

Power Systems

*Installing and Servicing the OpenCAPI
adapter support for the 8335-GTH
system*

IBM

Note

Before using this information and the product it supports, read the information in “[Safety notices](#)” on page v, “[Notices](#)” on page 57, 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)



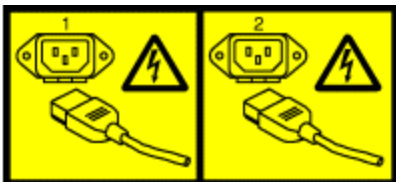
DANGER: Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack-mounted devices and do not use them to stabilize your body position (for example, when working from a ladder). Stability hazard:

- 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

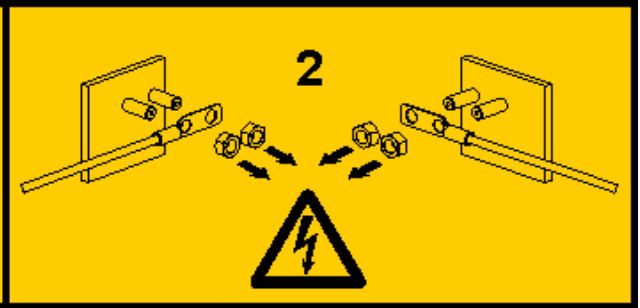
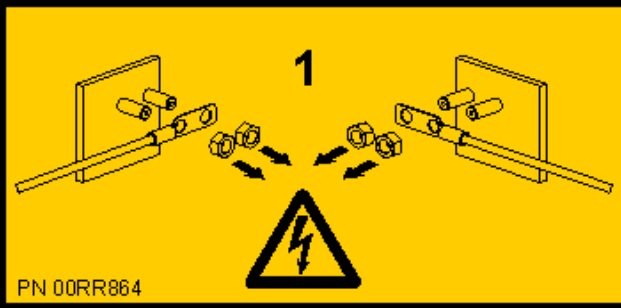


or



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.

8335-GTH system OpenCAPI PCIe adapter enablement introduction

This document describes how to install and service the interposer card and OpenCAPI cable that enables an OpenCAPI PCIe adapter to be supported in the IBM Power® System AC922 (8335-GTH) server.

The OpenCAPI PCIe adapter must be installed in PCIe slot 4.

The interposer card must be installed in the GPU 3 location on the system backplane, replacing a GPU in that position. A GPU in position 4 must be removed and replaced with an air baffle. The system supports two GPUs in GPU positions 1 and 2 when the interposer card is installed.

An OpenCAPI cable connects between the interposer and the OpenCAPI PCIe adapter. If you need to replace the interposer card or OpenCAPI cable, order part number 03FP138 and replace both parts at the same time.

Installing the OpenCAPI adapter support on the 8335-GTH system

Before you begin

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 32.

About this task



Attention: For safety and airflow purposes, if you remove parts from the system, you must ensure that:

- PCIe tailstock fillers are present.
- Graphic processor unit (GPU) airflow baffles are present.

Procedure

1. 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.

2. Use slot 4 for the PCIe adapter as shown in the following figure.

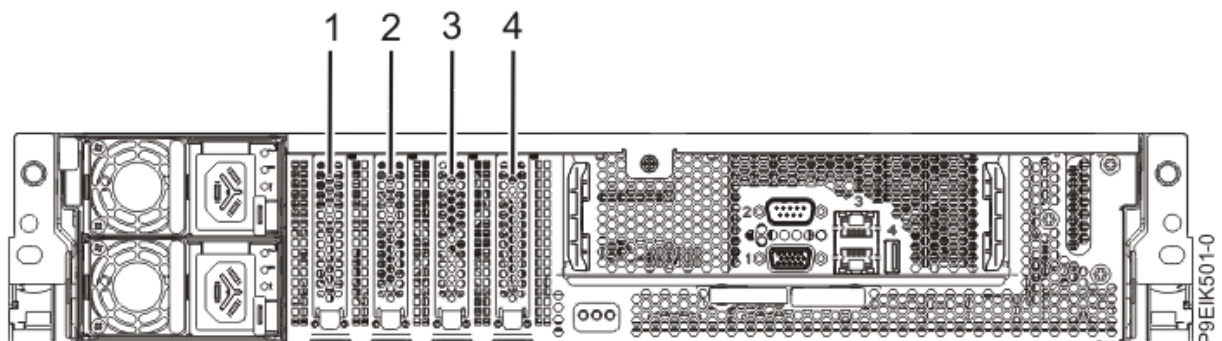
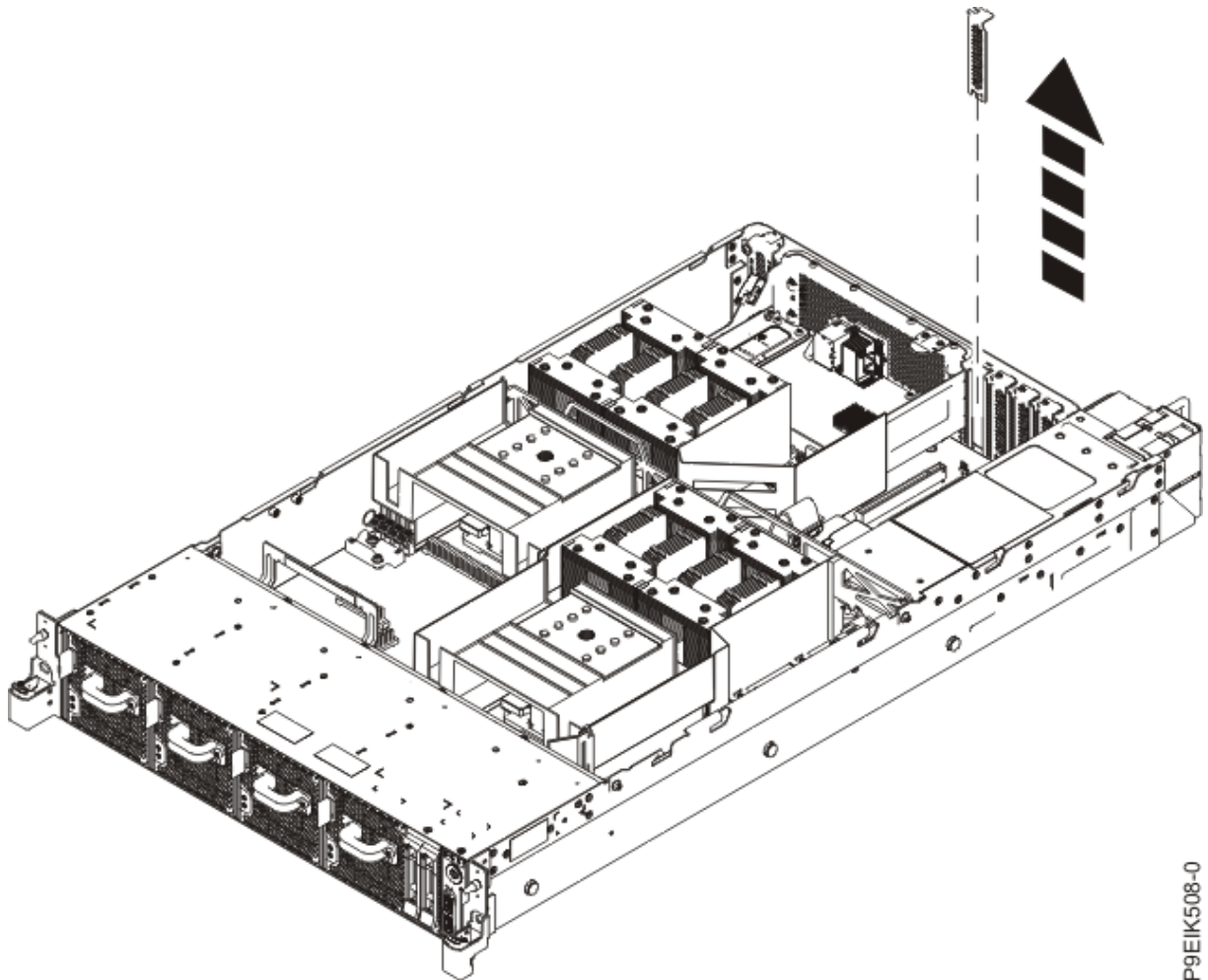


Figure 1. Rear view of a system with PCIe slots indicated

3. Remove the PCIe slot cover as shown in [Figure 2](#) on page 4.



P9EIK508-0

Figure 2. Removing the PCIe slot cover

4. Remove any GPUs from GPU positions 3 and 4.

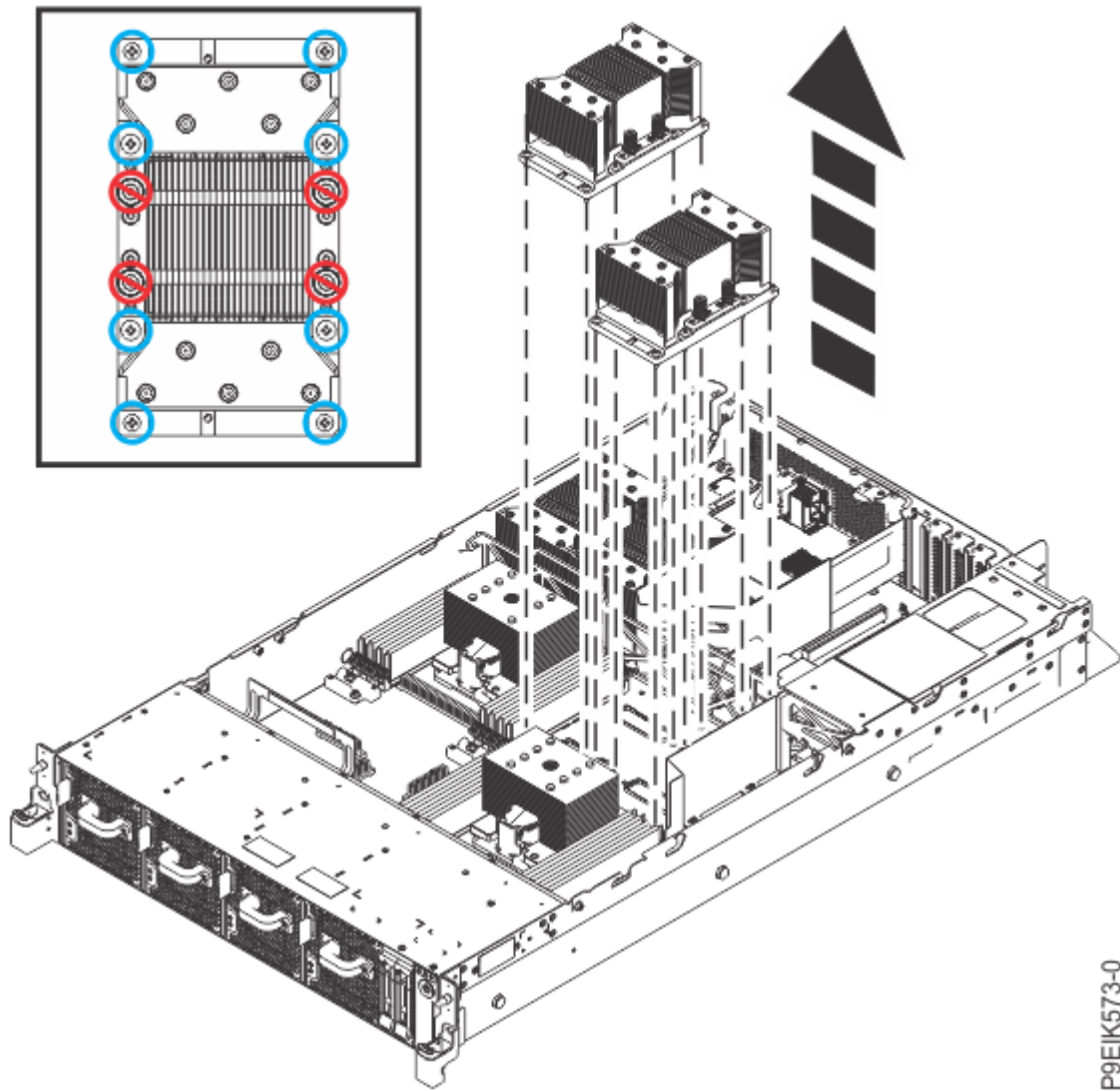


Attention: Do not unscrew the four spring-loaded screws that attach the heat sink to the GPU.

- a) Remove the eight screws that are shown in the following figure.
- b) Grasp the GPU by the heat sink, being careful not to bend the pins. Remove the GPU from the system backplane.

Be careful of the pins on the bottom of the GPUs to avoid damaging the pins and the GPU.

- c) Place the protective covers on the bottom of the removed GPUs.

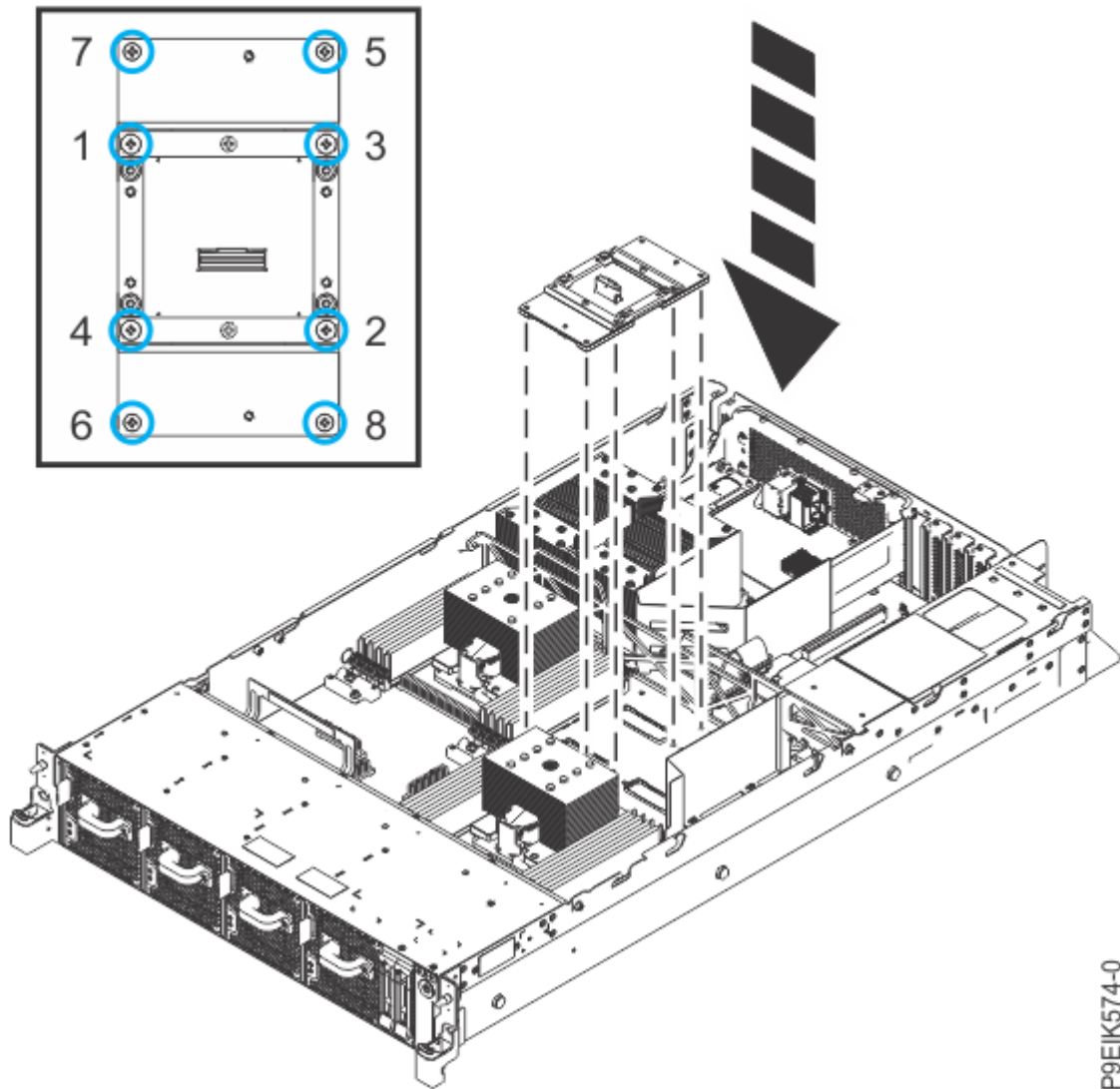


P9EIK573-0

Figure 3. Removing GPUs

5. Install the interposer into GPU position 3 as shown in the following figure.

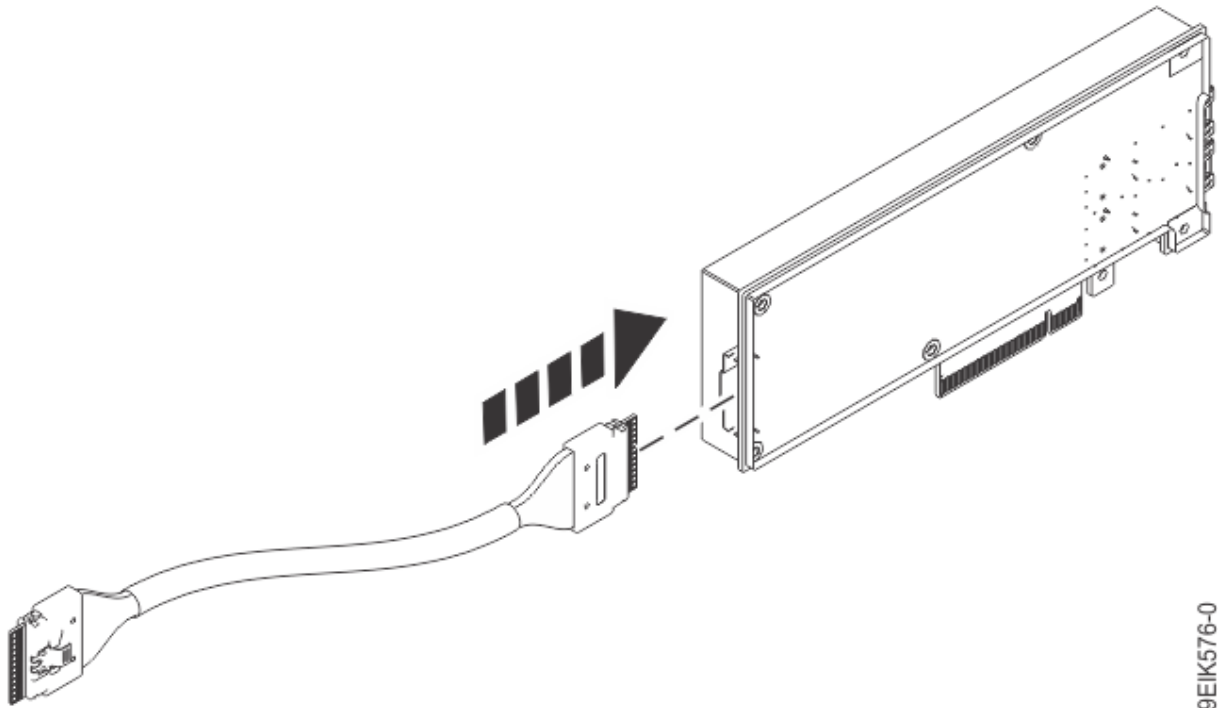
Start with the inner four screws (0.63 in, 16 mm in length). Thread the four inner screws half-way using the sequence that is shown. After all four screws are threaded, then fully tighten them. Next, tighten the outer four screws (0.47 in, 12 mm in length) by using the sequence that is shown. Take care to not damage the system backplane with the screw driver tip.



P9EIK574-0

Figure 4. Installing the OpenCAPI interposer

6. If needed, label and remove any plugs that extend out of the rear OpenCAPI PCIe adapter.
7. Attach the OpenCAPI cable to the OpenCAPI PCIe adapter as shown in the following figure.



