

Power Systems

*Servicing the 7063-CR1 Hardware
Management Console system*



Note

Before using this information and the product it supports, read the information in [“Safety notices” on page v](#), [“Notices” on page 101](#), 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)



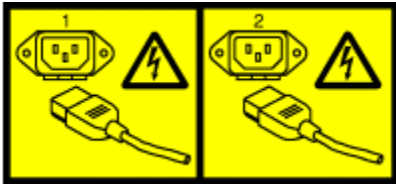
DANGER: Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack-mounted devices and do not use them to stabilize your body position (for example, when working from a ladder). Stability hazard:

- 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

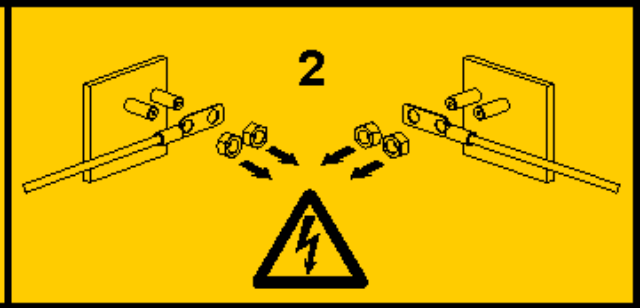
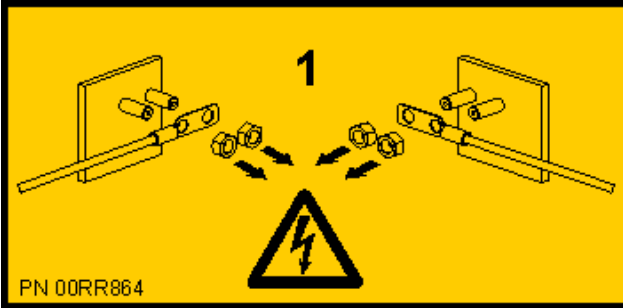


or



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.

Removing and replacing parts in the 7063-CR1

Use these procedures to remove and replace failing parts in the IBM 7063-CR1 Hardware Management Console. These parts are referred to as field replaceable units (FRUs).

Note: See the [International Information Bulletin for Customers - Installation of IBM Machines](http://www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss) (<http://www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss>). This bulletin (Publication number SC27-6601-00) provides a list of the key IBM system installation activities and those activities that might be billable activities.

Before you begin a replacement, complete these tasks:

1. If you are completing a replacement procedure that might put your data at risk, ensure, if possible, that you have a current backup of your system or logical partition (including operating systems, licensed programs, and data).
2. Review the installation or replacement procedure for the feature or part.
3. 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, or open or close a latch.
4. Ensure that you have access to a medium, flat-blade screwdriver, and a Phillips screwdriver.
5. If parts are incorrect, missing, or visibly damaged, contact the provider of the part or your next level of support.



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)



Attention:

Failure to follow the step-by-step sequence for FRU removal or installation might result in FRU or system damage.

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

For safety and airflow purposes and thermal performance, if you remove parts from the system, you must ensure that PCIe tail-stock fillers are present.

Use the following precautions whenever you handle electronic components or cables.

- The electrostatic discharge (ESD) kit and the ESD wrist strap must be used when you handle logic cards, single chip modules (SCM), multichip modules (MCM), electronic boards, and disk drives.
- Keep all electronic components in the shipping container or envelope until you are ready to install them.
- If you remove and then reinstall an electronic component, temporarily place the component on an ESD pad or blanket.

Removing and replacing a disk drive in the 7063-CR1

Learn how to remove and replace a disk drive in the IBM 7063-CR1 Hardware Management Console system.

About this task

The system has two physical disk drives. These drives are configured as a single RAID1 virtual drive, which has an ID of 0. If one of these disks has to be replaced, or reinstalled, use the [“mvCLI commands” on page 86](#) to check the status of the drives, the IDs of the drives, and to rebuild the array. The disk drive can be replaced with power on, and the HMC will continue to function normally.

Removing a disk drive from the 7063-CR1 system

Learn how to remove a disk drive from the IBM 7063-CR1 Hardware Management Console systems.

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. Locate the disk drive to replace.

a) Install the **mvcli** utility if it is not already installed.

For more information, see [“mvCLI commands” on page 86](#).

Note: It might not be obvious which drive you need to replace. You can use the following methods to identify the active or good drive.

Identifying the active drive by using visual inspection

If the HMC is running, complete the following steps:

- You can utilize visual inspection by looking at the HDD LED activity on the drives to identify which of the two drives the HMC is running from.
- The hard disk drive with the most LED activity is the active or good drive. The drive to replace is the one with little or no activity on the HDD LED.
- Record the physical position of that drive, the left slot is slot 0 (pd 0) and the slot to the right is slot 1 (pd 1).

If the HMC is not running, complete the following steps:

- i) Start the HMC and attempt a normal startup. If the HMC starts to a running OS and is working correctly, then you can use the visual inspection method ([Identifying the active drive by using visual inspection](#)).
- ii) If the HMC does not start, then remove one of the drives and try starting the HMC again. If the HMC starts and is operating normally, then the removed drive is the drive to replace. Make a note of the slot location of the bad drive.
- iii) If the HMC does not start, then reinsert the drive that was previously removed to its original slot, and then remove the other drive. If the HMC starts and is operating normally, then the removed drive is the drive to replace. Make a note of the slot location of the bad drive.
- iv) If neither drive starts the HMC successfully, then you can install the **mvcli** utility (if it is not already installed). For more information, see [“mvCLI commands” on page 86](#).

Note: The **mvcli** utility targets adapter ID 0 by default. However, some 7063-CR1 systems do not show any disks under the adapter ID 0 and it will be shown under the adapter ID 1. To switch to adapter ID 1, run the following command on the **mvcli** utility:

```
adapter -i 1
```

v) Run the following **mvcli** command:

```
info -o pd
```

- vi) Record the model, serial number, and position of the disk drive to replace from the returned information. It is possible that the failed disk drive might not return any information. If only one of the working disk drives returns information, then the other drive is the failed drive.
- vii) If you still cannot identify a failed drive, then you can replace both drives.

b) If visual inspection is not possible, run the following **mvcli** command:

c) If only one drive is listed, then the missing drive is to be replaced.

However, if both drives are listed, then it is strongly recommended that you follow the visual inspection method ([Identifying the active drive by using visual inspection](#)) to identify the failed drive.

3. Using the position information, unlock the drive bay handle **(B)** by pushing in the handle release latch **(A)** as shown in Figure 1 on page 4. Pull out the drive bay handle **(B)** towards you. If the disk drive bay handle is not all the way out, the disk drive cannot slide out of the system. Remove the disk drive from the system, supporting the bottom of the disk drive.

If the drive does not match the model and serial number you wrote down in the previous step, reinstall the disk drive in the drive bay you removed it from, and check the other drive bay.

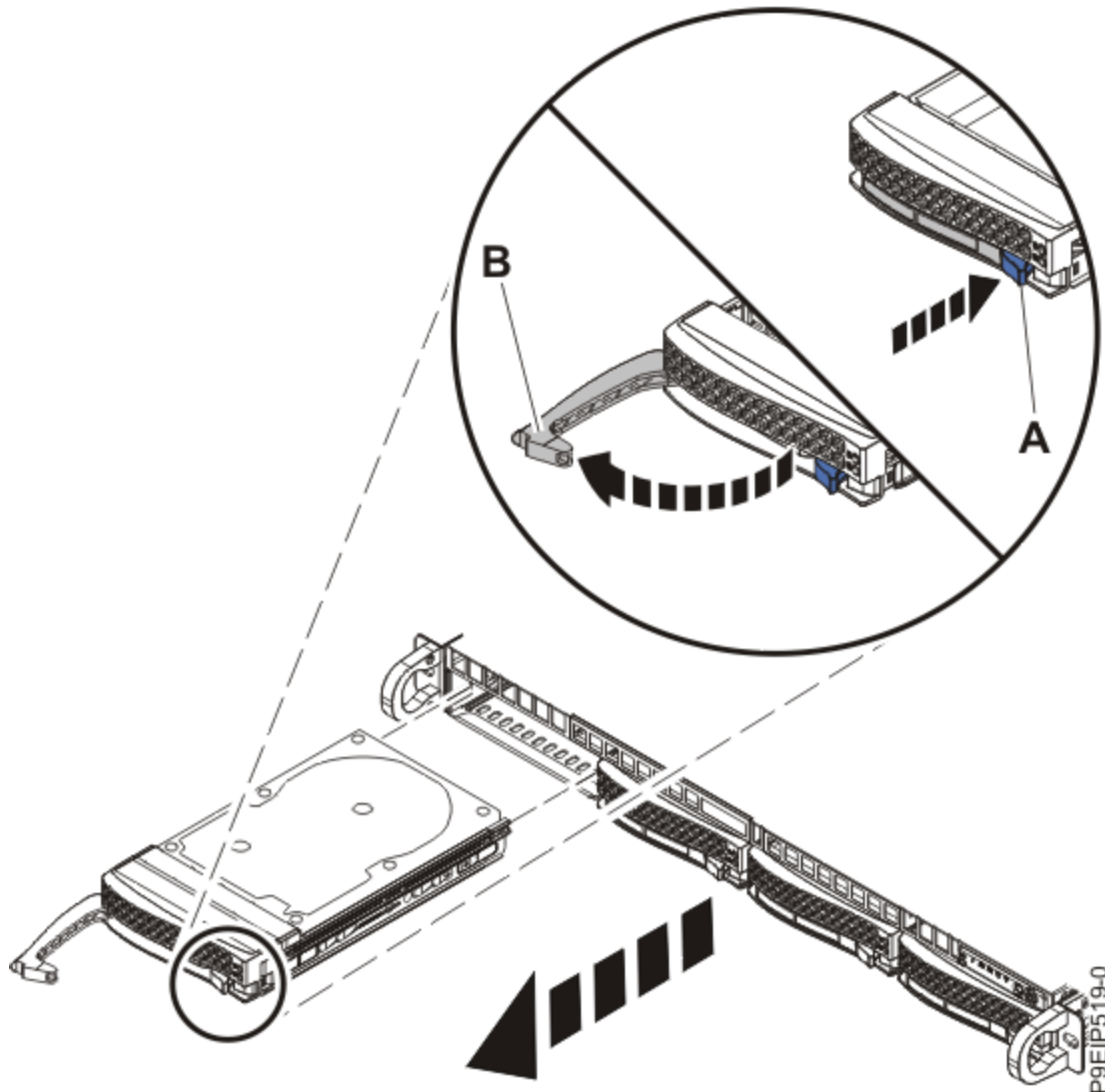


Figure 1. Removing a disk drive

4. Support the bottom of the disk drive as you slide it out of the system. Do not hold the disk drive by the handle.
5. To remove more than one disk drive, repeat steps “3” on page 4 though “4” on page 4 in this procedure until all disk drives are removed.
6. Remove a disk drive from the drive tray.

Unfasten the disk drive from the sides of the drive tray by removing the screws (two or three screws on each side), as shown in [Figure 2 on page 5](#).

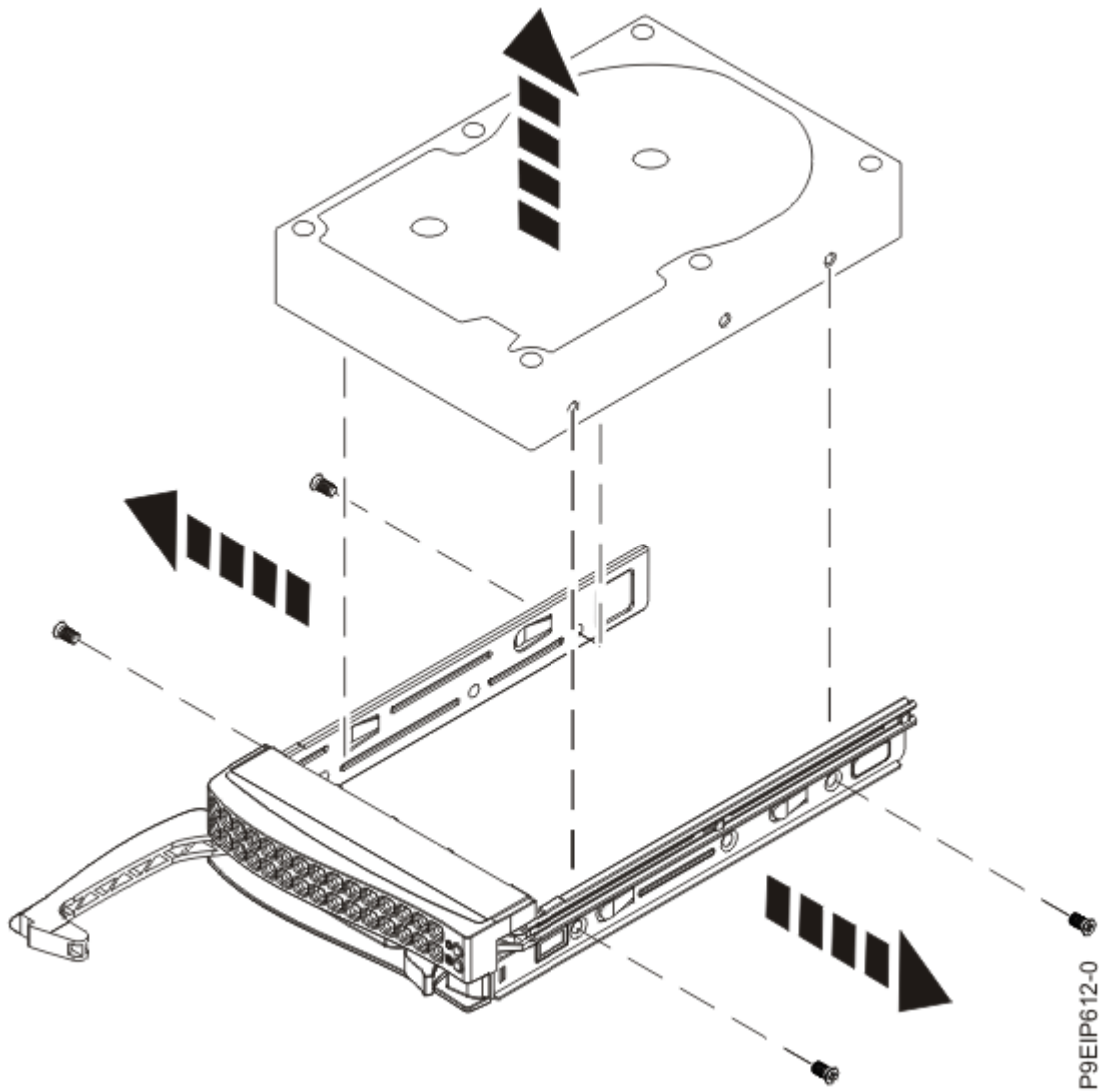


Figure 2. Removing the 3.5-inch disk drive from the drive tray

Replacing a disk drive in the 7063-CR1 system

Learn how to replace a disk drive in the IBM 7063-CR1 Hardware Management Console systems.

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. Install a disk drive into the drive tray.

Orient the disk drive such that the connectors are pointing to the rear of the disk drive as shown in [Figure 3 on page 6](#). Fasten the disk drive to the sides of the drive tray with the screws (two or three screws on each side), depending on the number of threaded holes present on the drive. If the number of threaded holes is greater than the number of screws that are available, use the threaded holes that are closest to each end of the drive.

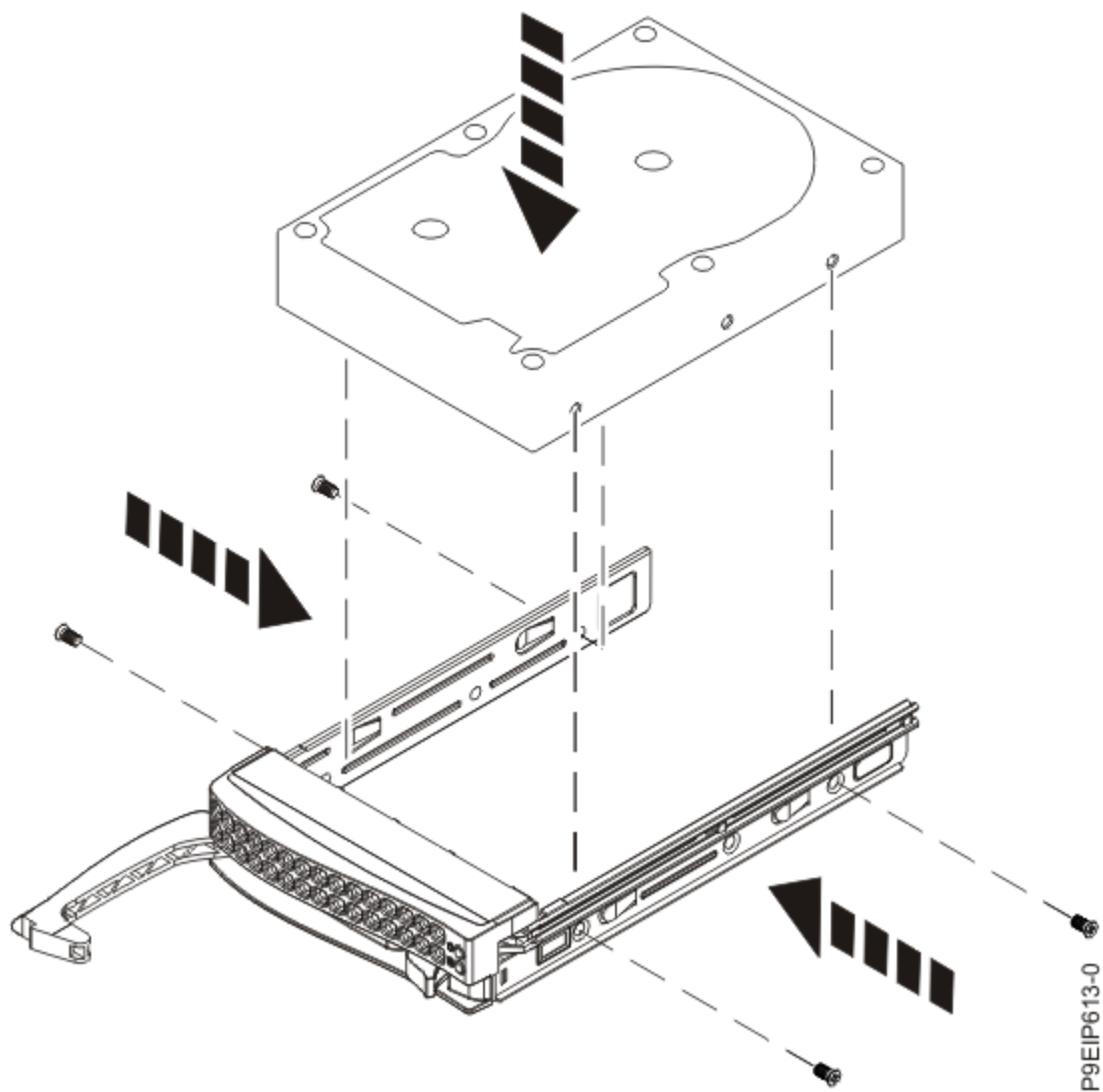


Figure 3. Mounting the 3.5-inch disk drive in the drive tray

3. Support the disk drive by the bottom as you position the disk drive, and insert it into the disk drive slot.

Important: Ensure that the disk drive is fully seated and is all the way into the system.

4. Lock the drive bay handle **(A)** by pushing in the handle release until it locks at **(B)** as shown in [Figure 4](#) on page 7.

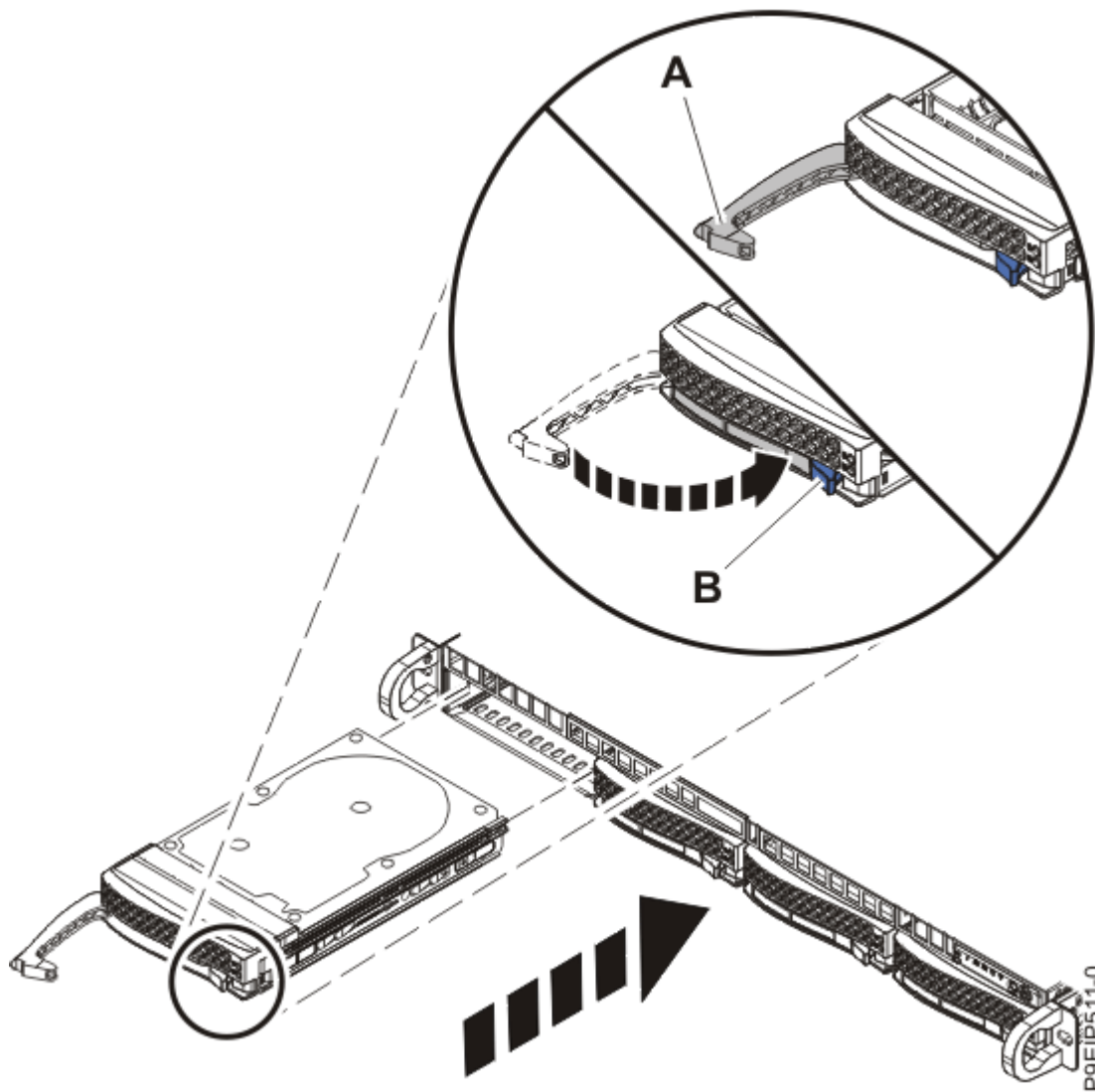


Figure 4. Disk drive lock detail

Note: The **mvcli** utility targets adapter ID 0 by default. However, some 7063-CR1 systems do not show any disks under the adapter ID 0 and it will be shown under the adapter ID 1. To switch to adapter ID 1, run the following command on the **mvcli** utility:

```
adapter -i 1
```

5. If both drives are being replaced, repeat steps from 1 to 4 for the second drive and continue with step “5.a” on page 7. Otherwise, go to step “6” on page 8.

- a) List the currently defined virtual disks by running the following command:

```
info -o vd
```

- b) Delete all existing virtual disks by running the following command:

```
delete -o vd -i 0
```

```
delete -o vd -i 1
```

- c) Recreate virtual disk 0. See [Creating the virtual disk on the 7063-CR1 system](#).

This ends the procedure.

6. If only one physical disk was replaced, initiate the rebuild operation manually on the virtual disk that was replaced.

a) To see if the rebuild operation has started automatically, run the following command from the **mvcli** command line:

```
info -o vd
```

If the rebuild operation has started, which is indicated by a line similar to the following:

```
BGA progress: rebuilding is 1% done
```

the procedure is complete and the HMC operating system can be started. The rebuild process continues in the background. If not, continue with the next step.

b) Verify that the newly installed drive is blank.

Run the following command:

```
info -o vd
```

Select one of the following options:

- If only one virtual disk is listed, go to step [“6.c” on page 8](#).
- If two virtual disks are listed, identify the one that contains the physical disk that was replaced by inspecting the output of `info -o vd` and observing the **PD Raid setup** line which lists the slot numbers contained in that virtual disk.
 - If the physical disk that was replaced shows as being part of virtual disk 0, run the following command:

```
delete -o vd -i 0
```

When asked "Are you sure you want to delete this virtual disk? (y or n)", answer "y".

- If the physical disk that was replaced shows as being part of virtual disk 1, run the following command:

```
delete -o vd -i 1
```

When asked "Are you sure you want to delete this virtual disk? (y or n)", answer "y".

Continue with step [“6.c” on page 8](#).

c) Start the virtual disk rebuild operation.

- If the virtual disk in the first bay was replaced, run the following command from the **mvcli** command line:

```
rebuild -a start -l <vd ID> -d 0
```

, where **vd ID** is the virtual disk that is identified in step [“6.b” on page 8](#).

- If the virtual disk in the second bay was replaced, run the following command from the **mvcli** command line:

```
rebuild -a start -l <vd ID> -d 1
```

, where **vd ID** is the virtual disk that is identified in step [“6.b” on page 8](#).

d) The rebuild operation can take several hours.

Check the status of the rebuild operation by running the following command from the **mvcli** command line:

```
info -o vd
```

If the status of the rebuild operation is in progress, the HMC operating system can be started and the rebuild process continues in the background.

If the status of the rebuild is **paused**, restart the rebuild operation by running the following command for a virtual disk in the first drive bay:

```
rebuild -a resume -l <vd ID> -d 1
```

, where **vd ID** is the virtual disk that is identified in step “6.b” on page 8.

Or by running the following command for a virtual disk in the second drive bay:

```
rebuild -a resume -l <vd ID> -d 0
```

, where **vd ID** is the virtual disk that is identified in step “6.b” on page 8.

e) Check the name of the virtual disk by running the following command:

```
info -o vd
```

If the name is not "HMC Disk" and shows one or more [D] (a letter D in enclosed brackets), correct the name by running the following command:

```
set -o vd -i <vd ID> -n "HMC Disk"
```

, where **vd ID** is the virtual disk that is identified in step “6.b” on page 8.

For example, if the name of the virtual disk 0 is "[D]HMC disk", run the following command:

```
set -o vd -i 0 -n "HMC Disk"
```

Removing and replacing the disk drive backplane in the 7063-CR1

Learn how to remove and replace the disk drive backplane in the IBM 7063-CR1 Hardware Management Console system.

About this task



Attention: The following procedures describe the removal and replacement of the disk drive backplane. Only an authorized service representative must remove or replace this part.

You can use a commercially available magnetic tip screwdriver to remove and replace the screws.

Removing the disk drive backplane from the 7063-CR1 system

Learn how to remove the disk drive backplane from the IBM 7063-CR1 Hardware Management Console system.

Before you begin

Power off the system and place it in the service position. For instructions, see “[Preparing the 7063-CR1 system to remove and replace internal parts](#)” on page 80.

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. Label and remove the drive signal cables **(A)**, the operator console cable **(B)**, and drive power cable **(C)** from the system backplane as shown in [Figure 5 on page 10](#).

Using your thumb, press the release latch on the connector to remove the cable.

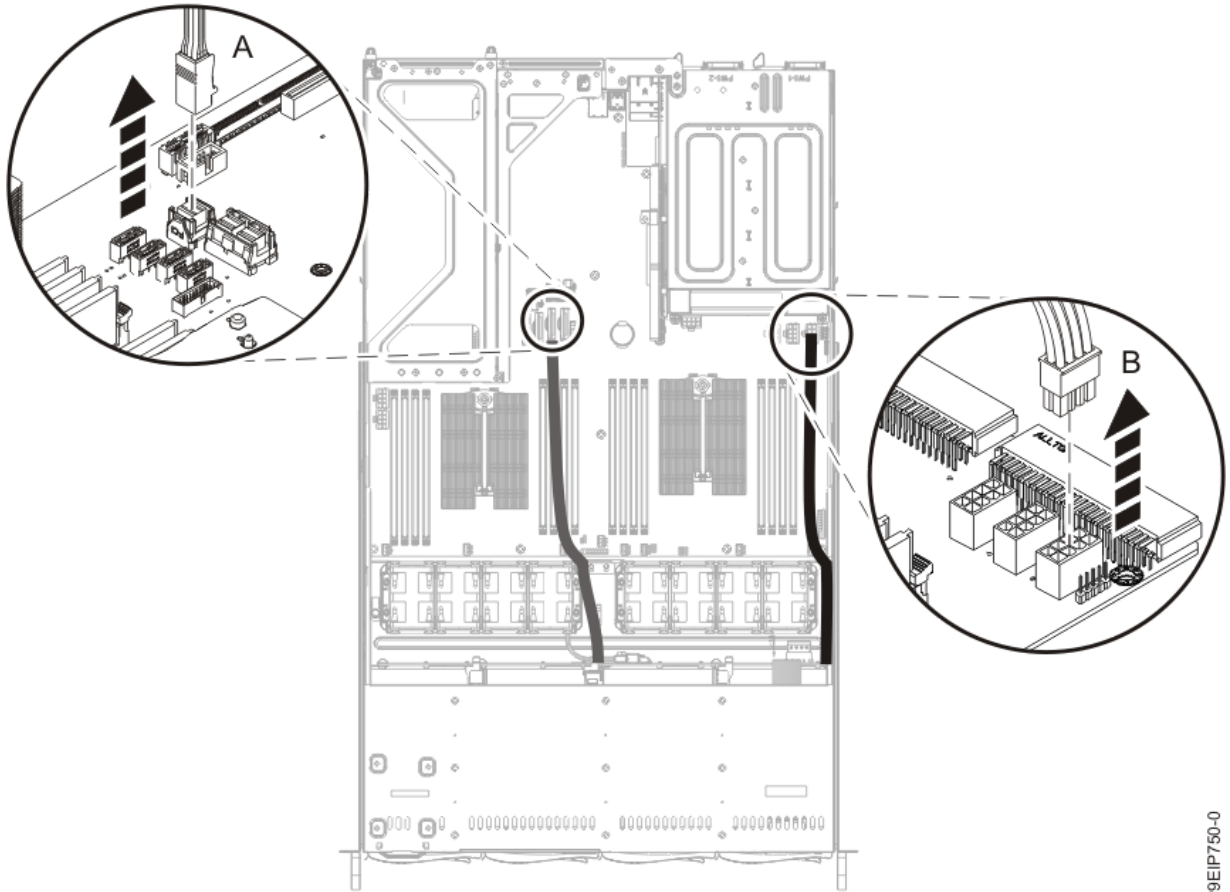


Figure 5. Disconnecting the drive signal and power cables

3. If needed, carefully cut the ties that secure the cables.

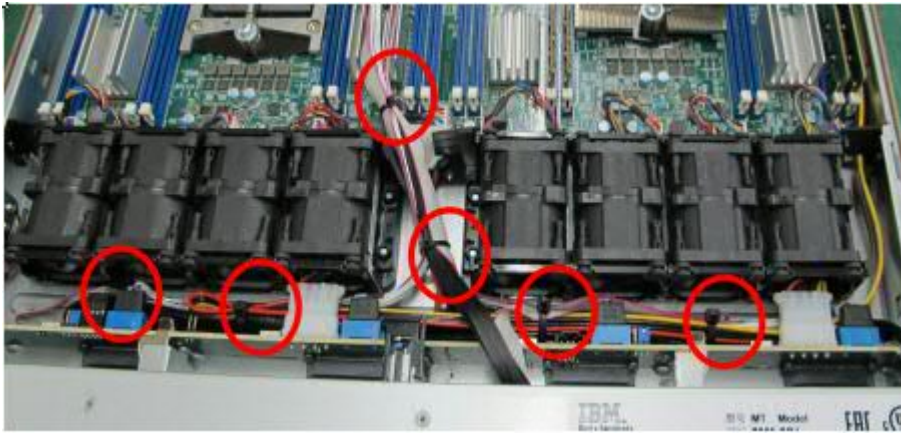


Figure 6. Cable tie locations

4. Move the fan housings out of the way as shown in [Figure 7 on page 11](#). They do not need to be disconnected.

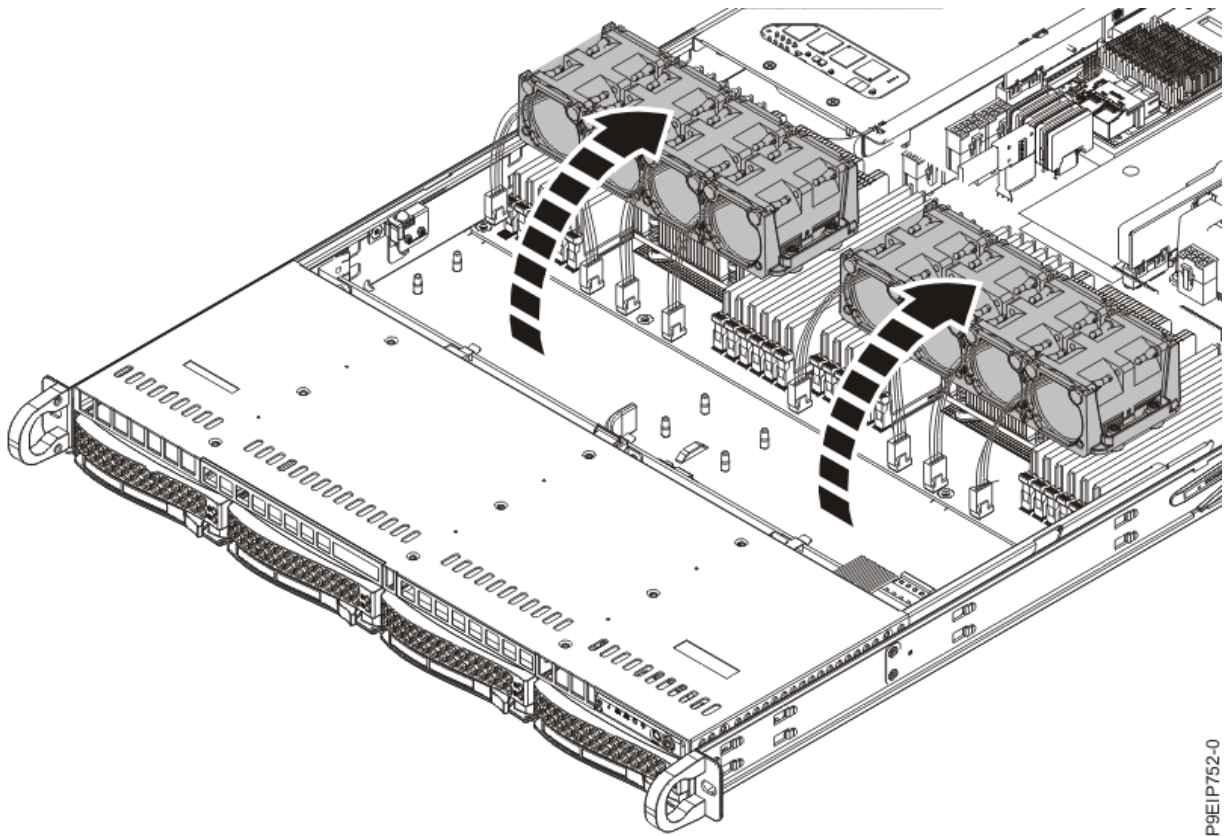
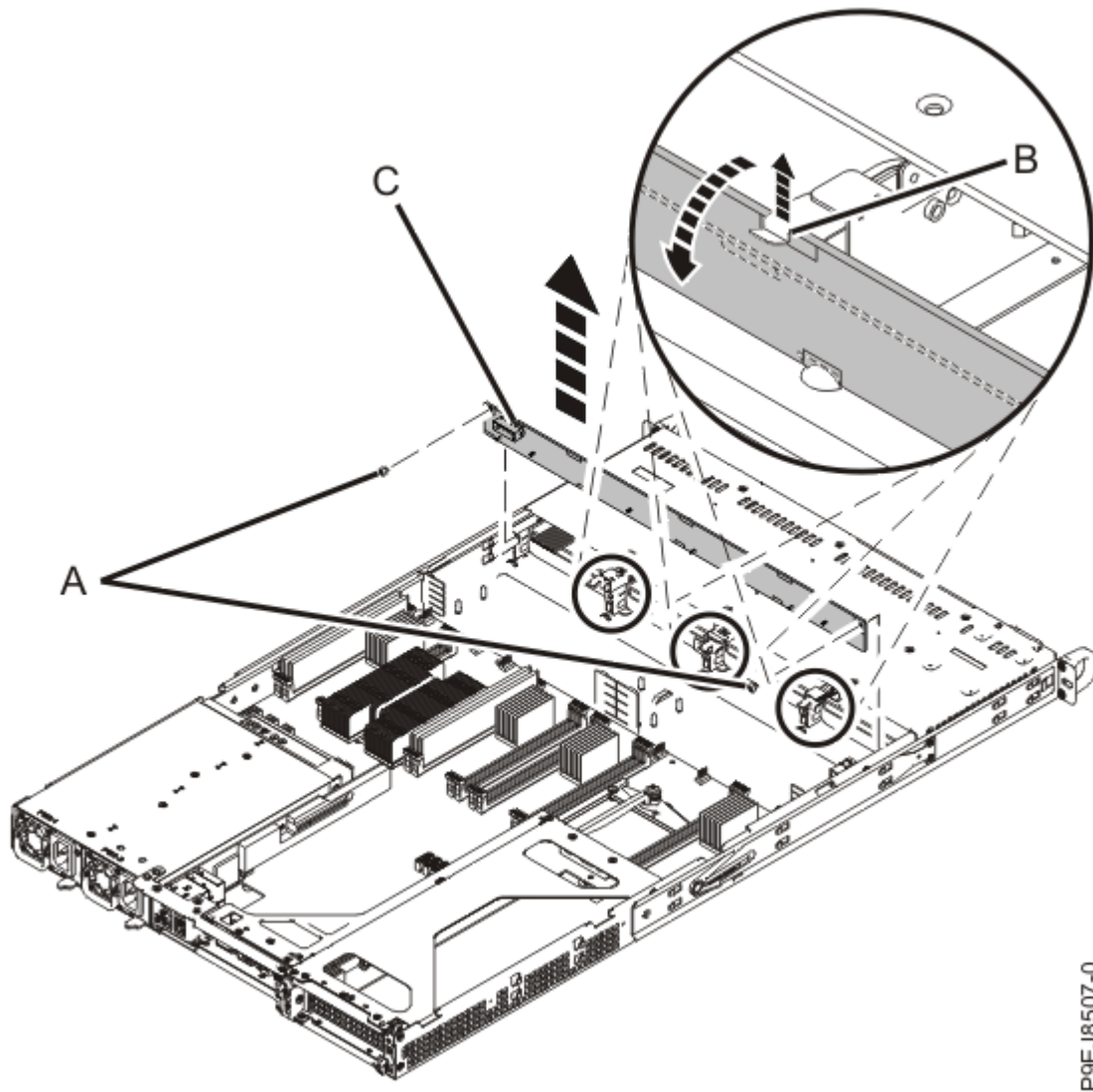


Figure 7. Moving the fans

5. Partially remove the front drive trays.
You do not need to completely remove the disk drives; pull them out about 2 cm (1 in.). For instructions, see [“Removing a disk drive from the 7063-CR1 system” on page 2](#).
6. Remove the disk drive backplane as shown in [Figure 8 on page 12](#).
 - a) Remove the two screws **(A)**, one from each side, from the top of the disk drive backplane.
 - b) Pivot the top of the disk drive backplane towards the rear of the system to free the disk drive backplane from the three retaining clips **(B)**.
 - c) Lift the disk drive backplane **(C)** from the system.

