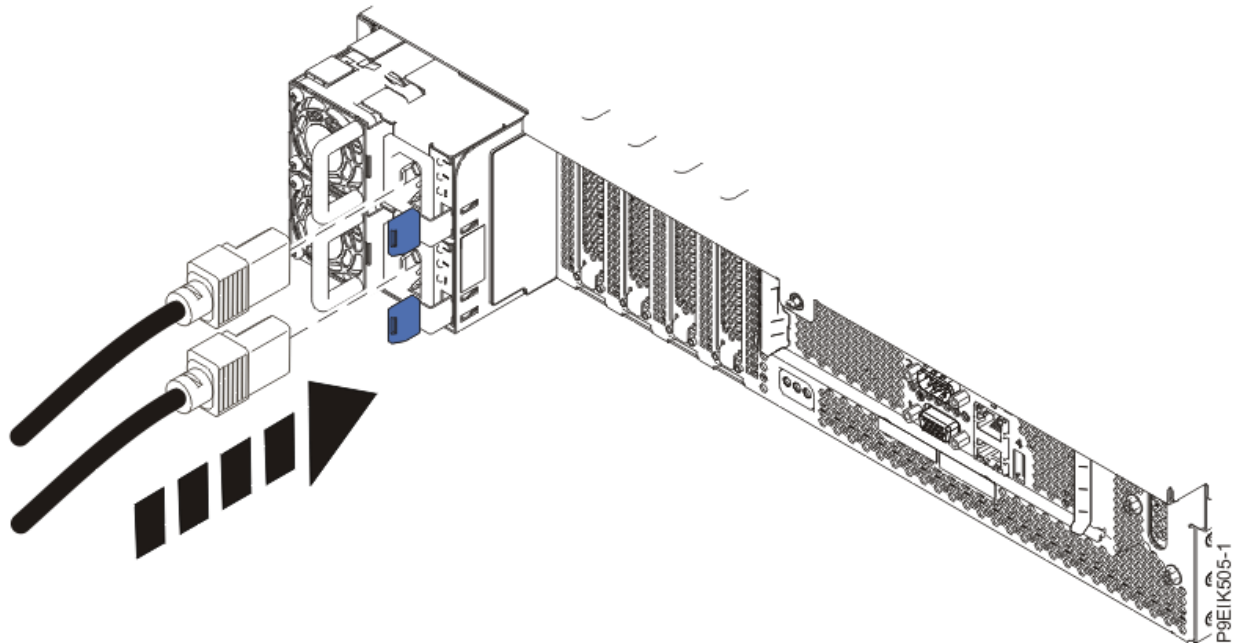


Figure 35. Connecting the power cords to the system

3. Loop and attach the power cords to the power supply handle.
Note how the power is looped; be sure to maintain at least a 5 cm (2 in.) diameter loop. Use the hook-and-loop fastener to tie the power cord to the power supply handle.

Figure 36 on page 49 and Figure 37 on page 50 shows how to loop the cables.