P9EIK576-0

Figure 5. Inserting the OpenCAPI cable into the PCIe adapter

8. Pass the OpenCAPI cable through the bulkhead as shown in the following figure.

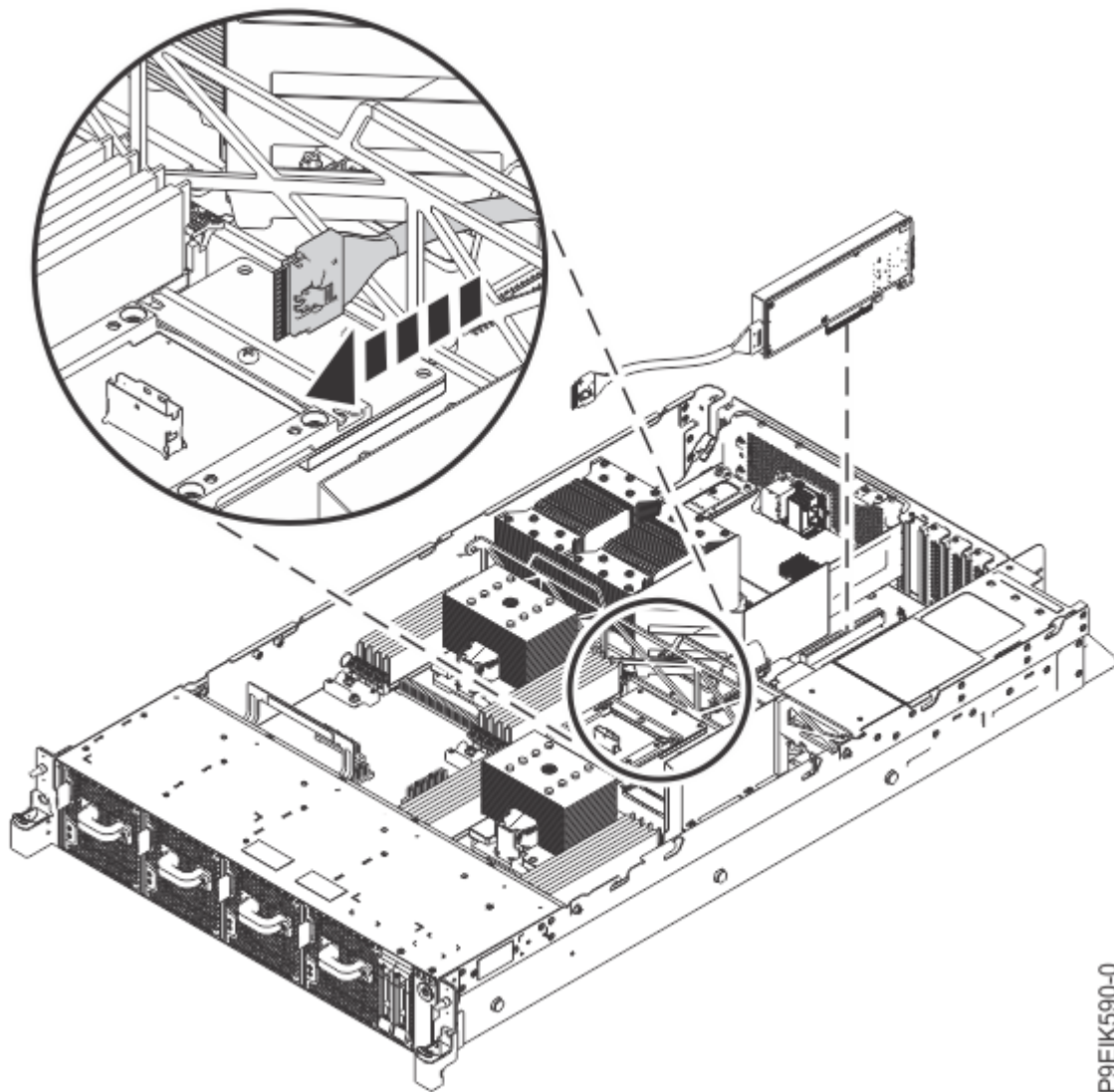
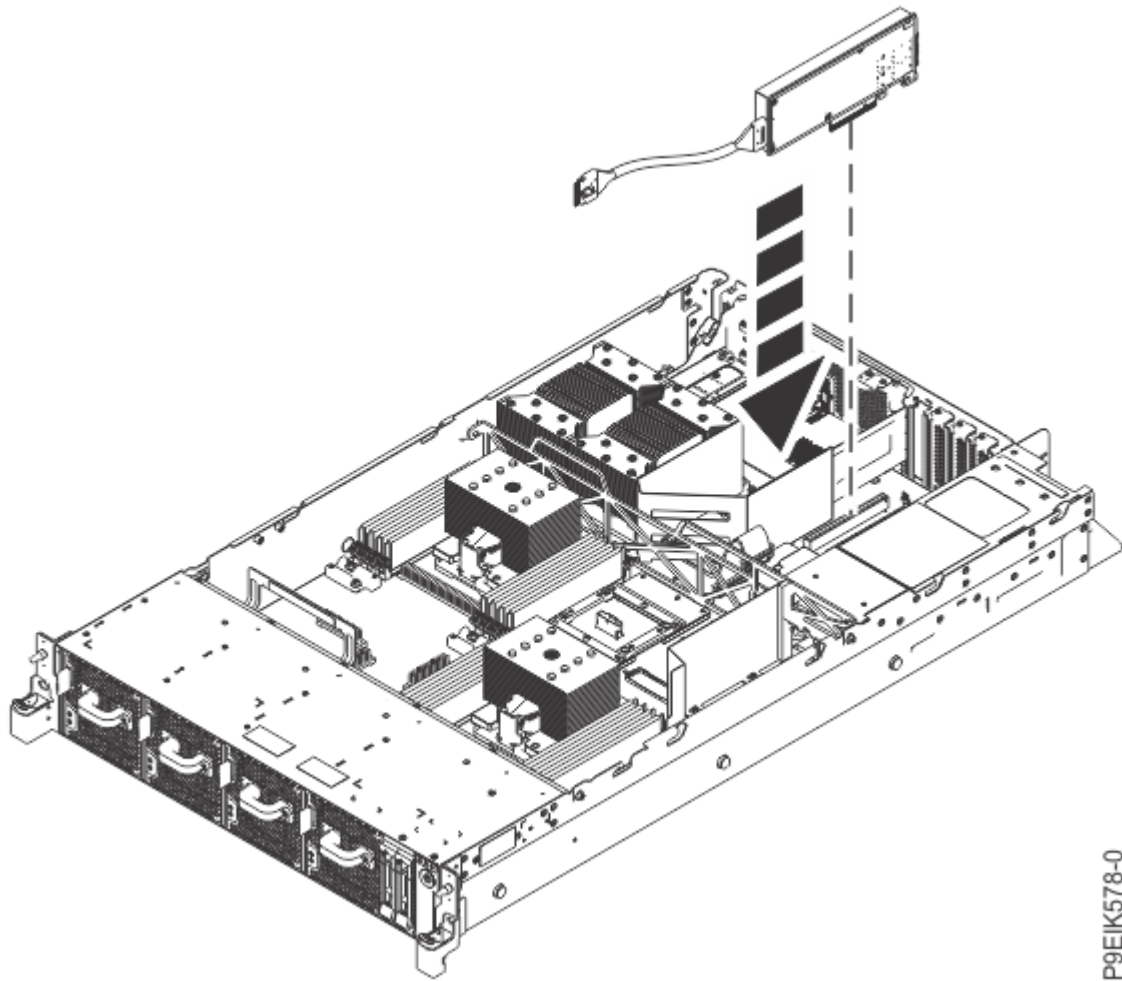


Figure 6. Routing the OpenCAPI cable

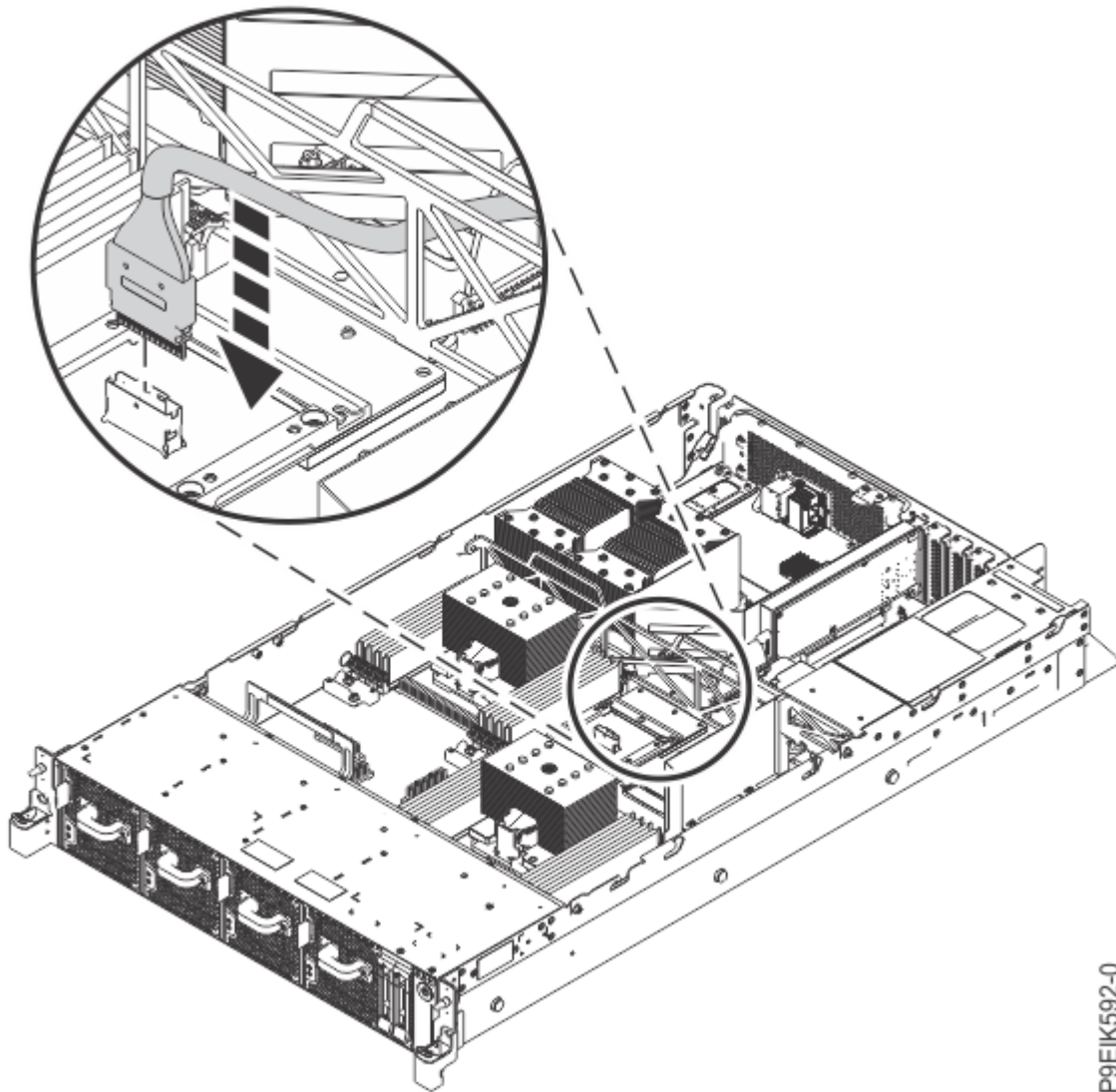
9. Insert the OpenCAPI PCIe adapter into PCIe adapter slot 4. Align the adapter properly and insert it fully into the slot as shown in the following figure.



P9EIK578-0

Figure 7. Inserting the PCIe adapter

10. Attach the OpenCAPI cable to the OpenCAPI interposer adapter in GPU position 3 as shown in the following figure.



P9EIK592-0

Figure 8. Inserting the OpenCAPI cable into the interposer

11. Using your labels, replace any plugs that you removed from the rear of the OpenCAPI PCIe adapter.
12. Install the air baffle **(A)** onto the interposer.
Use four screws (0.16 in, 4 mm in length) at **(B)**, secure the air baffle to the interposer.

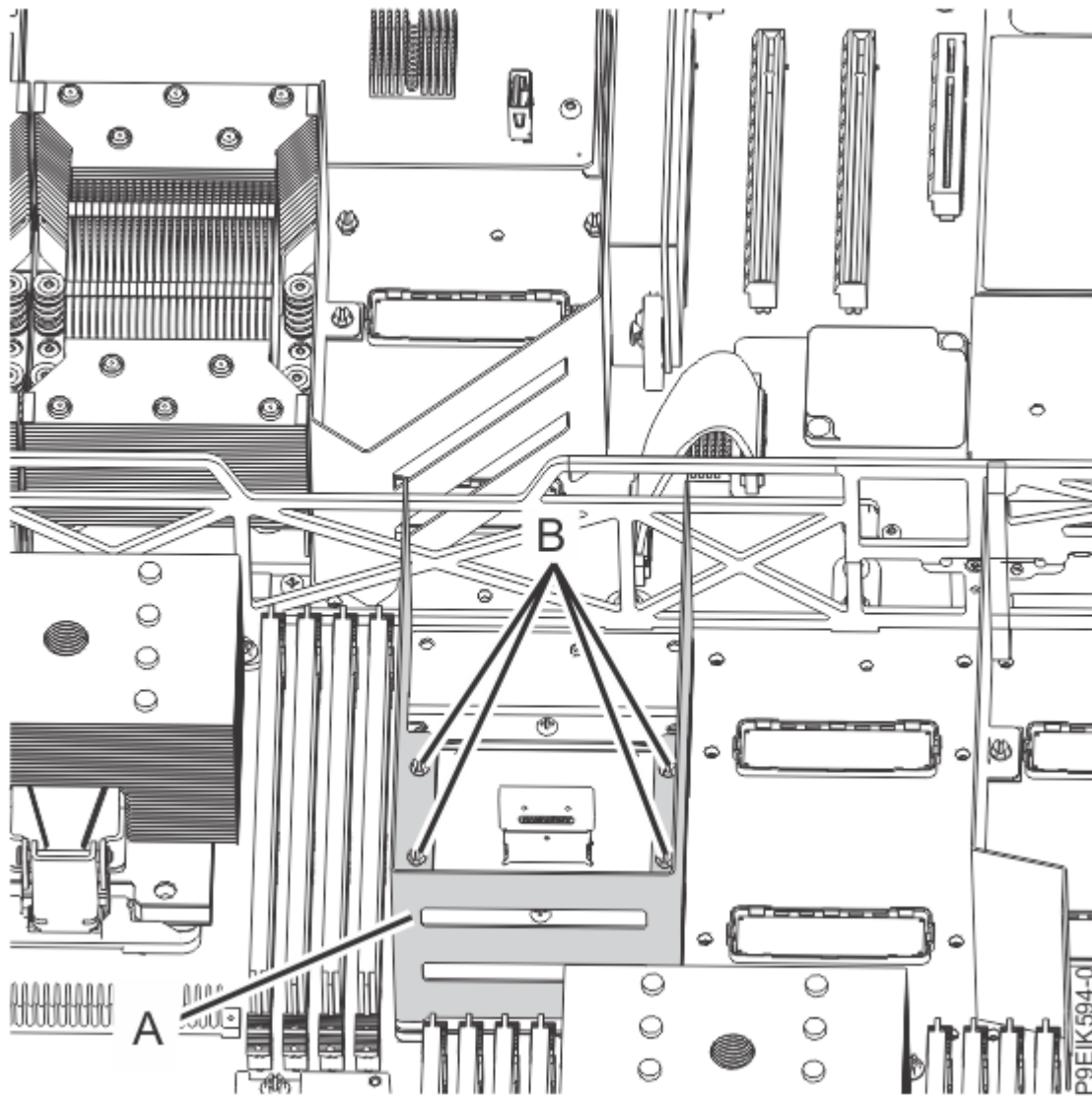


Figure 9. Installing the interposer air baffle

13. Install a GPU air baffle **(A)** into GPU position 4. Use four screws (0.16 in, 4 mm in length) in positions **(B)** to secure the air baffle to the system backplane.

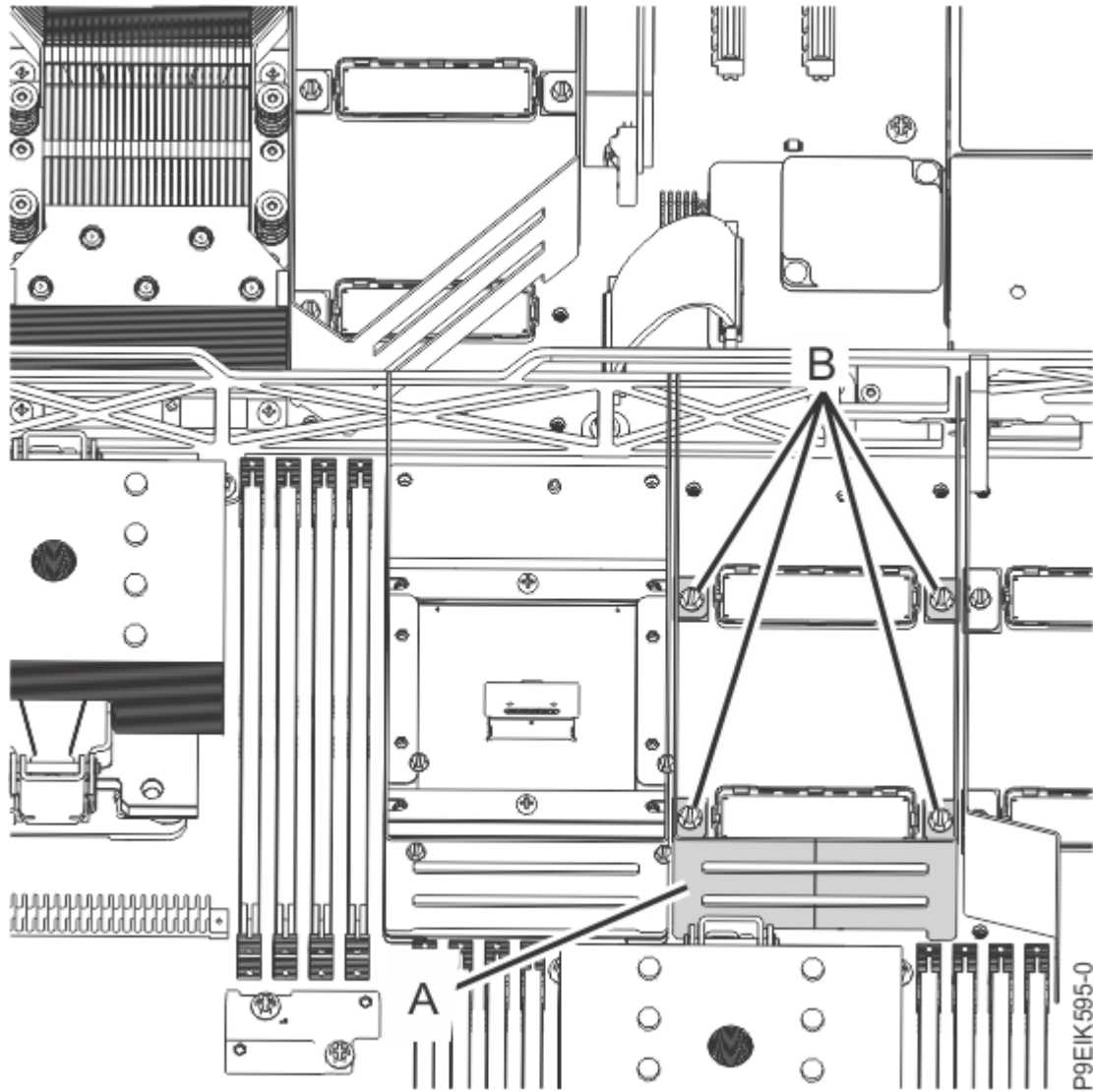


Figure 10. Installing the OpenCAPI interposer

What to do next

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 36.