P9EIP752-0



P9EJ8507-0

Figure 8. Removing the disk drive backplane and screws

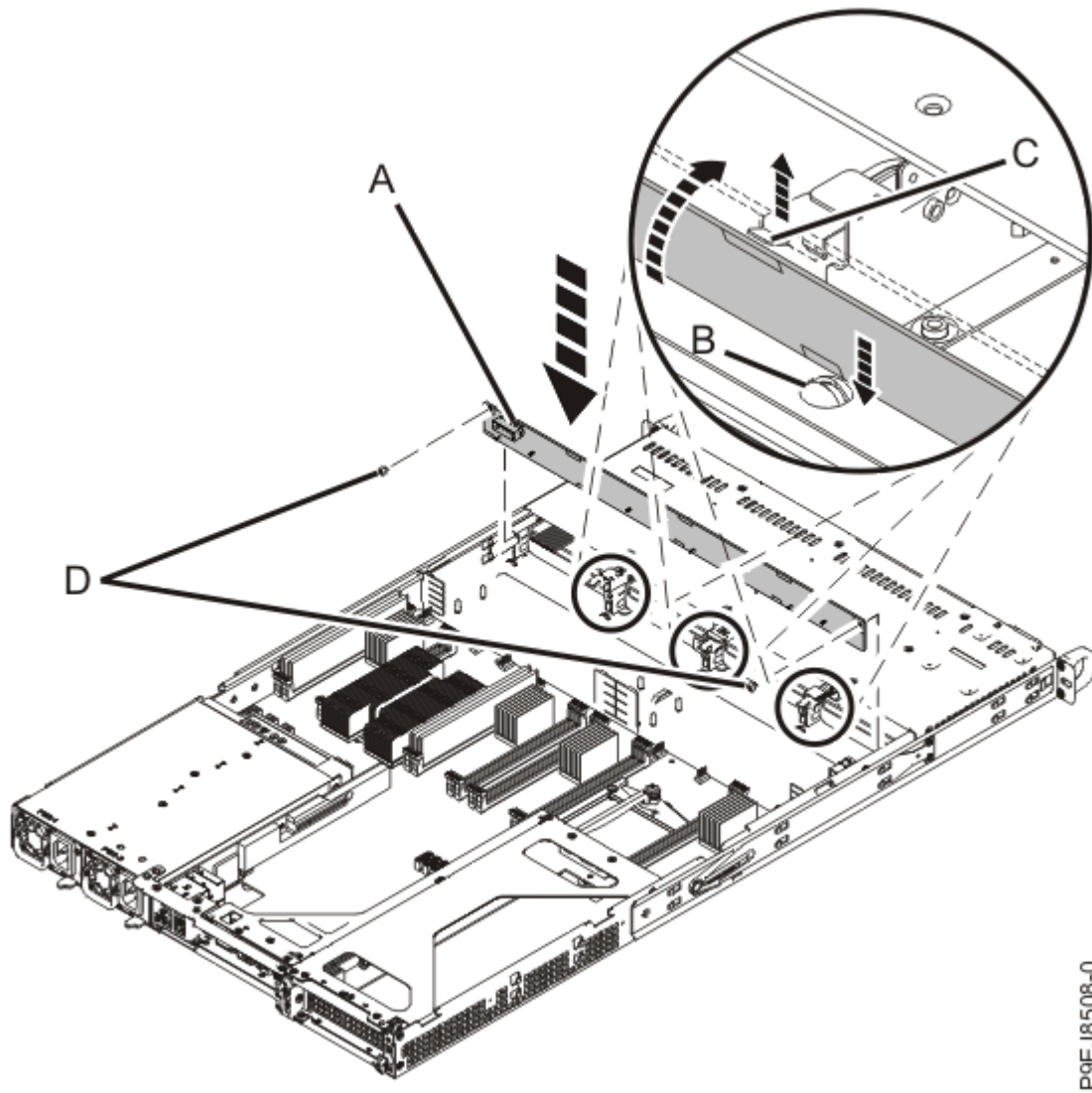
7. Place the disk drive backplane and cables on the table.

Replacing the disk drive backplane in the 7063-CR1 system

Learn how to replace the disk drive backplane in the IBM 7063-CR1 Hardware Management Console system.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the replacement disk drive backplane and cables from the protective plastic envelope.
3. Move the cables from the old disk drive backplane to the new card.
4. Replace the disk drive backplane as shown in [Figure 9 on page 13](#).
 - a) Insert the disk drive backplane **(A)** into the system using the alignment slots **(B)** in the chassis.
 - b) Snap the disk drive backplane into place so that it is held by the retaining clips **(C)**.
 - c) Replace the two screws **(D)**, one screw on each side, in the top of the disk drive backplane.



P9EJ8508-0

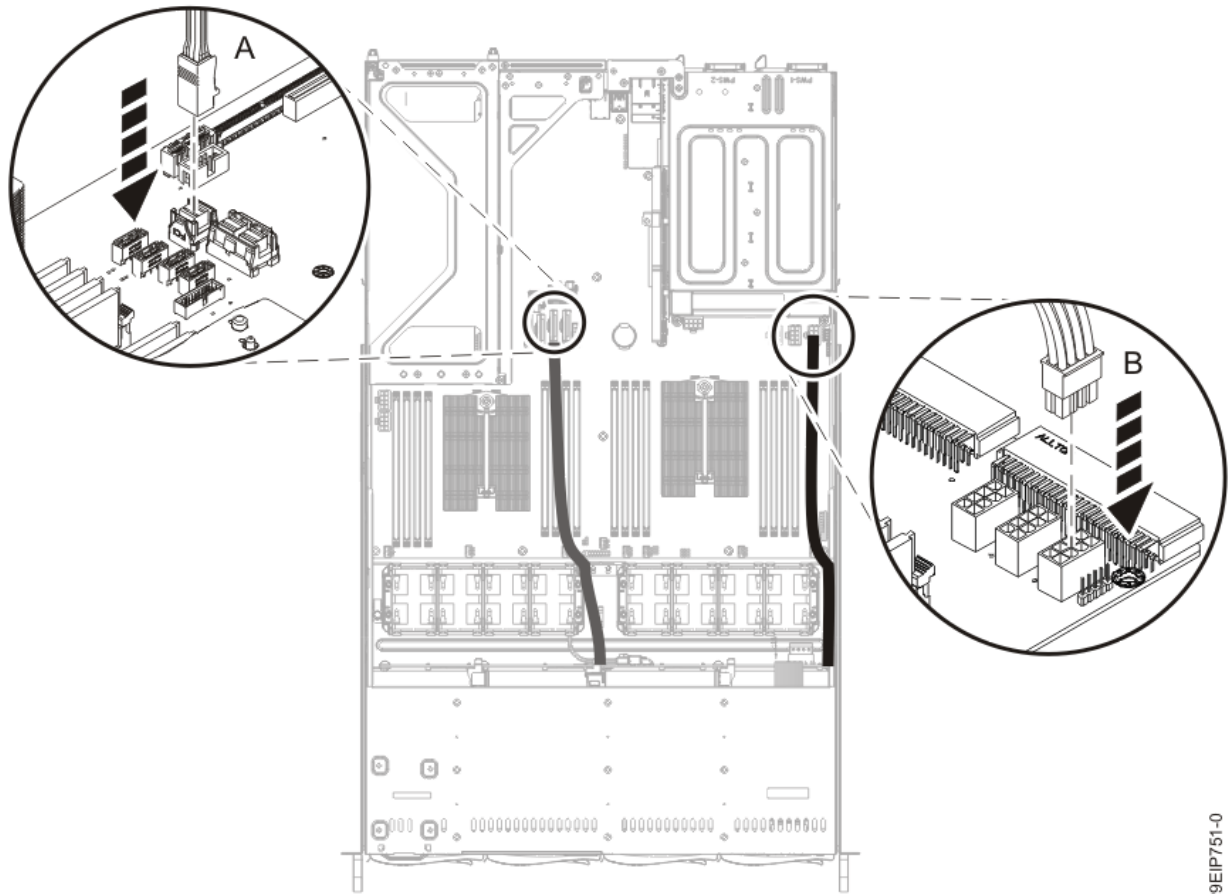
Figure 9. Installing the disk drive backplane

5. Fully insert the front drive trays.

For instructions, see [“Replacing a disk drive in the 7063-CR1 system”](#) on page 5.

6. Using the labels, replace the drive signal cables **(A)**, **(B)**, and drive power cable **(C)** into the system backplane as shown in [Figure 10](#) on page 14.

Ensure that the cable latch clip snaps into place on the connector.



P9EIP751-0

Figure 10. Connecting the drive signal and power cables

7. Replace the fans.

For instructions, see [“Replacing a fan in the 7063-CR1 system” on page 19.](#)

What to do next

Prepare the system for operation. For instructions, see [“Preparing the 7063-CR1 system for operation after removing and replacing internal parts” on page 83.](#)

Removing and replacing fans in the 7063-CR1

Learn how to remove and replace fans in the IBM 7063-CR1 Hardware Management Console system.

Removing a fan from the 7063-CR1 system

Learn how to remove fans from the IBM 7063-CR1 Hardware Management Console system.

Before you begin

(L008)





CAUTION: Hazardous moving parts nearby. (L008)

(L007)



CAUTION: A hot surface nearby. (L007)

Power off the system and place it in the service position. For instructions, see [“Preparing the 7063-CR1 system to remove and replace internal parts”](#) on page 80.

Procedure

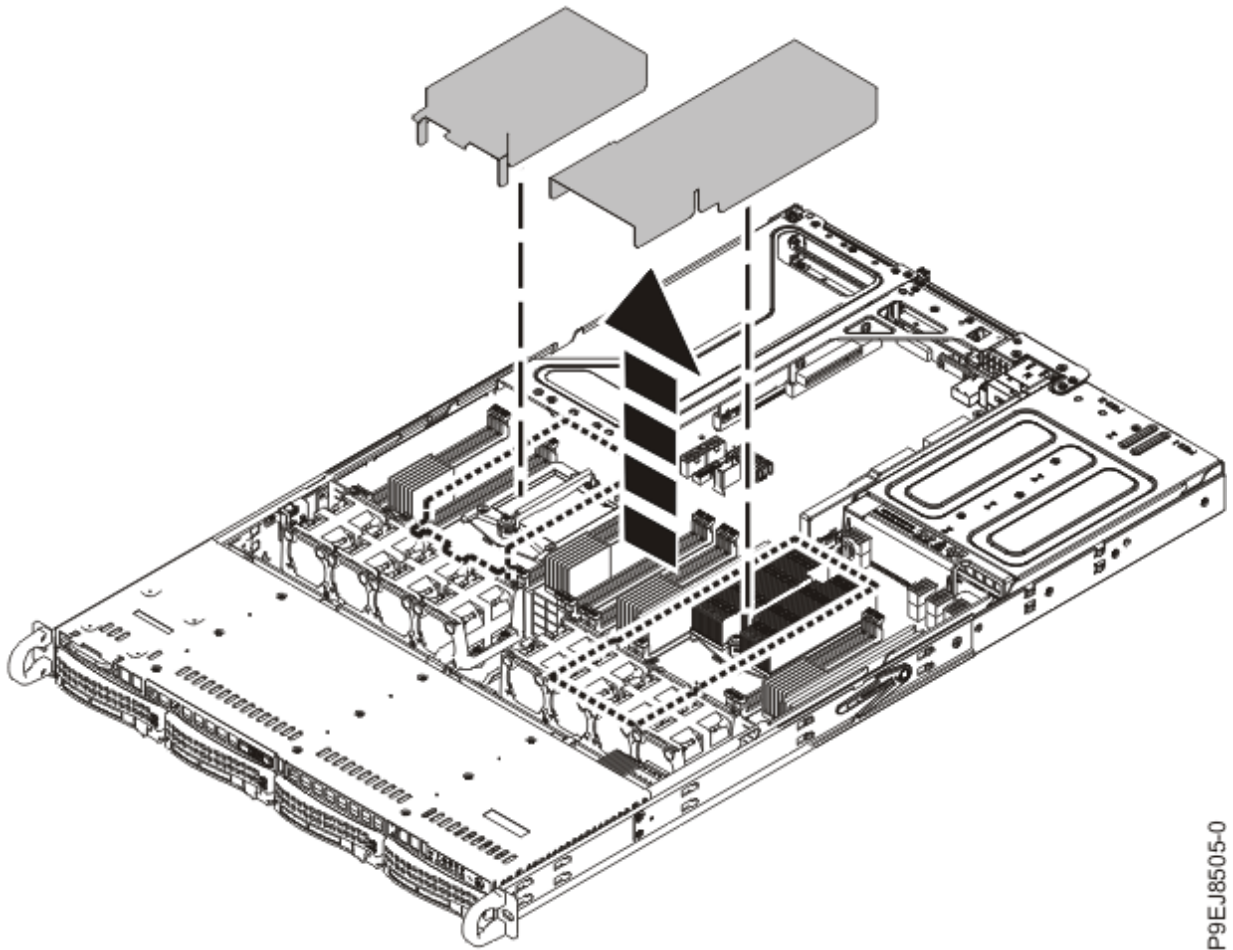
1. Attach the electrostatic discharge (ESD) wrist strap.

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:

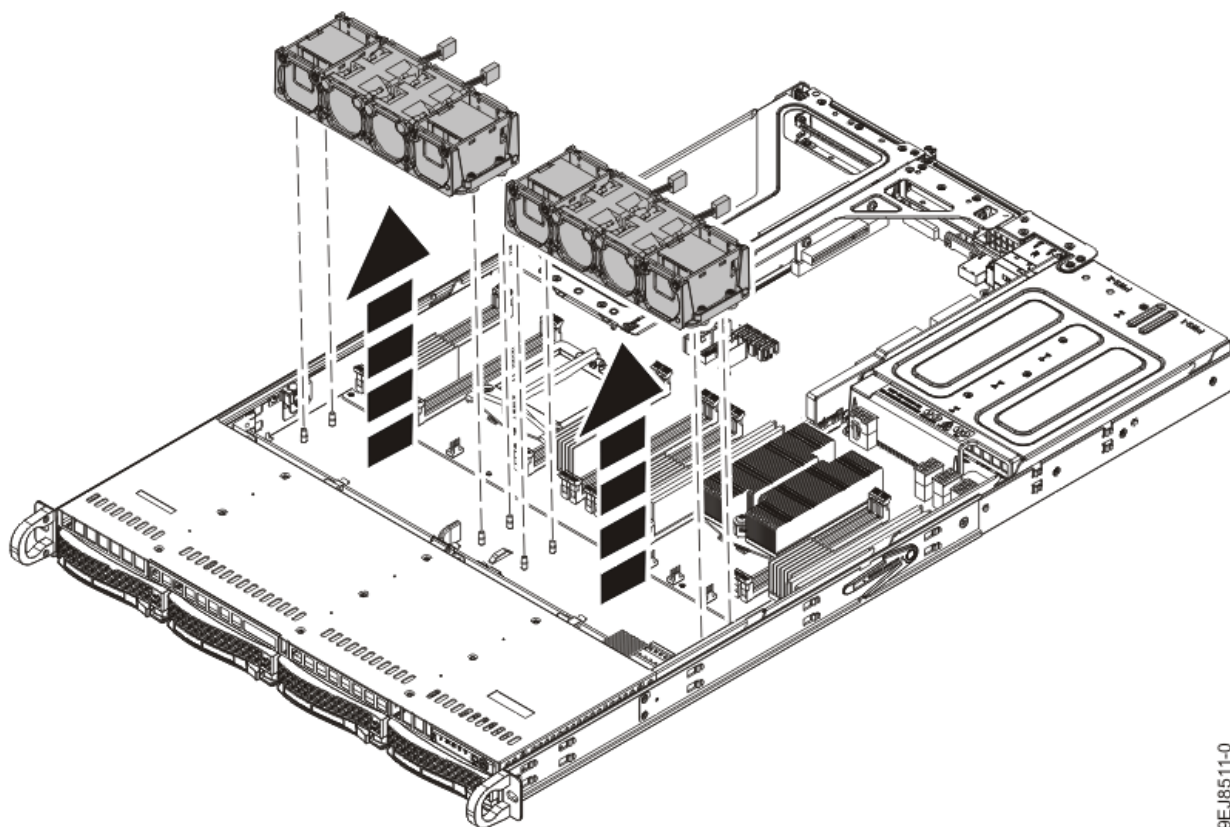
- Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
 - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD 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 processor air baffle as shown in [Figure 11 on page 16](#).
Carefully unsnap and lift the processor air baffle from the system.



P9EJ8505-0

Figure 11. Removing the system processor air baffle

3. Lift the holder for the fans as shown in [Figure 12 on page 17](#).
The fans are easier to remove when the holder is slightly lifted.



P9EJ8511-0

Figure 12. Removing the fan holder

4. Push the fan up from the holder as shown in [Figure 13](#) on page 18.

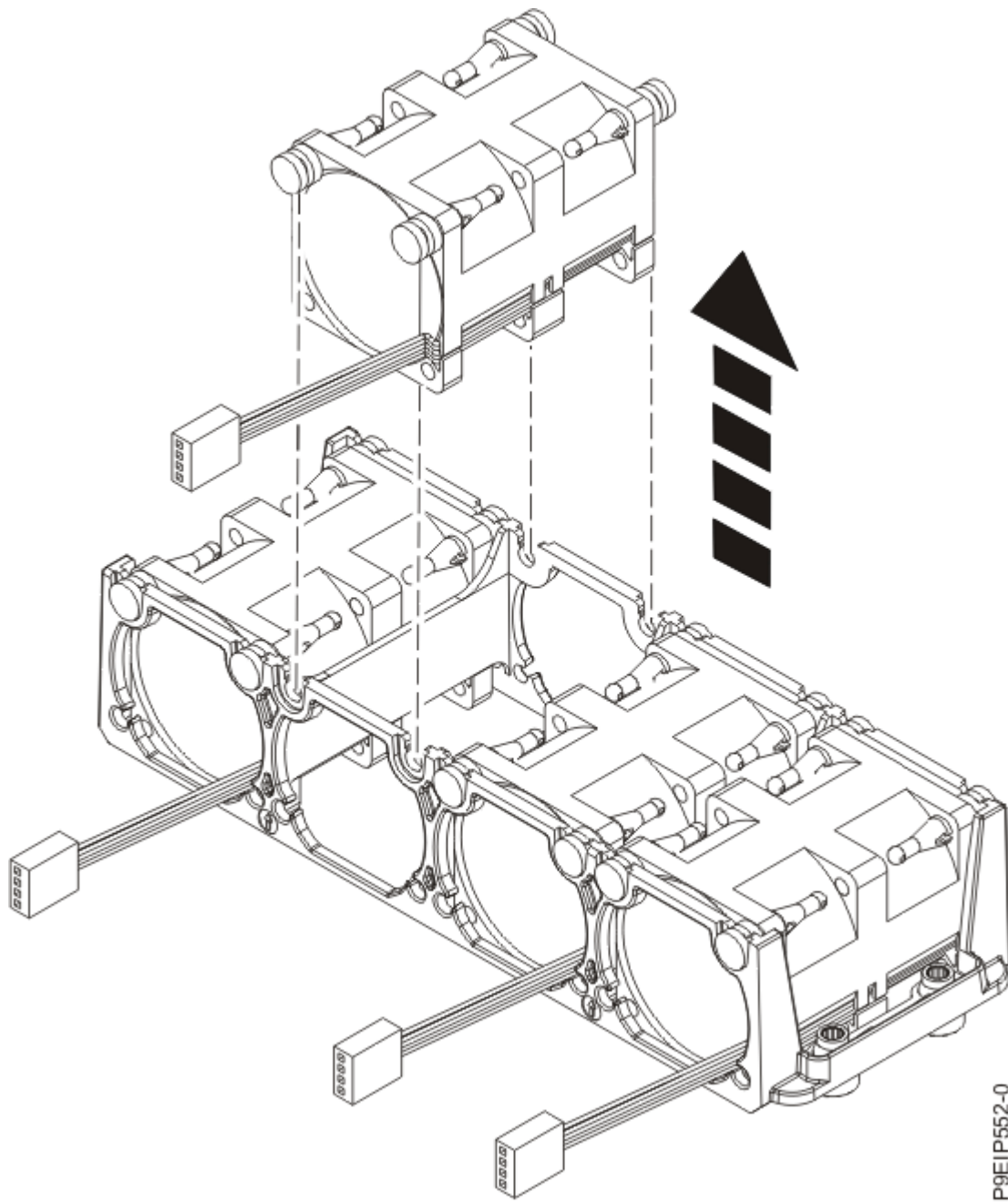


Figure 13. Removing a fan

5. To disconnect a fan cable, release the connector clip **(B)** and carefully pull up the connector **(A)** from the system backplane, as shown in [Figure 14](#) on page 19.

Do not pull on the wires. Feed the cable through the fan holder.

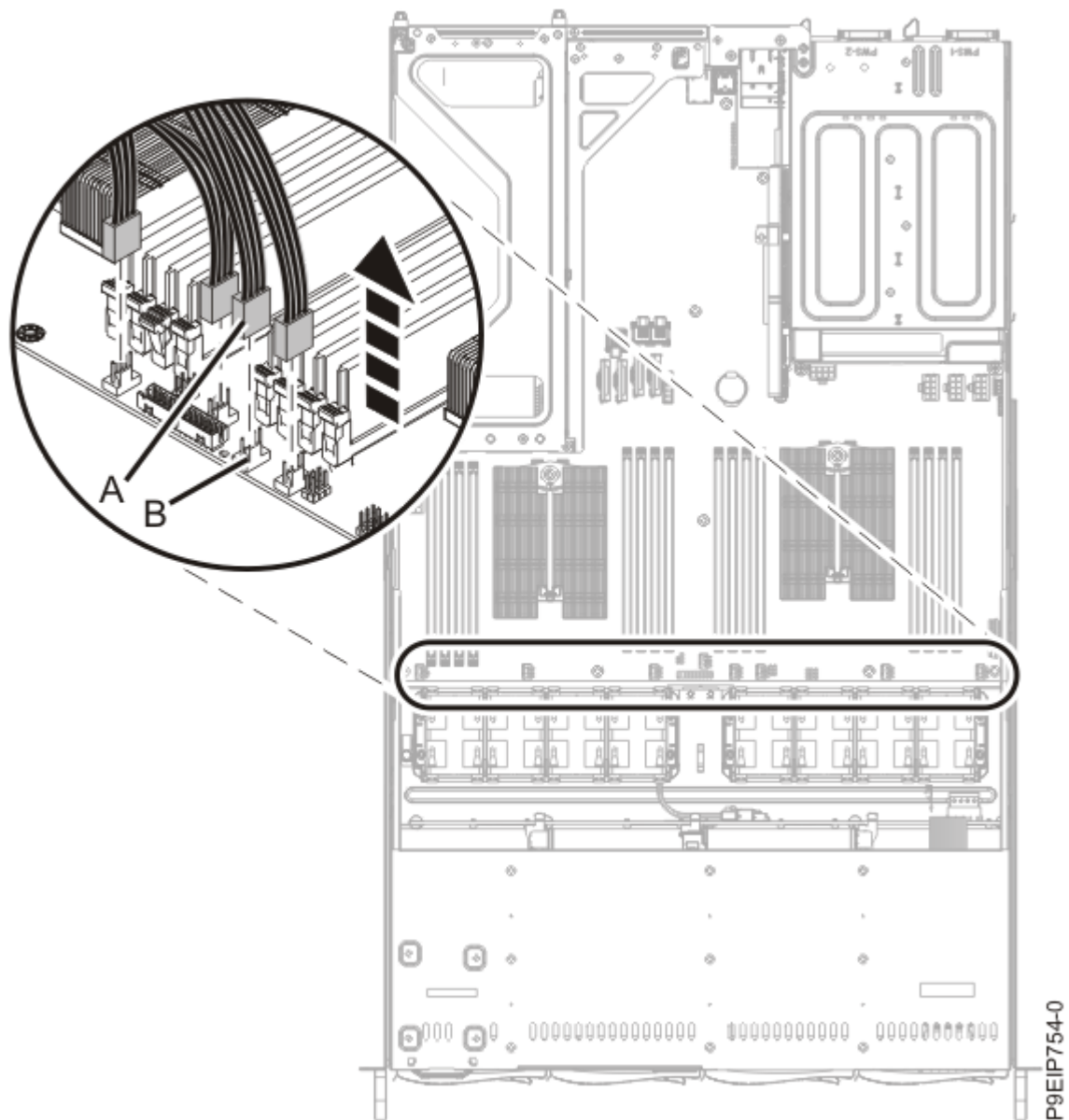


Figure 14. Disconnecting the fan cable

Replacing a fan in the 7063-CR1 system

Learn how to replace fans in the IBM 7063-CR1 Hardware Management Console system.

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 rubber fan mounts in the new fan by using the rubber fan mounts from the old fan.
The new fan has rubber mounts **(B)** as shown in the following figure. The old fan has rubber mounts **(A)** as shown.

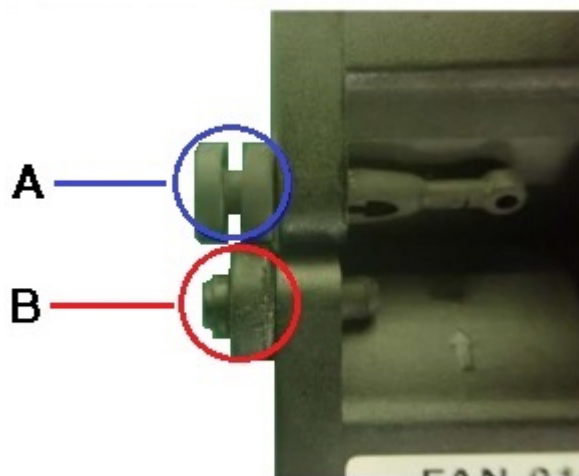


Figure 15. Rubber fan mounts

- a) From the new fan, remove the inner pin (**C**) of the fan mounting. Remove the rubber mounts (**D**) from the new fan.

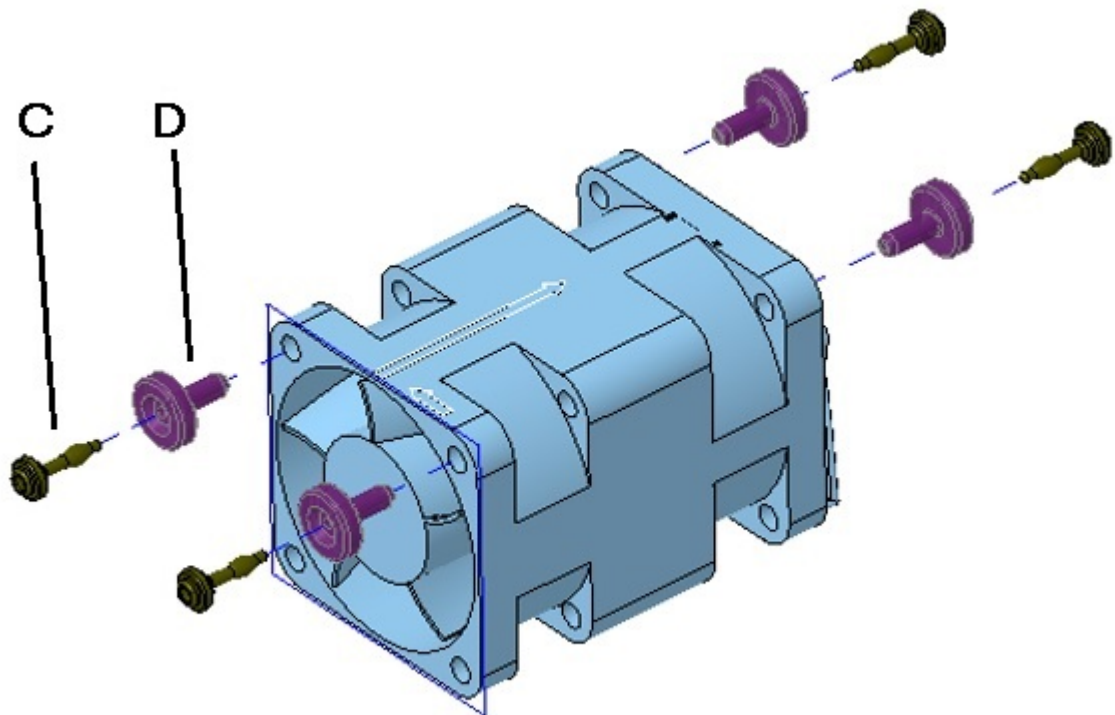


Figure 16. Removing the new fan mountings

- b) Remove the rubber mounts (**A**) from the old fan. Holding the large end of the rubber mount, pinch the inner part of the mount, and slowly pull the rubber mount out from the fan.
- c) Replace the rubber mounts (**A**) into the new fan, in their same relative positions as the old fan.
3. With the fan holder lifted, push the fan into the housing as shown in [Figure 17 on page 21](#).
Pass the fan wires through the fan holder. Align the standoffs in the fan with the slots in the fan holder.

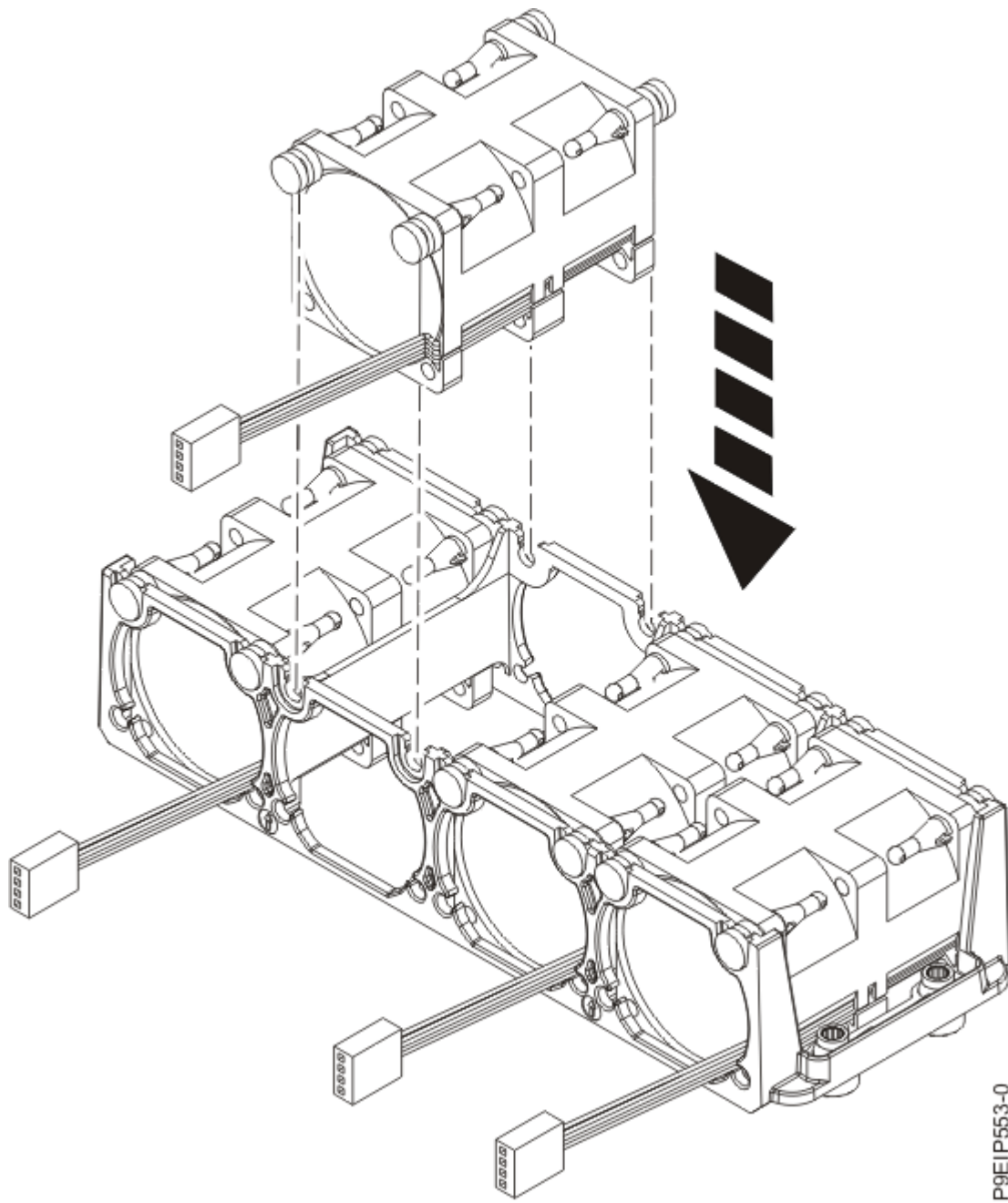


Figure 17. Replacing a fan

4. Replace the fan holder into the chassis.

Align the holes in the fan holder with the pins in the bottom of the chassis as shown in [Figure 18](#) on [page 22](#). For the fan holder near the cover switch, temporarily move the cover switch wires out of the way. When the fan holder is seated into the system, replace the wires that are located next to the fan holder.