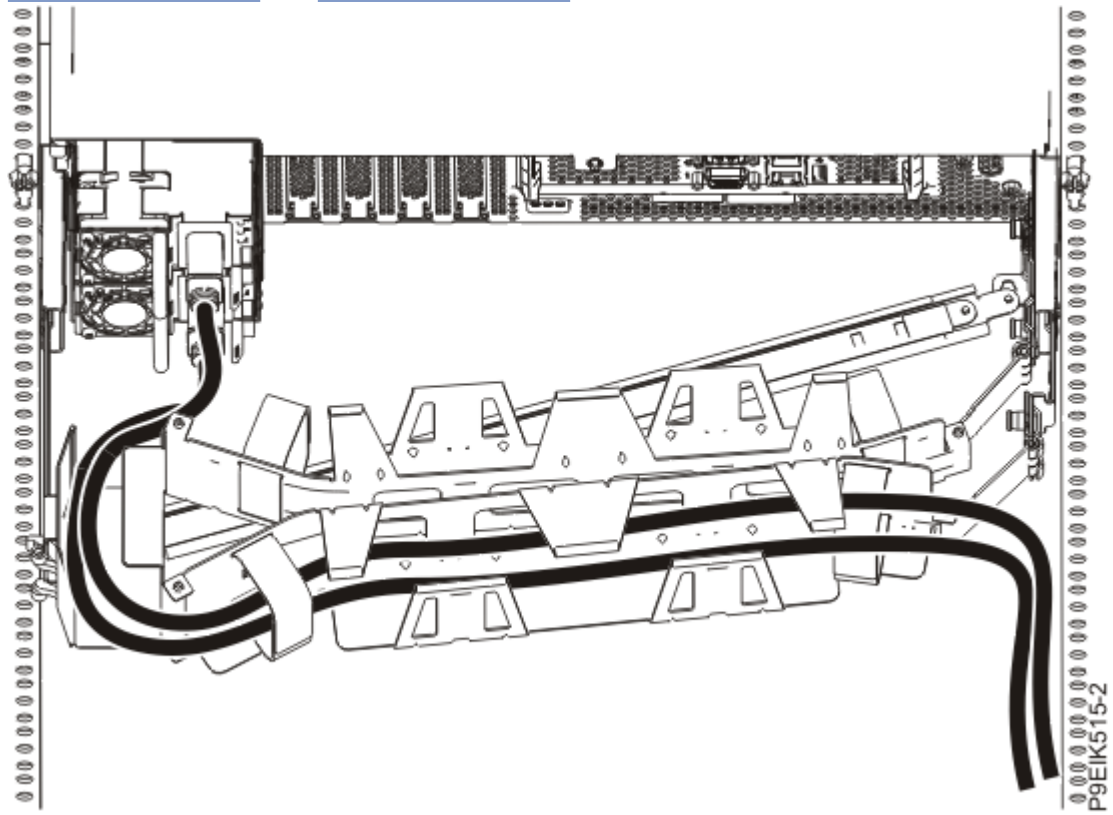


Figure 36. Routing the power cord loop in the cable management arm

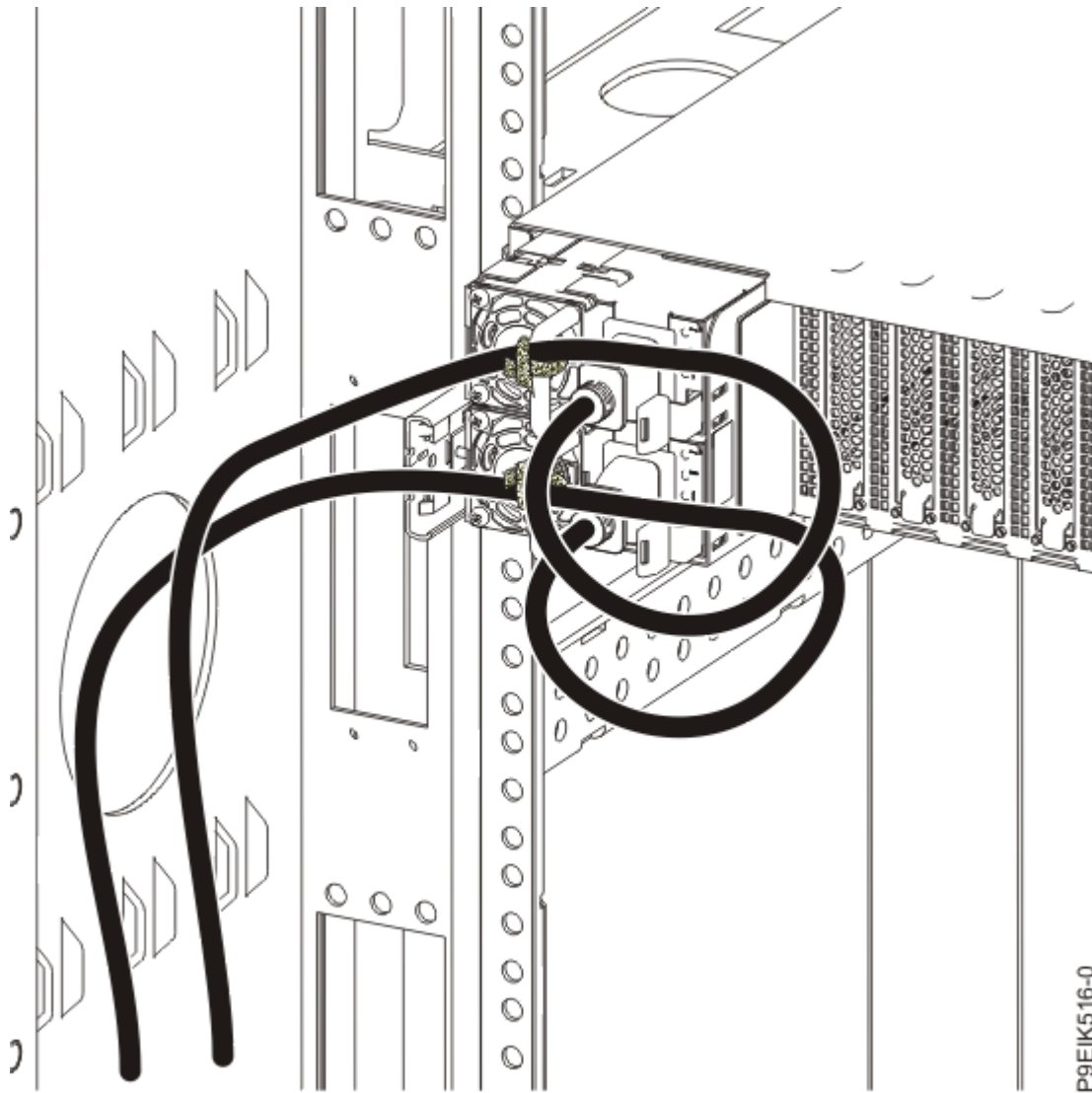


Figure 37. Power cord loop with sidewall routing

4. Close the rack door at the rear of the system.

Updating the system firmware level of a BMC card to OP940.20, or later, in an 8335-GTH or 8335-GTX system

To update the system firmware level of a BMC card to OP940.20, or later, complete the steps in this procedure.

Procedure

1. Are you able to connect the BMC card to the network with a Dynamic Host Configuration Protocol (DHCP) IP address?

If	Then
Yes	Update the system firmware level of the BMC card to OP940.20, or later. For instructions, see Updating the system firmware by using the OpenBMC tool . If you are not able to update the system firmware level, continue with the next step.
No	Continue with the next step.

2. Power off the system and place it in the service position. For instructions, see [“Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts” on page 29.](#)

3. Attach the electrostatic discharge (ESD) wrist strap.

The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.



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. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