Removing and replacing OpenCAPI adapter support on the 8335-GTH system

Before you begin

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 32.](#)

About this task



Attention: For safety and airflow purposes, if you remove parts from the system, you must ensure that:

- PCIe tailstock fillers are present.
- Graphic processor unit (GPU) airflow baffles are present.

Procedure

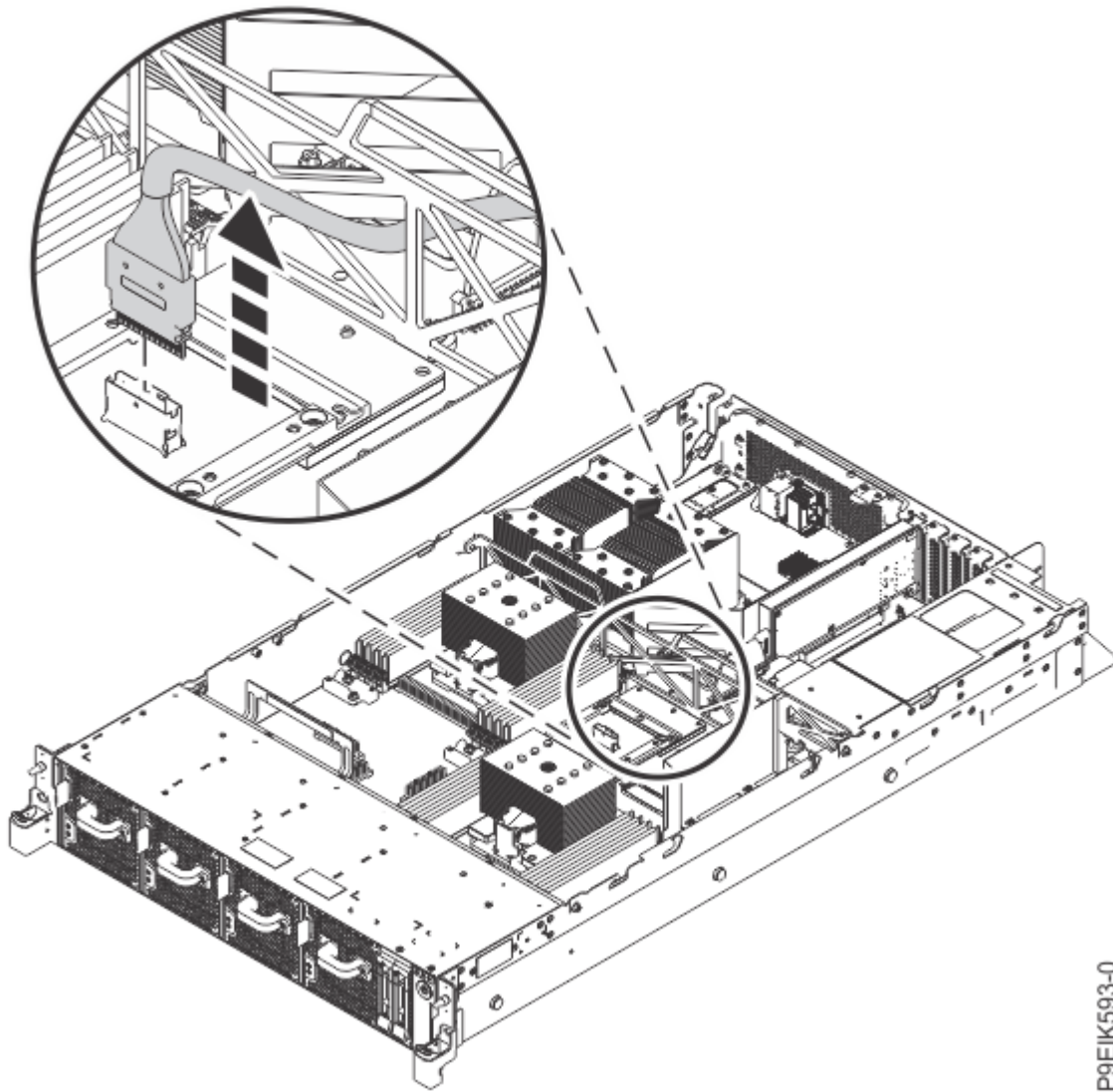
1. Attach the electrostatic discharge (ESD) wrist strap.

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:

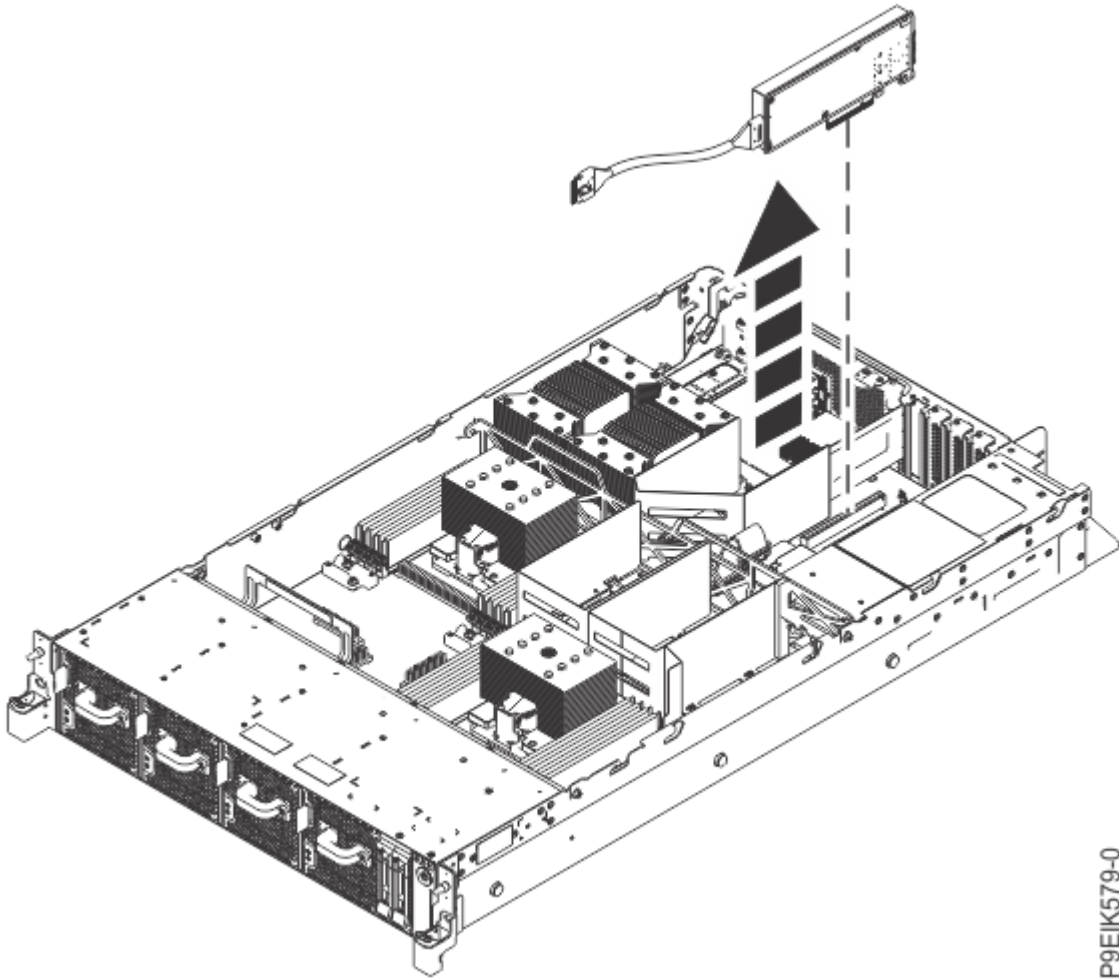
- Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
 - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD 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.
2. Remove the OpenCAPI cable from the interposer as shown in the following figure.



P9EIK593-0

Figure 11. Removing the OpenCAPI cable from the interposer

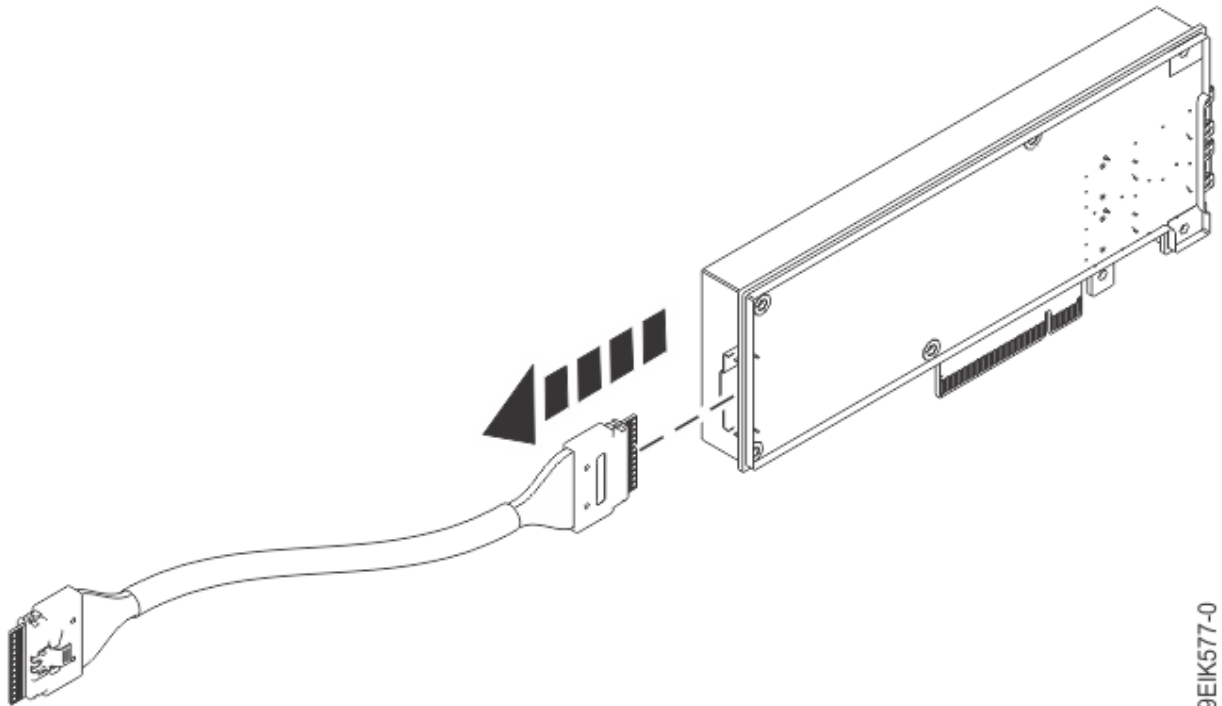
3. If needed, label and remove any plugs that extend out of the rear OpenCAPI PCIe adapter.
4. Remove the OpenCAPI PCIe adapter from PCIe adapter slot 4 as shown in the following figure. Carefully pass the cable through the bulkhead.



P9EIK579-0

Figure 12. Removing a PCIe adapter

5. Remove the OpenCAPI cable from the OpenCAPI PCIe adapter as shown in the following figure.



P9EIK577-0

Figure 13. Removing the OpenCAPI cable from the PCIe adapter

6. Remove the air baffle **(A)** from the interposer. Remove the four screws at **(B)**.

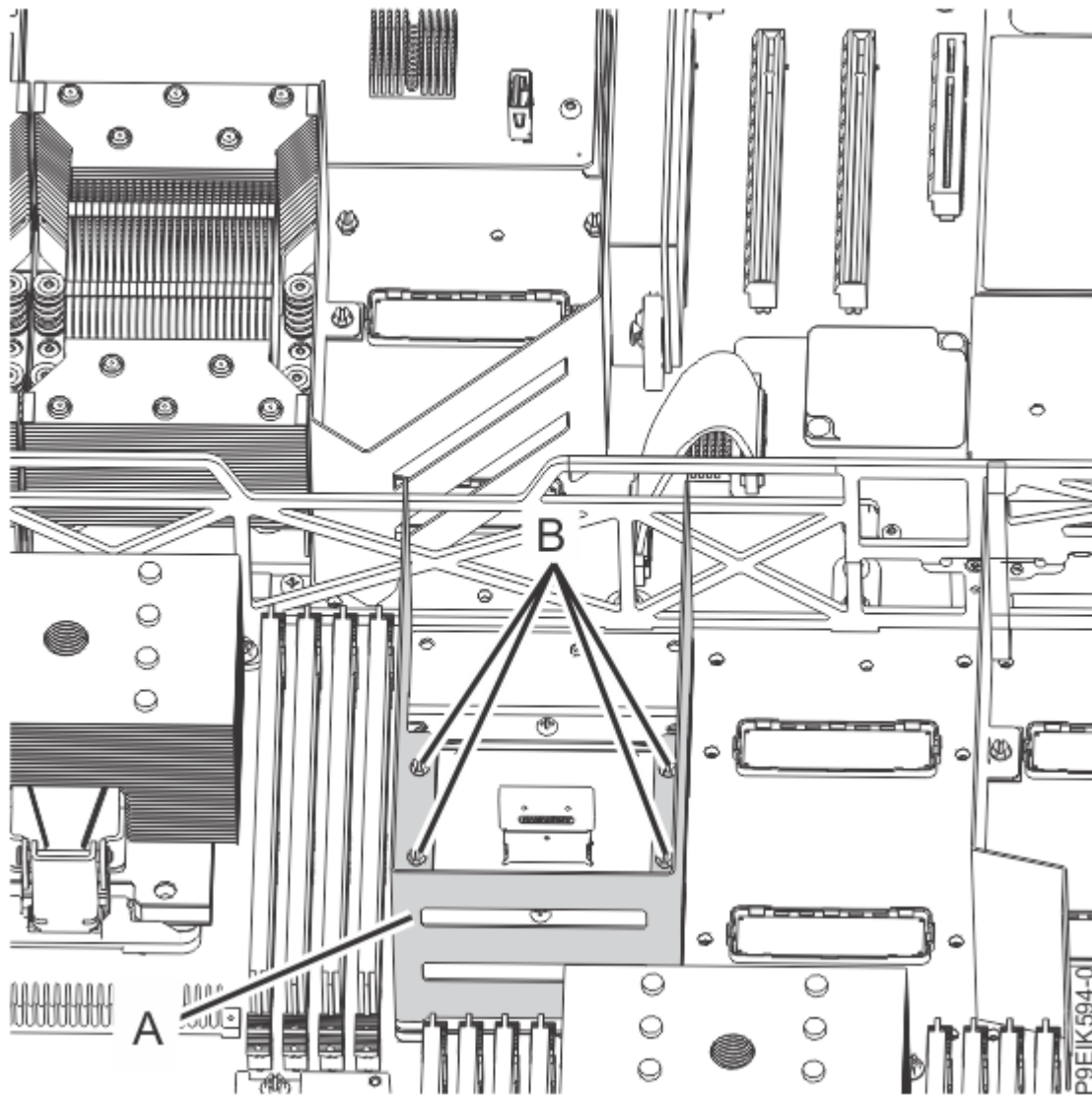
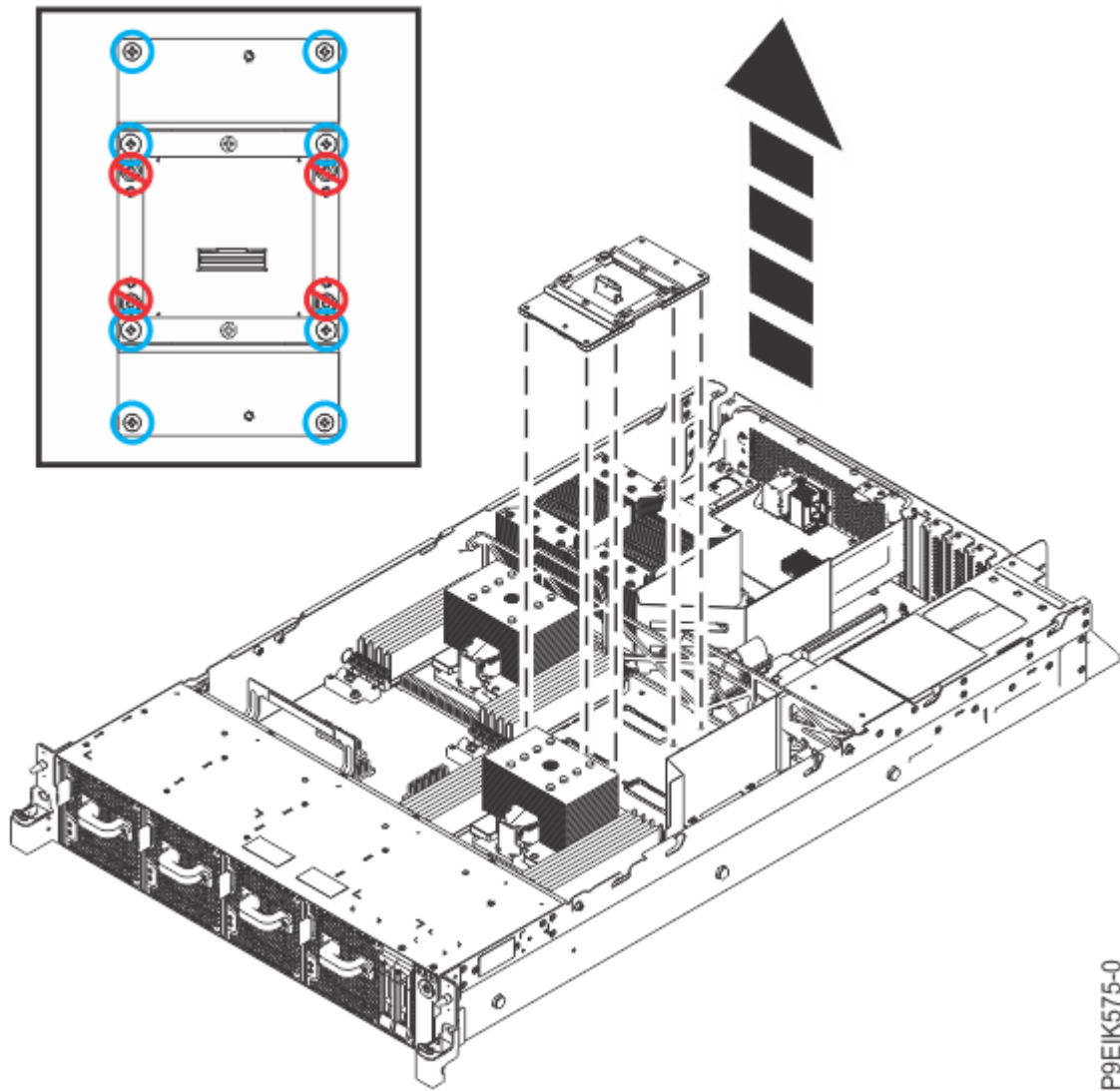


Figure 14. Removing the interposer air baffle

7. Remove the eight screws and remove the old interposer from GPU position 3 as shown in the following figure.

Do not unscrew the four inner most screws.