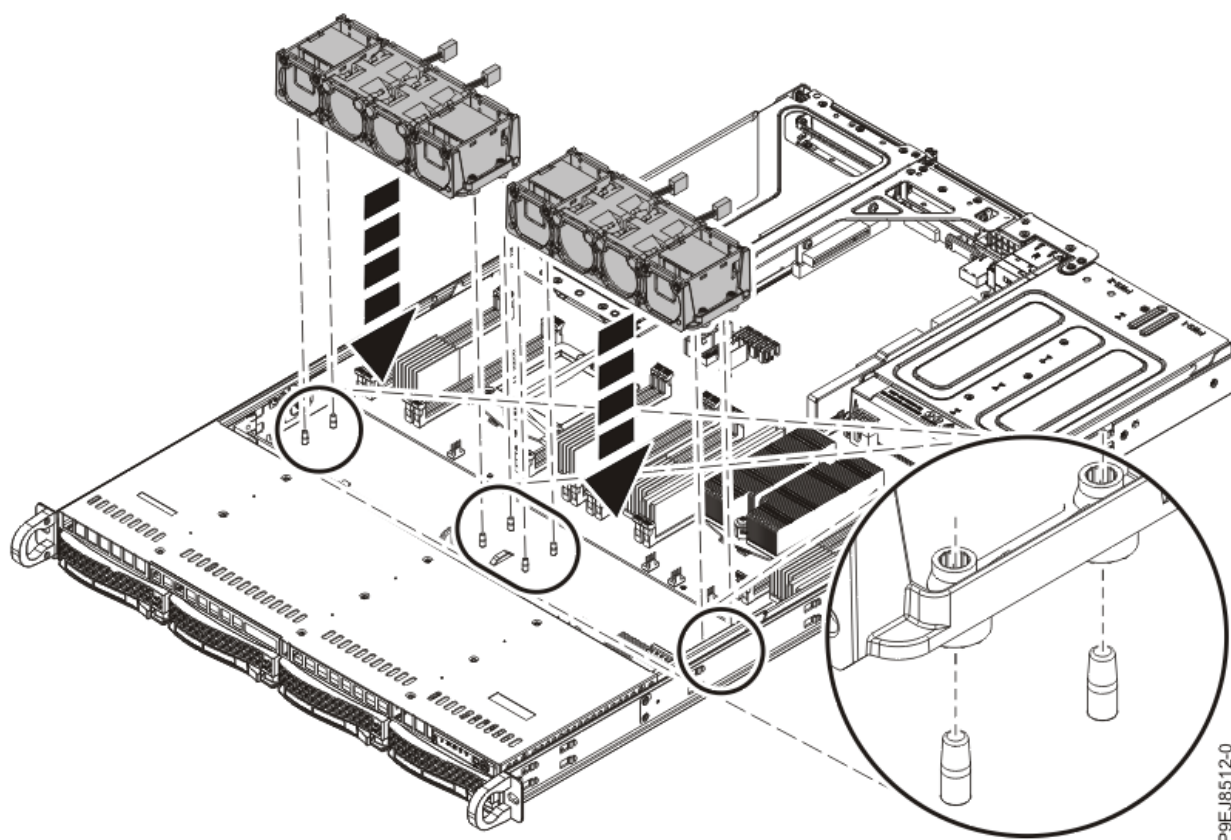


Figure 18. Aligning the fan holder

5. Connect the fan cable to the system backplane, as shown in [Figure 19](#) on page 23.

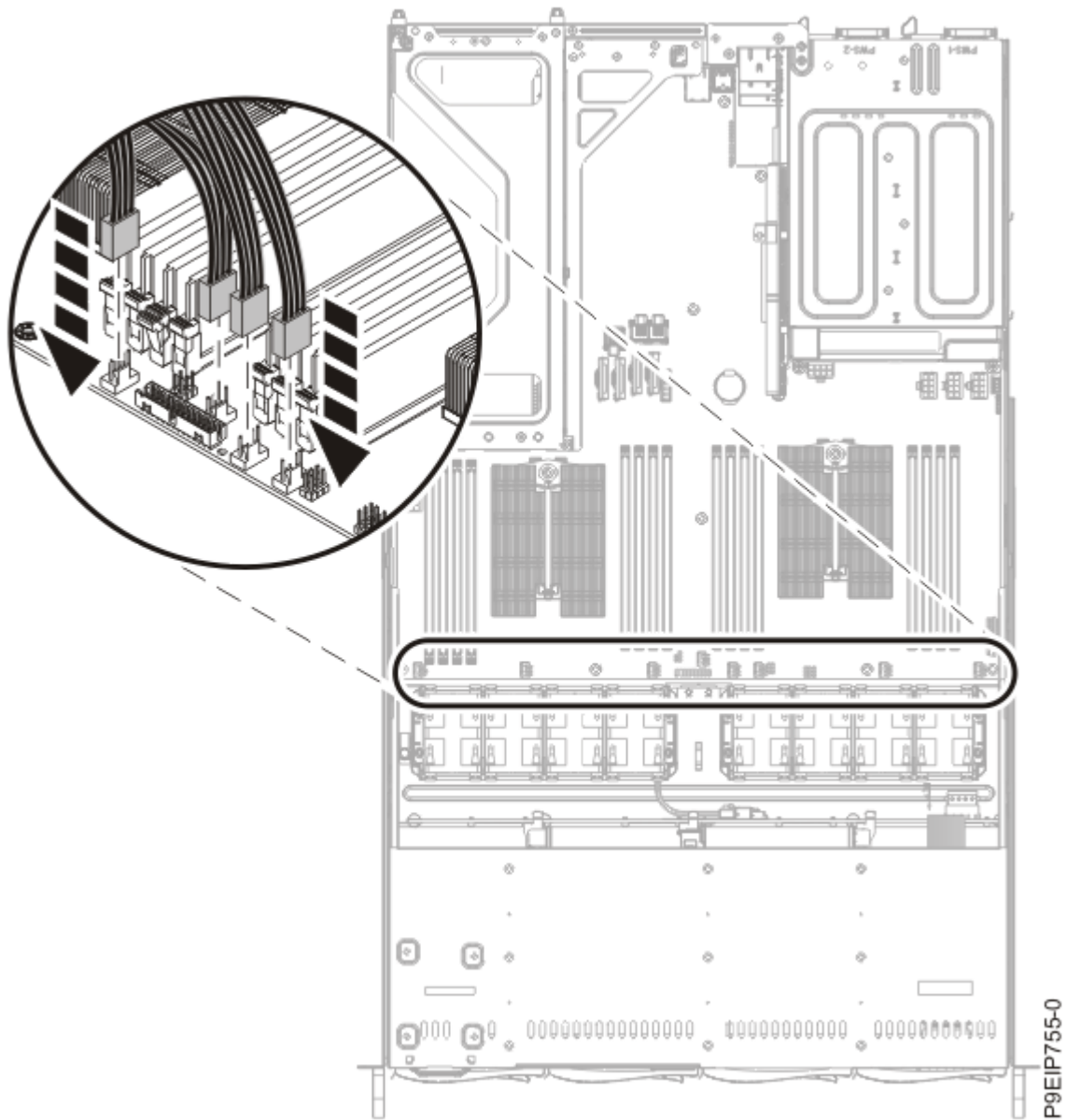
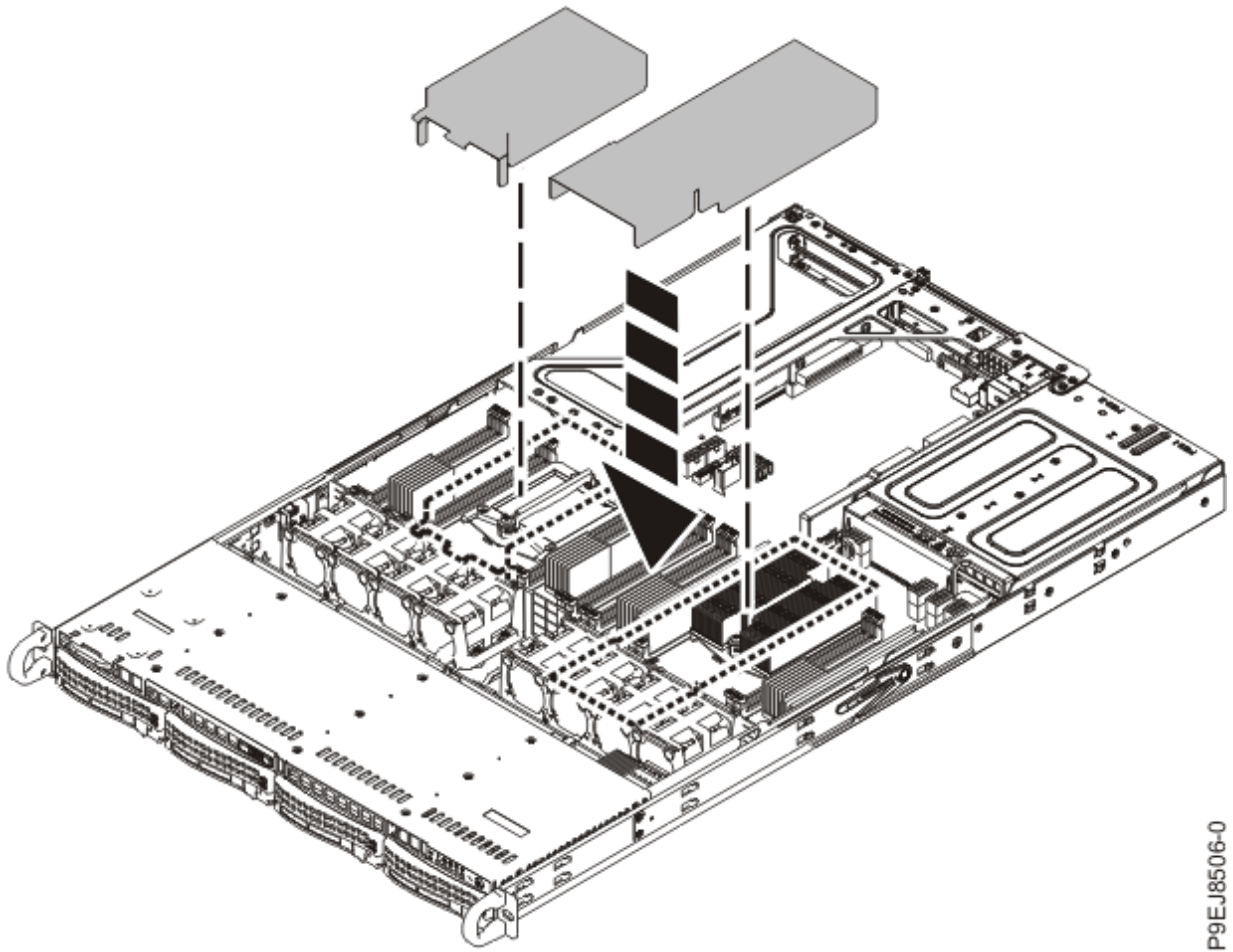


Figure 19. Connecting fan cables to the system backplane

6. Install the system processor air baffle as shown in [Figure 20](#) on [page 24](#).

Insert the edge of the system processor air baffle into the fan support. Then, carefully press the system processor air baffle down into place.



P9EJ8506-0

Figure 20. Installing the system processor air baffle

What to do next

Prepare the system for operation. For instructions, see [“Preparing the 7063-CR1 system for operation after removing and replacing internal parts”](#) on page 83.

Removing and replacing memory in the 7063-CR1

Learn how to remove and replace memory in the IBM 7063-CR1 Hardware Management Console system.

Before you begin

Power off the system and place it in the service position. For instructions, see [“Preparing the 7063-CR1 system to remove and replace internal parts”](#) on page 80.

About this task

The memory must be four 8 GB memory modules of the same type. Four memory modules plug into the following positions:

- P1M1-DIMMA and P1M1-DIMMB
- P1M2-DIMMA and P1M2-DIMMB

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. Depending on the memory location, you might need to remove the system processor air baffles. Carefully unsnap and lift the processor air baffle from the system.

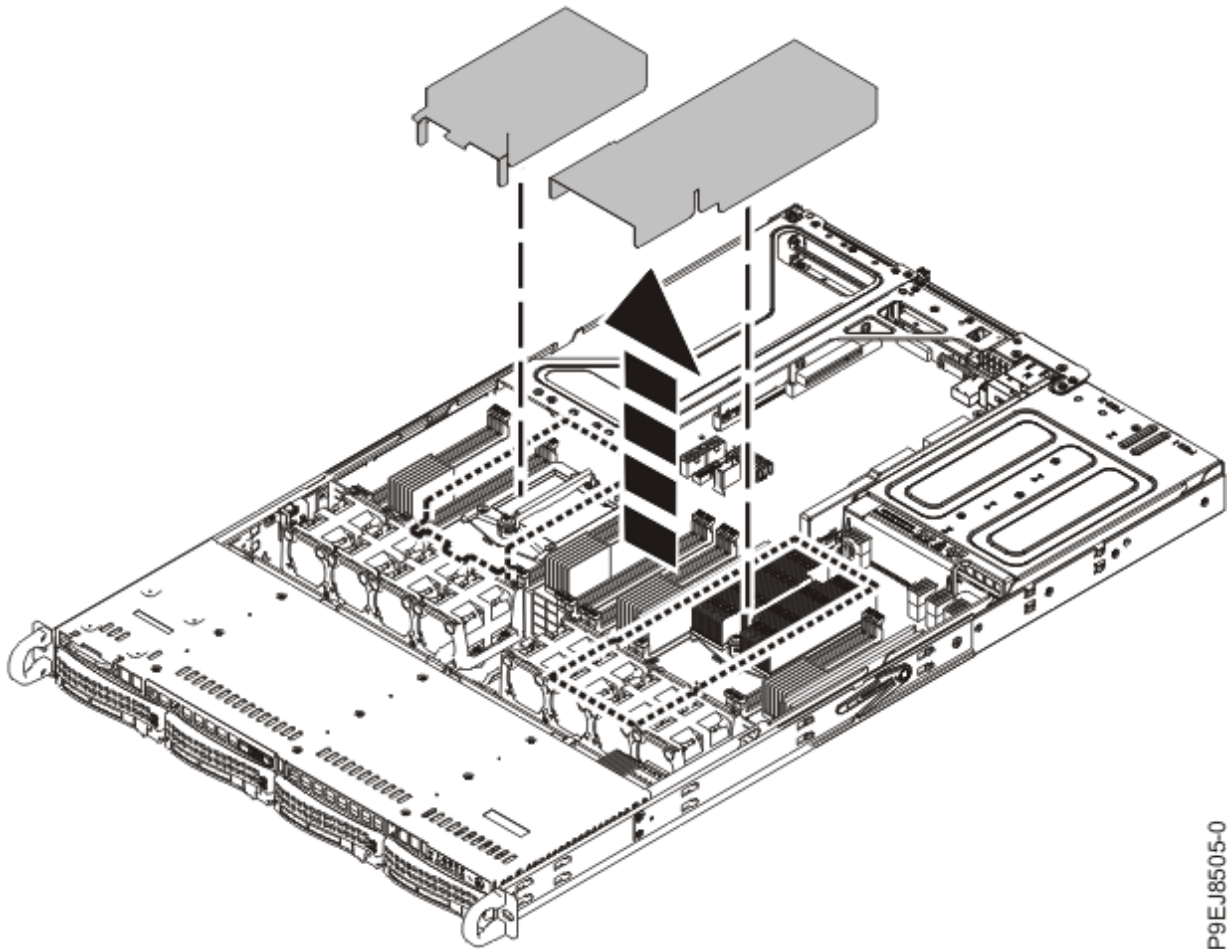


Figure 21. Removing the system processor air baffle

3. Remove the memory DIMM.
- a) Locate the memory DIMM that you want to remove.
 - b) Unlock the memory DIMM by simultaneously pushing the locking tabs away from the memory DIMM, in the direction that is shown in Figure 22 on page 26. Be sure to unlock both tabs at the same time. The lever action of opening the tabs pushes the memory DIMM out of the slot.
 - c) Hold the memory DIMM by the edges and pull it out of the slot.

P9EJ8505-0

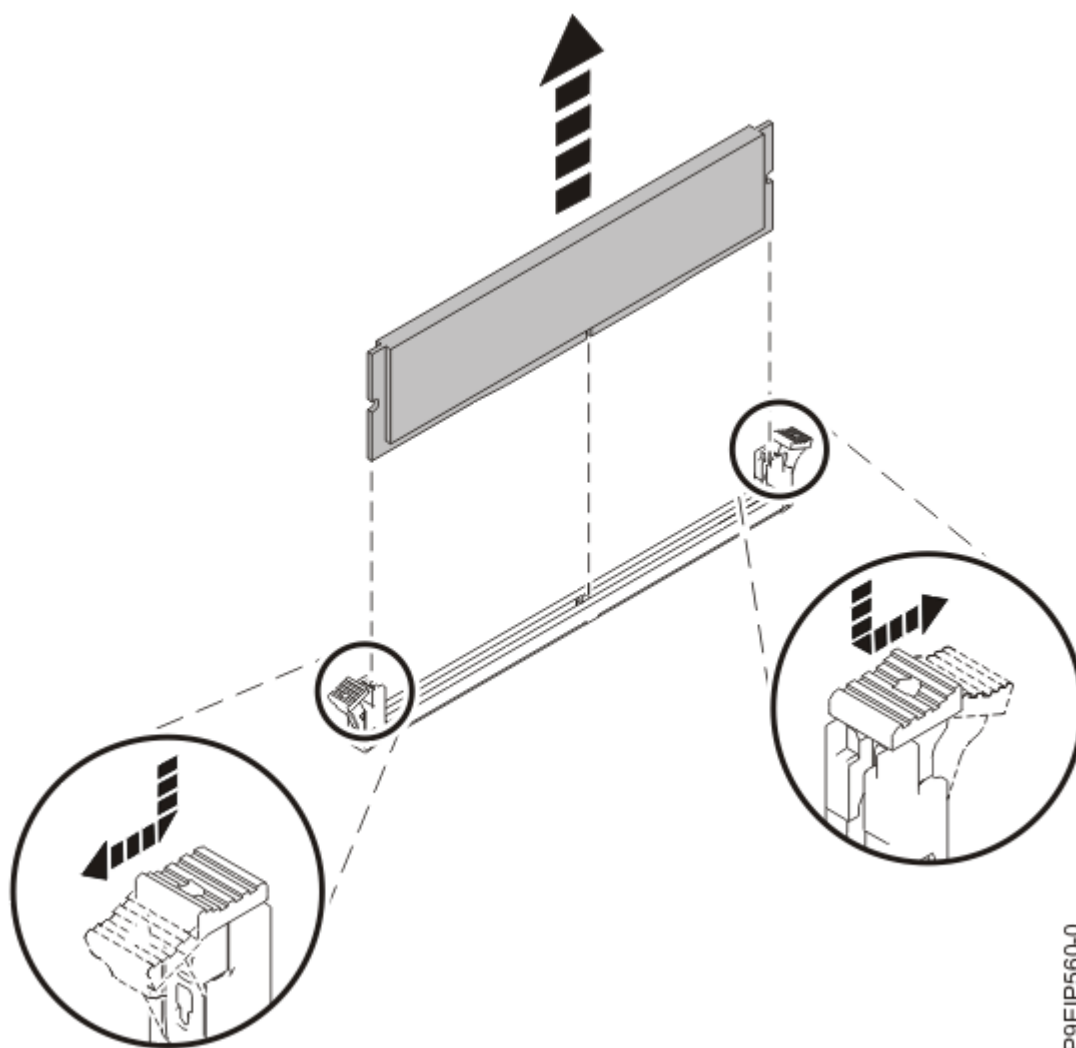


Figure 22. Removing the memory DIMM

4. Insert the memory DIMM.

- a) Grasp the memory DIMM along its edges and align it with the slot on the system backplane.



Attention: Memory is keyed to prevent it from being installed incorrectly. Note the location of the key tab within the memory connector before you attempt to install it.

- b) Press firmly on each side of the memory DIMM until the locking tab locks in place with an audible click.

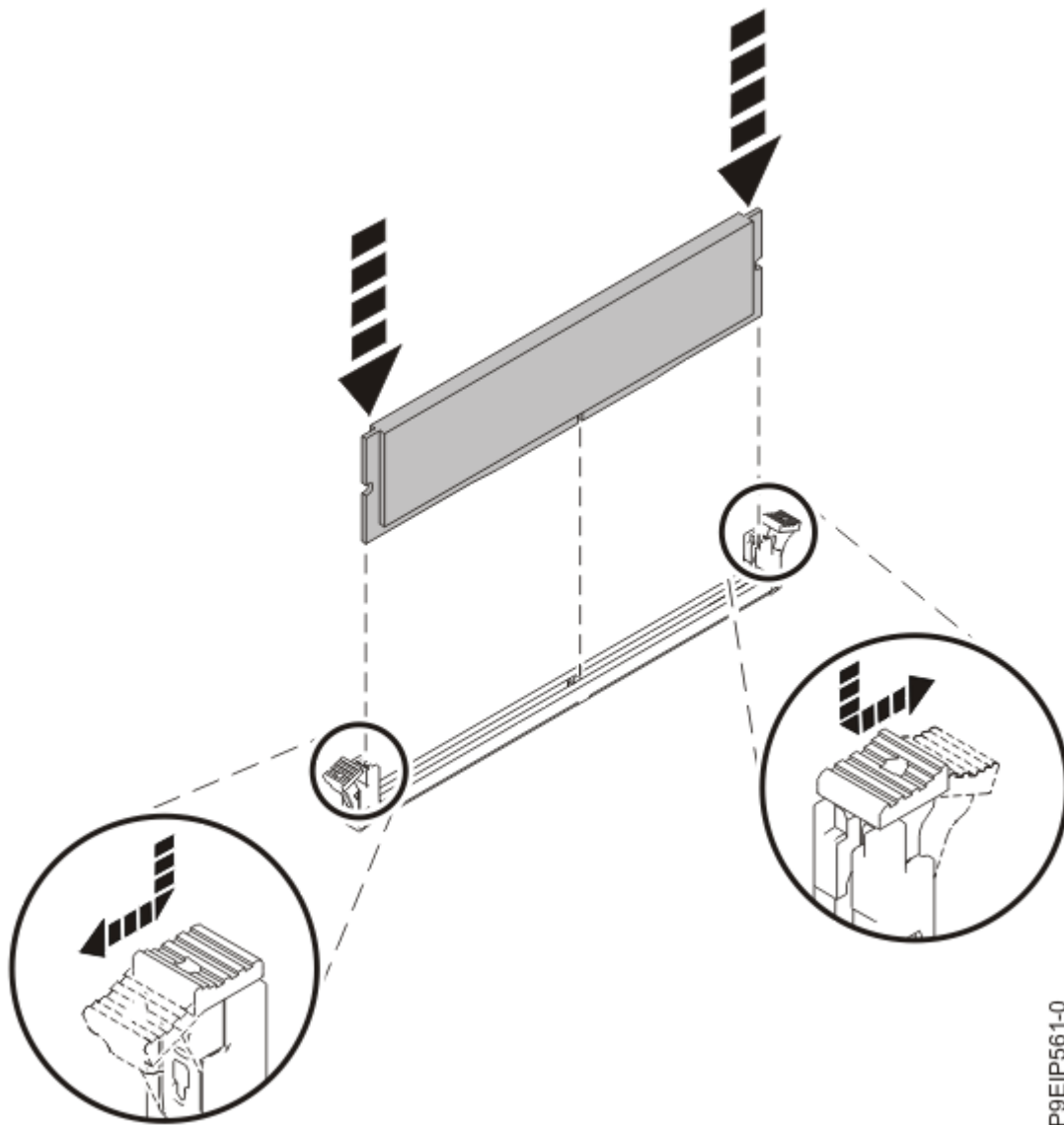
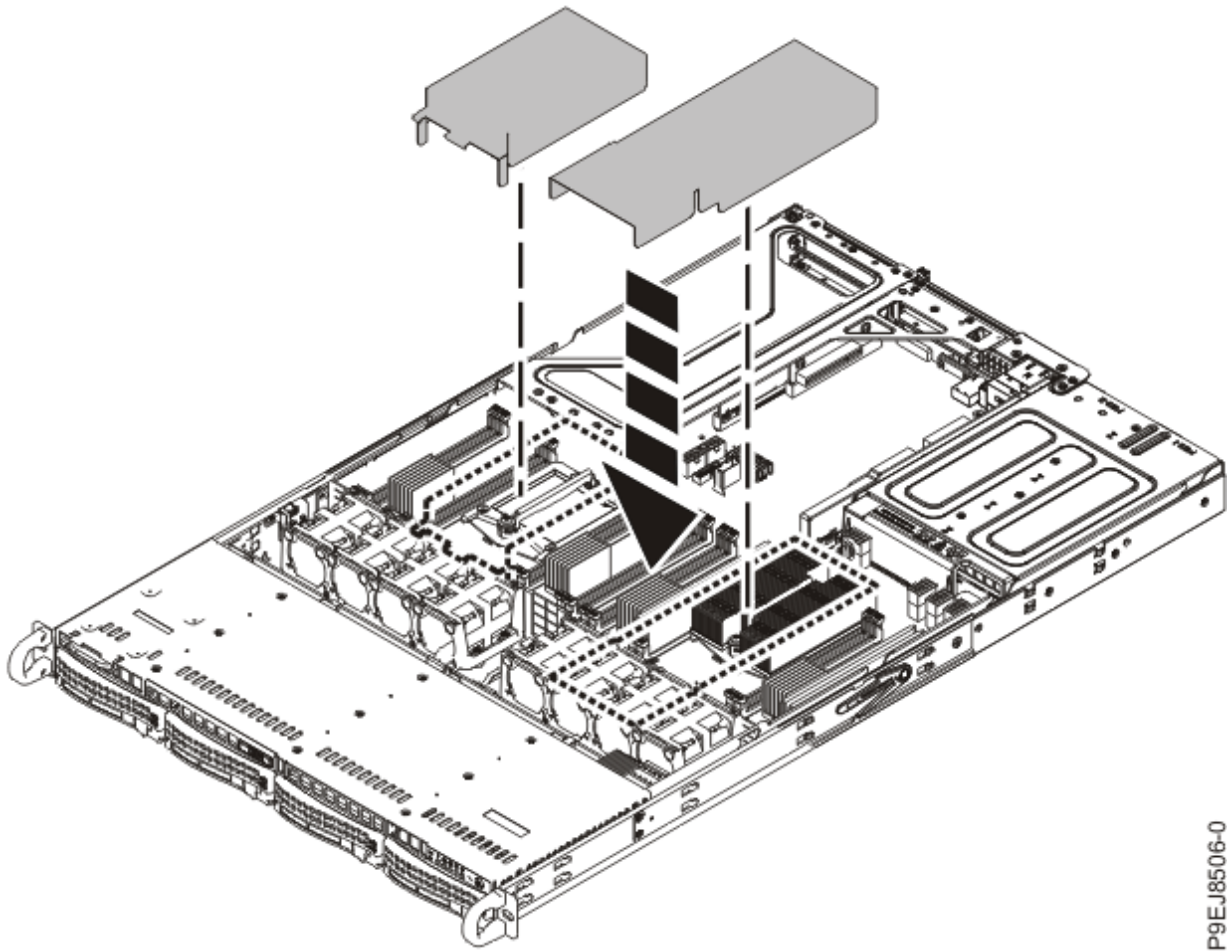


Figure 23. Inserting the memory DIMM

5. If you removed the system processor air baffle, replace it.

Insert the edge of the system processor air baffle into the fan support. Then, carefully press the system processor air baffle down into place.



P9EJ8506-0

Figure 24. Installing the system processor air baffle

What to do next

Prepare the system for operation. For instructions, see [“Preparing the 7063-CR1 system for operation after removing and replacing internal parts”](#) on page 83.

Removing and replacing PCIe adapters in the 7063-CR1

Learn how to remove and replace Peripheral Component Interconnect (PCI) Express (PCIe) adapters in the IBM 7063-CR1 Hardware Management Console system.

Removing a PCIe adapter from the 7063-CR1 system

Learn how to remove a PCIe adapter from the IBM 7063-CR1 Hardware Management Console system.

Before you begin

Power off the system and place it in the service position. For instructions, see [“Preparing the 7063-CR1 system to remove and replace internal parts”](#) on page 80.

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. Label and remove any Ethernet cables that extend out of the adapter.

See Figure 25 on page 29.

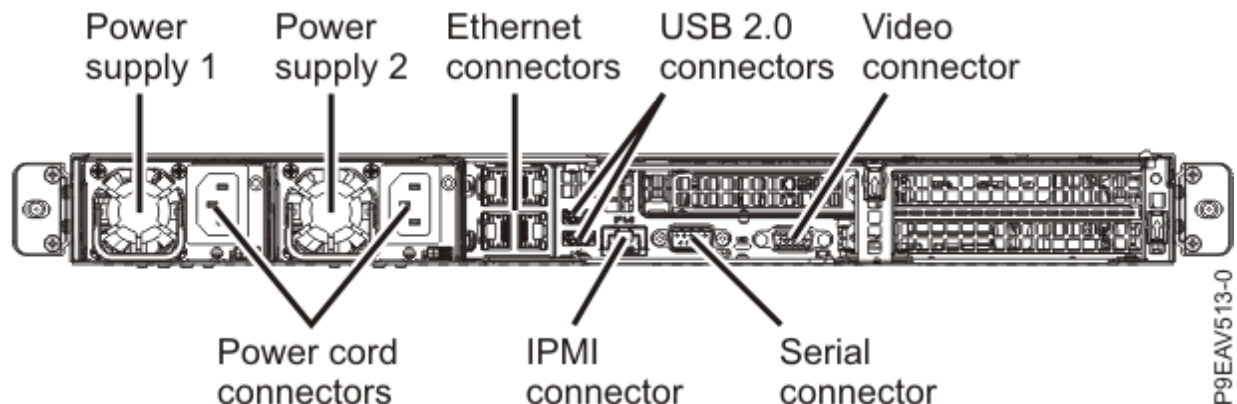
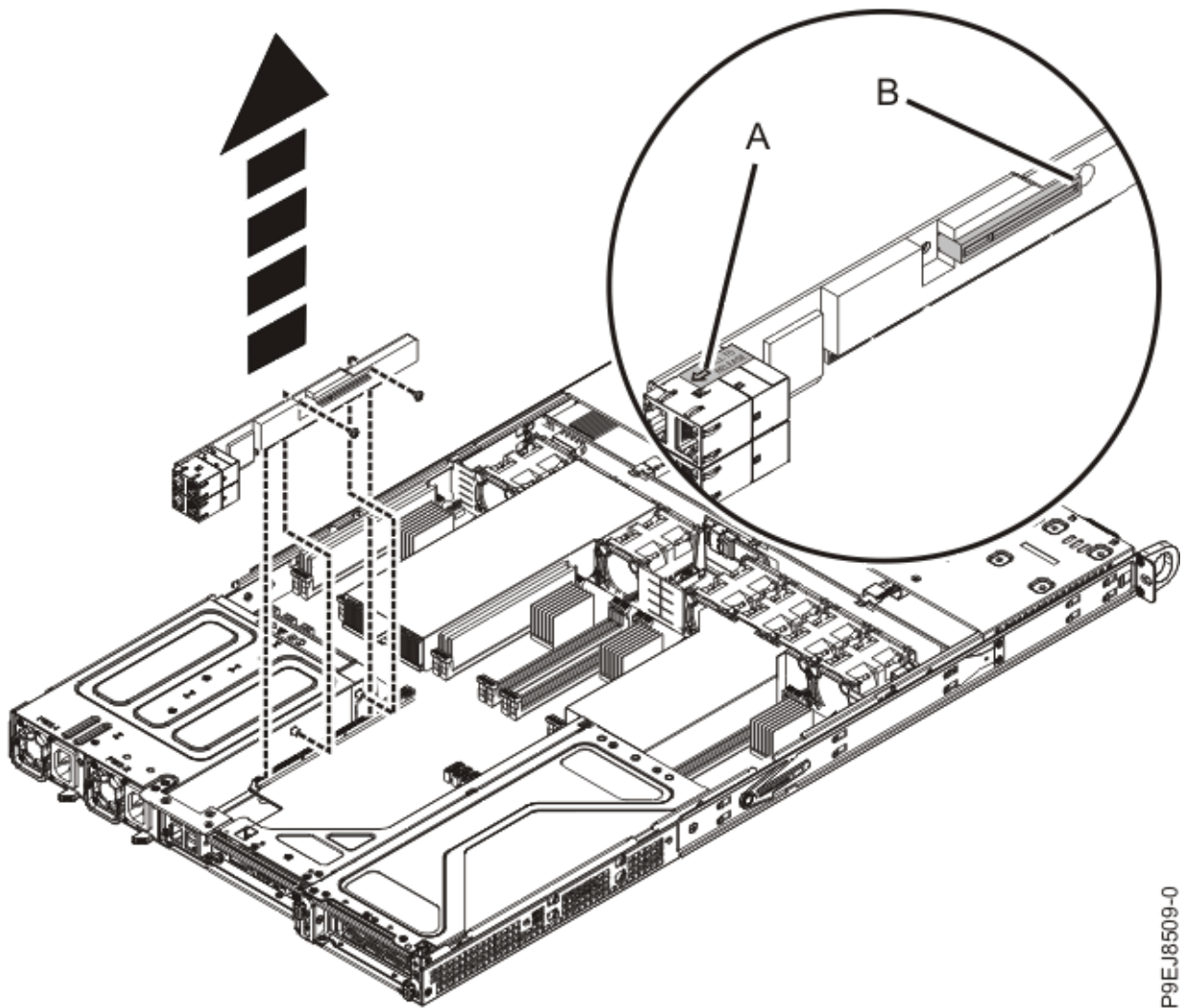


Figure 25. PCIe adapter positions

3. If you are working with the PCIe riser card in position 1 (UIO Network), complete the following steps:
- a) Remove the two screws that secure the PCIe riser card to the chassis as shown in [Figure 26 on page 30](#).
 - b) Lift the PCIe adapter riser at points **(A)** and **(B)** from the system backplane.



P9EJ8509-0

Figure 26. Removing the PCIe riser screws

Replacing a PCIe adapter in the 7063-CR1 system

Learn how to replace a PCIe adapter in the IBM 7063-CR1 Hardware Management Console system.

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. Refer to the PCIe adapter position as shown in [Figure 27 on page 31](#).