4. Remove the air baffles.

5. Install the system processor jumpers on the system backplane as shown in [Figure 38 on page 52.](#)

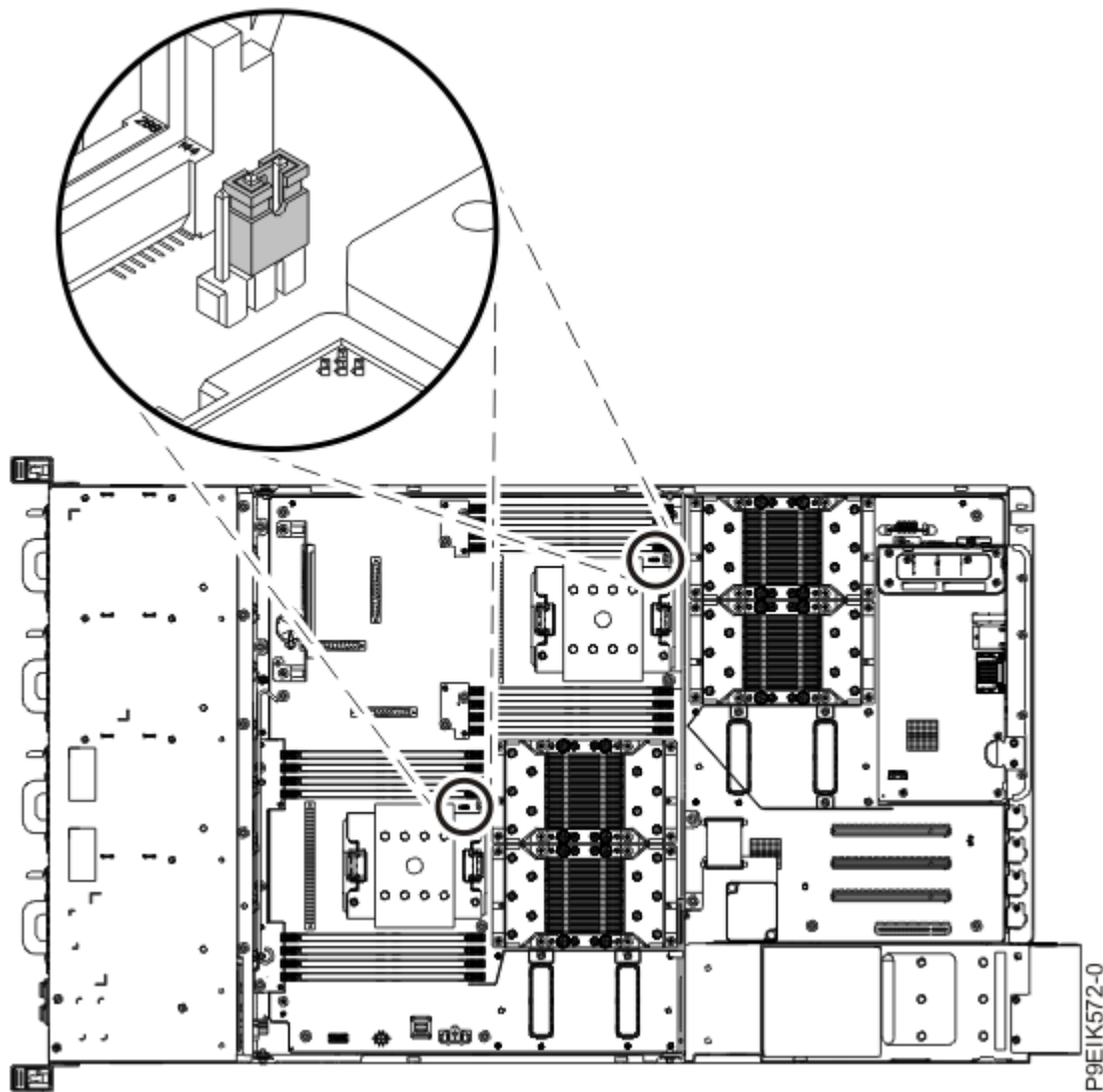


Figure 38. System processor jumper positions

6. Install the air baffles.
7. Prepare the system for operation. For instructions, see [“Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts” on page 33.](#)
8. Update the system firmware level of the BMC card to OP940.20, or later. For instructions, see [Updating the system firmware by using the OpenBMC tool.](#)

Note: If you are not able to update the system firmware level, contact your next level of support.

9. Power off the system and place it in the service position. For instructions, see [“Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts” on page 29.](#)
10. Attach the electrostatic discharge (ESD) wrist strap.

The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.



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.

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11. Remove the air baffles.