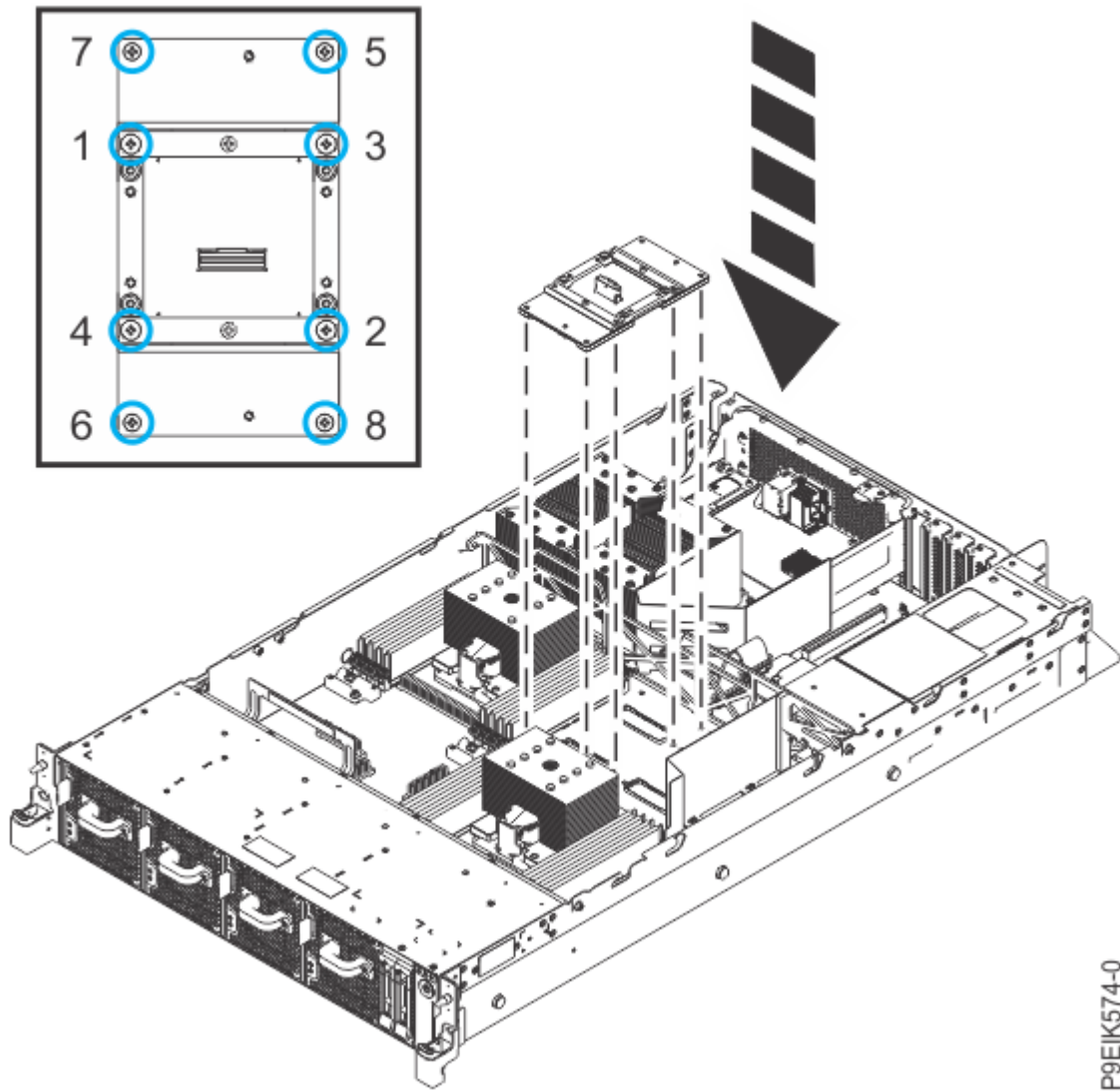


P9EIK575-0

Figure 15. Removing the OpenCAPI interposer

8. Install the interposer into GPU position 3 as shown in the following figure.

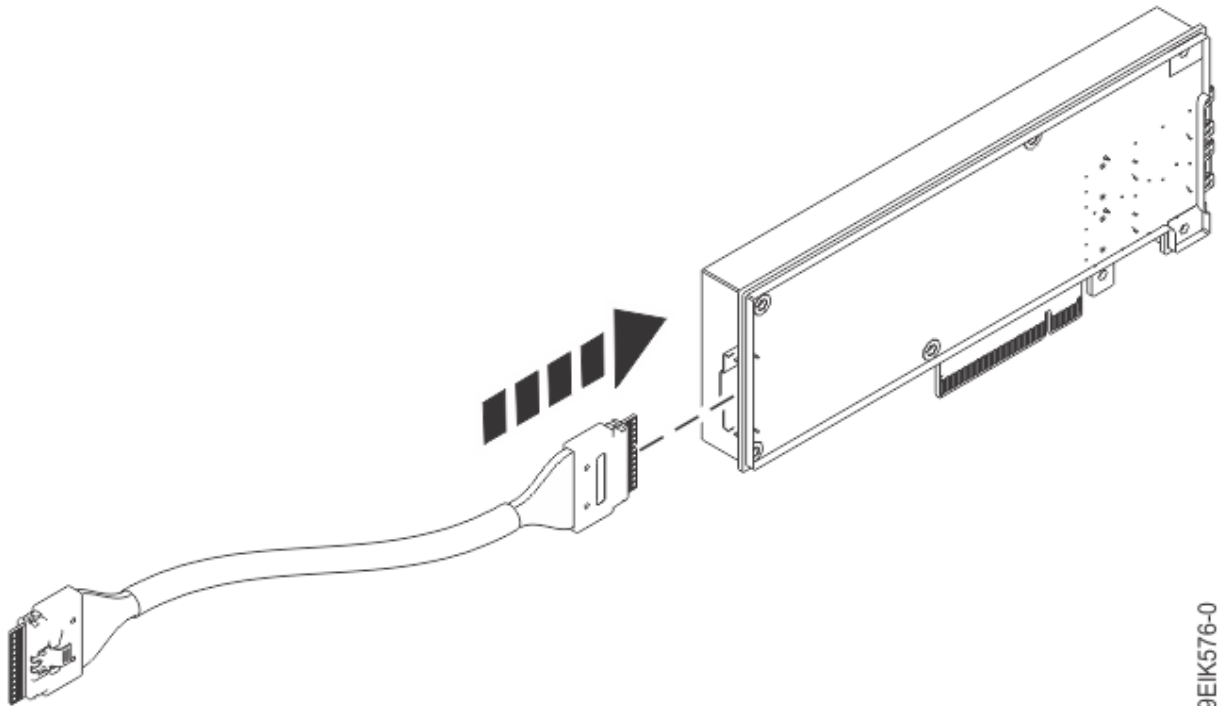
Start with the inner four screws (0.63 in, 16 mm in length). Thread the four inner screws half-way using the sequence that is shown. After all four screws are threaded, then fully tighten them. Next, tighten the outer four screws (0.47 in, 12 mm in length) by using the sequence that is shown. Take care to not damage the system backplane with the screw driver tip.



P9EIK574-0

Figure 16. Installing the OpenCAPI interposer

9. Attach the OpenCAPI cable to the OpenCAPI PCIe adapter as shown in the following figure.



P9EIK576-0

Figure 17. Inserting the OpenCAPI cable into the PCIe adapter

10. Pass the OpenCAPI cable through the bulkhead as shown in the following figure.

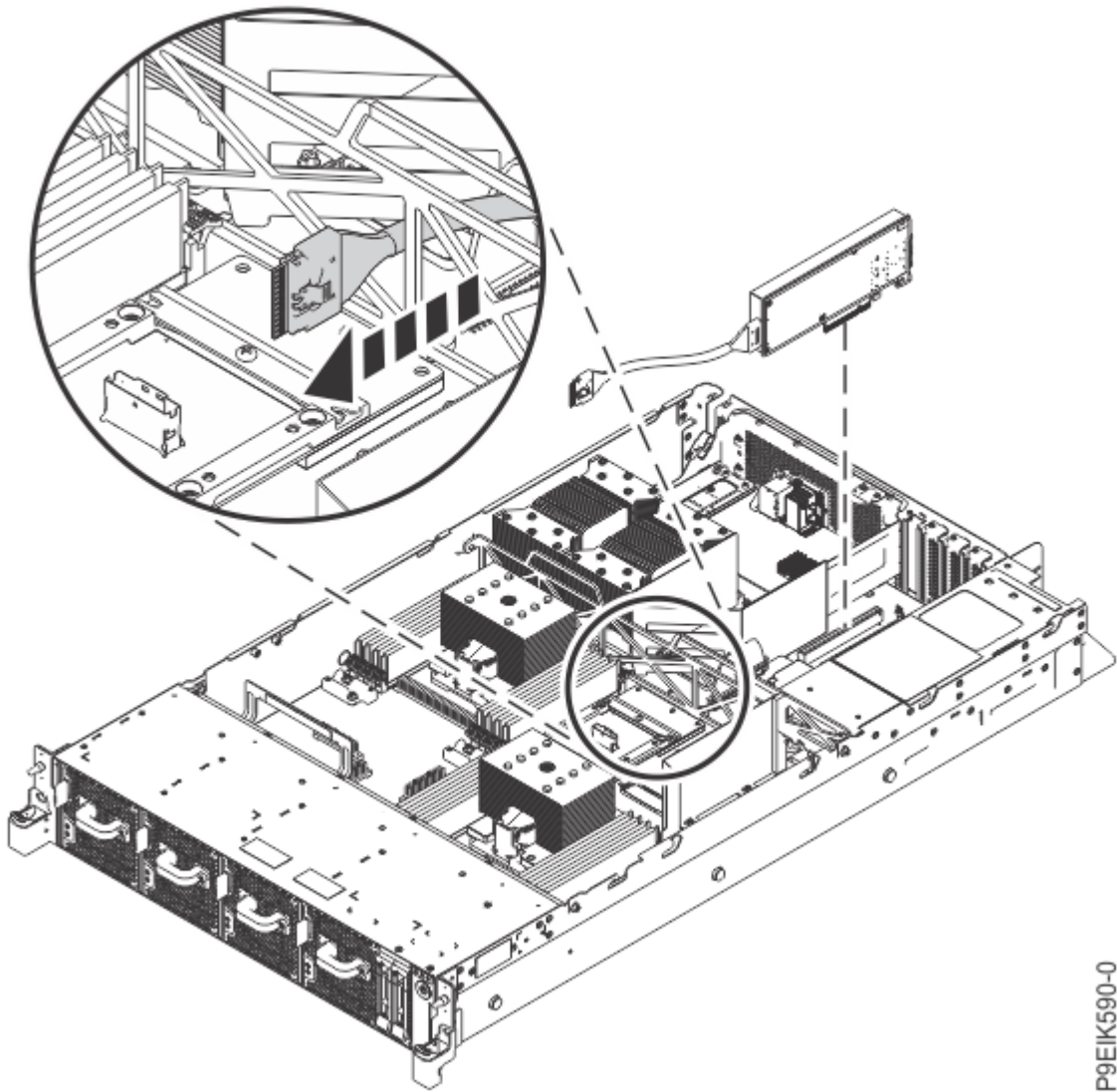
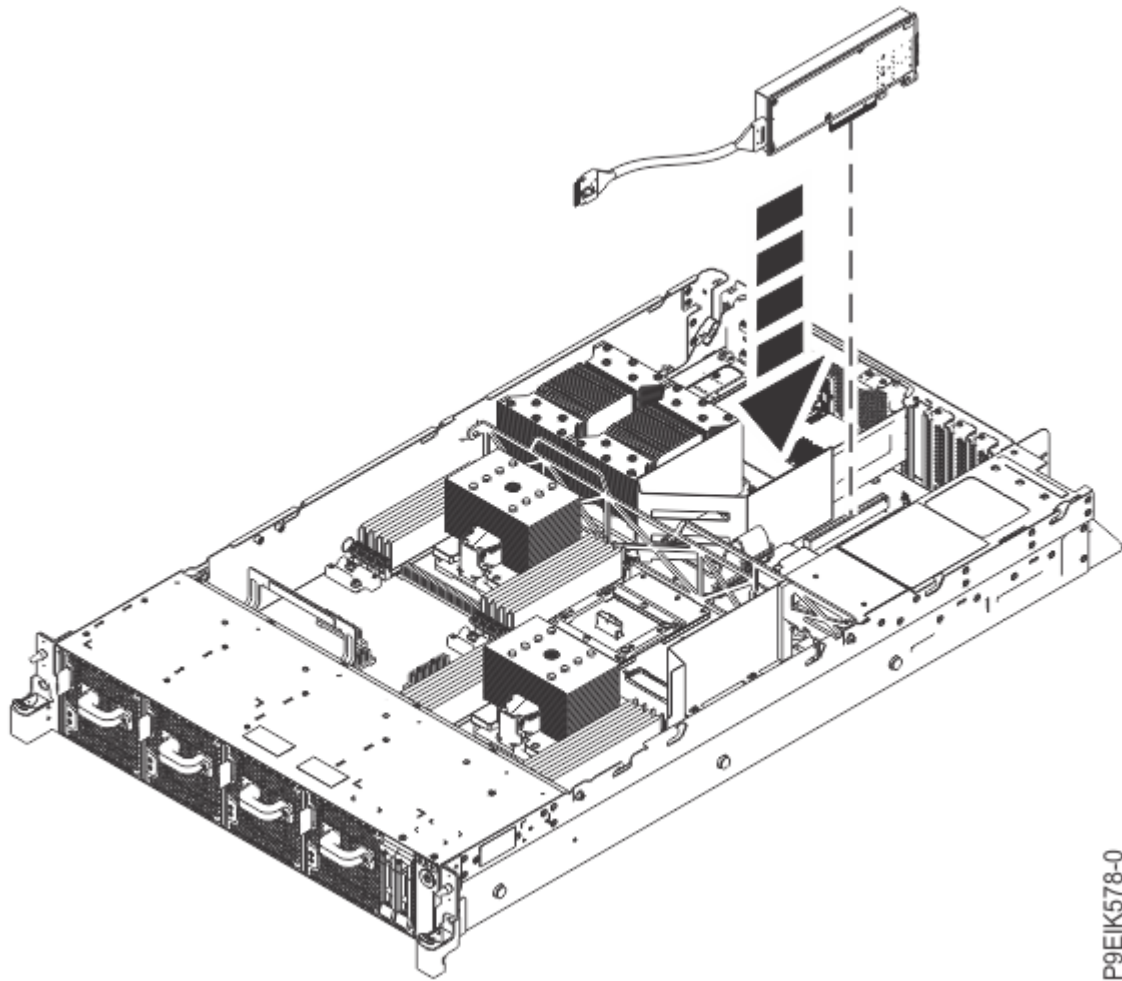


Figure 18. Routing the OpenCAPI cable

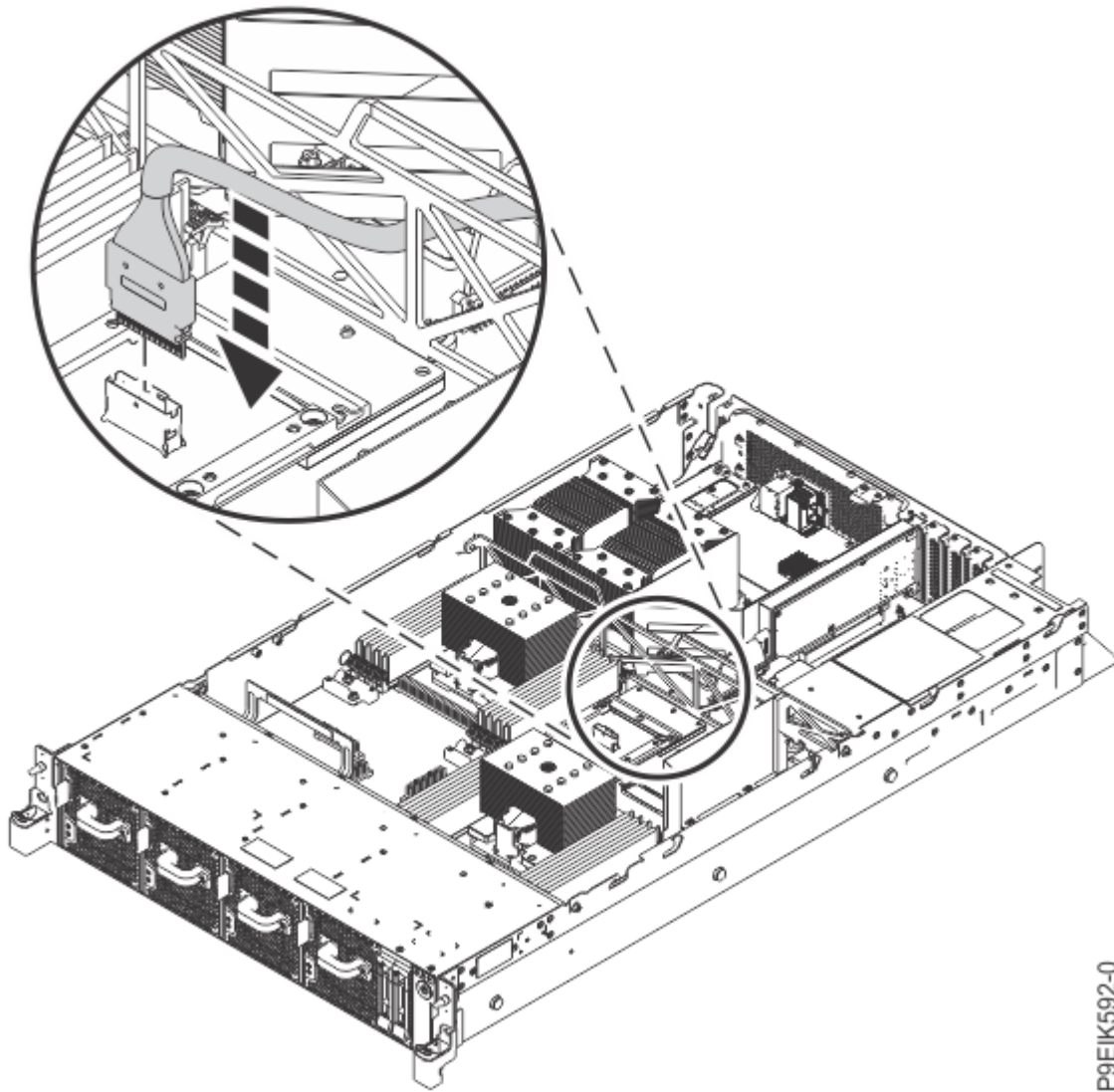
11. Insert the OpenCAPI PCIe adapter into PCIe adapter slot 4. Align the adapter properly and insert it fully into the slot as shown in the following figure.



P9EIK578-0

Figure 19. Inserting the PCIe adapter

12. Attach the OpenCAPI cable to the OpenCAPI interposer adapter in GPU position 3 as shown in the following figure.



P9EIK592-0

Figure 20. Inserting the OpenCAPI cable into the interposer

13. Using your labels, replace any plugs that you removed from the rear of the OpenCAPI PCIe adapter.
14. Install the air baffle **(A)** onto the interposer.
Use four screws (0.16 in, 4 mm in length) at **(B)**, secure the air baffle to the interposer.