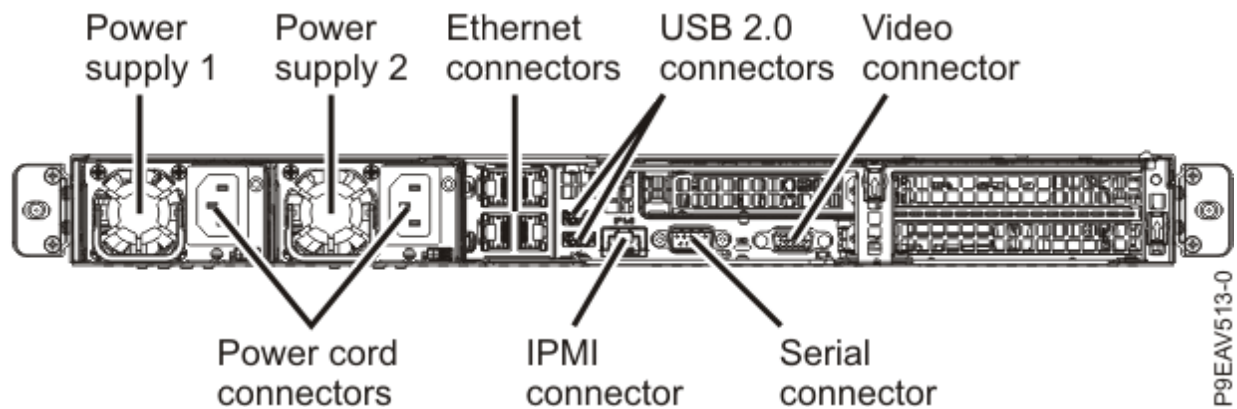


Figure 27. PCIe adapter positions

3. Complete the following steps:

- a) Replace the PCIe adapter riser (UIO Network) into the system backplane.
- b) Replace the two screws to secure the PCIe riser card to the chassis as shown in [Figure 28 on page 31](#).

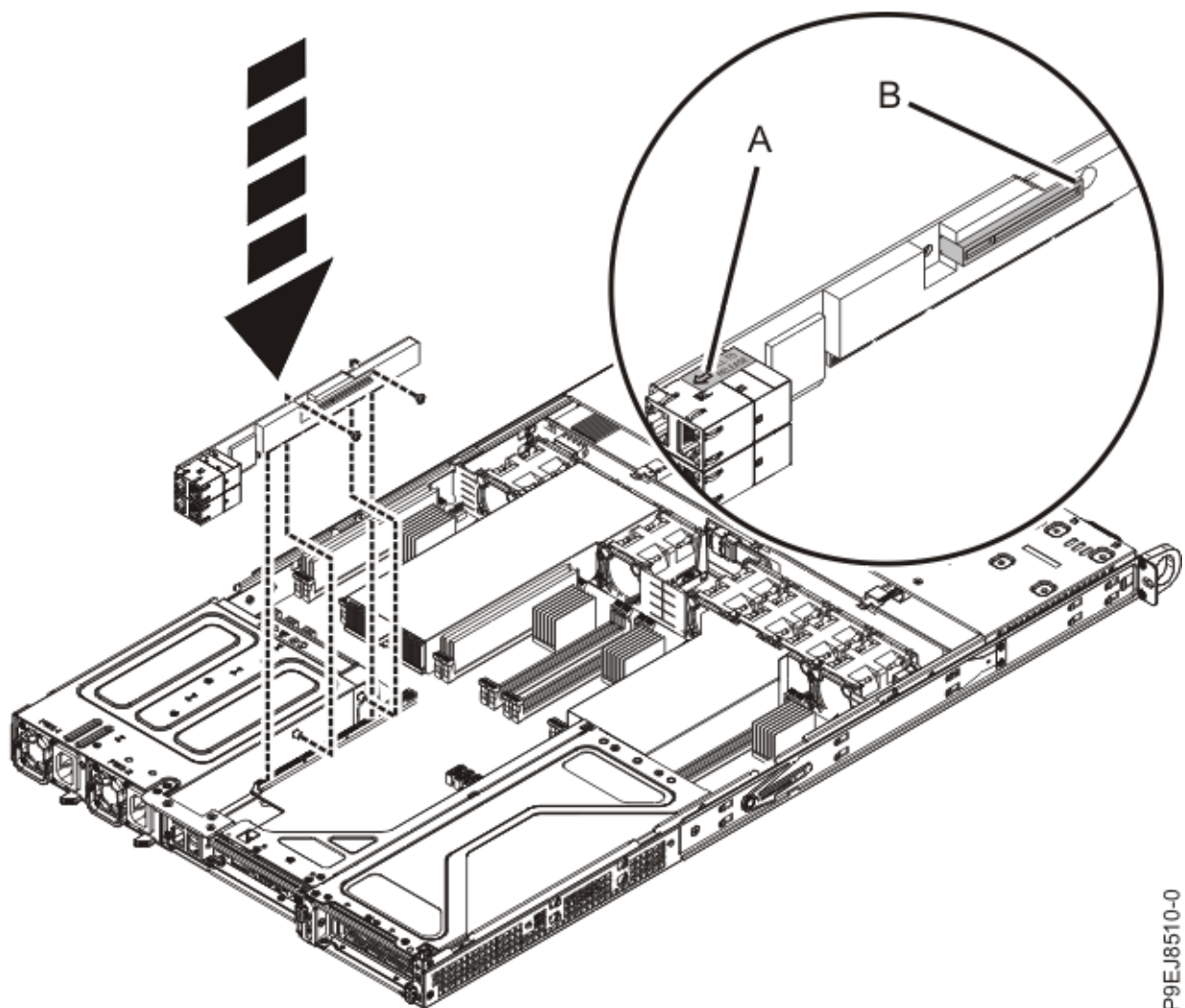


Figure 28. Replacing the PCIe adapter riser screws

4. Using your labels, replace any cables and plugs that you removed from the PCIe adapters.

What to do next

Prepare the system for operation. For instructions, see [“Preparing the 7063-CR1 system for operation after removing and replacing internal parts” on page 83.](#)

Removing and replacing a power supply in the 7063-CR1

Learn how to remove and replace power supplies in the IBM 7063-CR1 Hardware Management Console systems.

Removing a power supply from the 7063-CR1 system

Learn how to remove power supplies from the IBM 7063-CR1 Hardware Management Console systems.

About this task

If a single power supply failed, it can be replaced while the system is running.

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. Label and remove the power cord from the power supply.
For instructions, see [“Disconnecting the power cords from a 7063-CR1 system” on page 97.](#)
 3. To remove the power supply from the system, complete the following steps.
 - a) To unseat the power supply from its position in the system, push the locking-tab to the left as shown in [Figure 29 on page 33.](#)
 - b) Grasp the power supply handle with one hand, and pull the power supply 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.

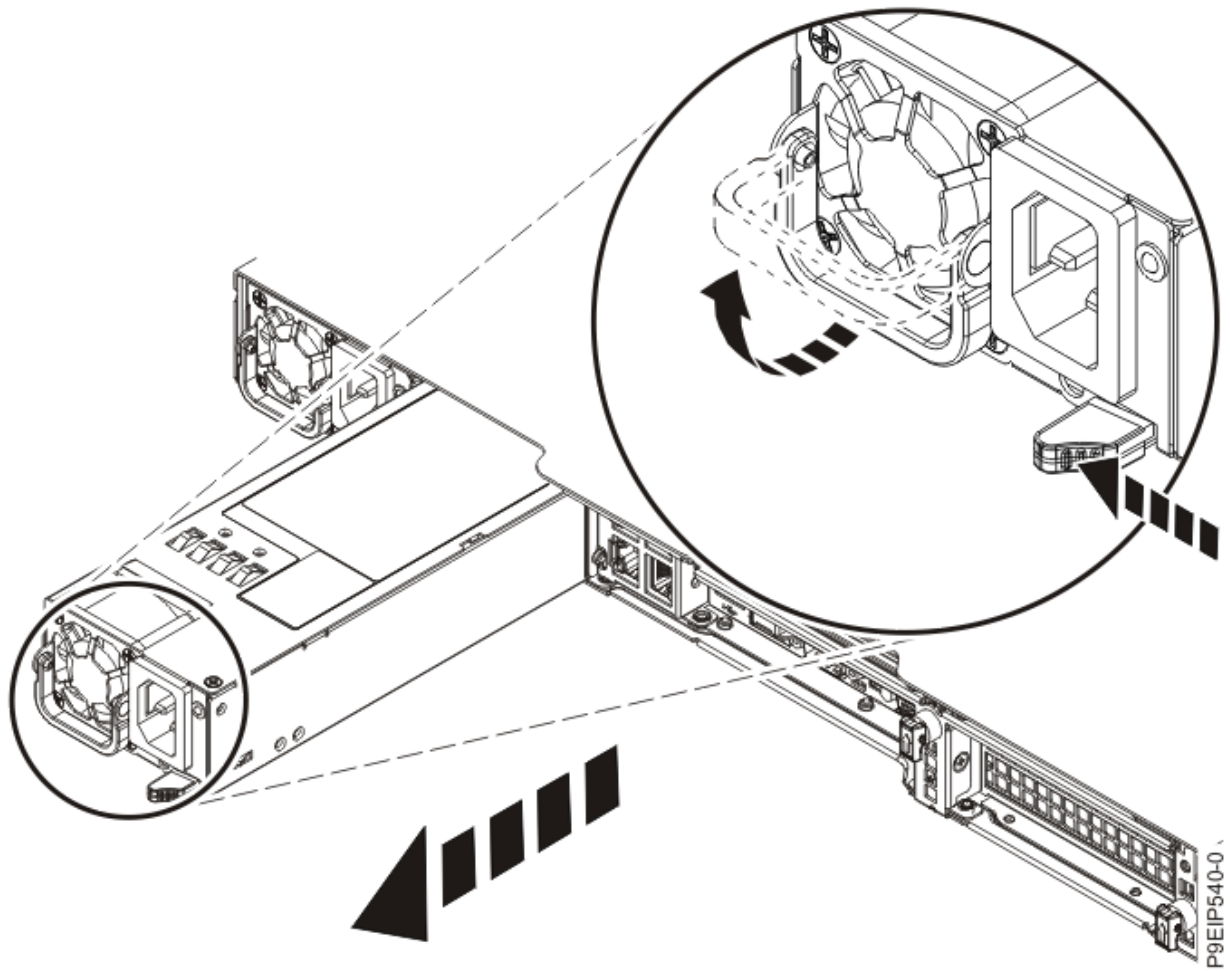


Figure 29. Removing a power supply from the system

Replacing a power supply in the 7063-CR1 system

Learn how to replace power supplies in the IBM 7063-CR1 Hardware Management Console systems.

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. Align the power supply with the bay as shown in [Figure 30 on page 34](#). The fan is on the left; the plug is on the right. Slide the power supply into the system until the latch locks in place.

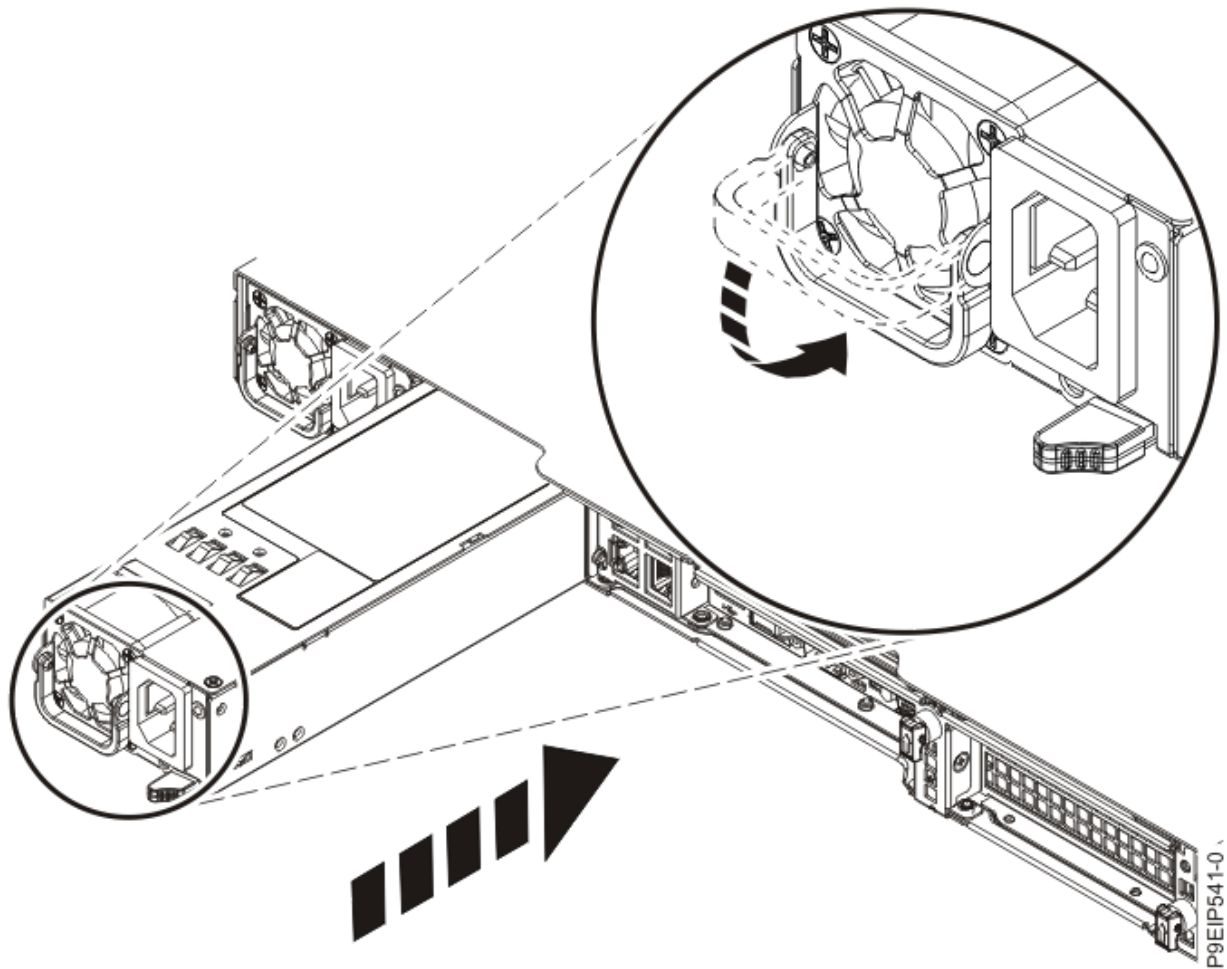


Figure 30. Replacing a power supply in the system

3. Reconnect the power cord.

For instructions, see [“Connecting the power cords to a 7063-CR1 system”](#) on page 98.

Removing and replacing the system backplane in the 7063-CR1

Learn how to remove and replace the system backplane in the IBM 7063-CR1 Hardware Management Console system.

Before you begin

Before you begin replacing the system backplane, write down the system serial number and machine model type. After you replace the system backplane, you must set the system serial number and machine model type in the system backplane.

About this task



Attention: The following procedures describe the removal and replacement of the system backplane. Only an authorized service representative must remove or replace this part.

You can use a commercially available magnetic tip screwdriver to remove and replace the screws.

Preparing the 7063-CR1 system to remove the system backplane

Learn how to prepare to remove the system backplane from the IBM 7063-CR1 Hardware Management Console system.

Before you begin

Before you begin replacing the system backplane, write down the system serial number and machine model type. After you replace the system backplane, you must set the system serial number and machine model type in the system backplane.

Procedure

1. If possible, have the customer create a backup of the BMC by completing the following steps:
 - a) Access the BMC GUI from a browser.
The user needs Administrator privilege. You can use either Google Chrome or Mozilla Firefox browsers.
 - b) Navigate to **Maintenance > IPMI Configuration**.
 - c) Press the **Save** button to create the backup.
The file is named `save_config.bin`
2. If possible, have the customer save the BMC network settings by completing the following steps:
 - a) Navigate to **HMC Management > Console Settings > Change BMC/IPMI Network Settings**
 - b) Record the following values:

IP address
Subnet mask
Gateway
3. Power off the system and place it in the service position.
For instructions, see [“Preparing the 7063-CR1 system to remove and replace internal parts” on page 80](#).

Removing the system backplane from the 7063-CR1 system

Learn how to remove the system backplane from the IBM 7063-CR1 Hardware Management Console system.

About this task

You can use a commercially available magnetic tip screwdriver to remove and replace the screws.

As part of the system backplane replacement, the system processor modules are moved from the old system backplane to the new system backplane.

As part of the system processor module replacement, the heat sink is removed. When the heat sink is removed from the system processor module, the thermal interface material (TIM) is typically adhered to the heat sink. Unless damaged, the TIM that is adhered to the heat sink can be reused. If the TIM is damaged, do not reuse the removed heat sink. Before you begin the processor removal and replacement procedure, ensure that you have a spare TIM and heat sink on hand.

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 both power supplies from the system.
For instructions, see [“Removing a power supply from the 7063-CR1 system” on page 32.](#)
 3. Label where the USB cable **(B)** and the serial cable **(A)** connect into the system backplane and unplug both cables.
The serial cable is non-functional, and may not be included in your system.

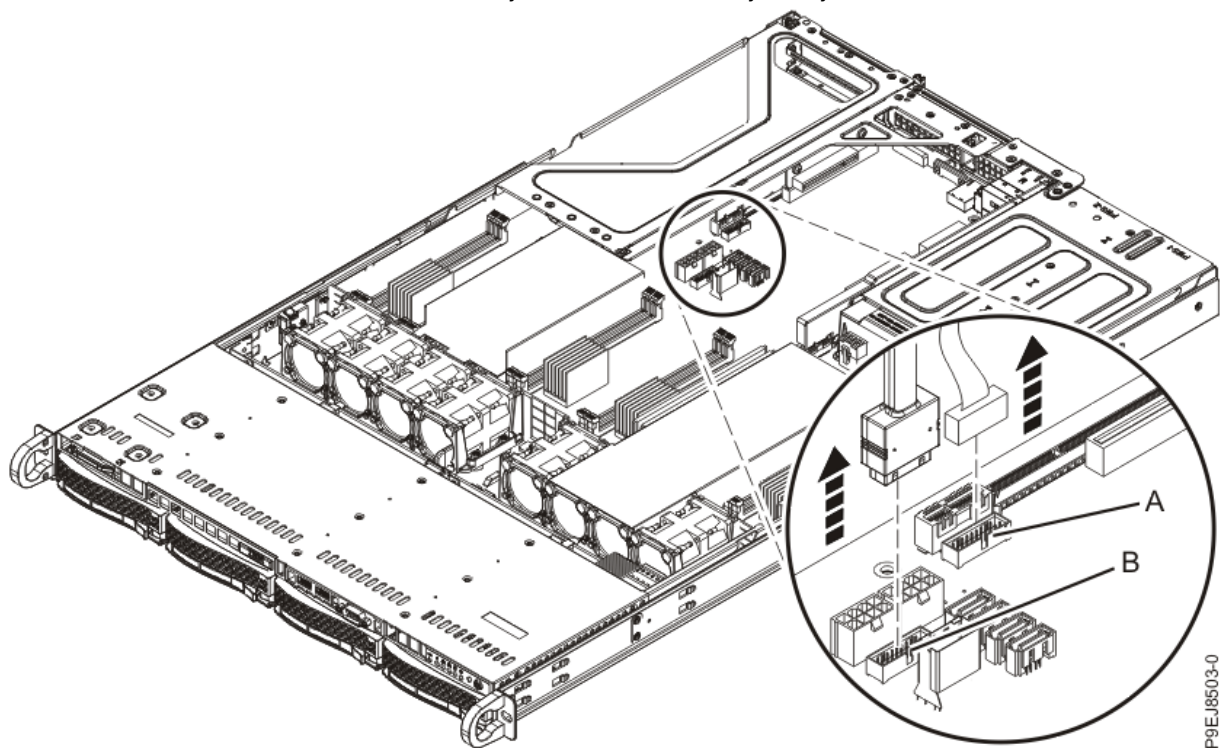
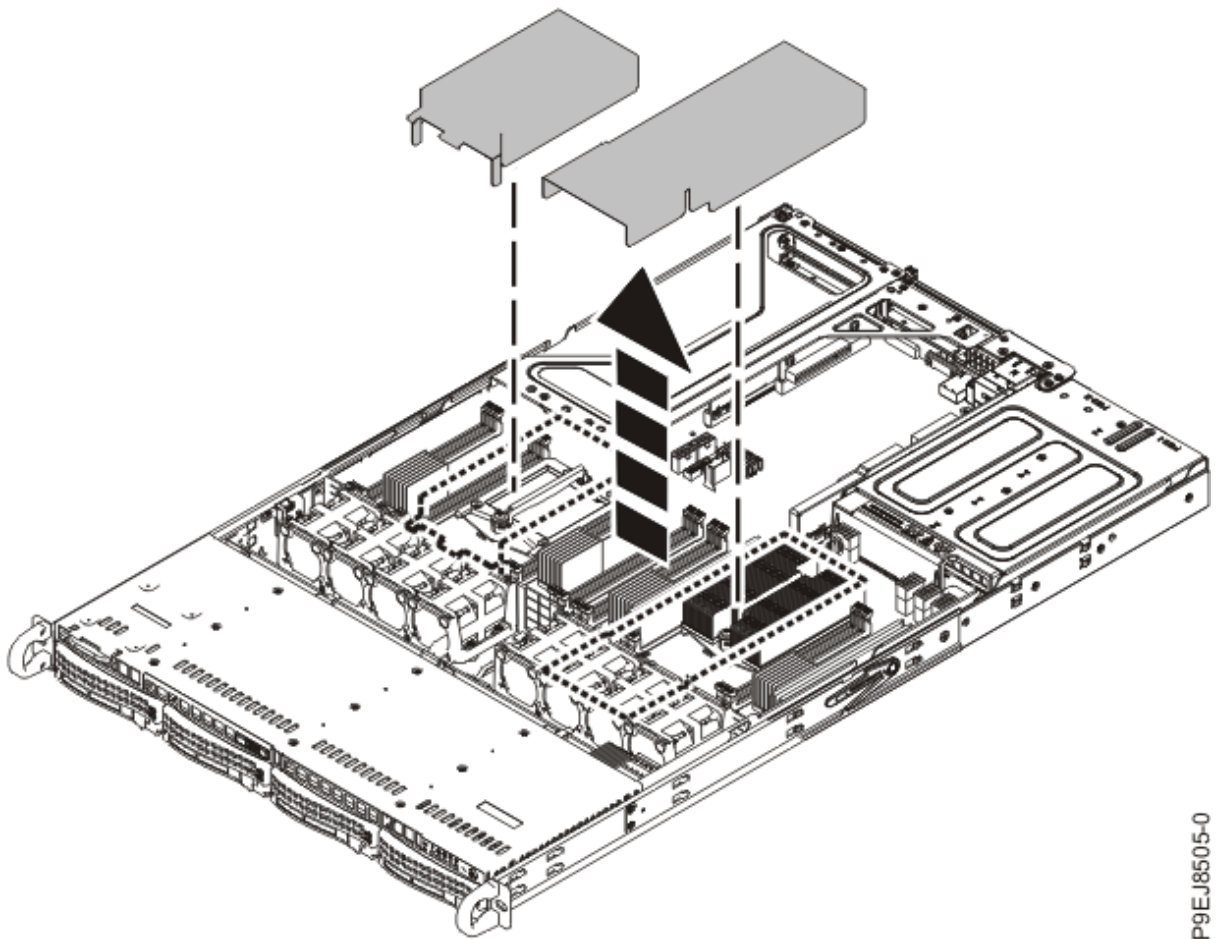


Figure 31. Disconnecting the USB and serial cables

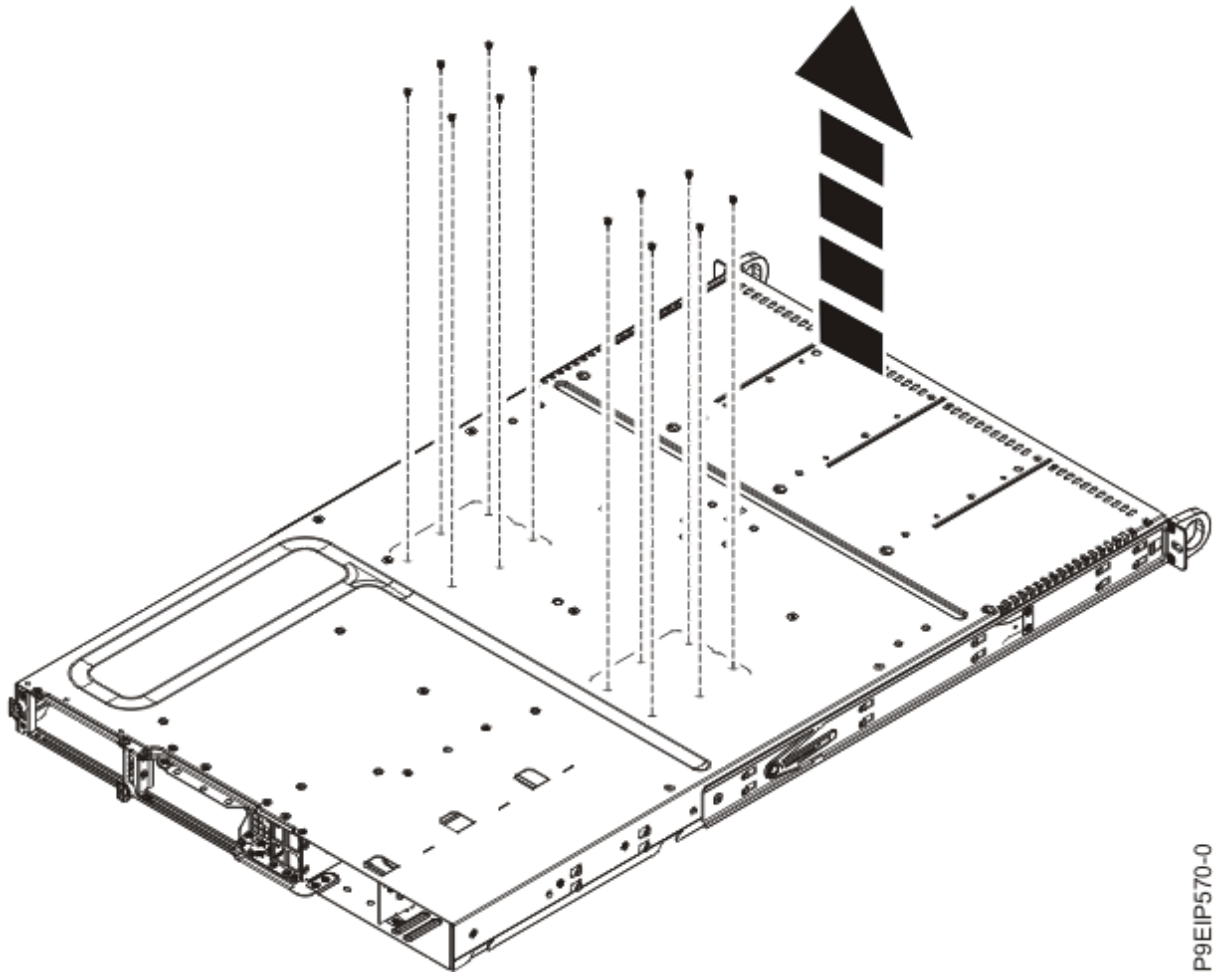
4. Remove the processor air baffle as shown in [Figure 32 on page 37.](#)
Carefully unsnap and lift the processor air baffle from the system.



P9EJ8505-0

Figure 32. Removing the system processor air baffle

5. Label and remove the memory DIMMs, recording their slot locations.
For instructions, see [“Removing and replacing memory in the 7063-CR1” on page 24.](#)
6. Remove all the fans and housings from the system.
For instructions, see [“Removing a fan from the 7063-CR1 system” on page 14.](#)
7. Noting their slot locations, label, and remove the PCIe risers and adapters.
For instructions, see [“Removing a PCIe adapter from the 7063-CR1 system” on page 28.](#)
8. Remove the 12 screws that support the processor sockets from below the chassis.
 - a) Turn the system over, upside down.
 - b) Remove the 12 screws from the bottom.
The screw locations are shown in [Figure 33 on page 38.](#)
 - c) Turn the system over, right side up.



P9EIP570-0

Figure 33. Processor socket screws on the bottom of the chassis

9. If needed, carefully cut the ties that secure the cables.

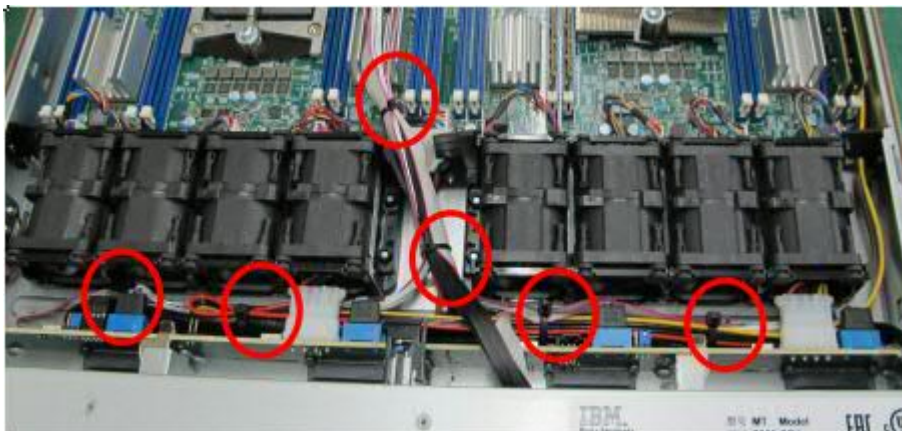


Figure 34. Cable tie locations

10. Remove the drive signal and drive power cables from the system backplane.
For instructions, see [“Removing the disk drive backplane from the 7063-CR1 system”](#) on page 9.
11. Remove the operator panel cable from the system backplane as shown in [Figure 35](#) on page 39.

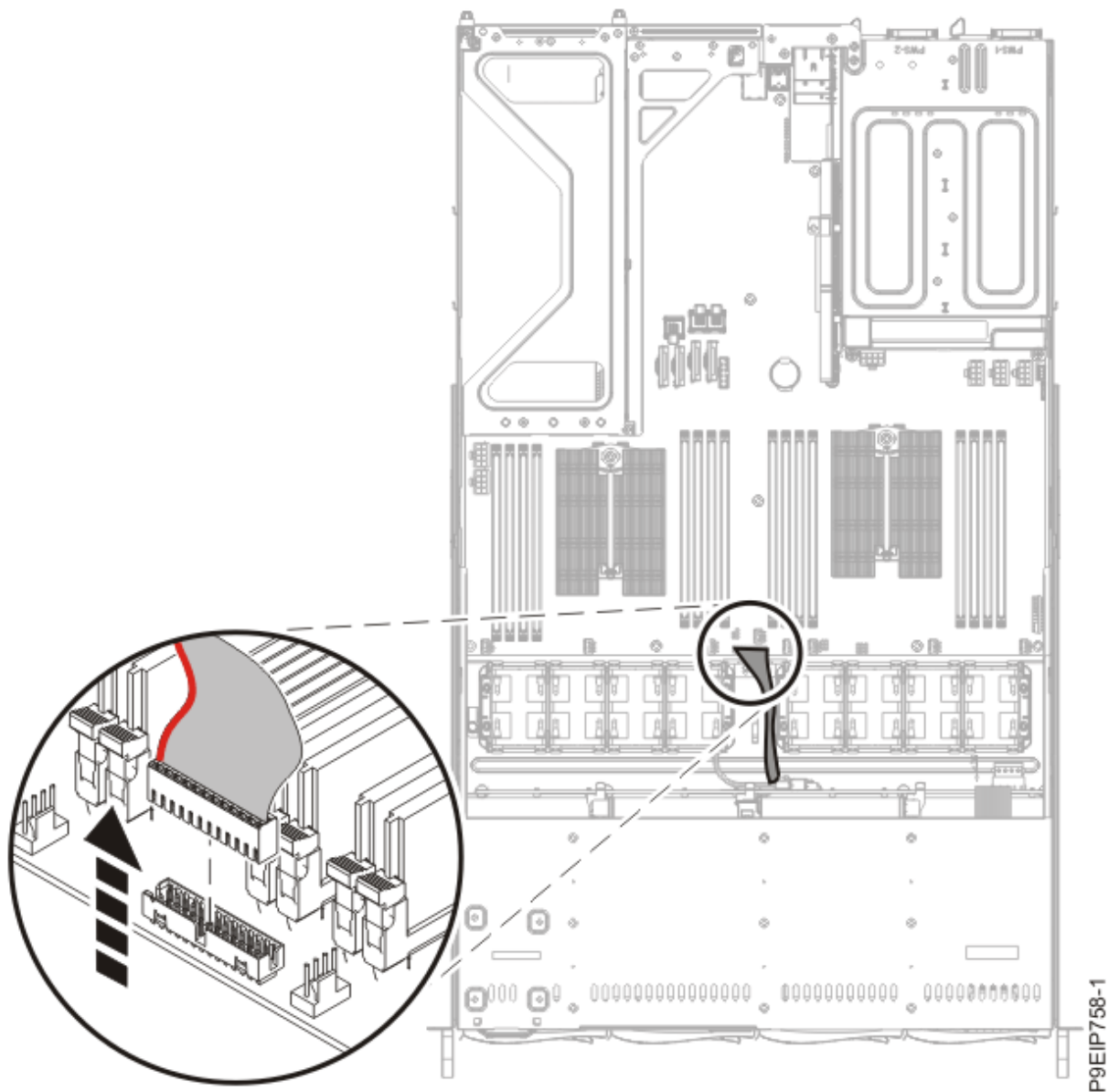


Figure 35. Removing the operator panel cable

12. Remove the 14 screws from the system backplane.
The screw locations are shown in [Figure 36 on page 40](#).

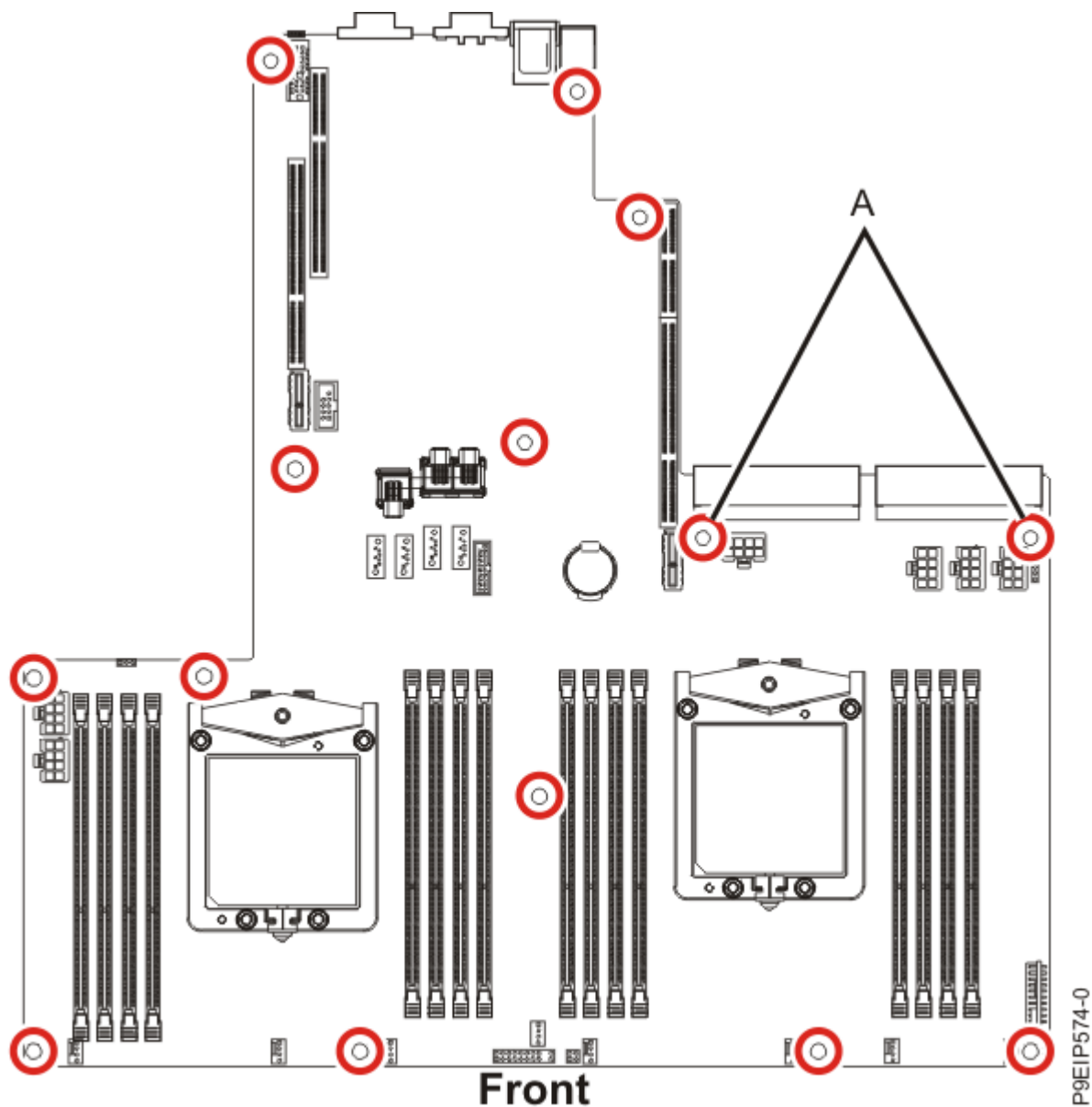
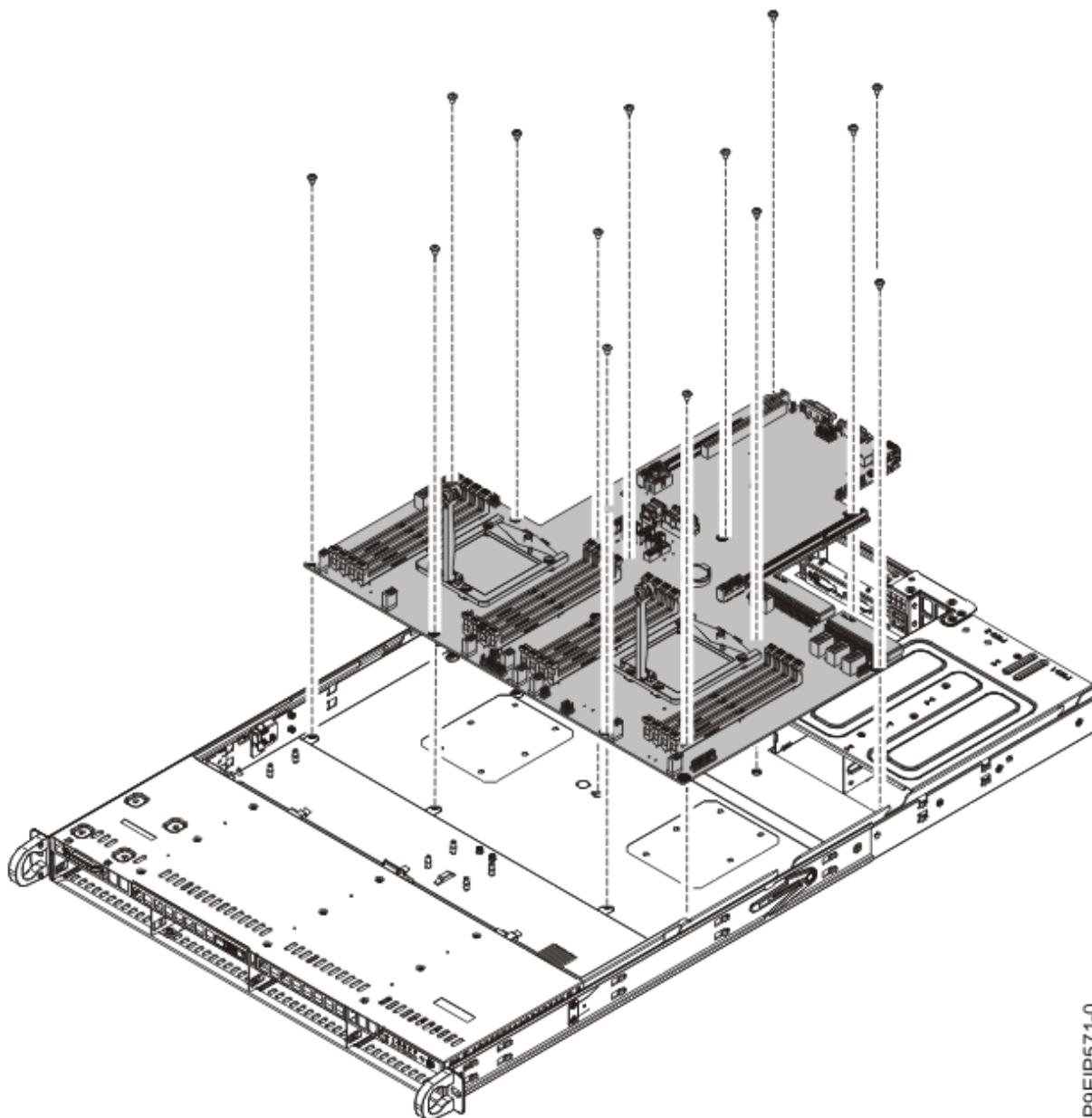


Figure 36. Screw locations

13. Moving the front cables out of the way, and carefully holding the processor heat sink, move the system backplane slightly forward and up to remove it.