12. Remove the system processor jumpers from the system backplane as shown in [Figure 39 on page 53](#).

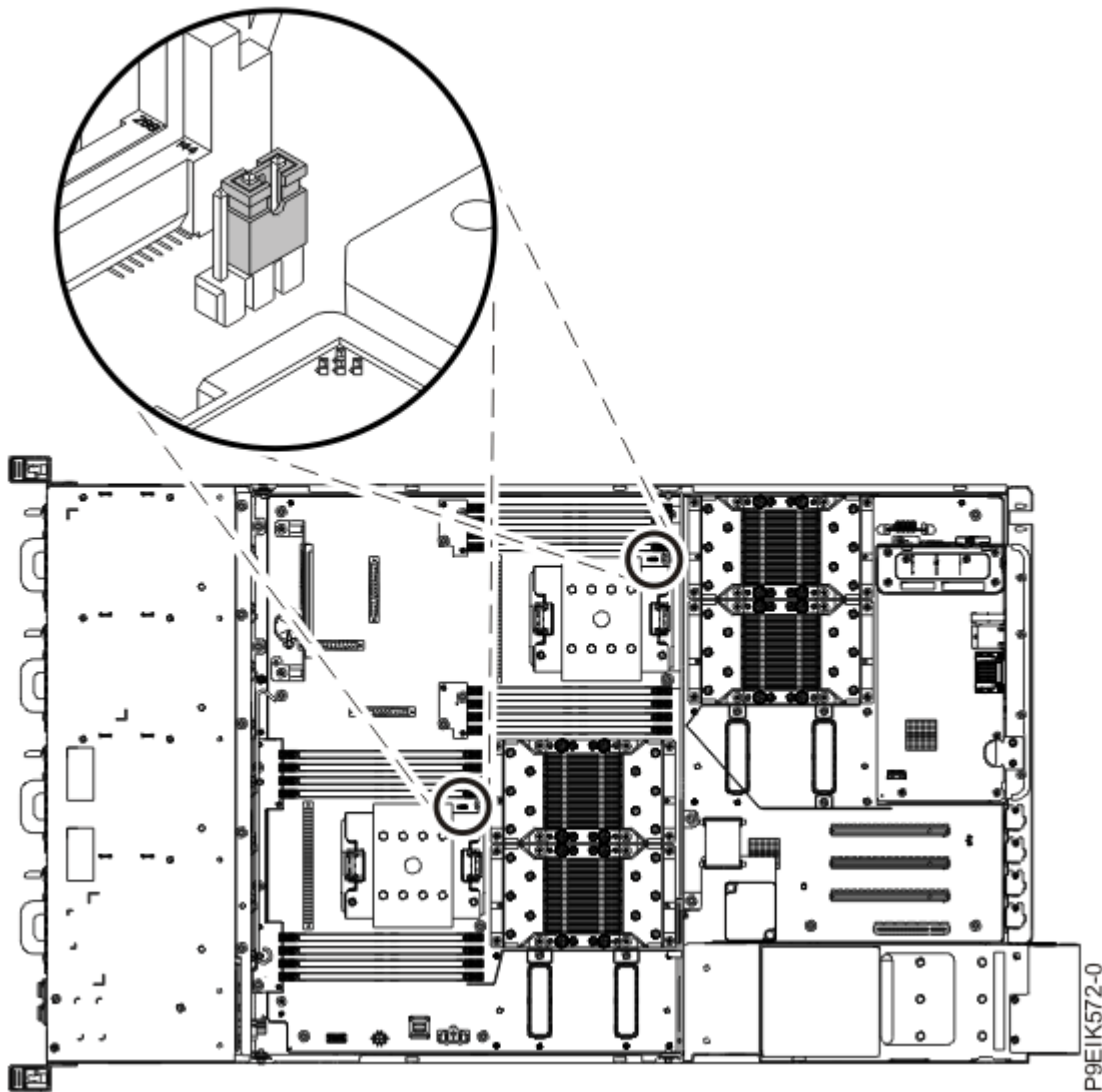


Figure 39. System processor jumper positions

13. Install the air baffles.

14. Prepare the system for operation. For instructions, see “[Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system for operation after you remove and replace internal parts](#)” on [page 33](#).

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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](http://www.w3.org/TR/wai-aria/) (www.w3.org/TR/wai-aria/), to ensure compliance with [US Section 508](http://www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards) (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](http://www.w3.org/TR/WCAG20/) (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.

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TTY service
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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.

Germany Notice

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

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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

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Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
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Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
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Tel: +49 (0) 800 225 5426
email: HalloIBM@de.ibm.com

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New Orchard Road
Armonk, NY 10504
Contact for FCC compliance information only: fccinfo@us.ibm.com

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