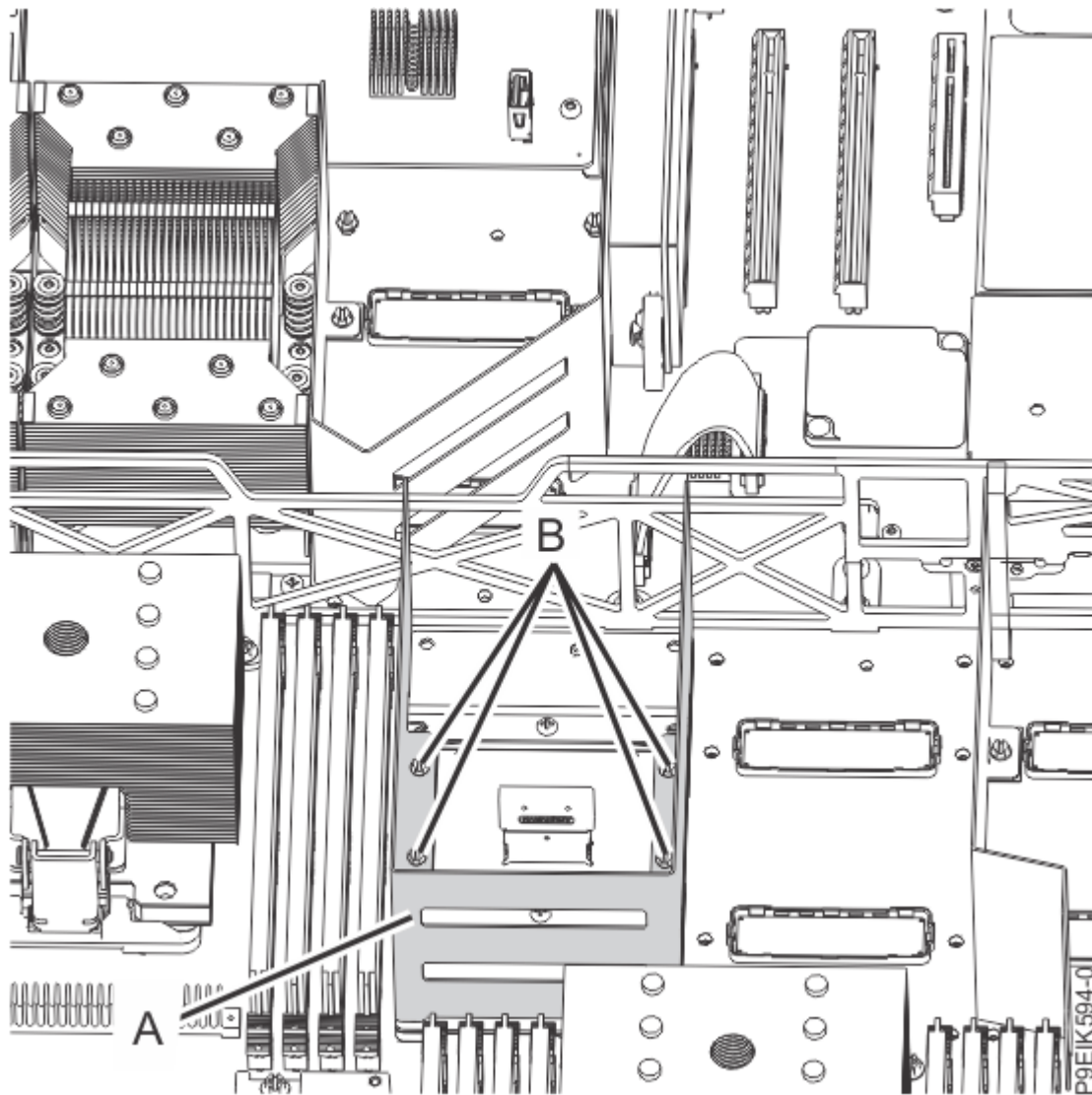


Figure 21. Installing the interposer air baffle

What to do next

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 36.

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:

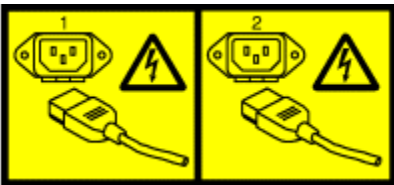
- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side,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



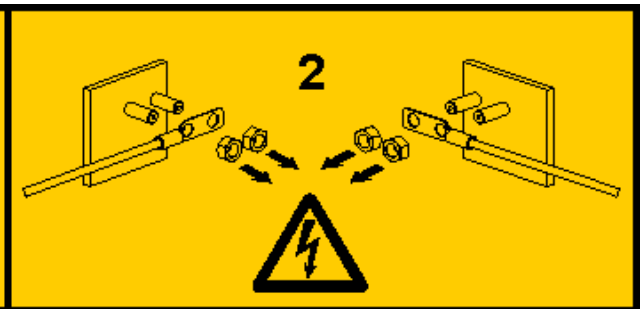
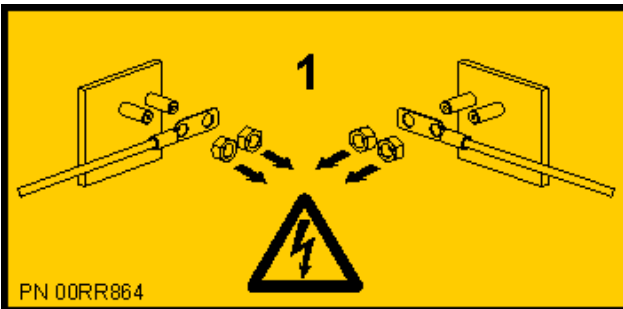
or




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 `impi tool` 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 22 on page 30](#) and [Figure 23 on page 30](#)) and at the rear of the system (as shown in [Figure 24 on page 31](#)).

- 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.

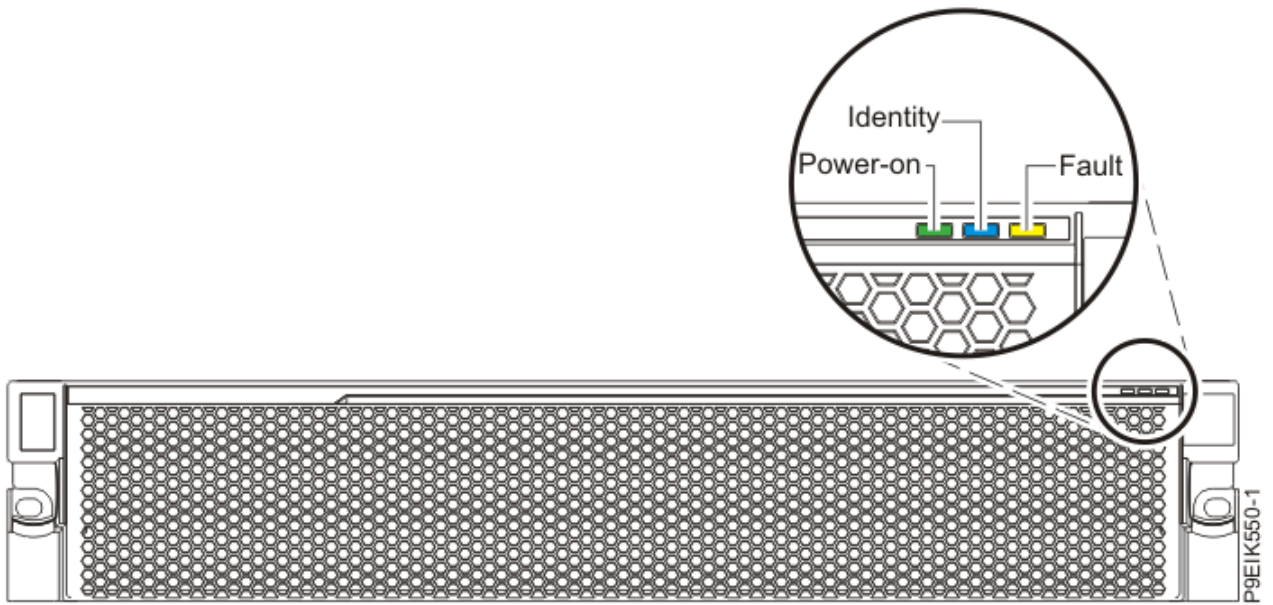


Figure 22. Front LEDs with bezel on

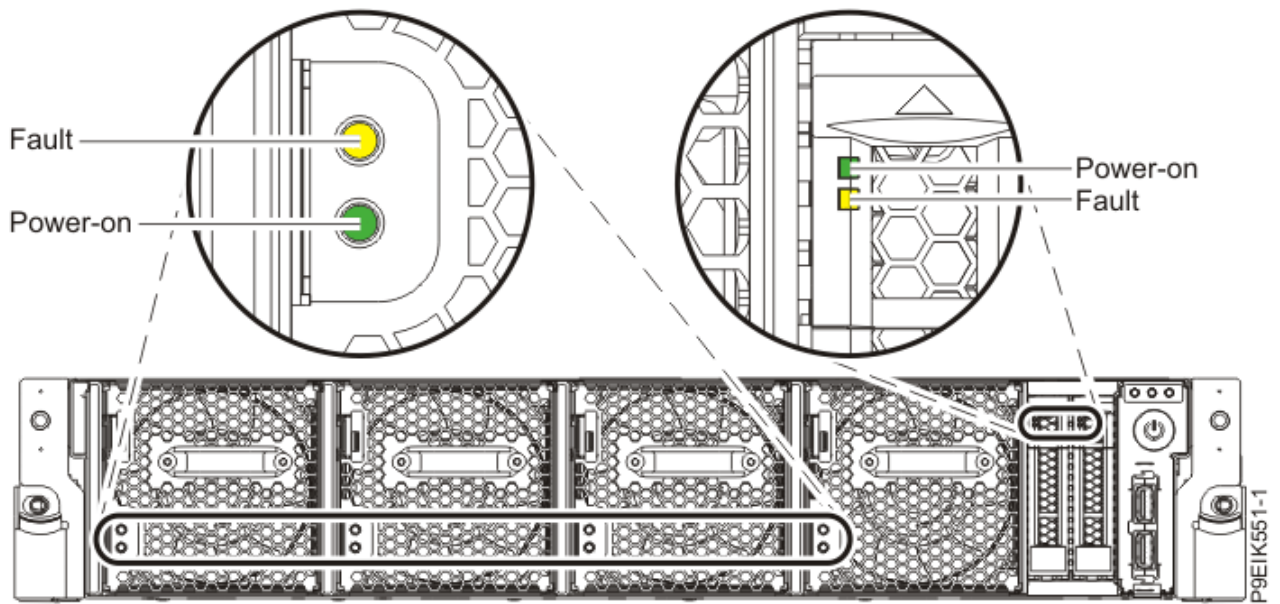


Figure 23. Front LEDs with bezel off

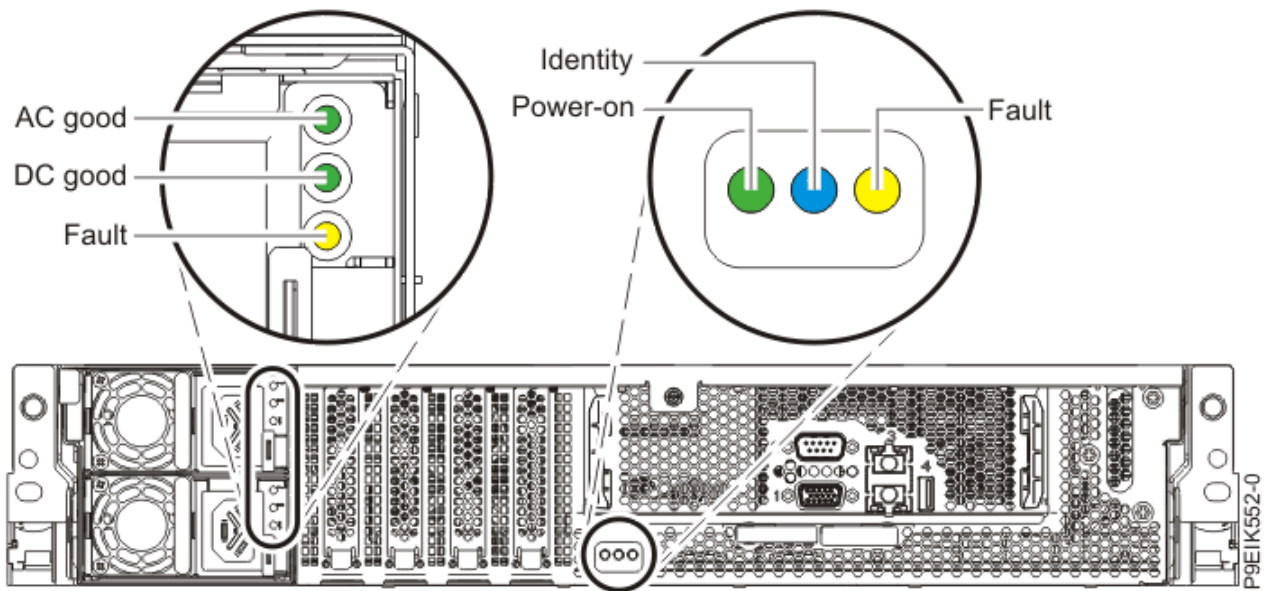


Figure 24. Rear LEDs

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 25.
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 29.
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 42.

(L007)

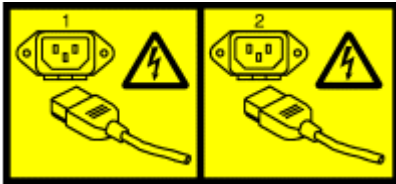


CAUTION: A hot surface nearby. (L007)

6. Stop the system. For instructions, see [“Stopping the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system”](#) on page 39.
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 48.

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

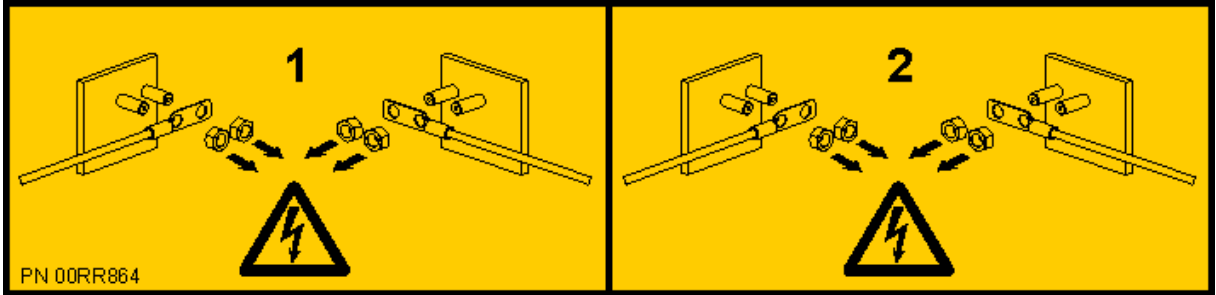



or



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 25 on page 35](#).

- 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 34 - “9.c” on page 34 for the other power supply.

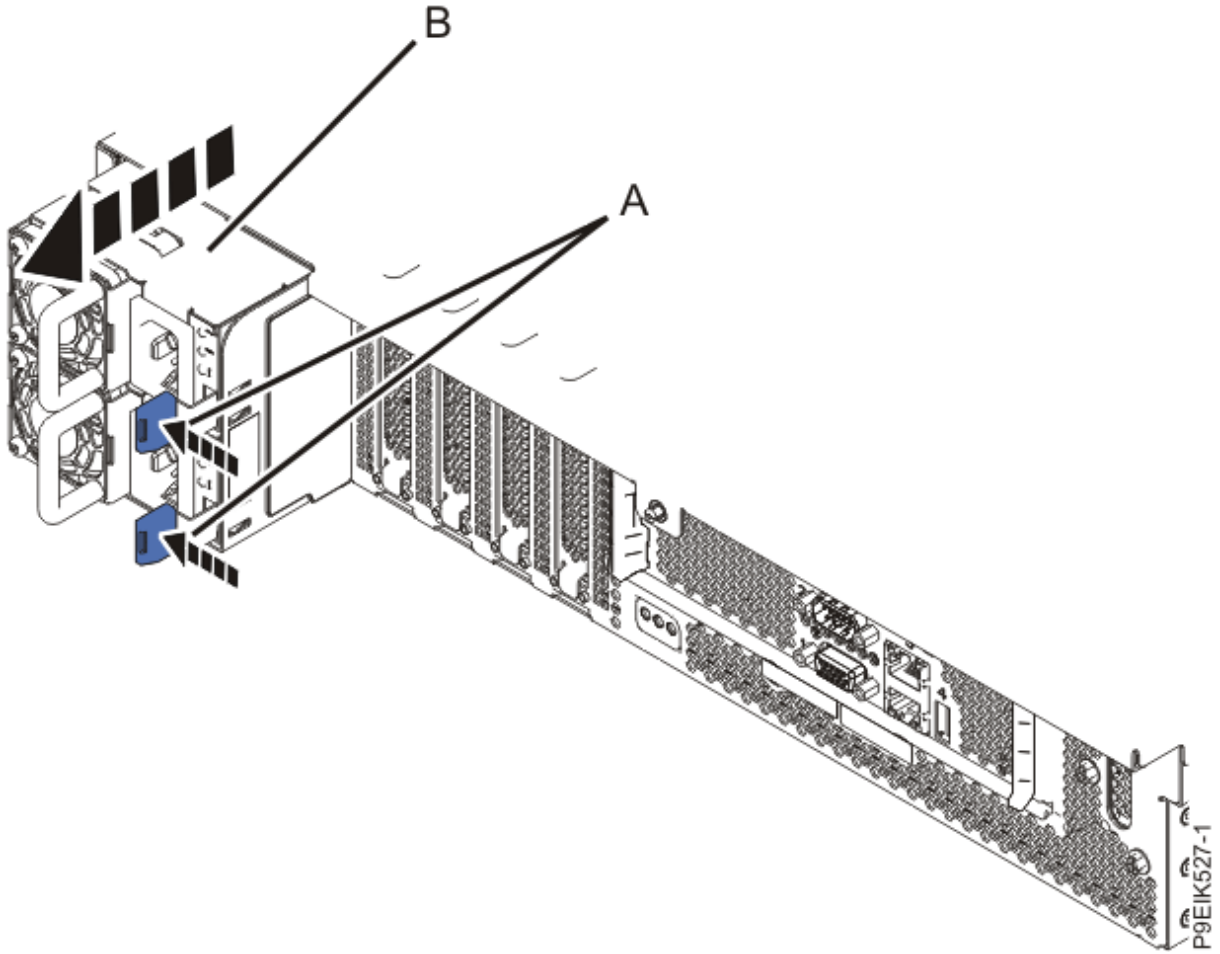


Figure 25. Removing the power supplies from the system

- 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 43.



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)

- 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 40.

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 41.
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 45.

(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 26 on page 37](#).
 - 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 36](#) - [“4.c” on page 36](#) for the other power supply.

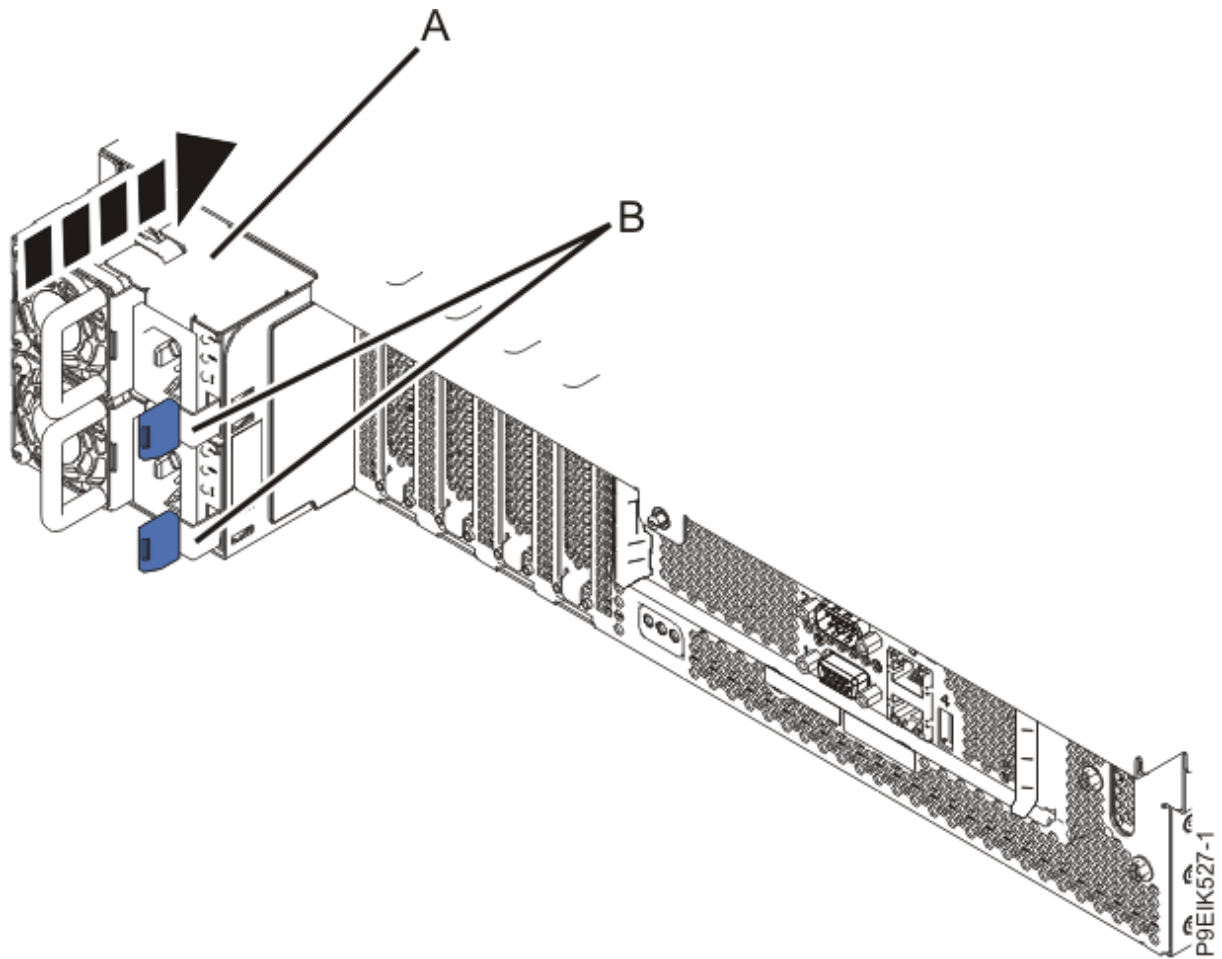


Figure 26. Replacing the power supplies in the system

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 51.