See [Figure 37 on page 41](#).



P9EIP571-0

Figure 37. Lifting out the system backplane

14. Place the system backplane on an ESD mat.

Replacing the system backplane in the 7063-CR1 system

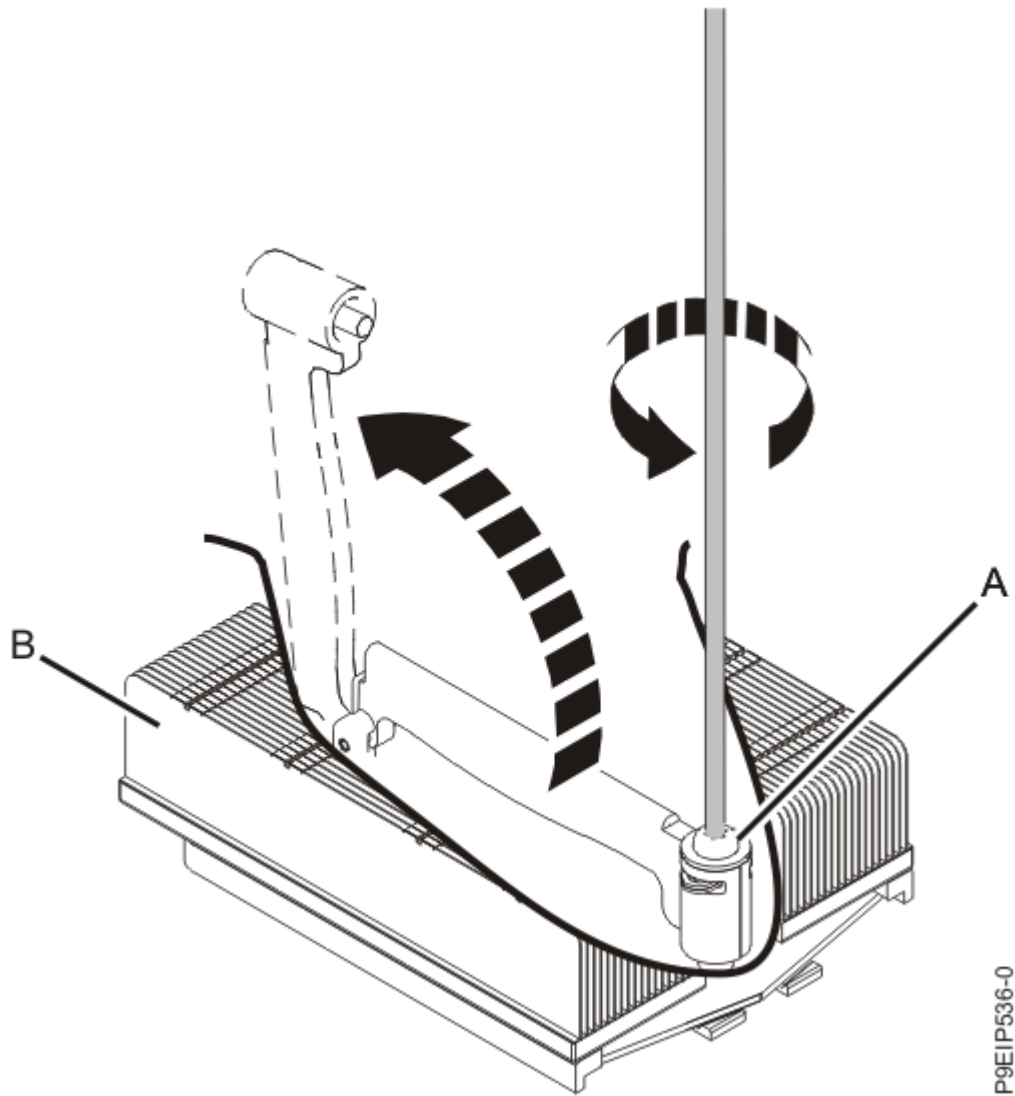
Learn how to replace the system backplane in the IBM 7063-CR1 Hardware Management Console system.

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the replacement system backplane from the static-protective package and place it on an ESD mat.

The following steps move the system processor module from the old system backplane to the new system backplane:

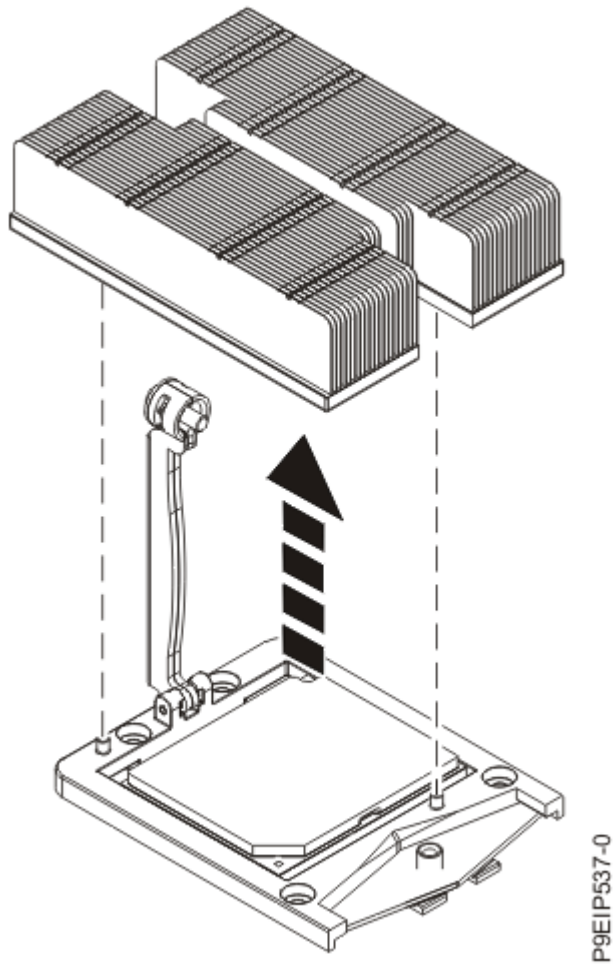
3. Loosen the load arm screw **(A)** of the system processor heat sink **(B)** that you are removing with a #3 Phillips screw driver. The load arm pivots in the direction that is shown in [Figure 38 on page 42](#).



P9EIP536-0

Figure 38. Loosening the load arm screw of the heat sink

4. Grip the heat sink and remove it by lifting it straight up as shown in [Figure 39 on page 43](#).



P9EIP537-0

Figure 39. Removing the heat sink

5. Place the heat sink upside down on a clean surface.
6. Inspect the thermal interface material (TIM) for visible signs of damage. If you see folds, tears, bends, or if you have doubts about the TIM, replace the heat sink and the TIM.
7. Inspect the system processor socket area and remove any dust or debris (use a can of compressed air).
8. Lower the vacuum pen tool onto the system processor module to install. Fully press the top of the pen **(A)** and hold the pen in the center of the system processor module as shown in [Figure 40 on page 44](#). Release the top of the pen to fasten the pen onto the system processor module.

Note: To prevent the system processor module from falling, do not press the tip while holding the pen and the system processor module. Minimize the time and distance that you have the pen holding the system processor module, in case the vacuum seal releases early.

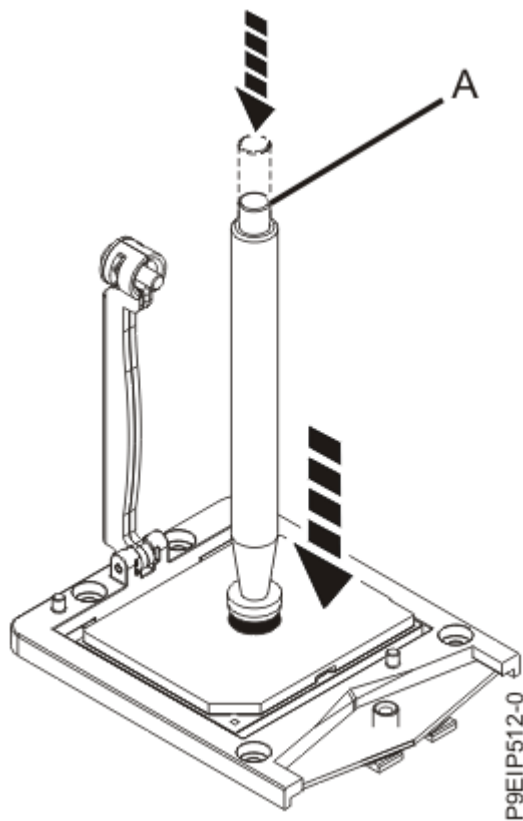


Figure 40. Lowering the removal tool onto the system processor module

9. Holding the pen, lift the pen and system processor module from the old system backplane socket to transfer it to the new system backplane socket.
10. Install the system processor module:
 - a) Lower the pen and system processor module onto the socket as shown in [Figure 41 on page 45](#). Align the beveled corner of the system processor module with the beveled corner on the system processor socket.
Use care to lower the tool evenly without tilting the system processor module.

Note: Do not attempt to slide the tool and the system processor module in any direction while the system processor module is touching the system processor socket.

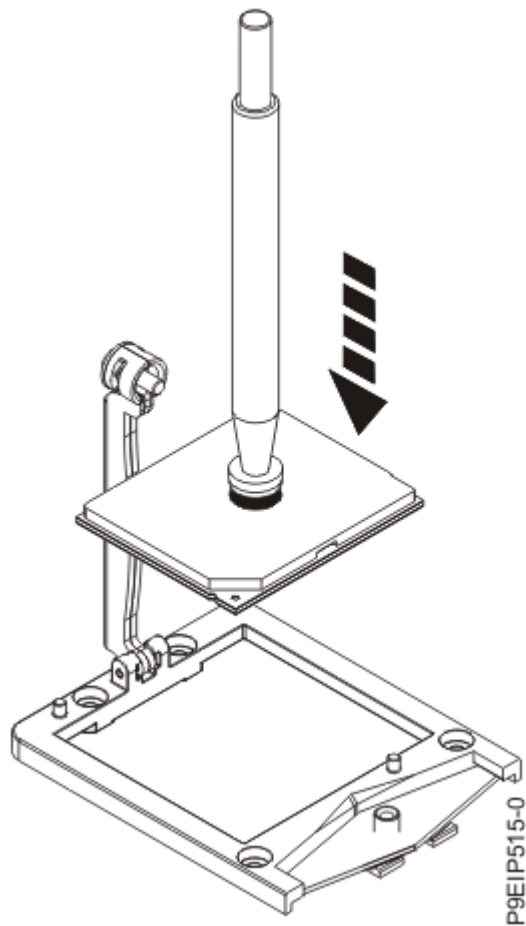
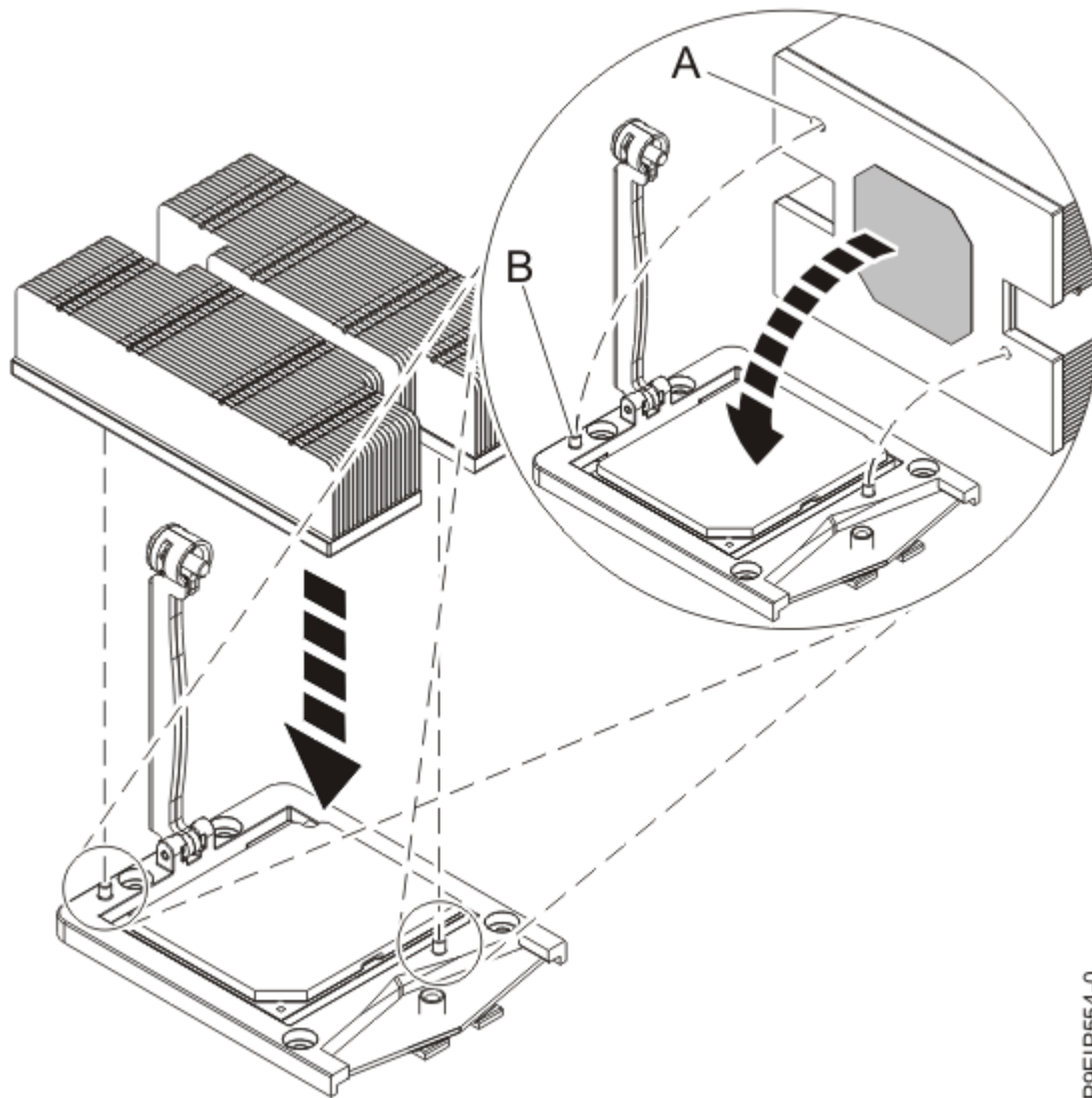


Figure 41. Lowering the system processor module into the system processor socket

- b) After the system processor module is properly aligned, press the top of the pen to release it from the system processor module. Lift the pen off the system processor module.
- 11. Move the processor heat sink to the system processor module. Carefully lower the heat sink over the system processor module, ensuring that the holes in the heat sink **(A)** align with the two guide pins **(B)** on the system processor socket.



P9EIP554-0

Figure 42. Installing the heat sink

12. Move the load arm **(A)** into position over the heat sink **(B)** and tighten the load arm screw with a #3 Phillips screw driver, as shown in [Figure 43 on page 47](#).

Note: Do not overtighten the load arm screw.

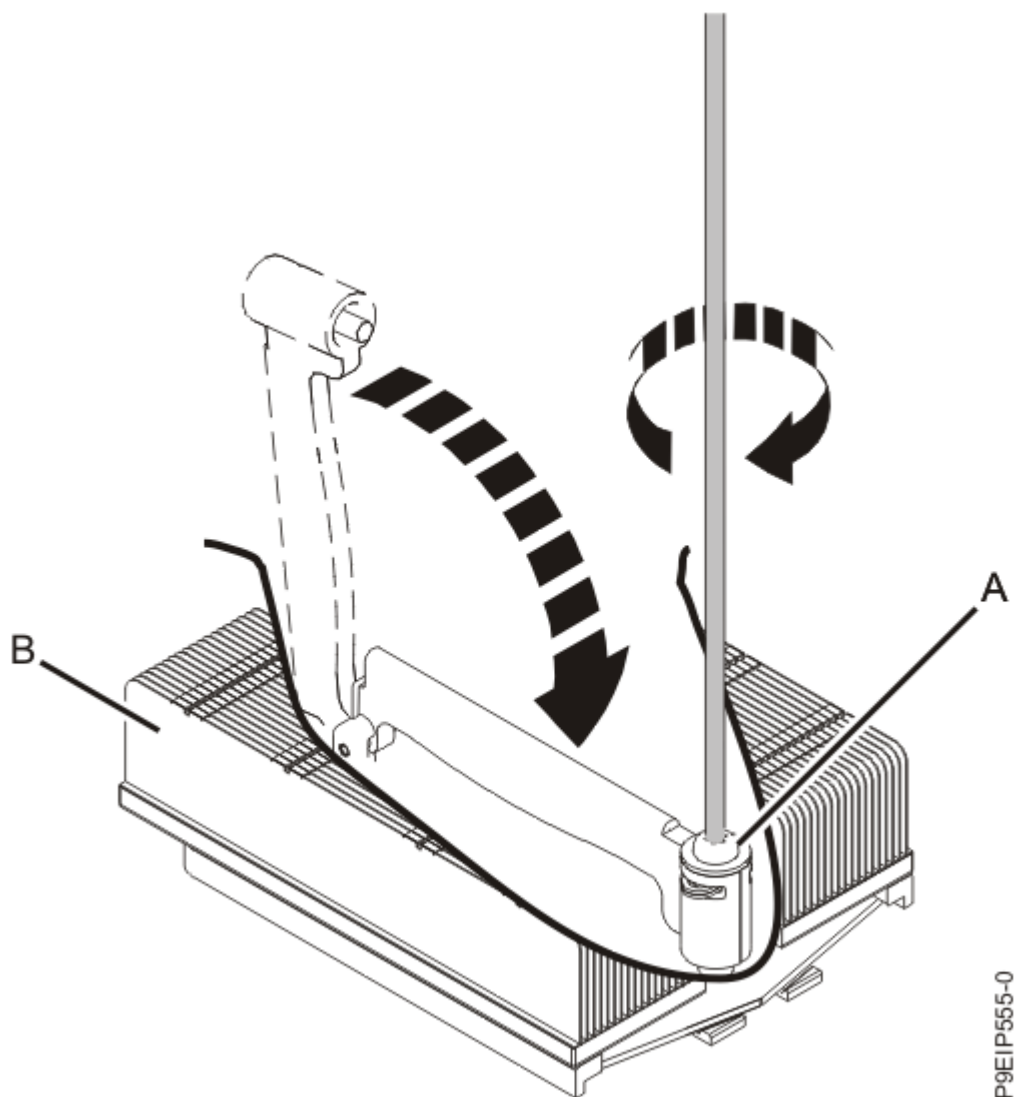
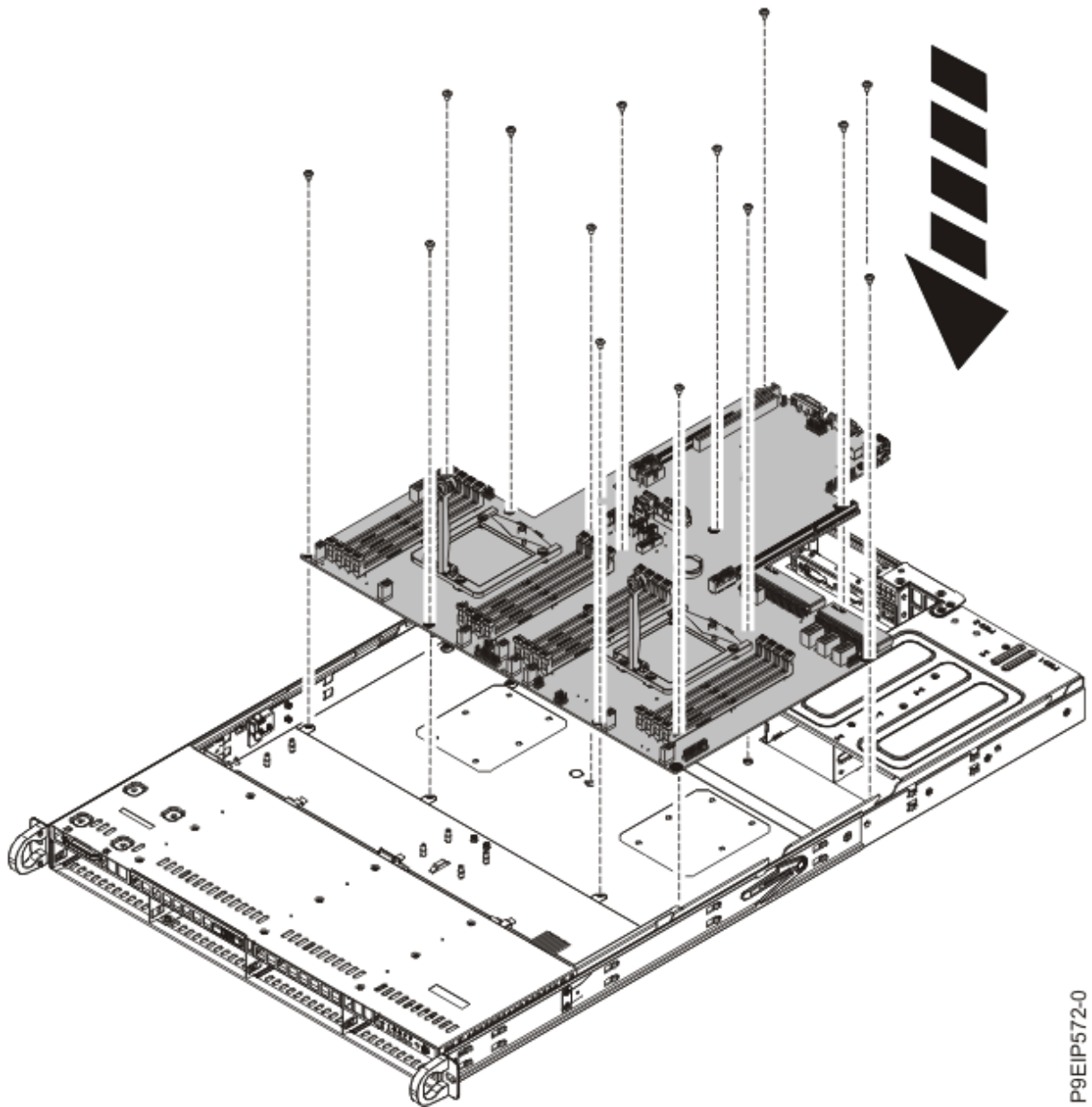


Figure 43. Tightening the load arm screw

The following steps continue installing components into the new system backplane:

13. Moving the front cables out of the way, and carefully holding the processor heat sink, lower the system backplane into the chassis, then slide it slightly back.

See [Figure 44 on page 48](#).



P9EIP572-0

Figure 44. Replacing the system backplane

14. Align and screw the 14 screws into the system backplane.
The screw locations are shown in [Figure 45 on page 49](#).

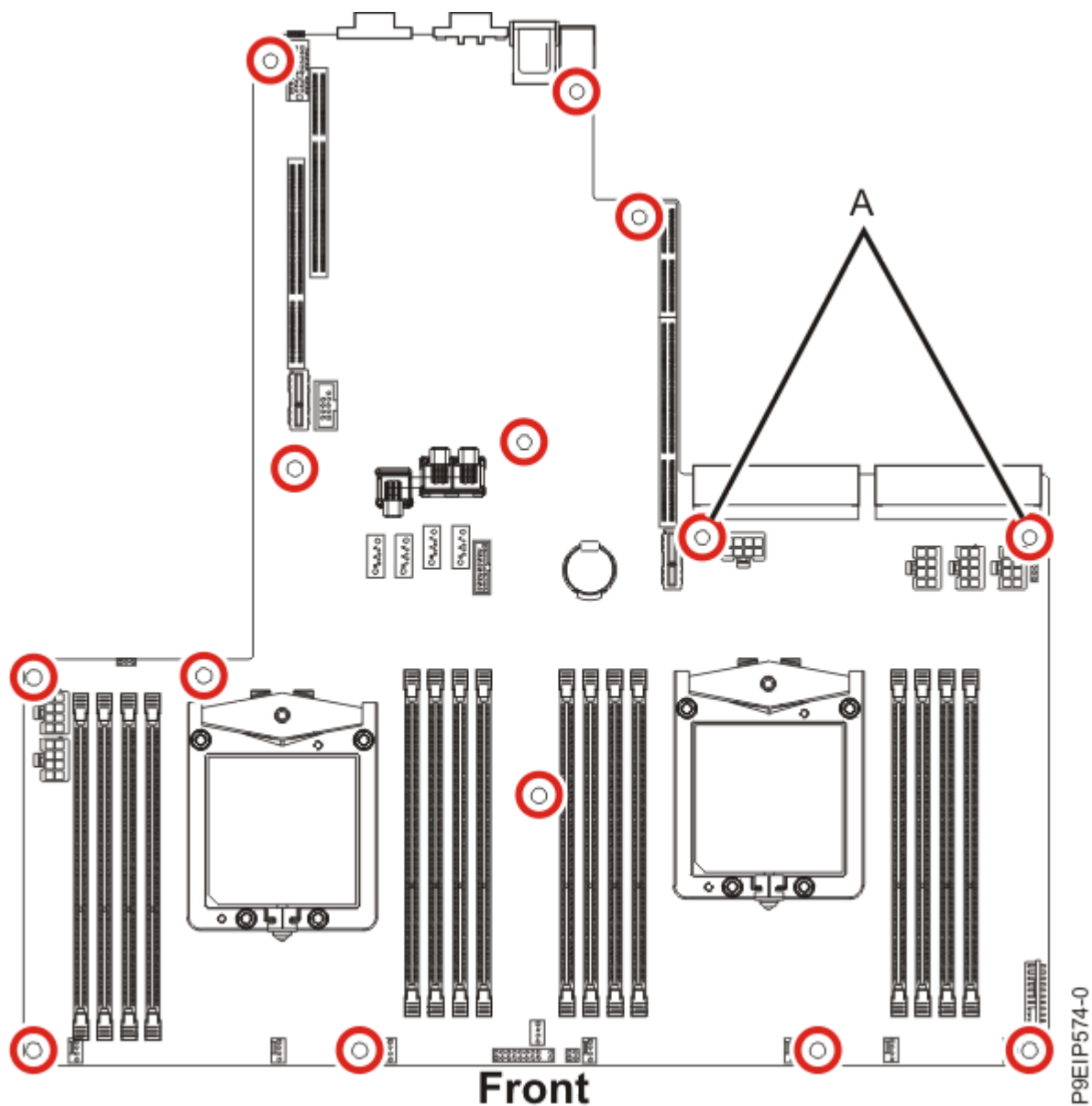


Figure 45. Screw locations

15. Replace the drive signal and drive power cables in the system backplane.
For instructions, see [“Replacing the disk drive backplane in the 7063-CR1 system”](#) on page 12.
16. Replace the operator panel cable into the system backplane as shown in [Figure 46](#) on page 50.

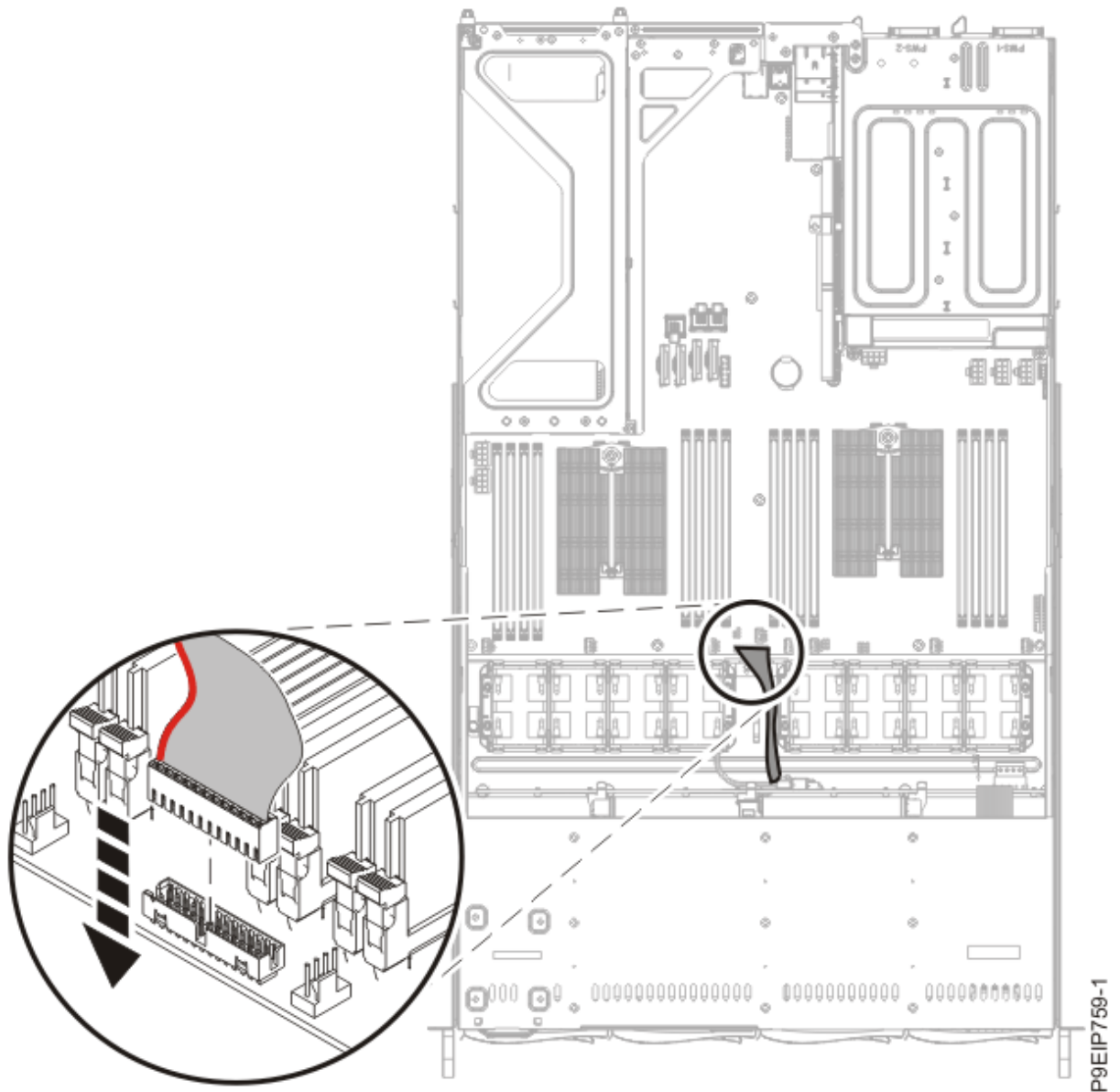


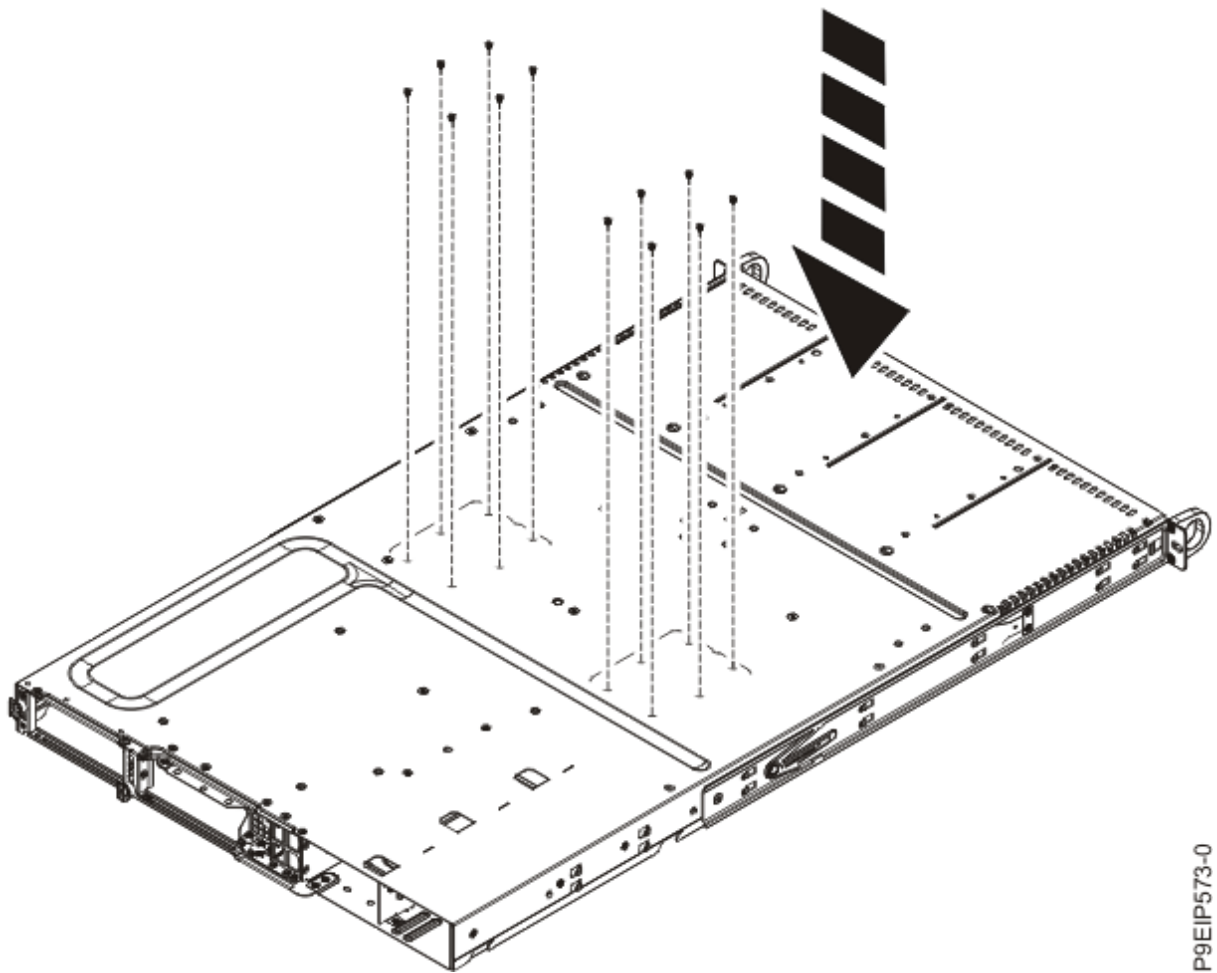
Figure 46. Replacing the operator panel cable

17. Replace the 12 screws from below the chassis that support the processor sockets.

- a) Turn the system over, upside down.
- b) Replace the 12 screws in the bottom of the system.

The screw locations are shown in [Figure 47 on page 51](#).

- c) Turn the system over, right side up.



P9EIP573-0

Figure 47. Processor socket screws on bottom of chassis

18. Using your labels, replace the PCIe risers and adapters.

For instructions, see [“Replacing a PCIe adapter in the 7063-CR1 system” on page 30.](#)

19. Replace the eight fan power connectors into the system backplane.

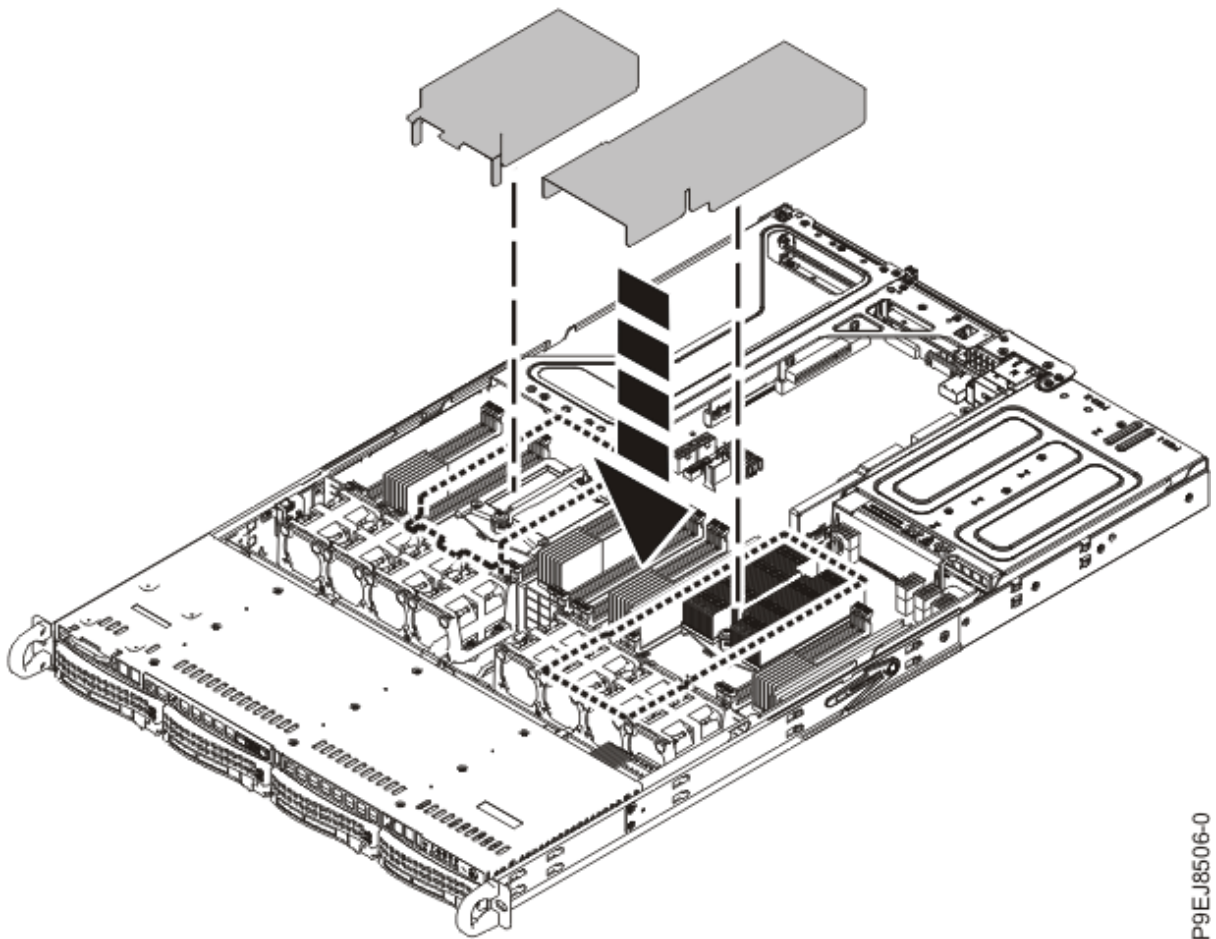
For instructions, see [“Replacing a fan in the 7063-CR1 system” on page 19.](#)

20. Using your labels, replace the memory DIMMs.

For instructions, see [“Removing and replacing memory in the 7063-CR1” on page 24.](#)

21. Install the system processor air baffle as shown in [Figure 48 on page 52.](#)

Insert the edge of the system processor air baffle into the fan support. Then, carefully press the system processor air baffle down into place.



P9EJ8506-0

Figure 48. Installing the system processor air baffle

22. Using your labels, reconnect the USB cable to the USB port **(B)** in the system backplane, then reconnect the serial cable to the serial port **(A)** in the system backplane.

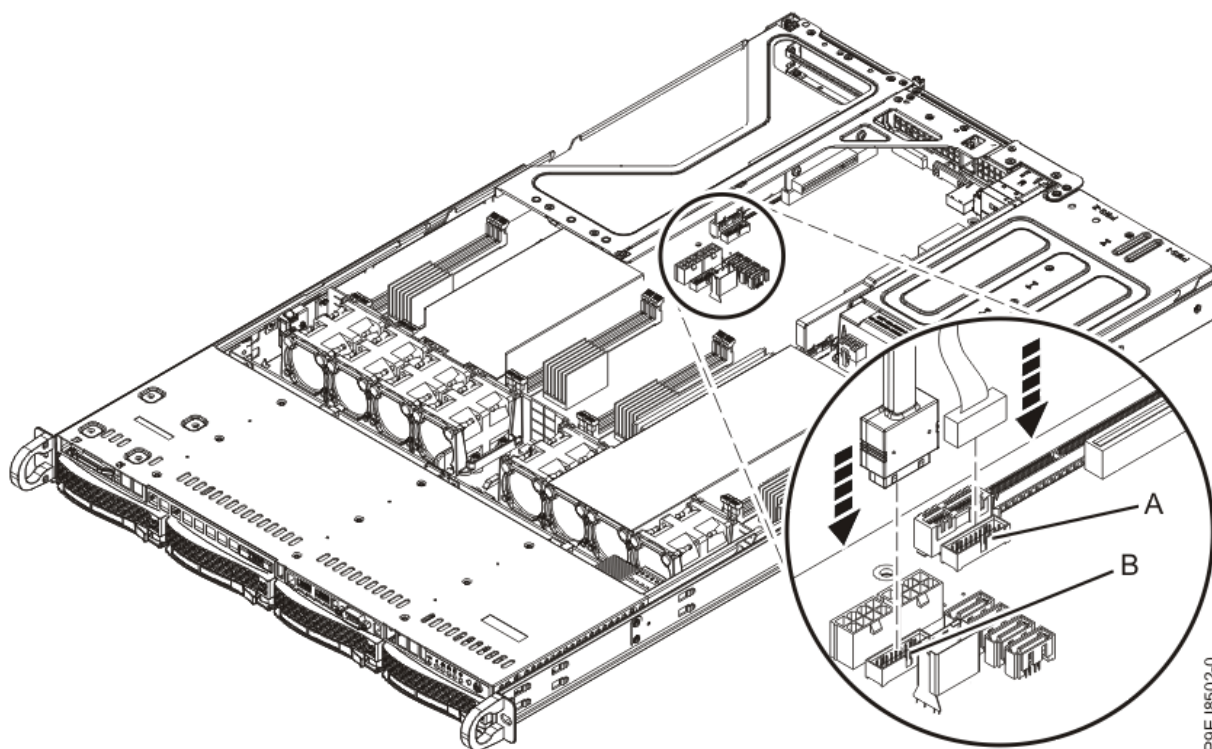


Figure 49. Reconnecting the USB cable

23. Replace both power supplies in the system.

For instructions, see [“Replacing a power supply in the 7063-CR1 system”](#) on page 33.

Preparing the 7063-CR1 system for operation after removing and replacing the system backplane

Learn how to prepare the IBM 7063-CR1 Hardware Management Console system for operation after removing and replacing the system backplane.

Procedure

1. Prepare the system for operation.

For instructions, see [“Preparing the 7063-CR1 system for operation after removing and replacing internal parts”](#) on page 83.

2. Boot the system and go into the Petitboot shell by selecting **Exit to shell** from the boot menu. Setup networking for the BMC. To set a static IP address, follow these steps:

- a) Set the mode to static by running this command:

```
ipmitool lan set 1 ipsrc static
```

- b) Set your IP address by running this command:

```
ipmitool lan set 1 ipaddr ip_address
```

where `ip_address` is the static IP address that you are assigning to this system.

- c) Set your netmask by running this command:

```
ipmitool lan set 1 netmask netmask_address
```

where `netmask_address` is the netmask for the system.

- d) Set your gateway server by running this command:

```
ipmitool lan set 1 defgw ipaddr gateway_server
```

where `gateway_server` is the gateway for this system.

- e) Confirm the IP address by running the command

```
ipmitool lan print 1
```

- f) To activate the network interface, perform the following command:

```
ipmitool mc reset cold
```

- g) To return to the boot menu, perform the following command:

```
exit
```

3. Set the system serial number and model number in the system backplane by completing the following steps.

These commands require root access.

- Select **Hardware Management Console** from the boot menu.
- Contact IBM Support to obtain the pesh password to become root on the HMC.
- Check the current system date and serial.

Use the command:

```
lshmc -v
```

- The date might be set to Jan 1st, 1970
- The serial might be set to all zeroes (16 zeroes). If that is the case assume the serial is 7 zeroes (0000000) when requesting root access and when running pesh.

- d) When the HMC boots, open a restricted shell (rshterm).

- If the HMC interface shows `Error status 500`. Follow these steps to get to a restricted shell (rshterm) from which to access the HMC command line and perform the steps outlined once root access is obtained.:

Alt-Ctrl-F4 (to switch to a restricted shell)

Alt-Ctrl-F2 (to return to the GUI)

- If the date and time is incorrect, set it via the GUI or using the command `chhmc`

- e) Update the machine serial number by running the following command, replacing `1234567` with your seven character serial number:

```
/opt/openpower/lht/bin/updateserial 1234567
```

- f) If needed, update the machine type and model by performing the following steps:

- Run the following command to check the value:

```
lshmc -v | grep TM
```

- If the value is not `7063-CR1`, run the following command to set it properly.

```
/opt/openpower/lht/bin/updatemodel 7063-CR1
```

4. Stop the system.

For instructions, see [“Stopping the 7063-CR1 system”](#) on page 85.

5. Obtain the latest PNOR image for the HMC from [Fix Central](http://www.ibm.com/support/fixcentral/) (www.ibm.com/support/fixcentral/).

- Click **Select product**.
- Select **Power** from the **Product Group** list.
- Select **Power Hardware Management Console** from the **Product** list.

- d) Select **7063-CR1** from the **Select from Power Hardware Management Console** list.
- e) Select the most recent machine code available from the **Select from 7063-CR1** list.
Note: The following steps might vary slightly depending on the download option you choose.
- f) Select the most recent service pack that is available. Then, click **Continue**.
- g) Select the download option that you prefer. Then, click **Continue**.
- h) Specify the serial number for your machine. Then, click **Continue**.
- i) To download the PNOR image file, click the download link that is next to the file with the extension .pnor.
6. Update the PNOR firmware.
 - a) Connect to the BMC using the IP address you set in [“2” on page 53](#). Use the following credentials:
 - User: ADMIN
 - Password: ADMIN
 - b) From the Maintenance list on the dashboard, select **PNOR Update**.
 - c) In the PNOR Upload window, choose the .pnor file from your local folder on your system and click **Upload PNOR**. Wait for the file to be uploaded. Then, click **OK**.
The existing and new dates of the PNOR firmware are displayed.
 - d) Click **Start Upgrade**.
As the PNOR update installs, the progress is displayed.
Note: You cannot perform other activities by using the BMC interface until the PNOR update is complete.
7. Start the system.
For instructions, see [“Starting the 7063-CR1 system” on page 84](#).
8. When the system finishes rebooting, select **System Configuration** from the boot menu to reconfigure the boot settings.
9. Under the **Boot Order** item, complete the following steps:
 - a) Navigate to **Clear** and press **Enter**.
 - b) Navigate to **Add Device:** and press **Enter**.
 - i) Navigate to the device you want; sda2 and press **Enter**.
 - ii) Tab to **OK** and press **Enter**.
10. Under the **Boot Console** item, select **/dev/tty1 [VGA]**
11. Select **OK** to save the settings.
12. Restart the system. Complete the following steps:
 - a) Stop the system.
For instructions, see [“Stopping the 7063-CR1 system” on page 85](#).
 - b) Start the system.
For instructions, see [“Starting the 7063-CR1 system” on page 84](#).
13. Have the customer verify the BMC network settings by completing the following steps:
 - a) Access the BMC GUI from a browser.
The user needs Administrator privilege. You can use either Google Chrome or Mozilla Firefox browsers.
 - b) Navigate to **HMC Management > Console Settings > Change BMC/IPMI Network Settings**
14. Have the customer access the BMC and restore the BMC settings.
 - a) Access the BMC GUI from a browser.
The user needs Administrator privilege. You can use either Google Chrome or Mozilla Firefox browsers.

- b) Navigate to **Maintenance > IPMI Configuration**.
 - c) Press the **Browse** button to locate backup file that was created earlier.
The default file name is `save_config.bin`
 - d) Press the **Reload** button to restore the configuration.
15. If the firmware level is not at the latest, recommend to the customer to update it.
For instructions, see [Updating the system firmware by using the BMC \(www.ibm.com/support/knowledgecenter/POWER9/p9ej6/p9ej6_update_firmware_bmc.htm\)](http://www.ibm.com/support/knowledgecenter/POWER9/p9ej6/p9ej6_update_firmware_bmc.htm).

Removing and replacing a system processor module in the 7063-CR1

Learn how to remove and replace a system processor module in the IBM 7063-CR1 Hardware Management Console system.

About this task



Attention: The following procedures describe the removal and replacement of the system processor module. Only an authorized service representative must remove or replace this part.

Removing a system processor module from the 7063-CR1 system

Learn how to remove a system processor module from the IBM 7063-CR1 Hardware Management Console system.

Before you begin

Power off the system and place it in the service position. For instructions, see [“Preparing the 7063-CR1 system to remove and replace internal parts” on page 80](#).

About this task

(L007)



CAUTION: A hot surface nearby. (L007)

As part of the system processor module replacement, the heat sink is removed. When the heat sink is removed from the system processor module, the thermal interface material (TIM) is typically adhered to the heat sink. Unless damaged, the TIM that is adhered to the heat sink can be reused. If the TIM is damaged, do not reuse the removed heat sink. Before you begin the processor removal and replacement procedure, ensure that you have a spare TIM and heat sink on hand.

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. Open the packaging of the new system processor module and place the cover upside down next to the tray, as shown in [Figure 50 on page 57](#). The cover is used for the system processor module that you are replacing.

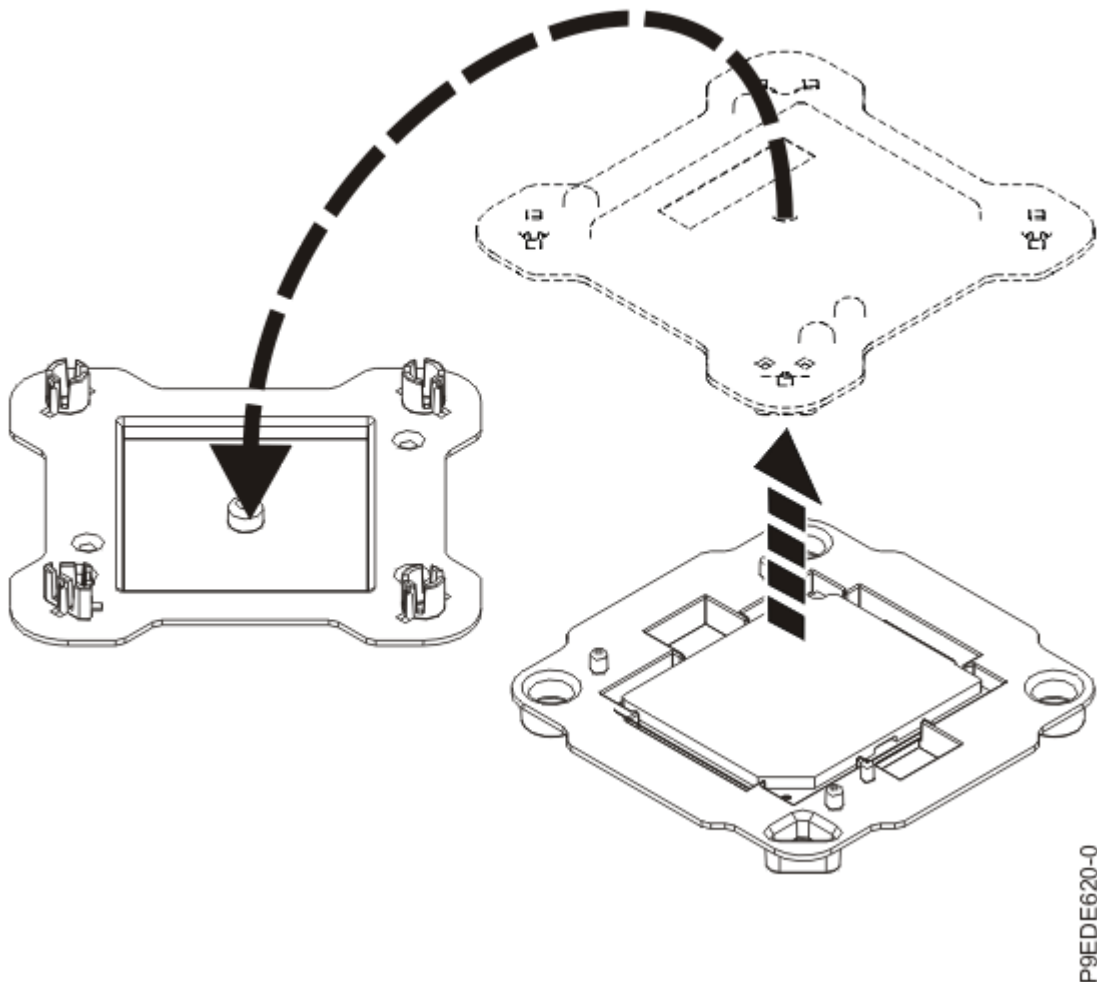
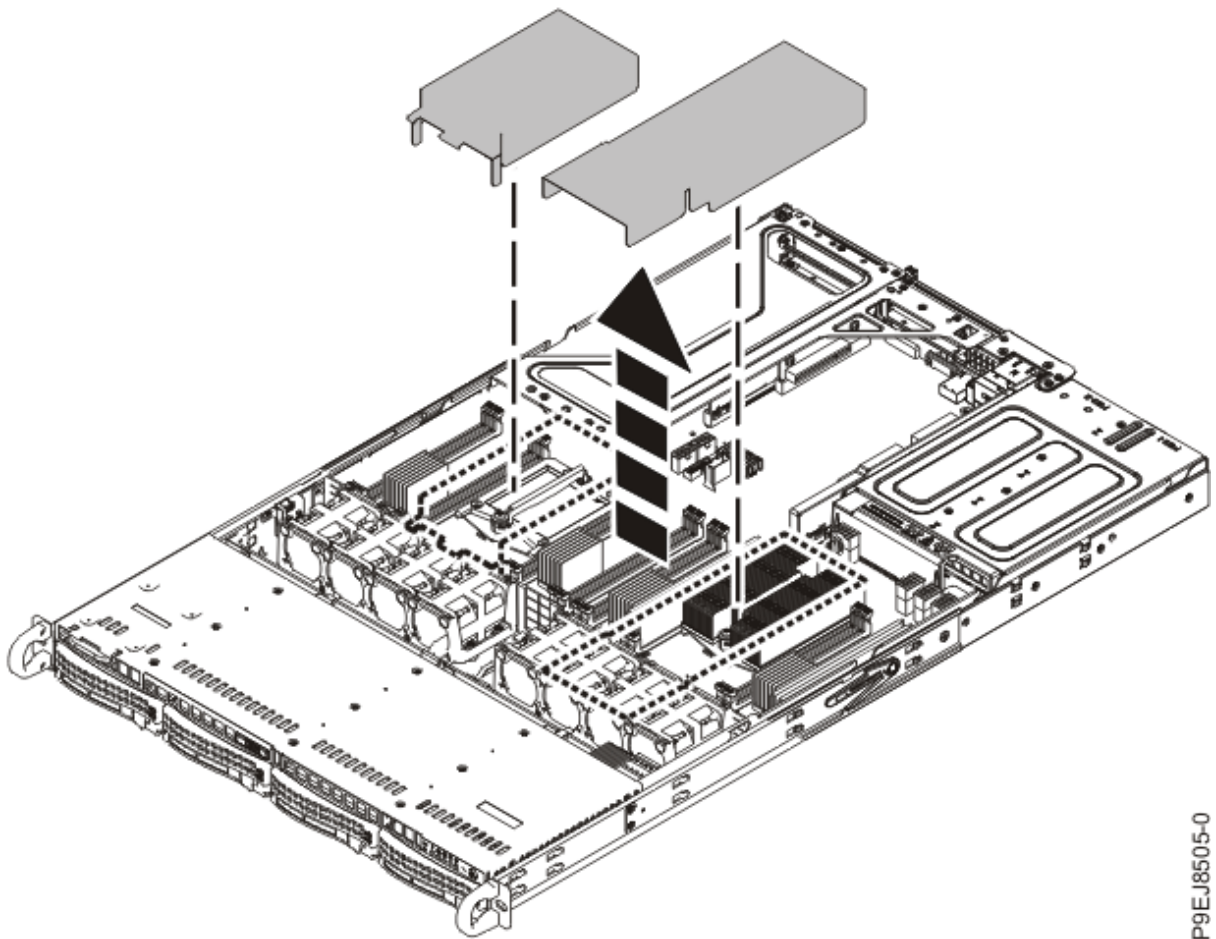


Figure 50. Opening the system processor module packaging

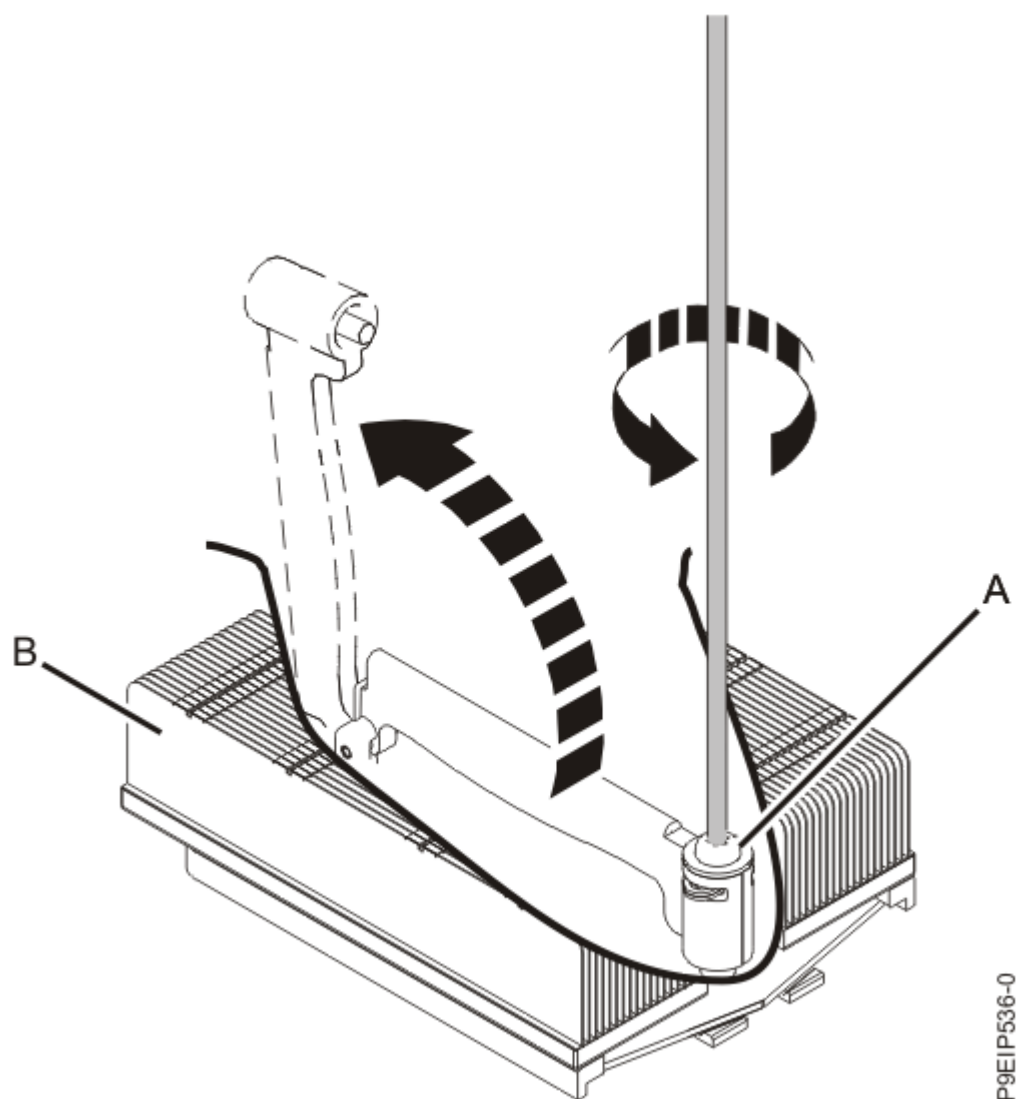
3. Remove the processor air baffle as shown in [Figure 51 on page 58](#). Carefully unsnap and lift the processor air baffle from the system.



P9EJ8505-0

Figure 51. Removing the system processor air baffle

4. Loosen the load arm screw **(A)** of the system processor heat sink **(B)** that you are removing with a #3 Phillips screw driver. The load arm pivots up in the direction that is shown in [Figure 52 on page 59](#).



P9EIP536-0

Figure 52. Loosening the load arm screw of the heat sink

5. Grip the heat sink and remove it by lifting it straight up as shown in [Figure 53 on page 60](#).

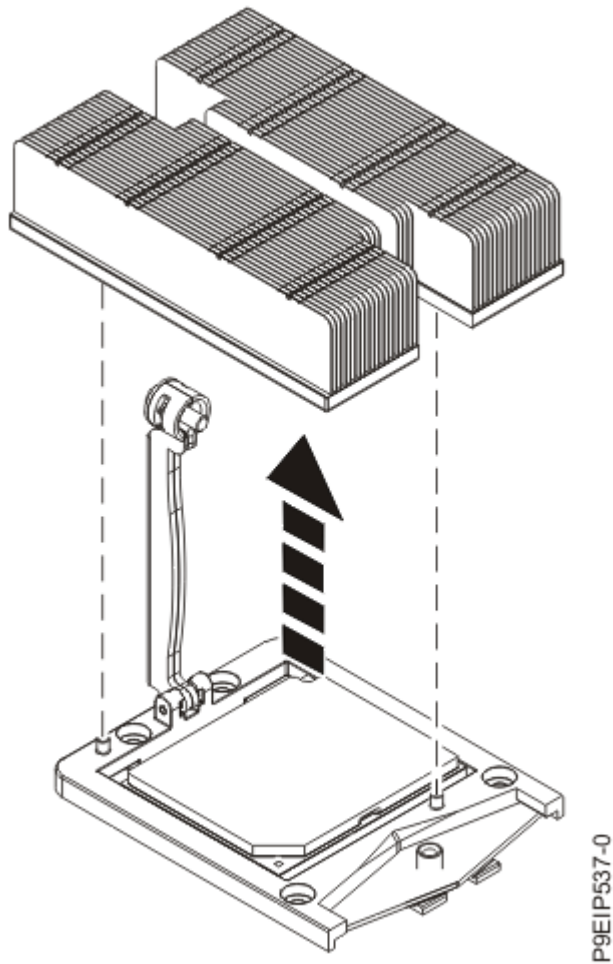


Figure 53. Removing the heat sink

6. Place the heat sink upside down on a clean surface.
7. Inspect the system processor socket area and remove any dust or debris (use a can of compressed air).
8. Lower the vacuum pen tool onto the system processor module. Fully press the top of the pen **(A)** and hold the pen in the center of the system processor module as shown in [Figure 54 on page 61](#). Release the top of the pen to fasten the pen onto the system processor module.

Note: To prevent the system processor module from falling, do not press the tip while holding the pen and the system processor module. Minimize the time and distance that you have the pen holding the system processor module in case the vacuum seal releases early.

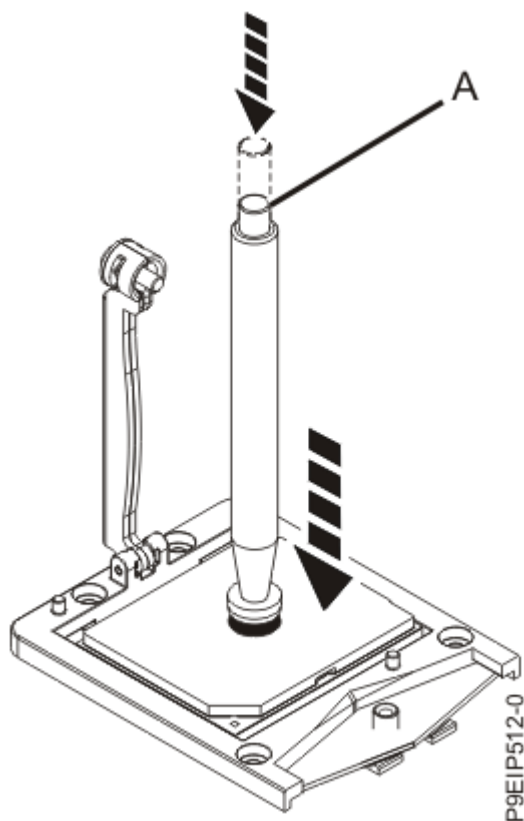


Figure 54. Locking the vacuum pen to the system processor module

9. Holding the vacuum pen, lift the pen and system processor module from the socket. Place them at an angle on the top cover of the system processor module packaging as shown in [Figure 55 on page 62](#). Setting the system processor module at an angle on the top cover of the system processor module packaging will make it easier to pick up and place in the packaging after you replace the system processor module.

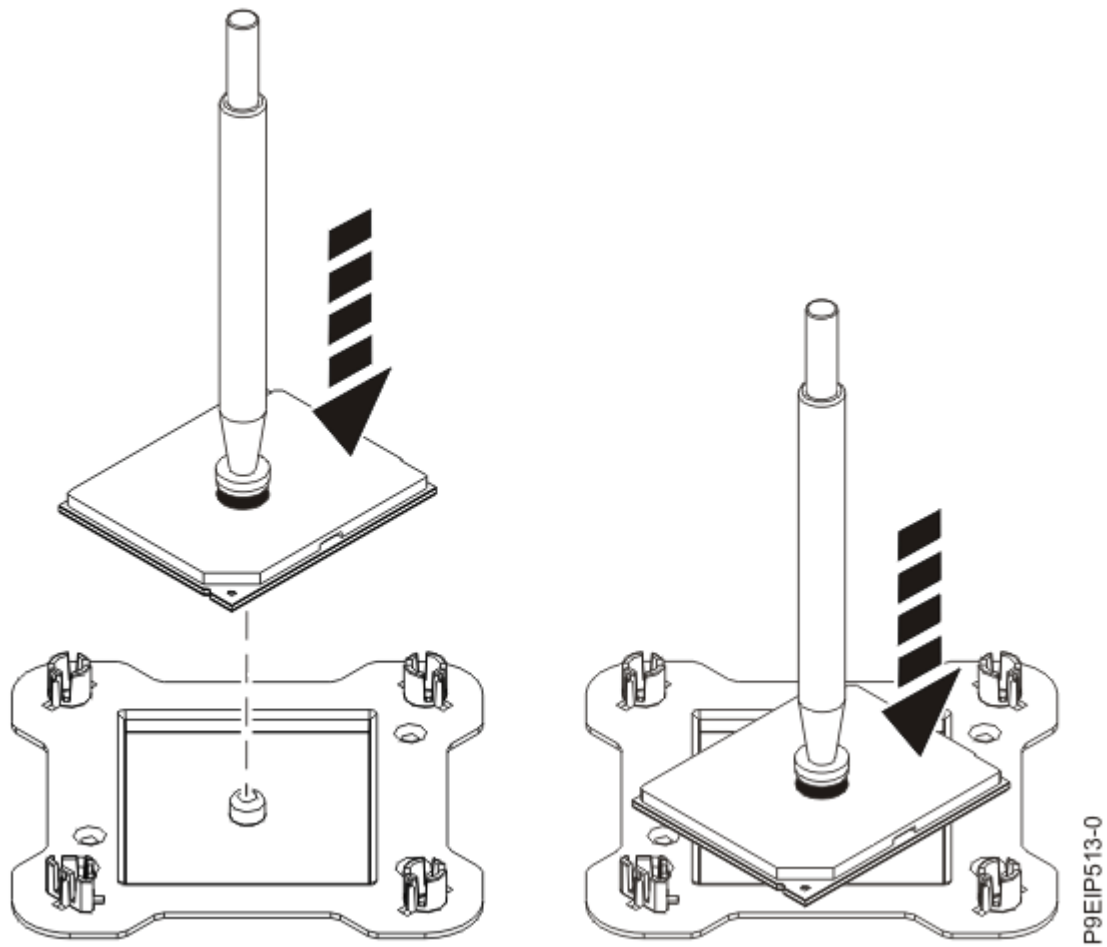


Figure 55. Placing the system processor module at an angle on the top cover of the packaging
10. Press the top of the pen to release the system processor module onto the cover.