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 38.

8. If the BMC card was replaced continue to the next step, otherwise go to step [“12”](#) on page 38.

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).

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).

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 38.
- **No:** Continue with step [“11.d”](#) on page 38.

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 43.

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 27 on page 39](#), is flashing. A flashing light indicates standby power to the unit.
3. Press the power button that is shown in [Figure 27 on page 39](#).

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.

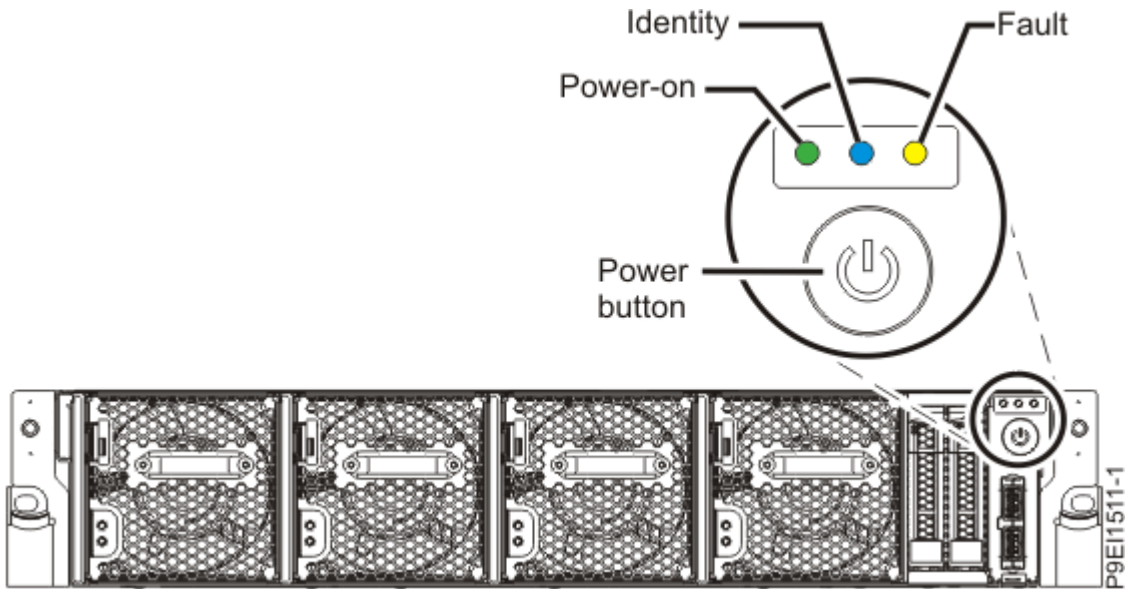


Figure 27. Power button

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.

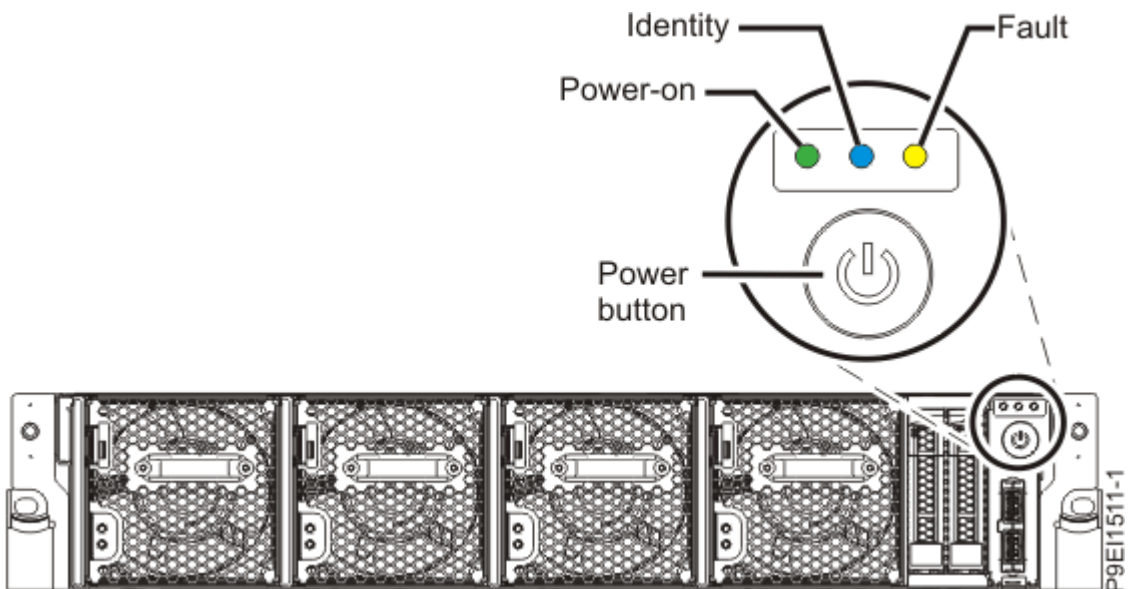


Figure 28. Power button

- 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.

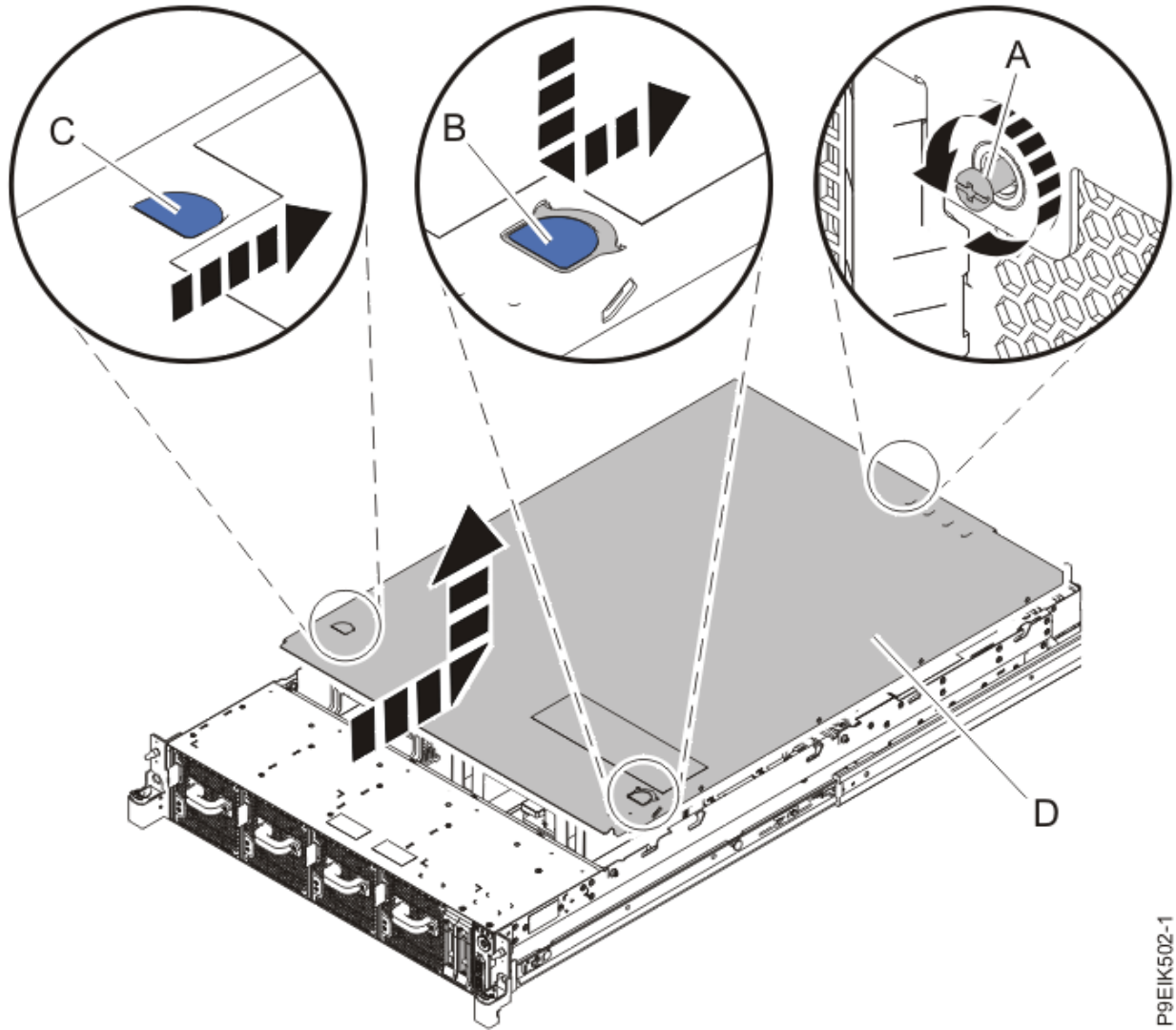
For instructions, see [“Preparing the 8335-GTC, 8335-GTG, 8335-GTH, 8335-GTW, or 8335-GTX system to remove and replace internal parts” on page 32.](#)

(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 29. 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 30](#) on page 42.

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

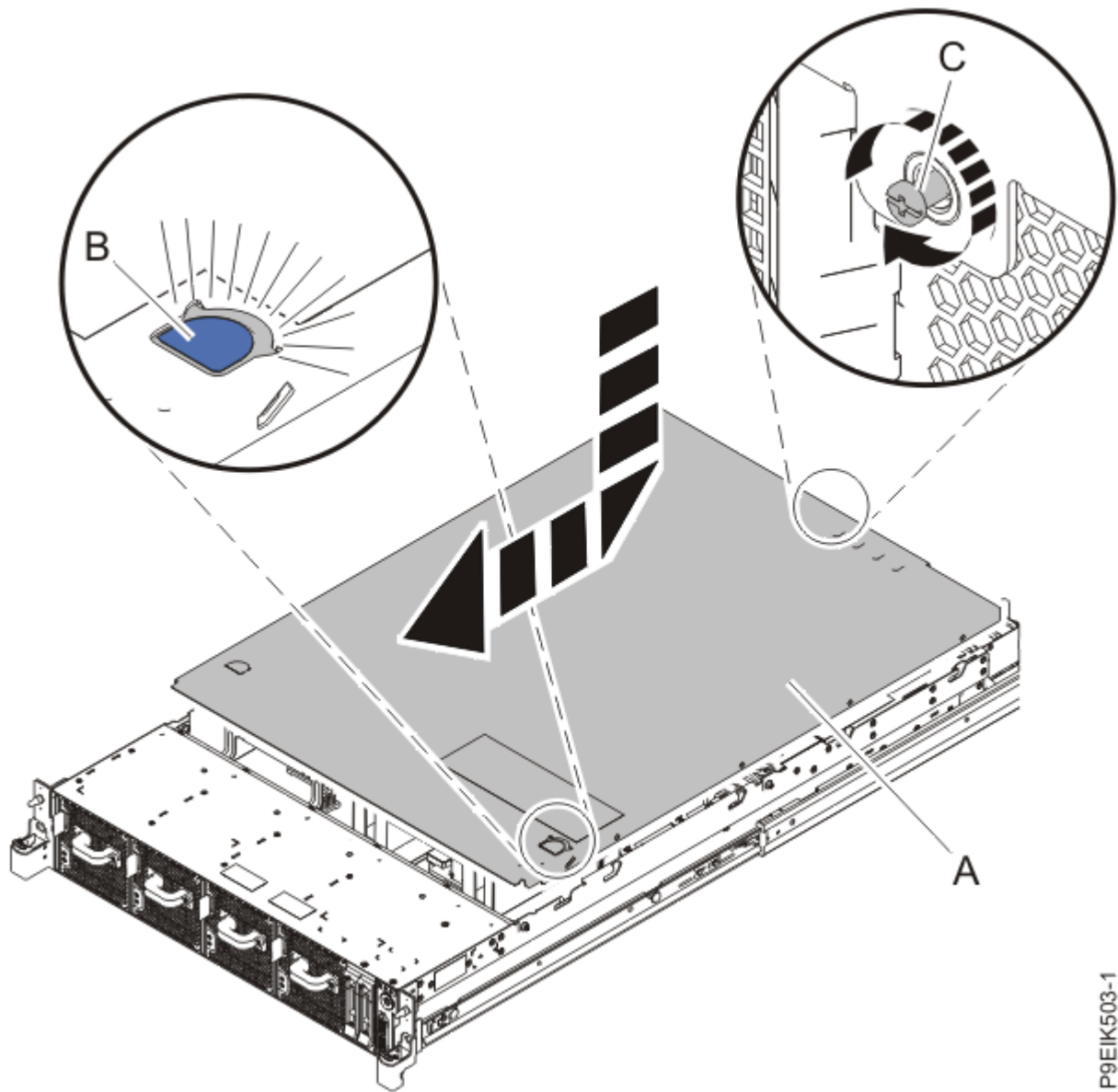


Figure 30. Installing the cover

P9EIK503-1

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.

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

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.

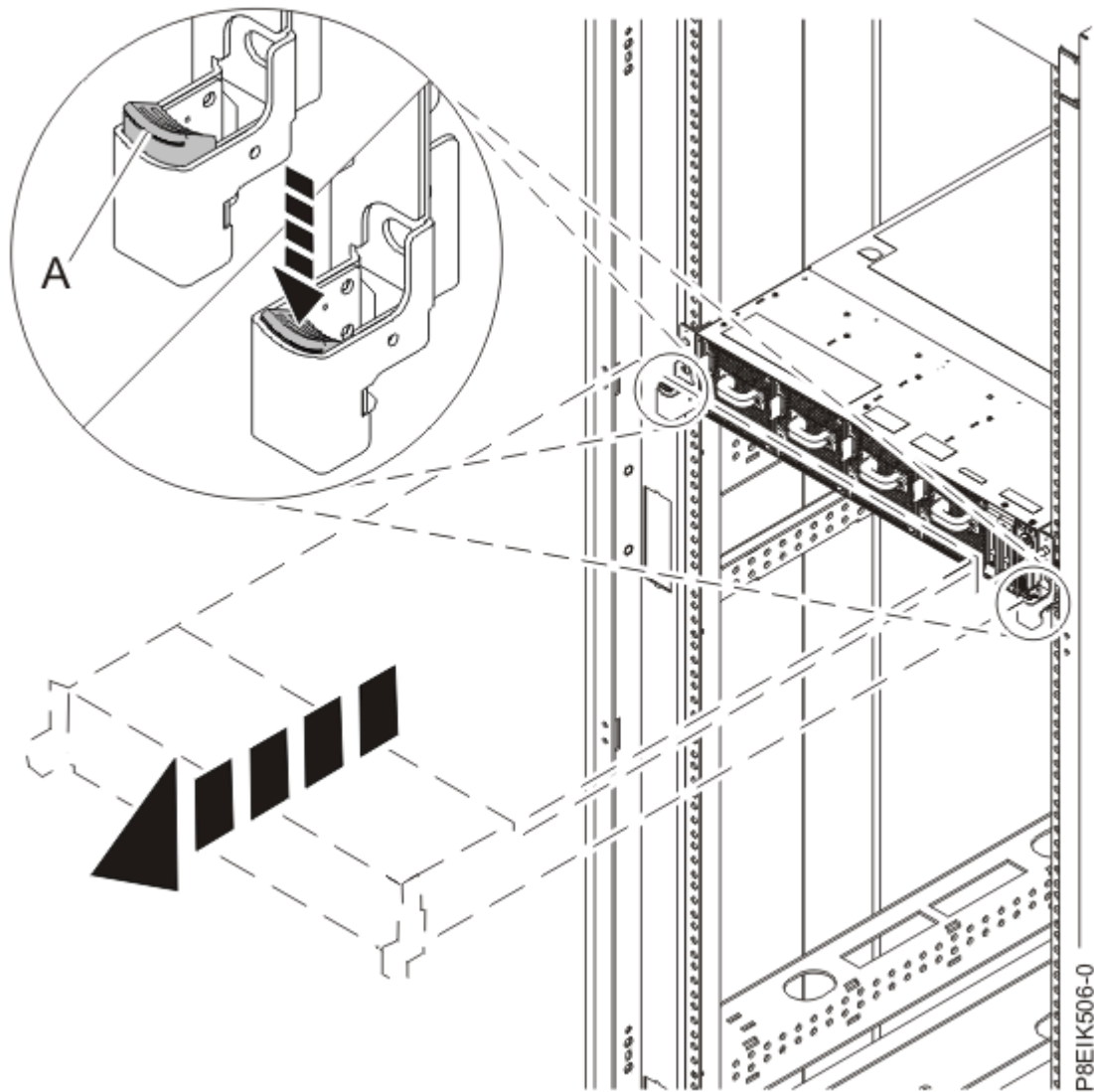


Figure 31. Placing the system into the service position

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 32 on page 45](#).