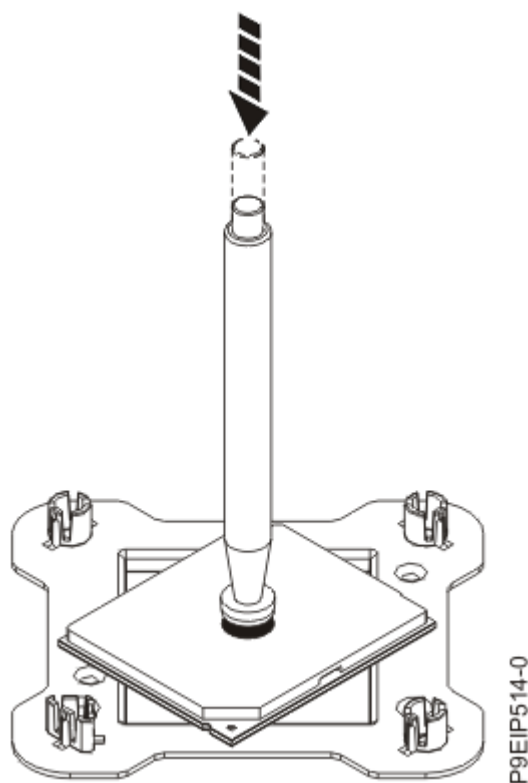


Figure 56. Releasing the pen

Replacing a system processor module in the 7063-CR1 system

Learn how to replace a system processor module in the IBM 7063-CR1 Hardware Management Console system.

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. Inspect the system processor socket area and remove any dust or debris (use a can of compressed air).
3. Lower the vacuum pen tool onto the system processor module to install. Fully press the top of the pen (**A**) and hold the pen in the center of the system processor module as shown in [Figure 57 on page 64](#). Release the top of the pen to fasten the pen onto the system processor module.

Note: To prevent the system processor module from falling, do not press the tip while holding the pen and the system processor module. Minimize the time and distance that you have the pen holding the system processor module, in case the vacuum seal releases early.

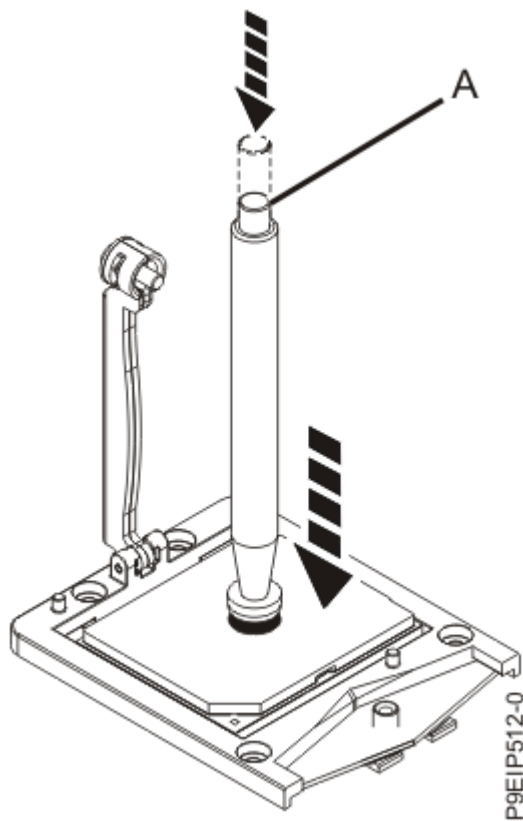


Figure 57. Lowering the removal tool onto the system processor module

4. Install the system processor module:

- a) Lower the pen and system processor module onto the socket as shown in [Figure 58 on page 65](#). Align the beveled corner of the system processor module with the beveled corner on the system processor socket.

Use care to lower the tool evenly without tilting the system processor module.

Note: Do not attempt to slide the tool and the system processor module in any direction while the system processor module is touching the system processor socket.

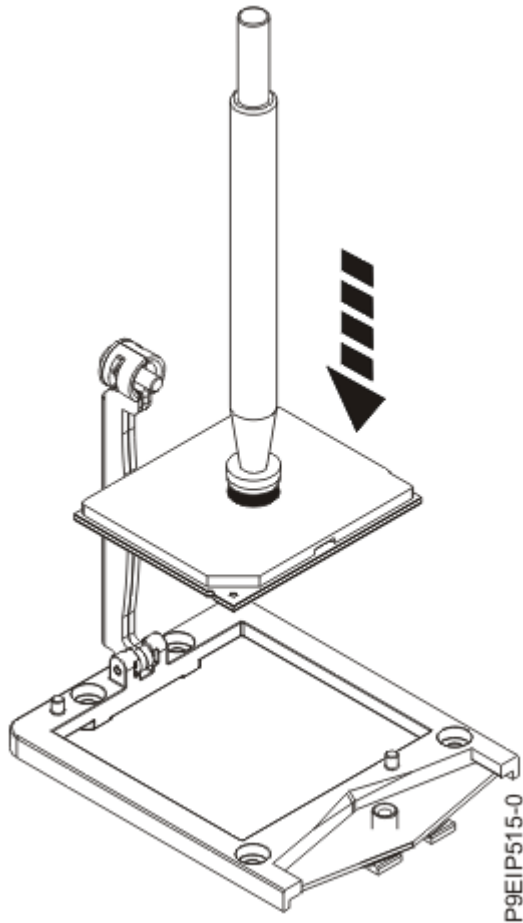
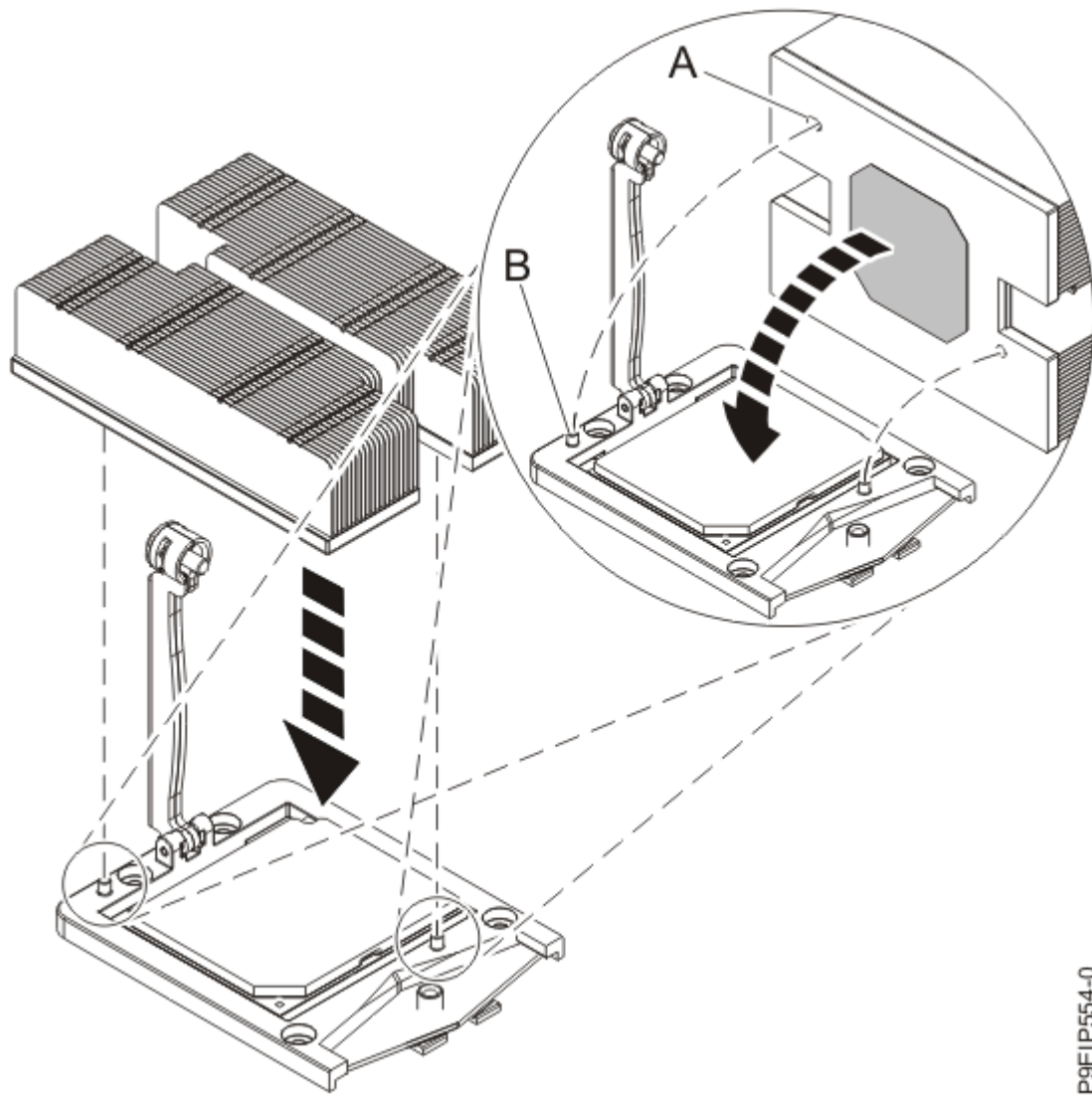


Figure 58. Lowering the system processor module into the system processor socket

- b) After the system processor module is properly aligned, press the top of the pen to release it from the system processor module. Lift the pen off the system processor module.
5. Install the new supplied heat sink that is provided in the FRU kit. The TIM is pre-applied to the heat sink. Carefully lower the heat sink over the system processor module, ensuring that the holes in the heat sink **(A)** align with the two guide pins **(B)** on the socket, as shown in [Figure 59 on page 66](#).



P9EIP554-0

Figure 59. Installing the heat sink

6. Move the load arm **(A)** into position over the heat sink **(B)** and tighten the load arm screw with a #3 Phillips screw driver, as shown in [Figure 60 on page 67](#).

Note: Do not overtighten the load arm screw.

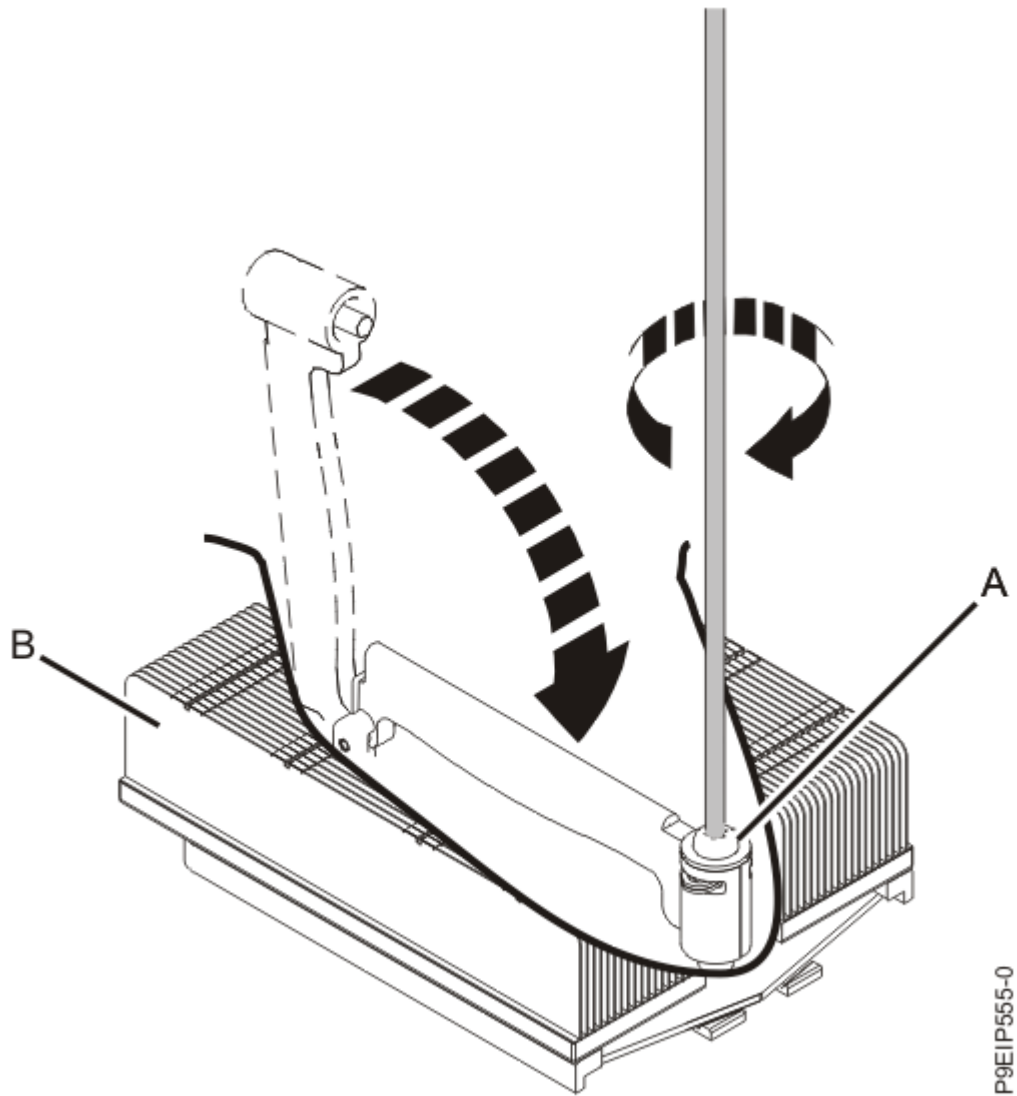
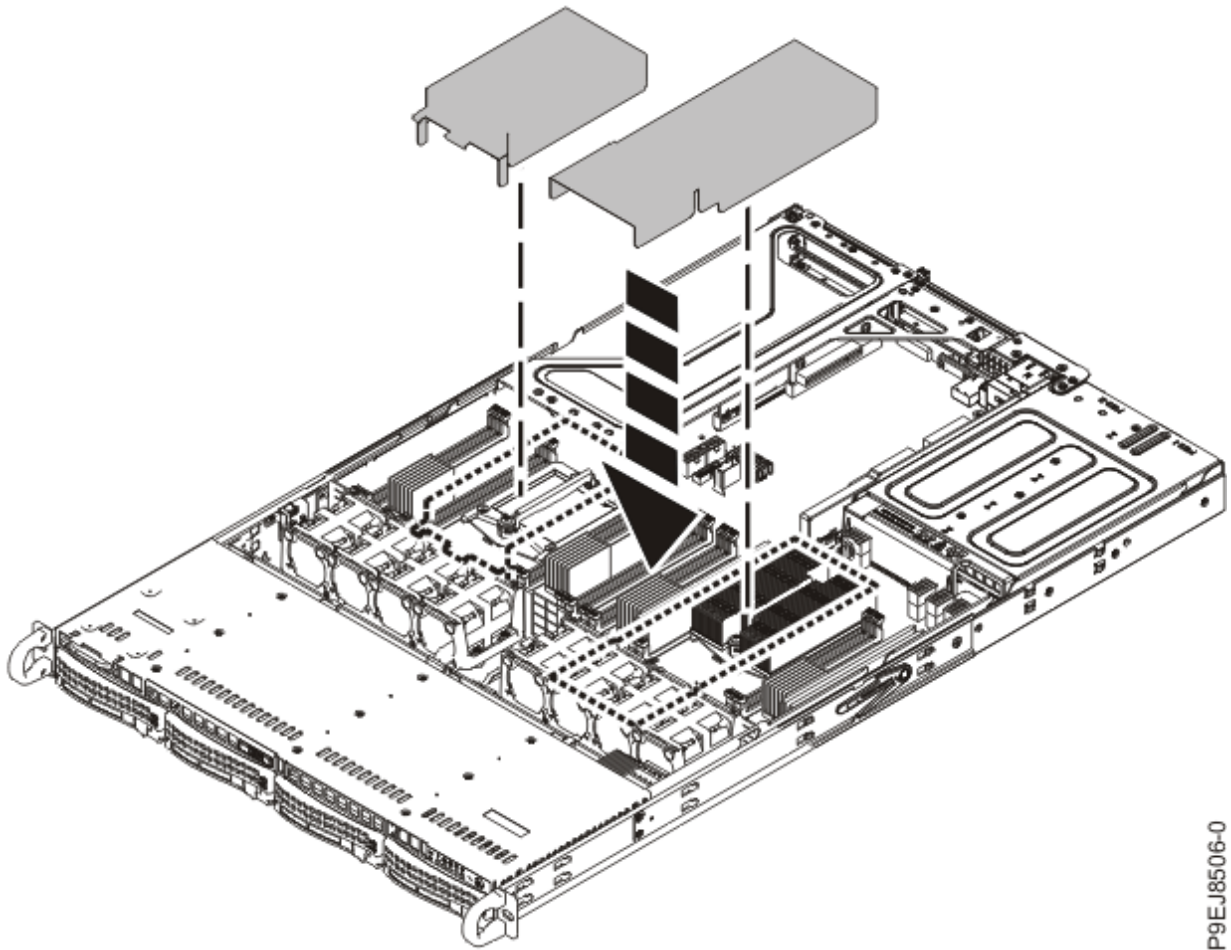


Figure 60. Tightening the load arm screw

7. Install the system processor air baffle as shown in [Figure 61](#) on page 68.

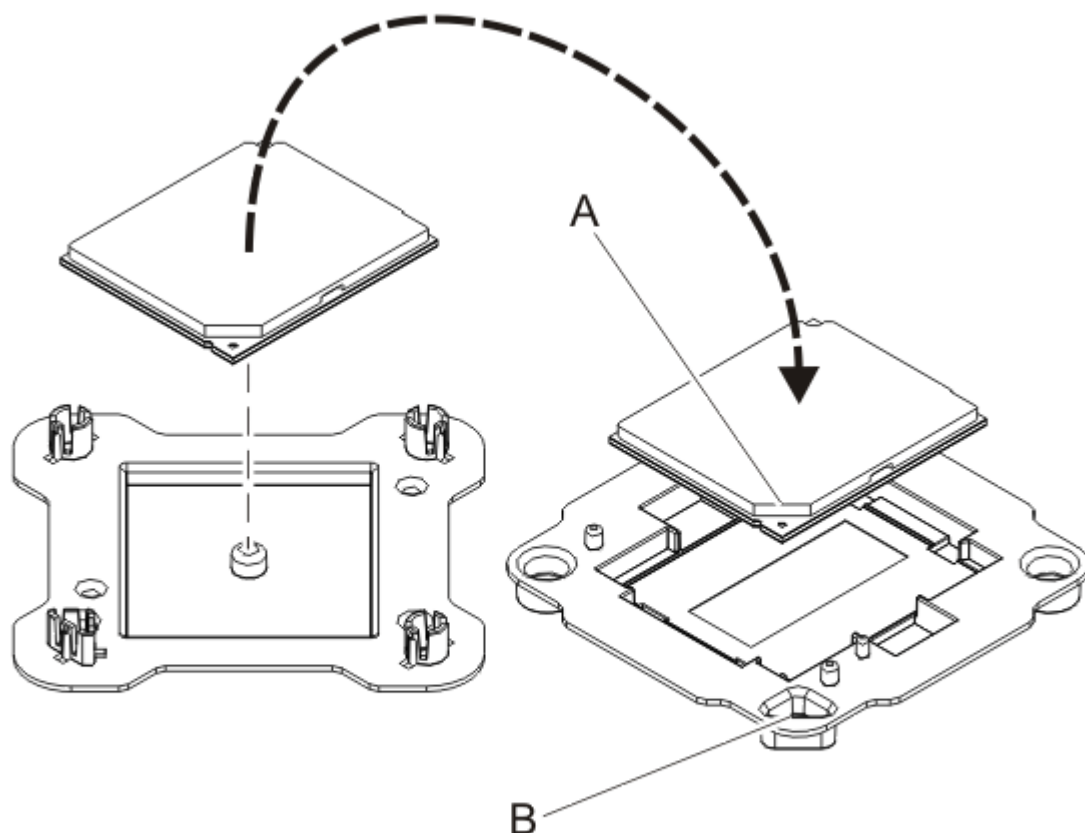
Insert the edge of the system processor air baffle into the fan support. Then, carefully press the system processor air baffle down into place.



P9EJ8506-0

Figure 61. Installing the system processor air baffle

8. Lightly grip the system processor module that you replaced by the edges and lift it off the shipping cover. Align the beveled corner of the module **(A)** to the corner of the tray with the triangle **(B)** and place it in the tray, as shown in [Figure 62 on page 69](#).



P9EDE608-0

Figure 62. Placing the system processor module into the shipping tray

What to do next

Prepare the system for operation. For instructions, see [“Preparing the 7063-CR1 system for operation after removing and replacing internal parts”](#) on page 83.

Removing and replacing the time-of-day battery in the 7063-CR1

Learn how to remove and replace the time-of-day battery in the IBM 7063-CR1 Hardware Management Console system.

Before you begin

Power off the system and place it in the service position. For instructions, see [“Preparing the 7063-CR1 system to remove and replace internal parts”](#) on page 80.

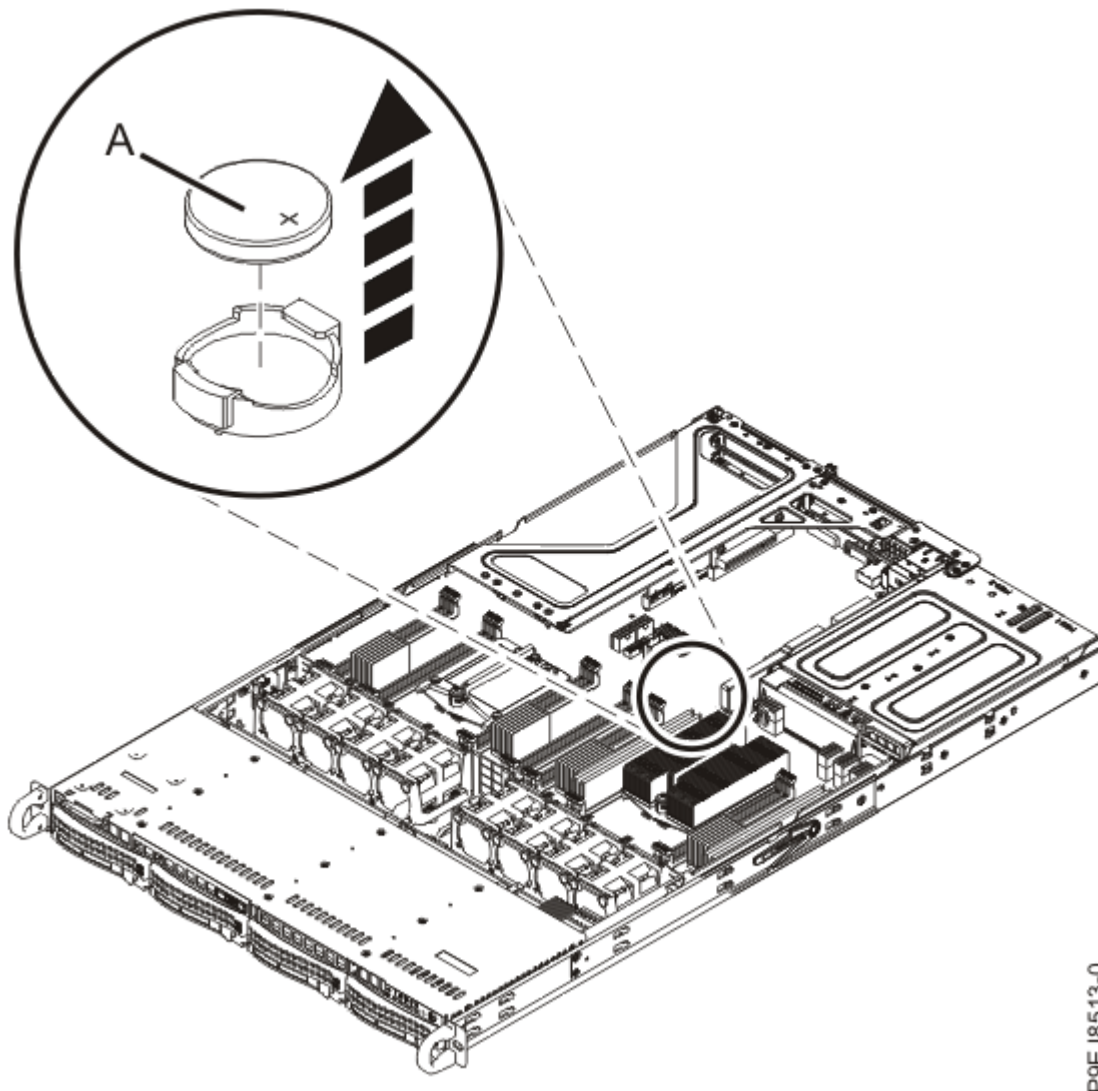
Procedure

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 time-of-day battery **(A)** by using your thumb to press the spring latch toward the back of the system to release the time-of-day battery. Lift the time-of-day battery as shown in [Figure 63 on page 70](#).
- When you remove the time-of-day battery, do not use a metallic tool to disengage it from its slot.



P9EJ8513-0

Figure 63. Time-of-day battery location

3. To replace the time-of-day battery, use your thumb to press the spring latch toward the rear of the system and replace the time-of-day battery.
- The orientation of the + of the battery is up.

What to do next

Prepare the system for operation. For instructions, see [“Preparing the 7063-CR1 system for operation after removing and replacing internal parts” on page 83.](#)

You need to set the system's time after you replace the time-of-day battery. You can set the time after the system is running by logging in to the web GUI.

Removing and replacing the USB cable and connector in the 7063-CR1

Learn how to remove and replace the USB cable and connector in the IBM 7063-CR1 Hardware Management Console system.

Removing the USB cable and connector from the 7063-CR1 system

Learn how to remove the USB cable and connector from the IBM 7063-CR1 Hardware Management Console systems.

Before you begin

Power off the system and place it in the service position. For instructions, see [“Preparing the 7063-CR1 system to remove and replace internal parts” on page 80.](#)

Procedure

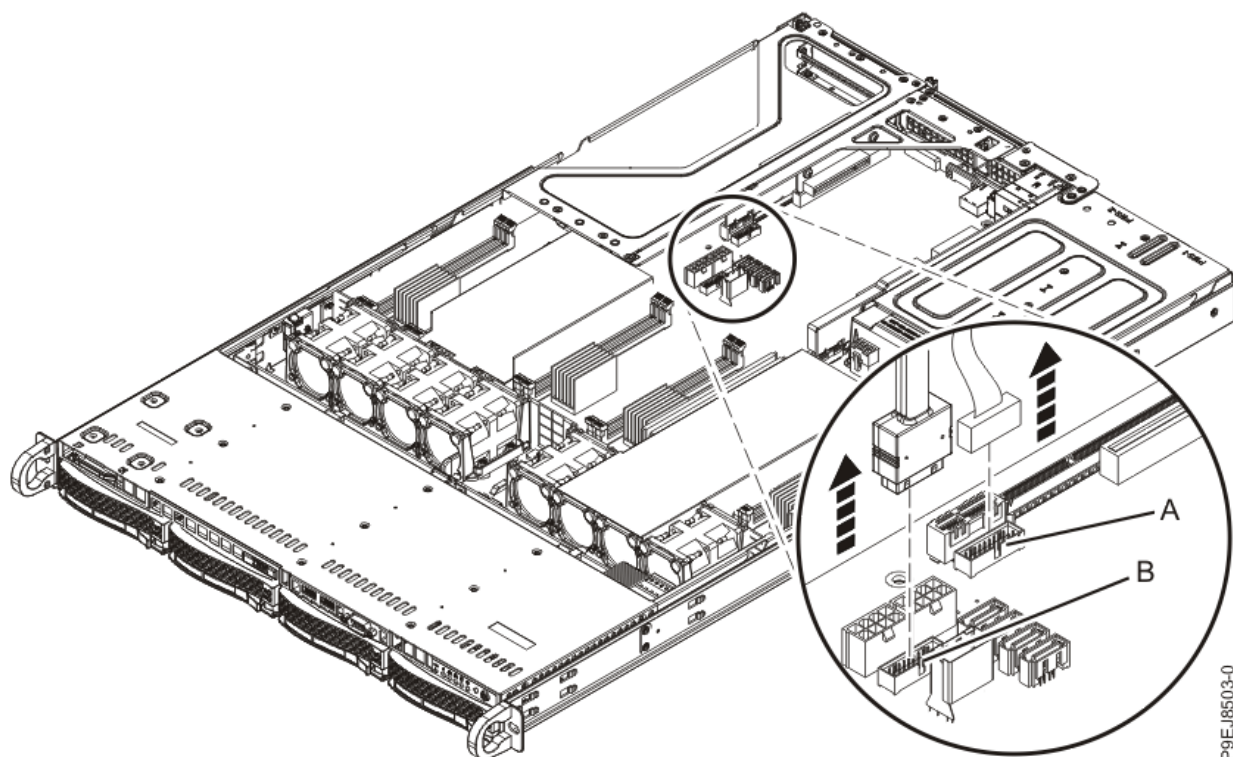
1. Attach the electrostatic discharge (ESD) wrist strap.

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. Label where the USB cable **(B)** and the serial cable **(A)** connect into the system backplane and unplug both cables.
The serial cable is non-functional, and may not be included in your system.



P9EJ8503-0

Figure 64. Disconnecting the USB and serial cables

3. Remove the USB cable and connector as shown in Figure 65 on page 73.
 - a) Push the release latch **(A)** to the left, and slightly push the latch towards the front of the chassis.
This releases and pushes the USB cable and connector out of the front of the chassis.
 - b) Slide the USB cable and connector out of the front of the system, being careful not to catch the cable on the chassis as you remove the USB cable.

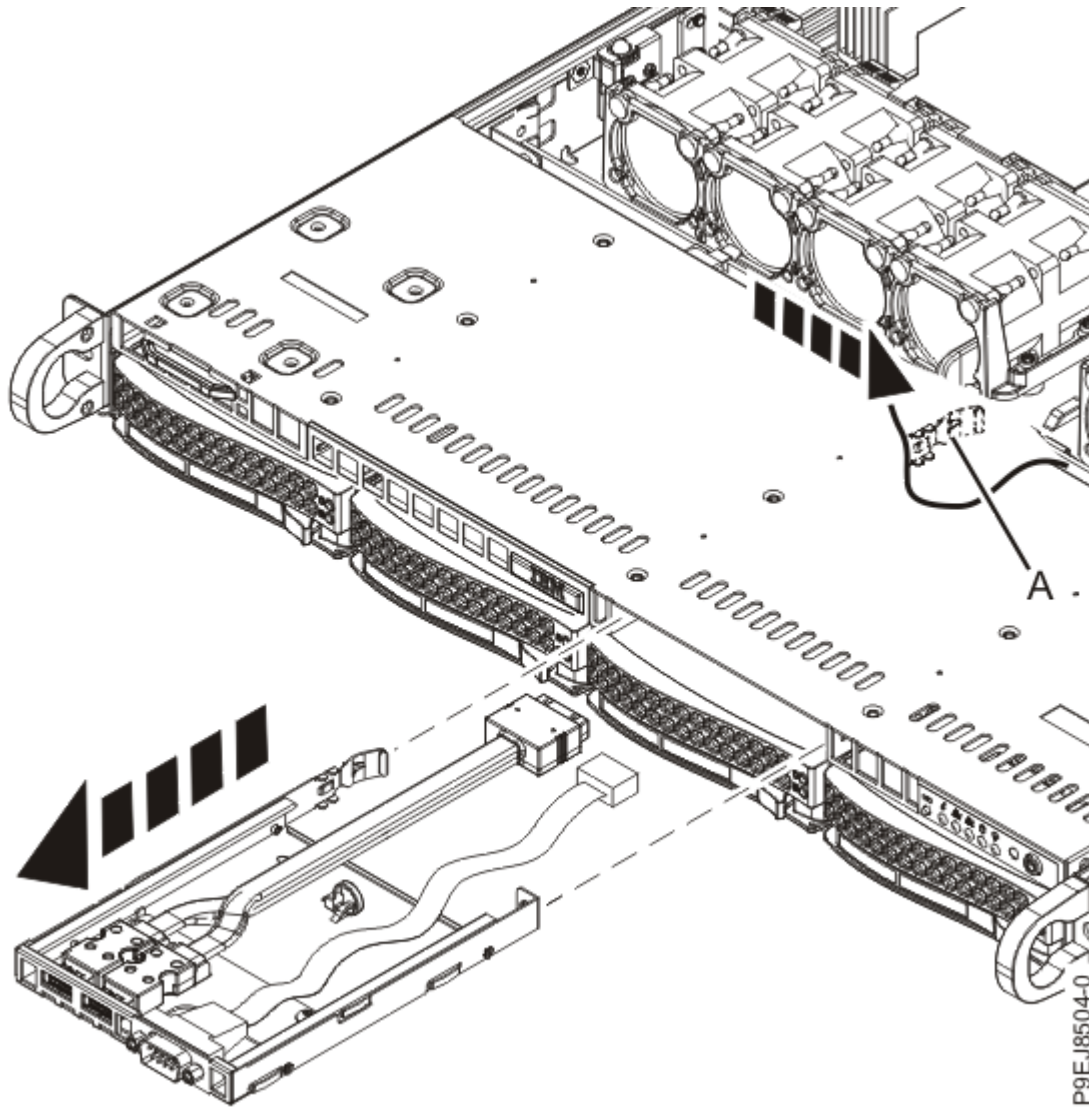


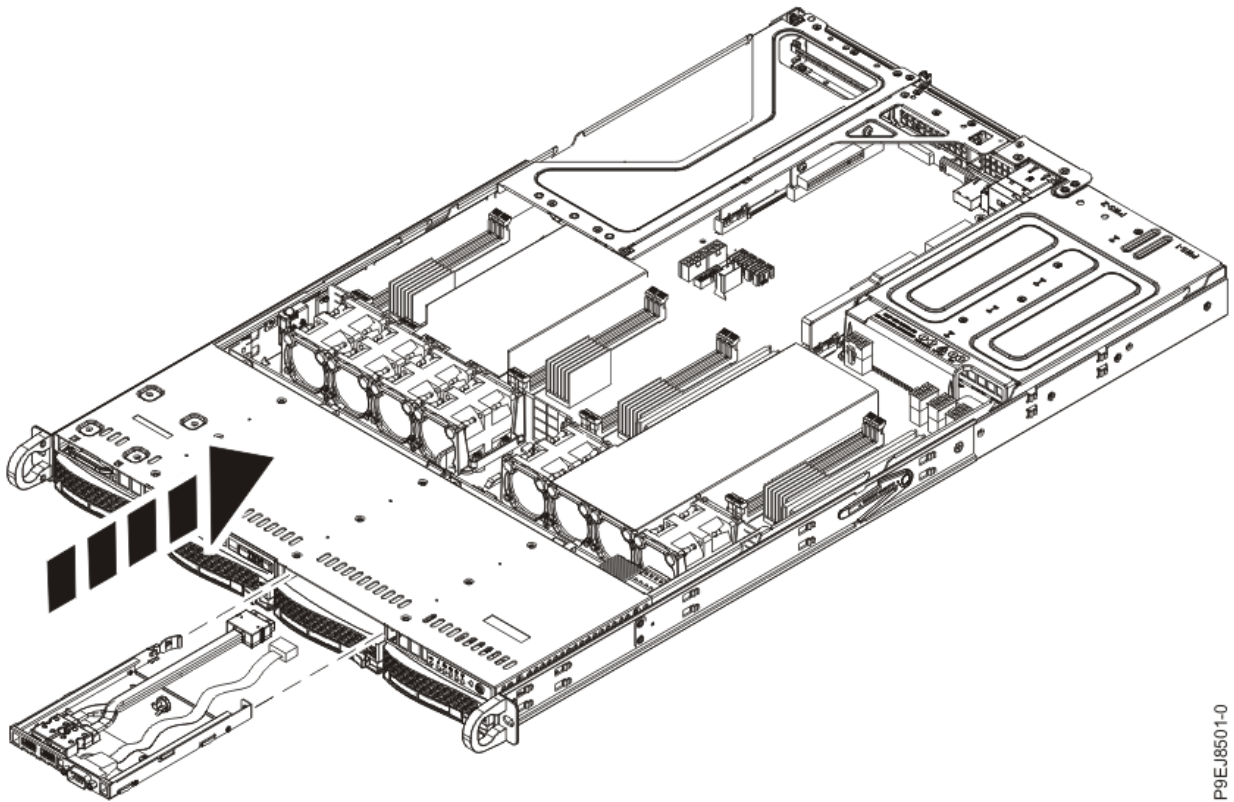
Figure 65. Removing the USB cable and connector

Replacing the USB cable and connector in the 7063-CR1 system

Learn how to replace the USB cable and connector in the IBM 7063-CR1 Hardware Management Console systems.