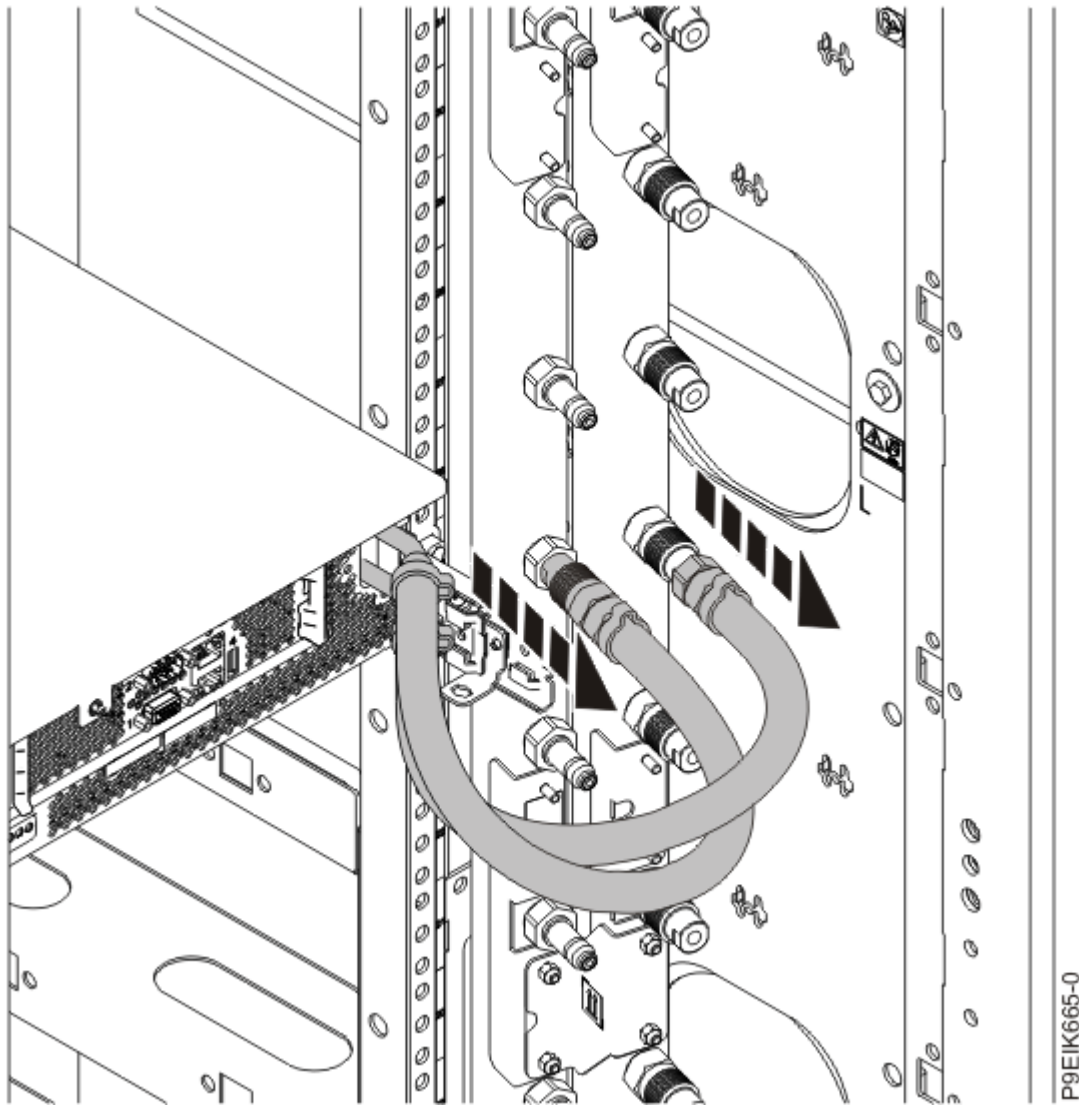


Figure 32. Disconnecting the water hoses

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 46](#)
- [“Fixed rails” on page 47](#)

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 33 on page 46](#).

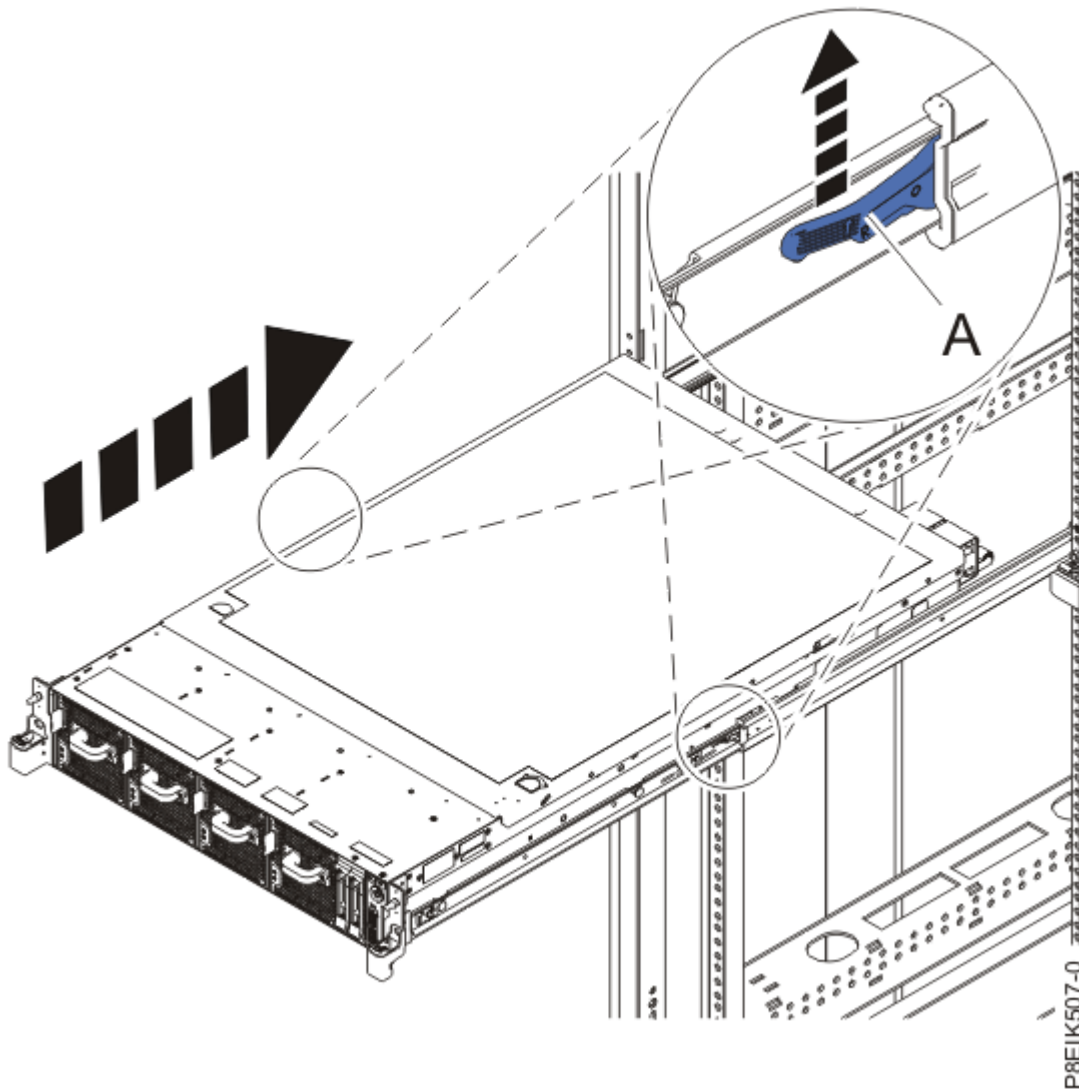


Figure 33. Placing the system into the operating position

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.

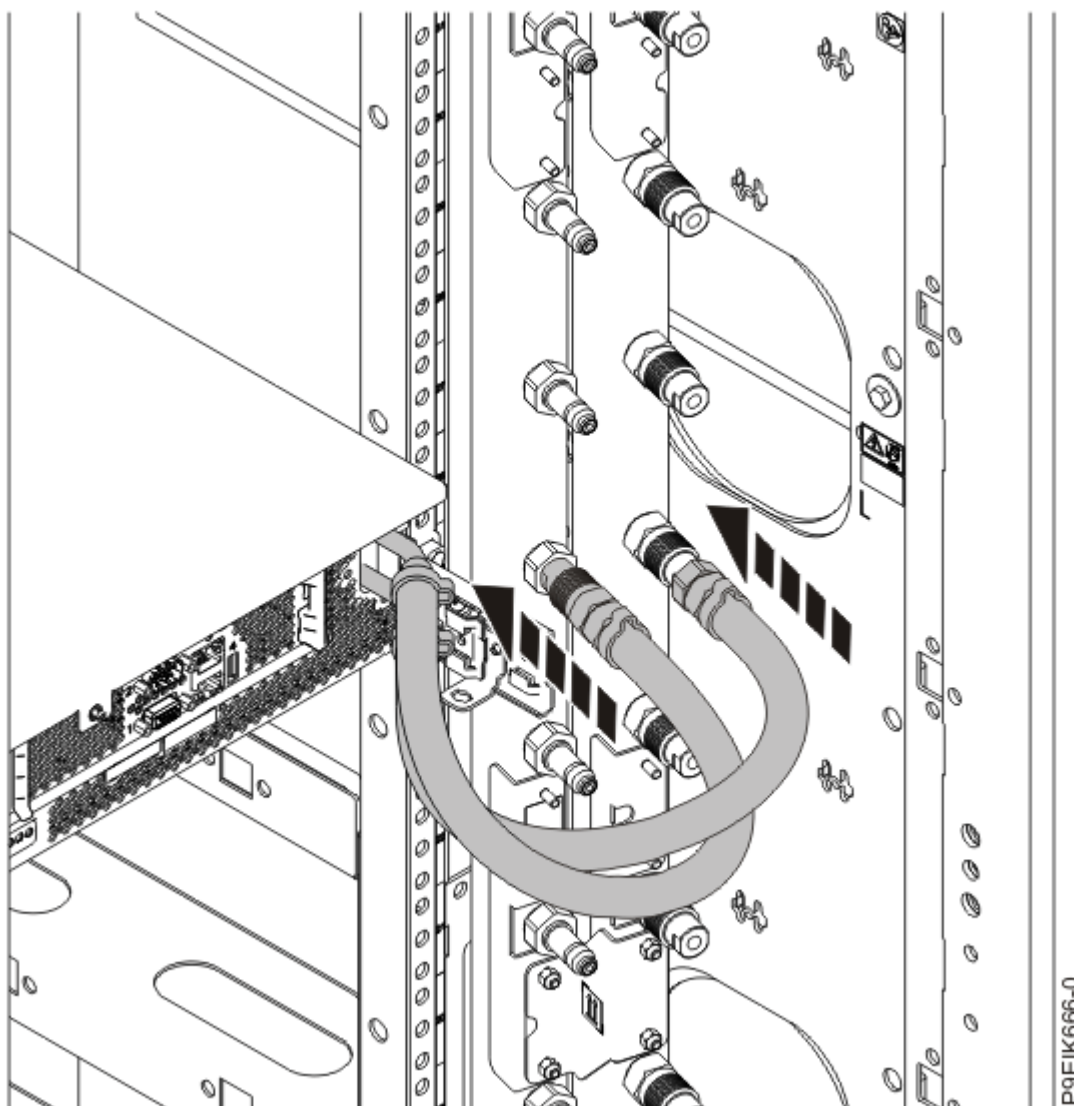


Figure 34. Connecting the water hoses

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

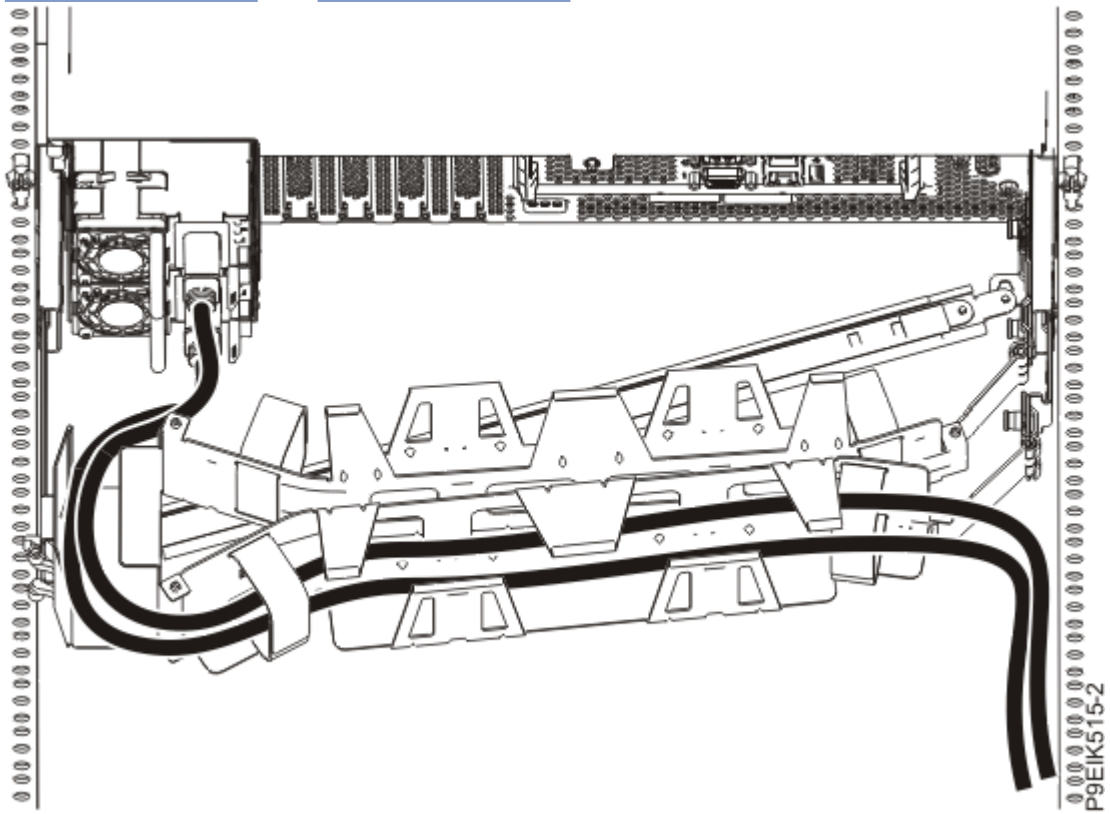


Figure 35. Routing the power cord loop in the cable management arm

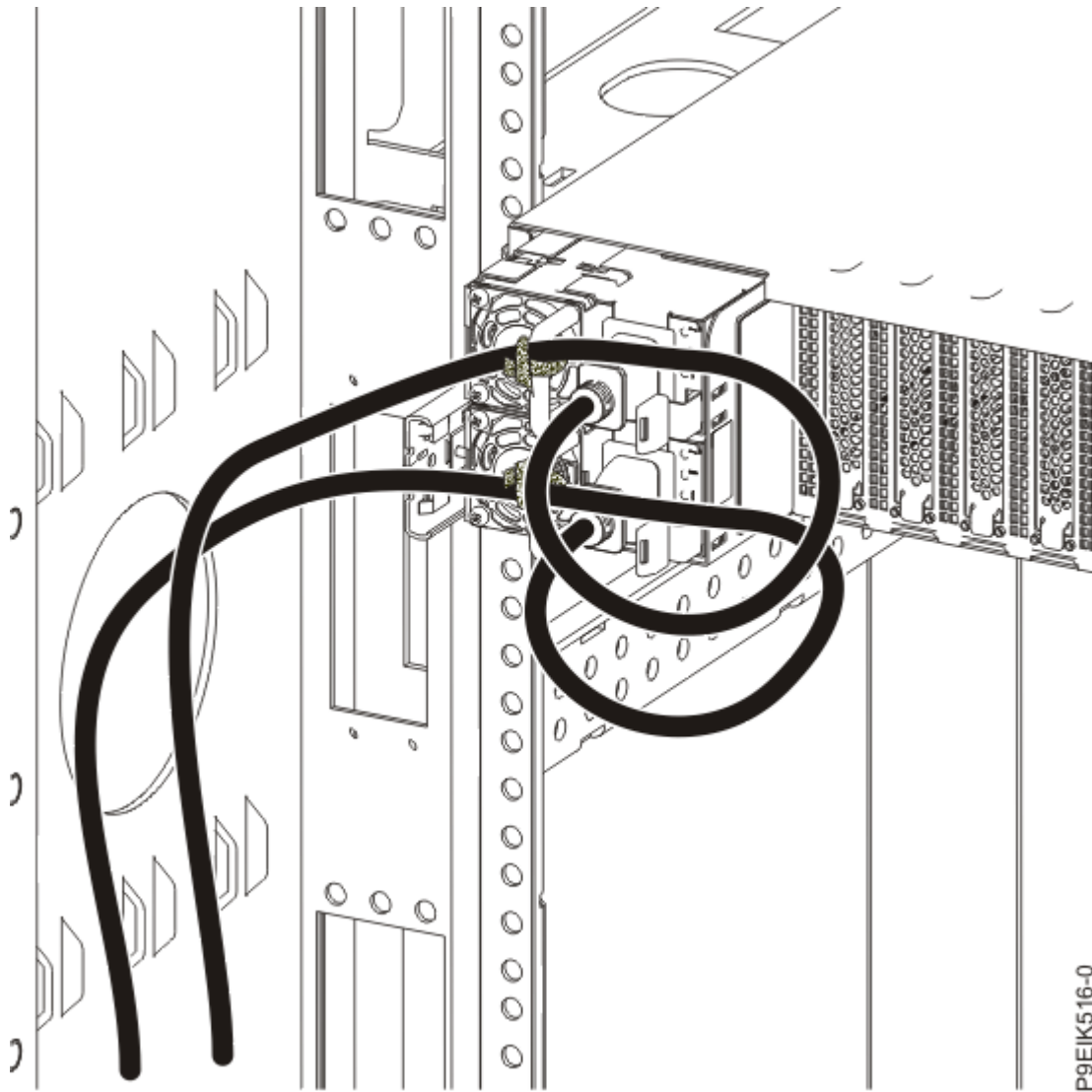


Figure 36. Power cord loop with sidewall routing

4. Disconnect the power cords from the system unit as shown in [Figure 37](#) on page 51.

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.

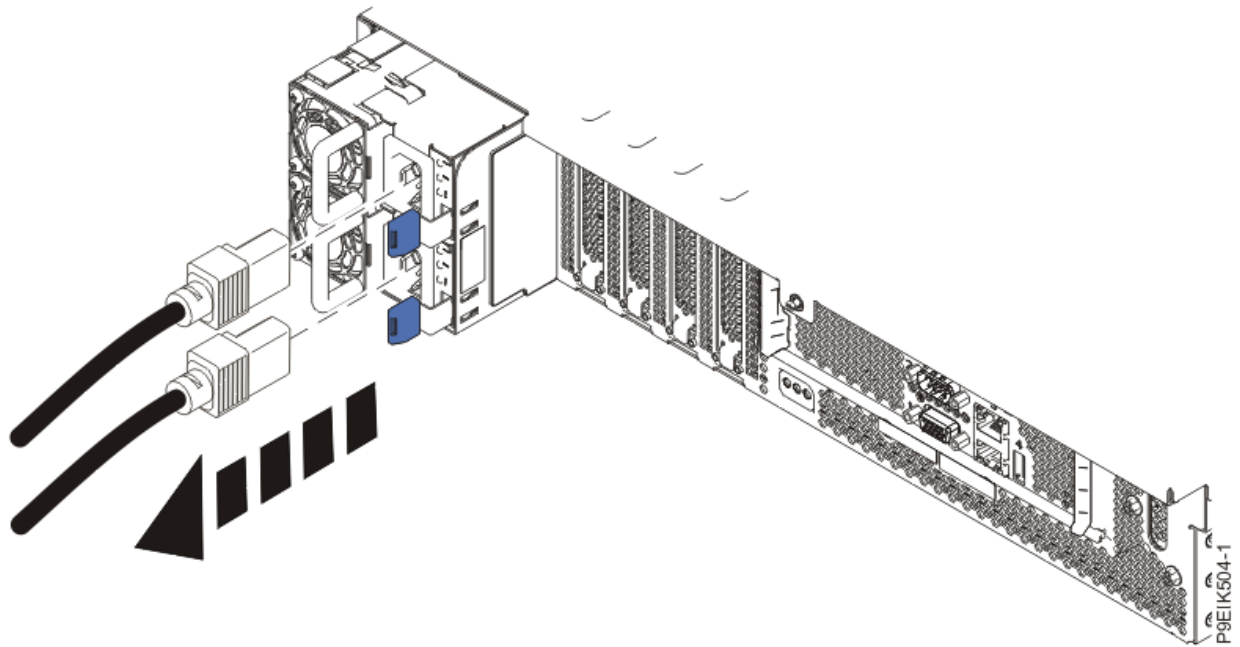


Figure 37. Removing the power cords from the system

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 38 on page 51](#).

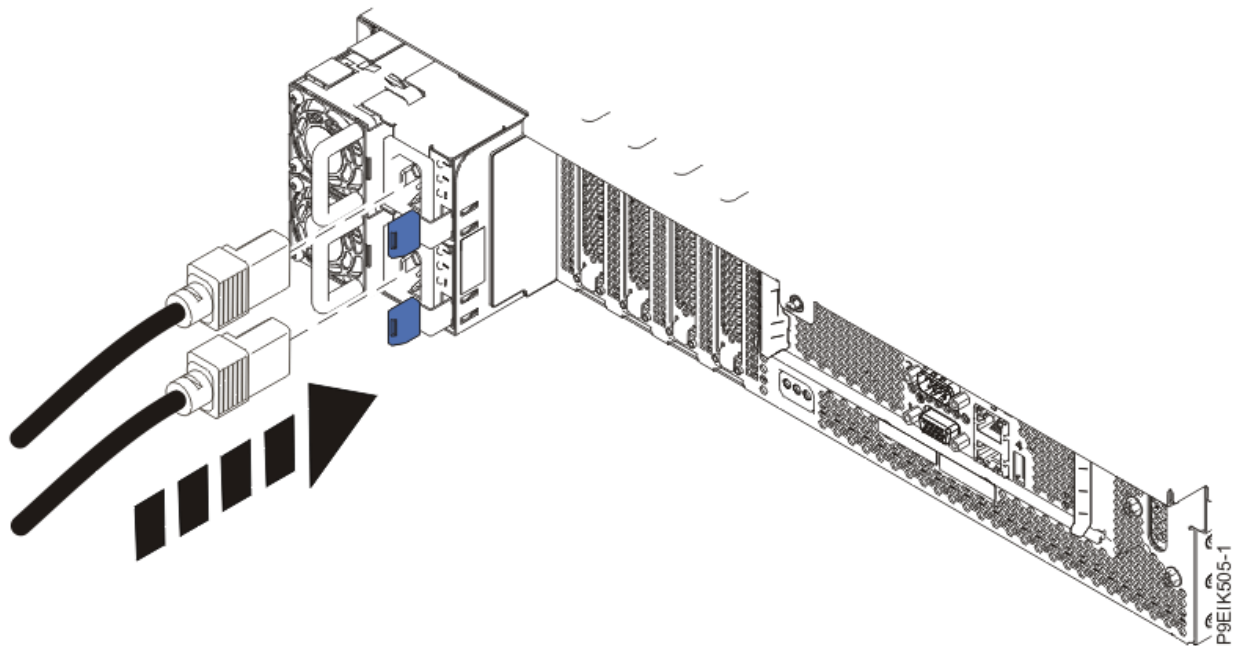


Figure 38. Connecting the power cords to the system

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 39 on page 52 and Figure 40 on page 53 shows how to loop the cables.

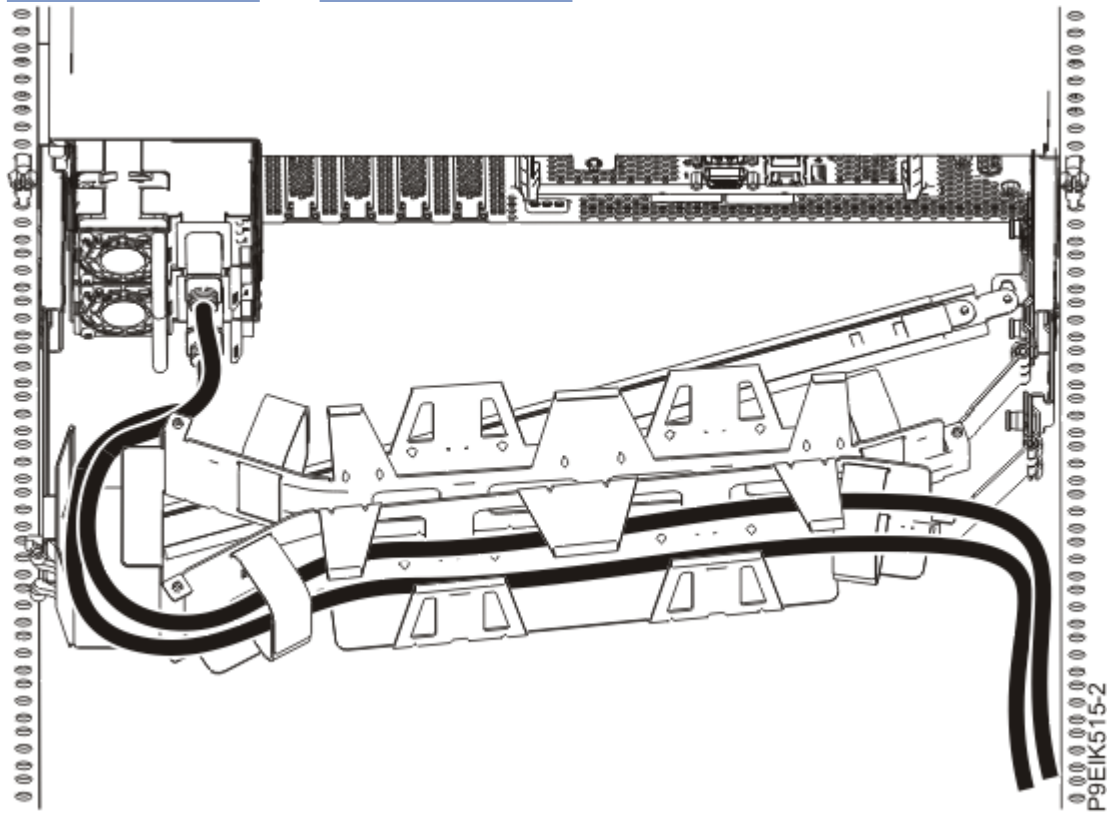


Figure 39. Routing the power cord loop in the cable management arm

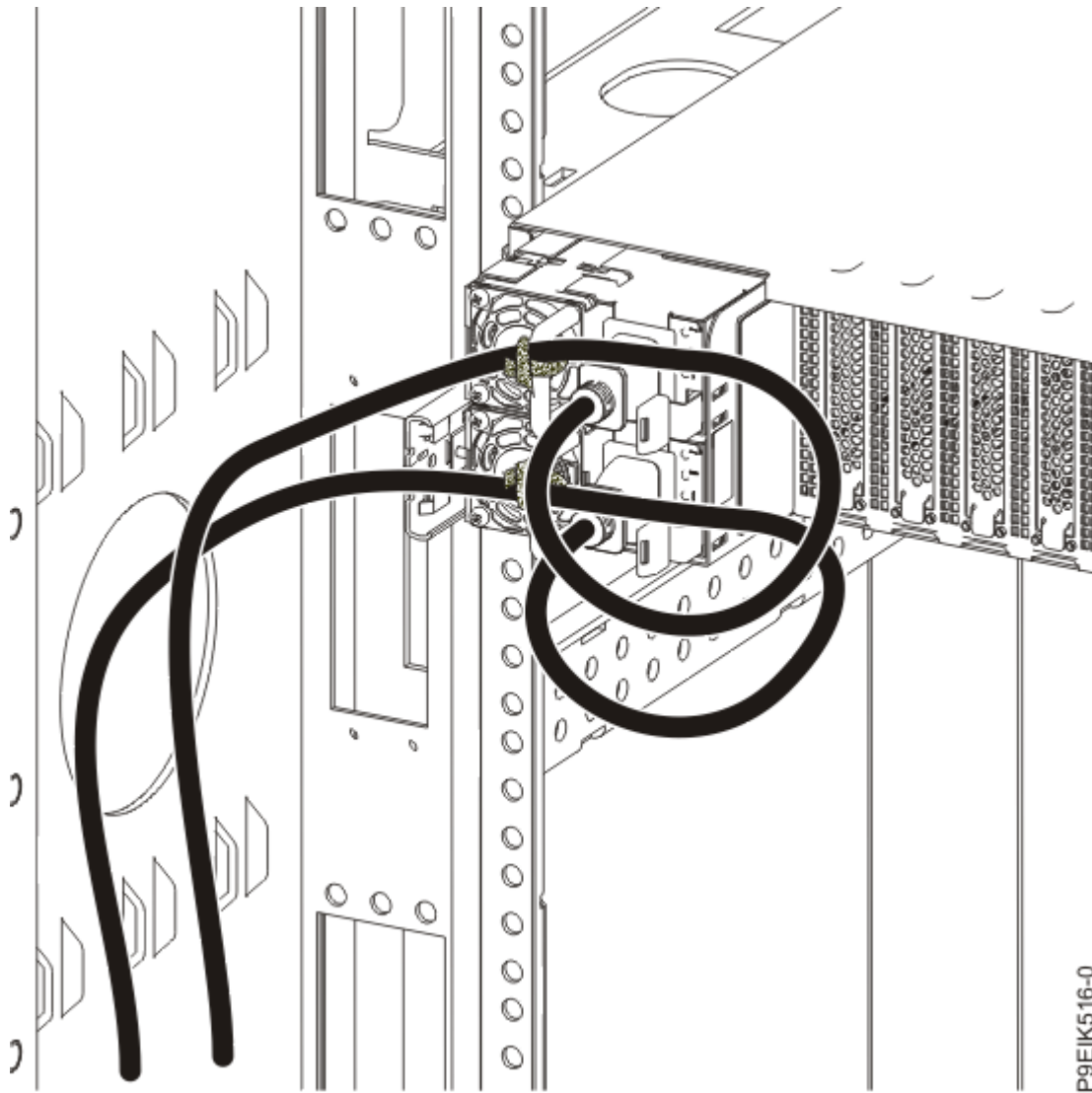


Figure 40. Power cord loop with sidewall routing

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 32.](#)

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 41 on page 55.](#)

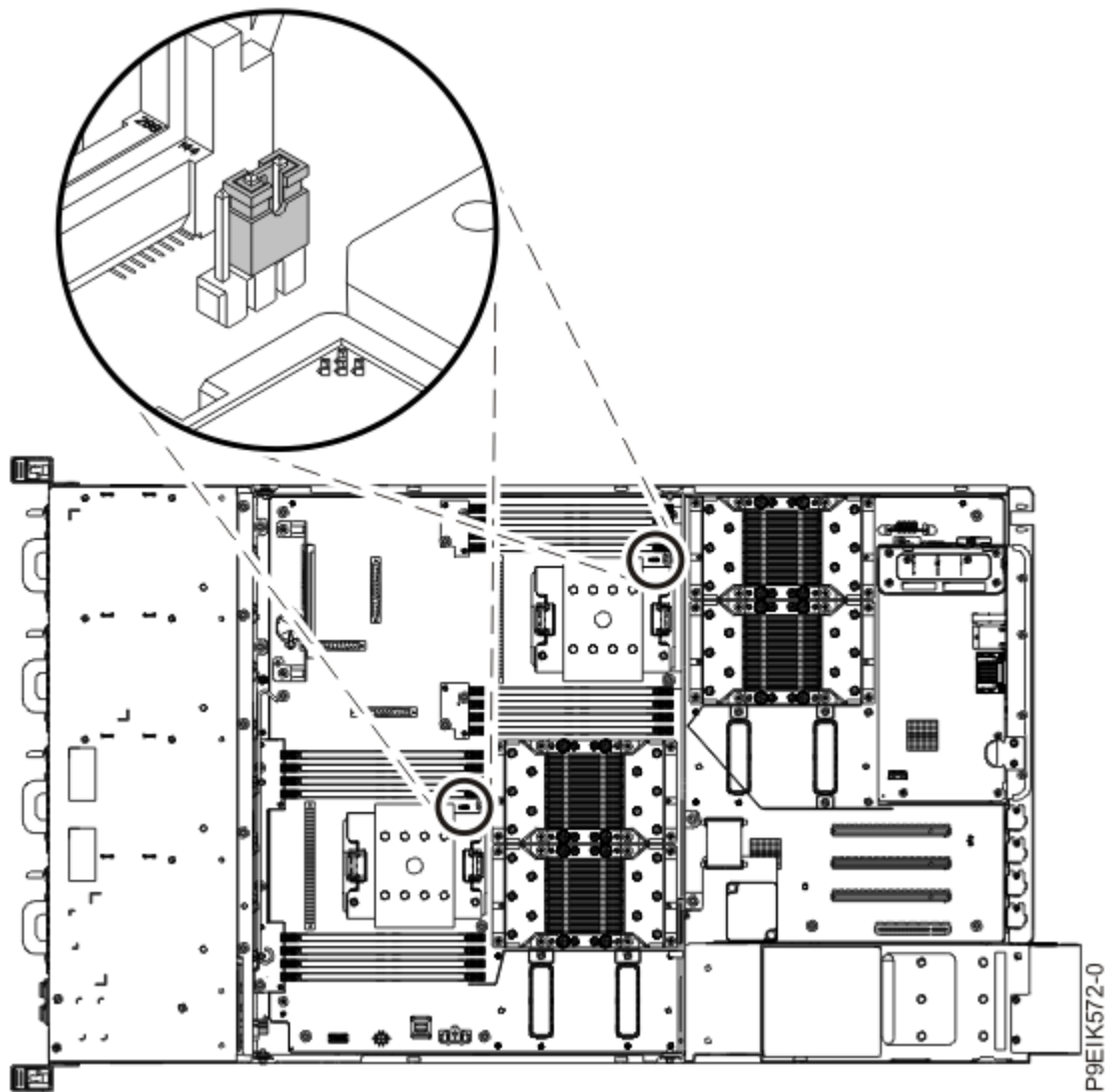


Figure 41. System processor jumper positions

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 36.
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 32.
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.

- 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.

11. Remove the air baffles.

12. Remove the system processor jumpers from the system backplane as shown in [Figure 42 on page 56](#).

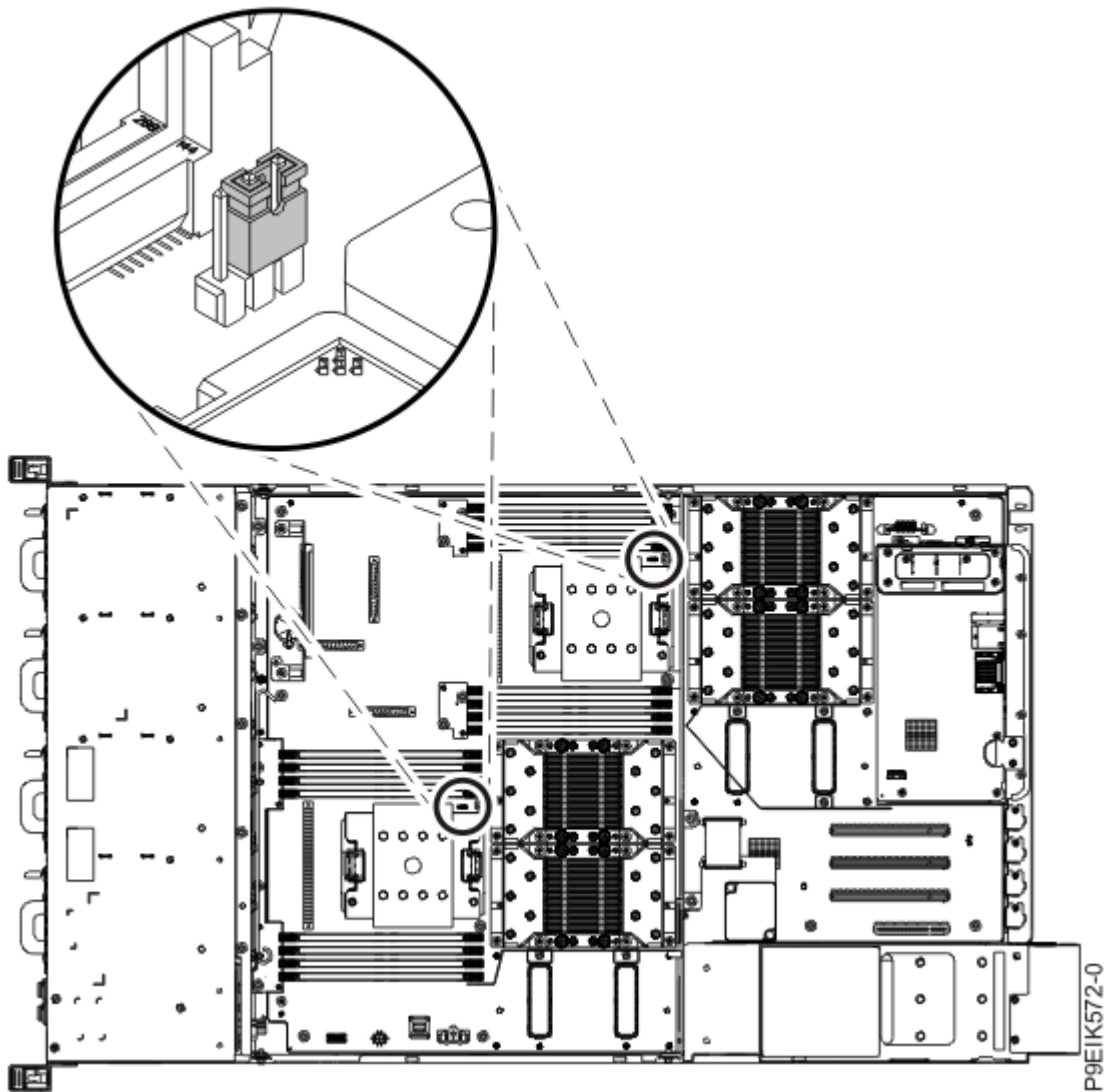


Figure 42. System processor jumper positions

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 36](#).

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Accessibility features for IBM Power Systems servers

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

Overview

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

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

The IBM Power Systems servers use the latest W3C Standard, [WAI-ARIA 1.0 \(www.w3.org/TR/wai-aria/\)](http://www.w3.org/TR/wai-aria/), to ensure compliance with [US Section 508 \(www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards\)](http://www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards) and [Web Content Accessibility Guidelines \(WCAG\) 2.0 \(www.w3.org/TR/WCAG20/\)](http://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 section of the IBM Knowledge Center help \(www.ibm.com/support/knowledgecenter/doc/kc_help.html#accessibility\)](http://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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CAN ICES-3 (A)/NMB-3(A)

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

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

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

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EN 55032 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

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

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

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.

New Orchard Road
Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
IBM Deutschland GmbH
Technical Relations Europe, Abteilung M456
IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 (0) 800 225 5426
email: HalloIBM@de.ibm.com

Generelle Informationen:

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

Japan Electronics and Information Technology Industries Association (JEITA) Notice

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

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

高調波電流規格 JIS C 61000-3-2 適合品

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

高調波電流規格 JIS C 61000-3-2 準用品

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

- 回路分類 : 6 (単相、PFC回路付)
- 換算係数 : 0

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

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VCCI-A

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People's Republic of China Notice

声 明

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

Russia Notice

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

Taiwan Notice

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IBM Taiwan Contact Information:

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

United States Federal Communications Commission (FCC) Notice

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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM-authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors

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

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

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

Class B Notices

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

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

Canada Notice

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

European Community and Morocco Notice

This product is in conformity with the protection requirements of Directive 2014/30/EU of the European Parliament and of the Council on the harmonization of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

German Notice

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

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

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Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

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

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

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road

Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
IBM Deutschland GmbH
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IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 (0) 800 225 5426
email: HalloIBM@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55032 Klasse B

Japan Electronics and Information Technology Industries Association (JEITA) Notice

(一社) 電子情報技術産業協会 高調波電流抑制対策実施
要領に基づく定格入力電力値 : Knowledge Centerの各製品の
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This statement applies to products less than or equal to 20 A per phase.

高調波電流規格 JIS C 61000-3-2 適合品

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

高調波電流規格 JIS C 61000-3-2 準用品

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

- 回路分類 : 6 (単相、PFC回路付)
- 換算係数 : 0

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

高調波電流規格 JIS C 61000-3-2 準用品

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

- 回路分類 : 5 (3相、PFC回路付)
- 換算係数 : 0

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VCCI-B

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台北市松仁路7號3樓
電話：0800-016-888

United States Federal Communications Commission (FCC) Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM-authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM-authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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

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

Responsible Party:

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

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