Procedure

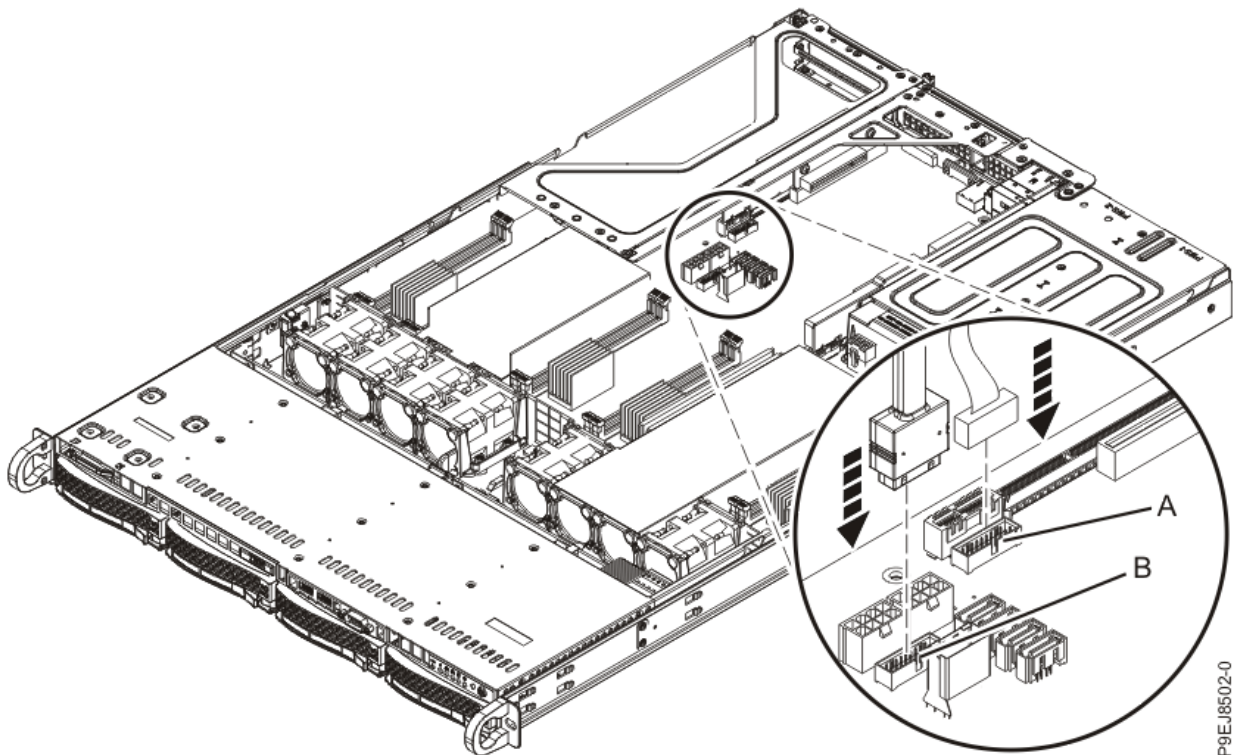
1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Route the USB and serial cables in through the front of the system, then slide the USB cable and connector into the front of the system as shown in [Figure 66 on page 74](#), until it clicks into place. The serial cable is non-functional, and may not be included in your system.



P9EJ8501-0

Figure 66. Inserting the USB cable and connector

3. Using your labels, reconnect the USB cable to the USB port **(B)** in the system backplane, then reconnect the serial cable to the serial port **(A)** in the system backplane.



P9EJ8502-0

Figure 67. Reconnecting the USB cable

Common procedures for servicing the 7063-CR1

Learn about the common procedures related to removing and replacing parts in the IBM 7063-CR1 Hardware Management Console 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)

Procedure

1. If you are installing a new feature, ensure that you have the software that is required 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, or open or close a latch.
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, use the following website to locate your service and support telephone numbers:

<http://www.ibm.com/planetwide>

7. If you encounter difficulties during the installation, contact your service provider, your IBM reseller, or your next level of support.
8. For thermal performance, ensure that the top cover is on when the system is running.

9. If you are installing new hardware in a logical partition, you need to understand and plan for the implications of partitioning your system. For information, see [Logical Partitioning](#).

Identifying the 7063-CR1 system that contains the part to replace

Learn how to determine which system has the part you want to replace.

LEDs on the 7063-CR1 system

Use this information as a guide to the LEDs on the IBM 7063-CR1 Hardware Management Console system.

The LEDs indicate various system status. If the part does not have a problem indicator LED, you can use a troubleshooting program such as **impitool** to identify the issue.

The front LEDs are shown in [Figure 68 on page 79](#).

- The green LED **(6)** indicates the power status (on or off). It is not an indicator of power having been applied.
- The identify LED **(2)** can indicate the following states:
 - Solid blue indicates that the local UID button was pressed.
 - Flashing blue indicates that a remote UID command was run.
 - Solid red indicates that the system is overheated.
 - Flashing red at 1 Hz indicates that a fan failed.
 - Flashing red at 0.25 Hz indicates that a power supply failed.
- The amber LED **(5)** flashes when there is SATA drive activity, for SATA drives directly attached to the system backplane.
- The network activity LEDs **(3)** and **(4)** flash when there is network activity on the feature EKA6 four port network card.

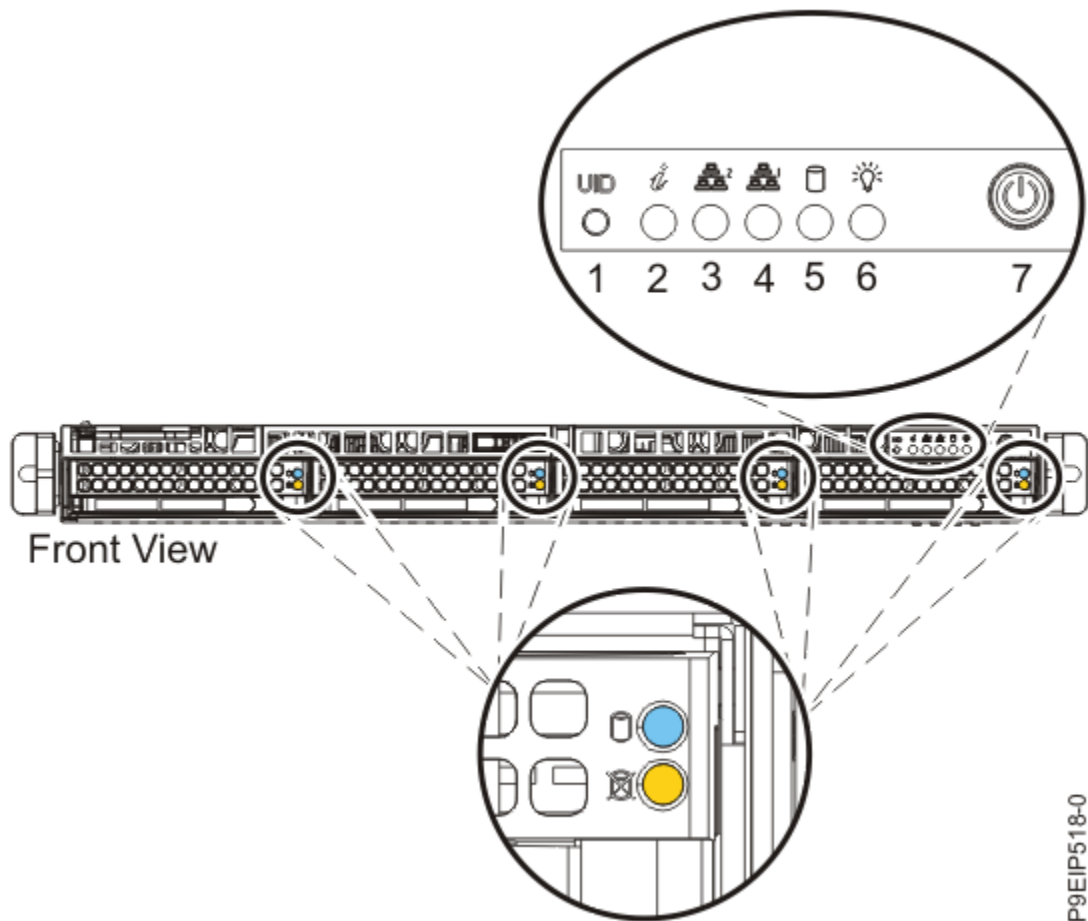


Figure 68. LEDs on the front of the system

LEDs are also located on the rear of the system; see [Figure 69 on page 79](#).

The identify LED is at **(2)**. Turn it on by using a system identify command or by pressing the UID button.

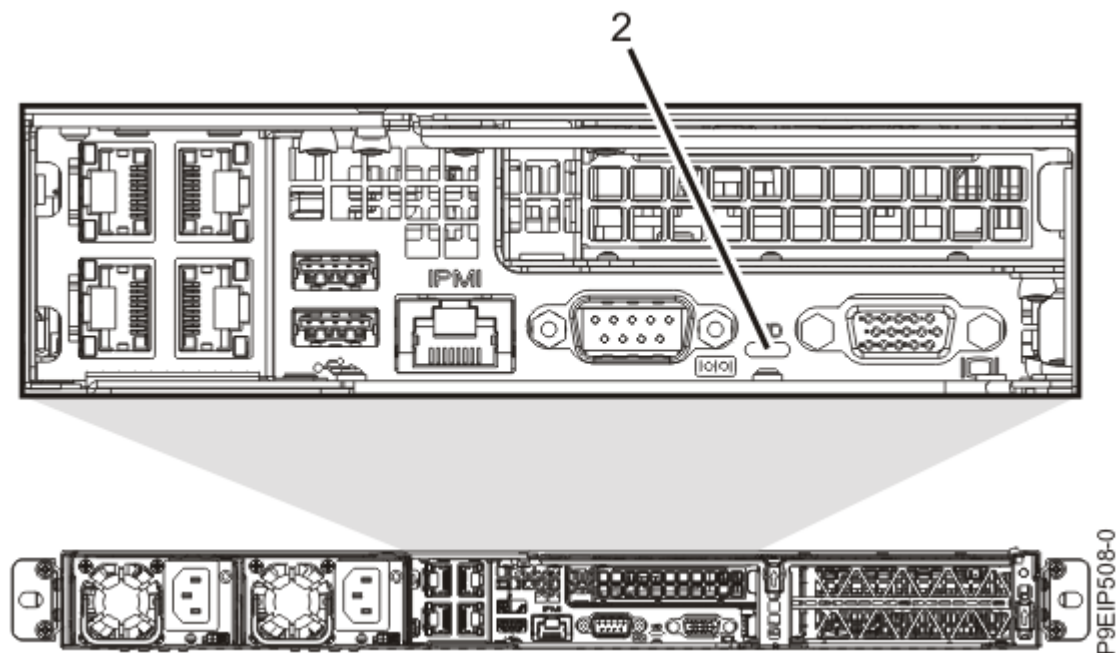


Figure 69. LEDs on the rear of the system

Drive LEDs can indicate the following states:

- Blue activity LED can indicate the following states:
 - When there is no activity, the LED is off for SATA drives; on for SAS drives.
 - Flashing blue indicates activity
- Red status LED can indicate the following states. The status LED does not work when SATA drives are directly attached to the system backplane.
 - Steady red indicates that the drive failed
 - Flashing red at 4 Hz identifies the drive
 - Flashing red at 1 Hz indicates that the drive is rebuilding

Power supply LEDs can indicate the following states:

- Steady green indicates that power is on
- Flashing green indicates AC power is applied, but the system is yet to be powered on.
- Steady amber indicates that power is off, or a power fault occurred
- Flashing amber indicates that the power supply is overheating

Identifying the 7063-CR1 that needs servicing

Use the Intelligent Platform Management Interface (IPMI) program to turn on the blue identify LED to help you find the IBM 7063-CR1 Hardware Management Console system that needs servicing.

Procedure

Use the **ipmitool** command to activate the blue system identify LED.

For in-band networks, enter the following chassis identify command:

```
ipmitool chassis identify <interval>
```

interval

The time to turn on the identify LED in seconds. The default value is 15. This means that the LED is on for 15 seconds and then turns off for 15 seconds. A value of zero (0) turns off the LED. A value of force turns on the LED and leaves it on until turned off.

To run the command remotely over the LAN, enter the following chassis identify command:

```
ipmitool -I lanplus -H <hostname> -U <username> -P <password> chassis identify <interval>
```

Preparing the 7063-CR1 system to remove and replace internal parts

Learn how to prepare the IBM 7063-CR1 Hardware Management Console system to remove and replace internal parts.

Procedure

1. Complete the prerequisite tasks. For instructions, see [“Before you begin” on page 75](#).
2. Identify the part and the system that you will be working on. For instructions, see [“Identifying the 7063-CR1 system that contains the part to replace” on page 78](#).
3. Attach the electrostatic discharge (ESD) wrist strap.

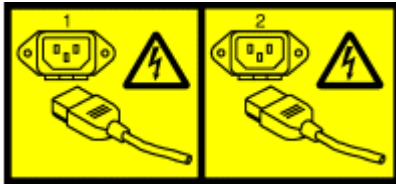
The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.

**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. Stop the system. For instructions, see [“Stopping the 7063-CR1 system” on page 85](#).
 5. Disconnect the power source from the system by unplugging the system. For instructions, see [“Disconnecting the power cords from a 7063-CR1 system” on page 97](#).

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)



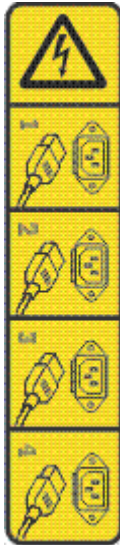
or



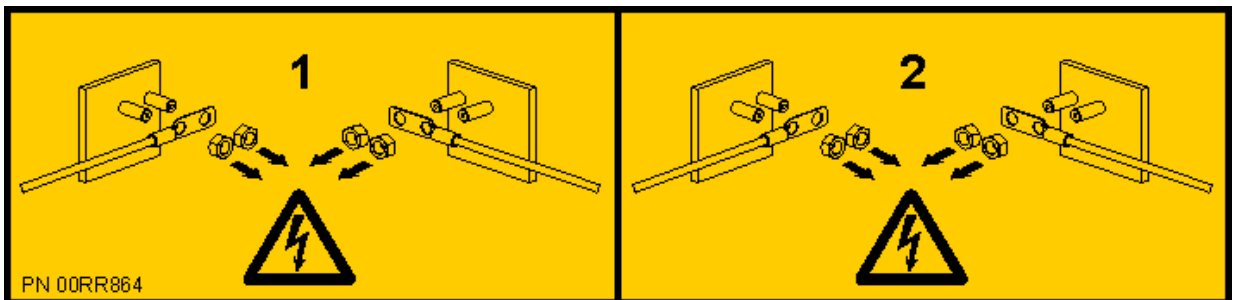
or



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)

6. Place the system into the service position. For instructions, see [“Placing a 7063-CR1 system into the service position” on page 93.](#)



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)

7. Remove the service access cover. For instructions, see [“Removing the service access cover from a 7063-CR1 system” on page 91.](#)

Preparing the 7063-CR1 system for operation after removing and replacing internal parts

Learn how to prepare the IBM 7063-CR1 Hardware Management Console system for operation after removing and replacing internal parts.

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 a 7063-CR1 system” on page 92.](#)
3. Place the system into the operating position. For instructions, see [“Placing a 7063-CR1 system into the operating position” on page 96.](#)

(L012)





CAUTION: Pinch hazard. (L012)

4. Reconnect the power cords to the system. For instructions, see [“Connecting the power cords to a 7063-CR1 system”](#) on page 98.
5. Start the system. For instructions, see [“Starting the 7063-CR1 system ”](#) on page 84.
6. Verify the installed part.
For instructions, see [Verifying a repair](http://www.ibm.com/support/knowledgecenter/POWER9/p9ej5/p9ej5_verifyrepair.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9ej5/p9ej5_verifyrepair.htm).

Starting and stopping the 7063-CR1

Learn how to start and stop the IBM 7063-CR1 Hardware Management Console system to perform a service action or system upgrade.

Starting the 7063-CR1 system

You can use the power button to start the IBM 7063-CR1 Hardware Management Console systems.

About this task



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

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

Procedure

1. Before you press the power button, ensure that the power supplies are connected to the system unit and that the power cables are connected to a power source.
2. Press the power button **(7)** shown in [Figure 70 on page 85](#).
You may have to press the switch for 0.5 to 3 seconds.

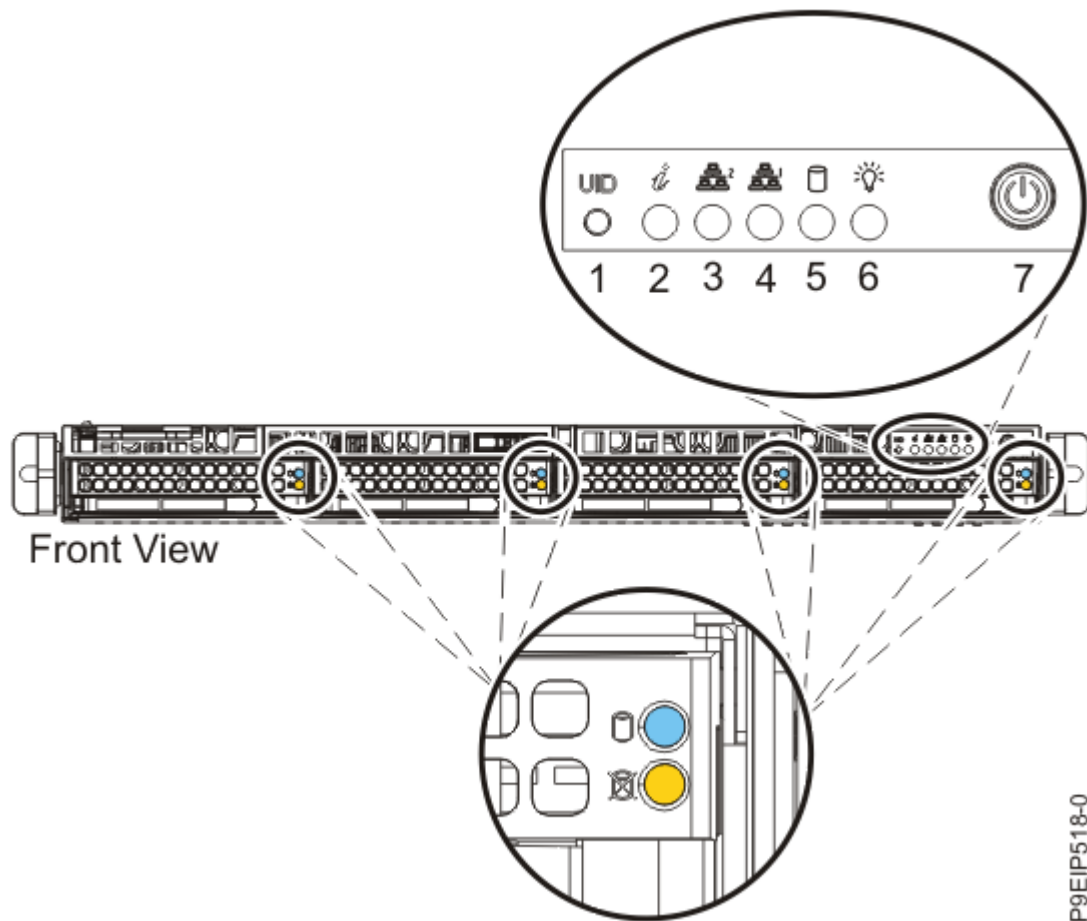


Figure 70. Power switch for the 7063-CR1 system

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 7063-CR1 system

Learn how to stop the IBM 7063-CR1 Hardware Management Console systems to complete another task.

Procedure

You can use the **hmcshutdown** command to stop and power down the system.

For example, the following command will shut down the system now.

```
hmcshutdown -t now
```

Disk drive commands for the 7063-CR1 system

Learn about the disk drive commands for the IBM 7063-CR1 Hardware Management Console system.

mvCLI commands

Learn about the mvCLI commands. They are for SATA drives that are directly connected to the system backplane without using a PCIe adapter.

Running the mvCLI commands from the HMC operating system

The mvCLI commands are supplied in the HMC operating system. You need root access to run the command. If the HMC operating system is available, to run the command, use:

```
su -
```

and enter the root password to start mvCLI:

```
/opt/marvell/bin/mvcli
```

To exit mvCLI mode, enter the command:

```
exit
```

Entering "help" at the mvcli command prompt lists the mvcli commands.

Installing mvCLI in the Petitboot environment

To use the mvCLI commands, the **mvcli** utility must be available. If you need to install the **mvcli** utility, use the Petitboot command line to mount the storage that contains the **mvcli** utility using the following procedure. The installation lasts during the current Petitboot session; once you reboot, the installation does not persist.

1. From the Petitboot menu, select **Exit to shell**.
2. To use the **mvcli** utility at the Petitboot shell:
 - If you have the HMC Recovery ISO file mounted using the Virtual Storage menu option in the Remote Console, or on a USB key inserted on one of the USB port of the system:
 - At the petitboot shell, copy the mvcli utility from /var/petitboot/mnt/dev/sr0/util/marvell directory to /tmp, then make the **mvcli** utility executable before running it.

```
cp /var/petitboot/mnt/dev/sr0/util/marvell/mvcli /tmp
chmod +x /tmp/mvcli
```

- To run the command; use:

```
modprobe sg
/tmp/mvcli
```

- If you need to obtain the **mvcli** utility over the network, you must first configure the network.
 - At the petitboot shell, run the following commands to configure the network:

```
ip addr add xxx.xxx.xxx.xxx/yyy.yyy.yyy.yyy dev ETHERNET_DEVICE
ip route add default via zzz.zzz.zzz.zzz
```

where: xxx.xxx.xxx.xxx is the IPV4 ip address; yyy.yyy.yyy.yyy is the IPV4 network mask; zzz.zzz.zzz.zzz is the IPV4 gateway address; and ETHERNET_DEVICE is the network interface name you can obtain from running `ip addr show`

- After you configure the network, you can use the **scp** or **wget** commands to copy the **mvcli** utility:

```
scp USER_ID@HOST_NAME:PATH_TO_CMD/mvcli /tmp
```

Or:

```
wget http://HOSTNAME/PATH_TO_CMD/mvcli -P /tmp
```

Where: **USER_ID** is the user name to use on the **HOST_NAME** where the **mvcli** utility is located. **HOSTNAME** is the host name or IP address where the **mvcli** utility is located

- Make the **mvcli** utility executable before running it.

```
chmod +x /tmp/mvcli
```

- To run the command; use:

```
/tmp/mvcli
```

- If you have the **mvcli** utility on a USB drive, ensure that the USB drive is formatted as "vfat".
 - If you have the USB drive inserted and then boot, the USB drive might be automatically mounted. To see if the USB drive is mounted, from the petitboot shell, run this command :

```
mount
```

If the USB drive mounted automatically, it will show the USB drive as: `/dev/mapper/sdb1` mounted on `/var/petitboot/mnt/dev/sdb1`

- The drive mounts as read-only; you need to unmount then remount the USB drive as read-write. At the petitboot shell, unmount the USB drive using this command:

```
umount /var/petitboot/mnt/dev/sdb1
```

- At the petitboot shell, re-mount the USB drive in read-write mode using these commands:

```
mkdir /tmp/media  
mount /dev/mapper/sdb1 /tmp/media  
modprobe sg
```

- To run the command; use:

```
/tmp/media/mvcli
```

mvCLI commands

To check the status of the RAID virtual disk, run the following command:

```
info -o vd
```

The results are similar to this listing:

```

Virtual Disk Information
-----
id:                0
name:              HMC Disk
status:            online
Stripe size:      64
RAID mode:         RAID1
Cache mode:        Off
size:              1907649 M
BGA status:        N/A
Block ids:         0 4
# of PDs:          2
PD RAID setup:     0 1

Total # of VD:     1

```

To show all physical disks and IDs, run the following command:

```
info -o pd
```

The physical disk ID (PD ID) matches the slot in which the drive is plugged in the system, with 0 being the leftmost slot.

The results are similar to this listing:

```

Physical Disk Information
-----
Adapter:           0
PD ID:             0
Type:              SATA PD
Linked at:         HBA port 0
Size:              1953514584 K
Write cache:       supported (on)
SMART:             supported (on)
NCQ:               supported (on)
48 bits LBA:       supported
supported speed:   1.5 3 6 Gb/s
Current speed:     6 Gb/s
model:             ST2000NM0024-1HT174
Serial:            Z4H0E1G1
Firmware version:  SN06
Locate LED status: off
block ids:         0
associated VDs:    0
PD valid size:     0 K

Adapter:           1
PD ID:             1
Type:              SATA PD
Linked at:         HBA port 1
Size:              1953514584 K
Write cache:       supported (on)
SMART:             supported (on)
NCQ:               supported (on)
48 bits LBA:       supported
supported speed:   1.5 3 6 Gb/s
Current speed:     6 Gb/s
model:             ST2000NM0024-1HT174
Serial:            Z4H03KCM
Firmware version:  SN05
Locate LED status: off
block ids:         4
associated VDs:    0
PD valid size:     0 K

Total # of PD:     2

```

To list the serial number of a drive, run the following command:

```
info -o pd -i <id of drive>
```

To show all host bus adapters (HBAs), run the following command:

```
info -o hba
```

The **smart** command shows the status of various sensors and metrics for the drive. Use the command to periodically check the state of the drives. An error is logged in the Service Focal Point error log and a call-home is made when the smart command indicates a problem. The format of the smart command is

```
smart -p PD_ID
```

If you run this command:

```
smart -p 0
```

The results are similar to this listing:

SMART STATUS RETURN: OK.

Smart ID	Attribute Name	Current	Worst	Threshold	RawValue	Status
01	Read Error Rate	76	64	44	00000000F5E0	OK
03	Spin-Up Time	98	96	0	000000000000	OK
04	Start/Stop Count	100	100	20	0000000000C8	OK
05	Reallocated Sectors	100	100	10	000000000000	OK
07	Seek Error Rate	88	60	45	0000000091DC	OK
09	Power-On Hours Count	96	96	0	0000000010FD	OK
0A	Spin Retry Count	100	100	97	000000000000	OK
0C	Power Cycle Count	100	100	20	0000000000C6	OK
B8	End-to-End error	100	100	99	000000000000	OK
BB	Reported Uncorrectable	100	100	0	000000000000	OK
BC	Command Timeout	100	100	0	000000000000	OK
BD	High Fly Writes	100	100	0	000000000000	OK
BE	Temperature Diff	73	66	40	00000000001B	OK
BF	G-sense error rate	100	100	0	000000000000	OK
C0	Power-off retract	100	100	0	0000000000F5	OK
C1	Load/Unload cycle	100	100	0	00000000001AA	OK
C2	HDA temperature	27	40	0	00000000001B	OK
C3	ECC recovered	76	6	0	00000000F5E0	OK
C5	Current pending	100	100	0	000000000000	OK
C6	Offline scan wrong	100	100	0	000000000000	OK
C7	UDMA CRC error rate	200	200	0	000000000000	OK

Creating the virtual drive on the 7063-CR1 system

Follow the steps in this procedure in the unlikely event that you need to re-create the virtual drive on the IBM 7063-CR1 Hardware Management Console.

About this task

This procedure assumes that:

- The system was erroneously shipped without an already created and pre-loaded virtual disk
- The existing virtual disk is somehow damaged and needs to be re-created.

These are rare events.



CAUTION: This procedure will result in loss of data. This procedure should only be used if the HMC operating system is either not installed, incorrectly installed, or corrupted.

This task must be performed from the Petitboot shell.

Procedure

1. Access the Petitboot shell and install the **mvcli** utility.

For instructions, see [“mvCLI commands” on page 86](#).

2. If you have not already done so, before running **mvcli** for the first time, run the following commands:

```
modprobe sg
/tmp/mvcli
```

3. To check that there are no virtual drives already defined, run the following command:

```
/tmp/mvcli info -o vd
```

If there is a drive defined, run the following command to remove it; where <id> is the listed ID for the virtual disk:

```
/tmp/mvcli delete -o vd --id <id>
```

4. Run these commands to check the health of the two host bus adapters (HBAs):

```
/tmp/mvcli info -o hba
```

For each HBA, verify that the following lines all show "Healthy":

```
Image health
Autoload image health
Boot loader image health
Firmware image health
Boot ROM image health
HBA info image health
```

5. To create the virtual disk, run the following command:

```
/tmp/mvcli create -o vd -r1 -n "HMC Disk" -d 0,1
```

6. To verify the virtual disk was created, run the following command:

```
/tmp/mvcli info -o vd
```

7. Use the HMC recovery media to restore the virtual disk configuration.

Sensor readings GUI display

The sensor readings GUI display is a way to quickly determine the general health status of the server without having to look at the detailed system event log (SEL) information.

To view the sensor readings GUI display, log in to the BMC web interface. Click **Server Health > Sensor Readings**.

Some occurrences of errors in the system might not appear in the sensor readings GUI. After you view the sensor readings GUI display, use the SEL logs to view any active SEL events that indicate a service action event.

Sensor readings display operation

Most sensors are initially gray, then change status and color during the boot process when the FRU is initialized and either determined to be good (green) or faulty (red). No sensor display is available until you can get to the sensor display selection on the BMC, which means that the system attains a certain power level or that the BMC finishes initializing. The indicator color of the sensor is determined based on the sensor status at time of invocation of the display. The sensor display maintains the sensor status indicator color until the display is refreshed, which updates the sensor value with the latest status. Changes to SEL events changes color of sensor indicator when you refresh or restart the display. Sensor status display also starts over with a reboot or a power cycle.

Sensor status indicator descriptions

Gray indicator:

- FRU not plugged

- Sensor not initialized
- Sensor function is not initialized

Red (faulty) indicator:

- Critical threshold exceeded (an event requires a service action)
- Service action required for hard fail
- Partial function failure that reached a "service action required" state
- A deconfigured resource requires a service action

Green (good) indicator:

- FRU or sensor is plugged in and fully operational
- Recoverable event is below the critical "service action required" threshold
- FRU or sensor returned to "normal" operating range (for threshold sensors)

Removing and replacing covers on a 7063-CR1 system

Learn how to remove and replace the covers on an IBM 7063-CR1 Hardware Management Console system so that you can access the hardware parts or service the system.

Removing the service access cover from a 7063-CR1 system

Learn how to remove the service access cover from an IBM 7063-CR1 Hardware Management Console system.

About this task



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

Procedure

1. Ensure that you removed both power cords from the system. For instructions, see [“Disconnecting the power cords from a 7063-CR1 system”](#) on page 97.

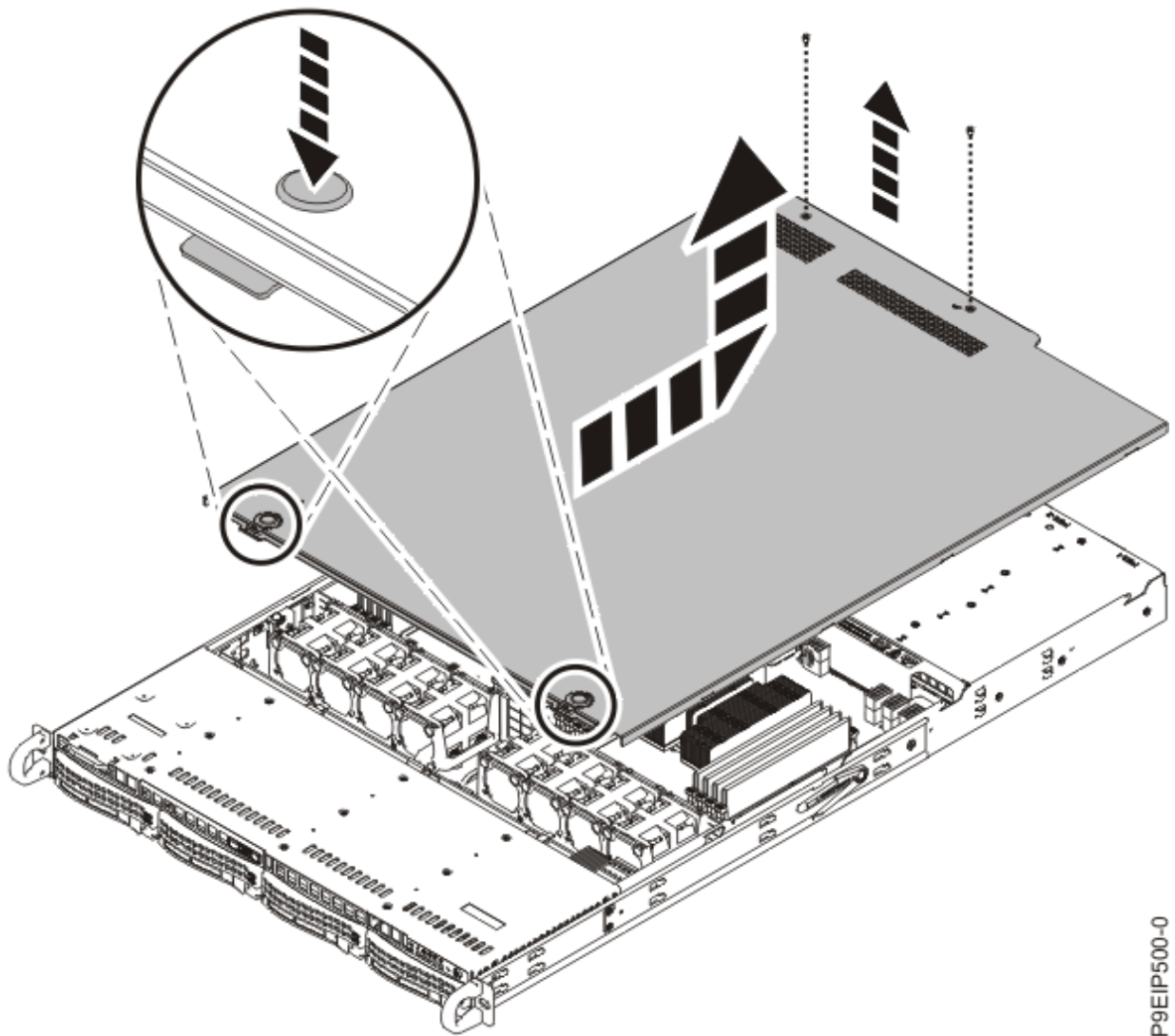
(L005)



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. Remove the two cover screws **(1)**, from the rear of the cover.
3. Press both buttons on the top cover **(2)** to release the latches as shown in [Figure 71 on page 92](#), and push the cover back about 0.5 in (1 cm) until it stops.

If the buttons do not easily press down, partially remove the drives directly under the buttons.



P9EIP500-0

Figure 71. Releasing and opening the cover

4. Lift up the front of the cover up and remove it from the system.

Installing the service access cover on a 7063-CR1 system

Learn how to install the service access cover on a rack-mounted IBM 7063-CR1 Hardware Management Console system.

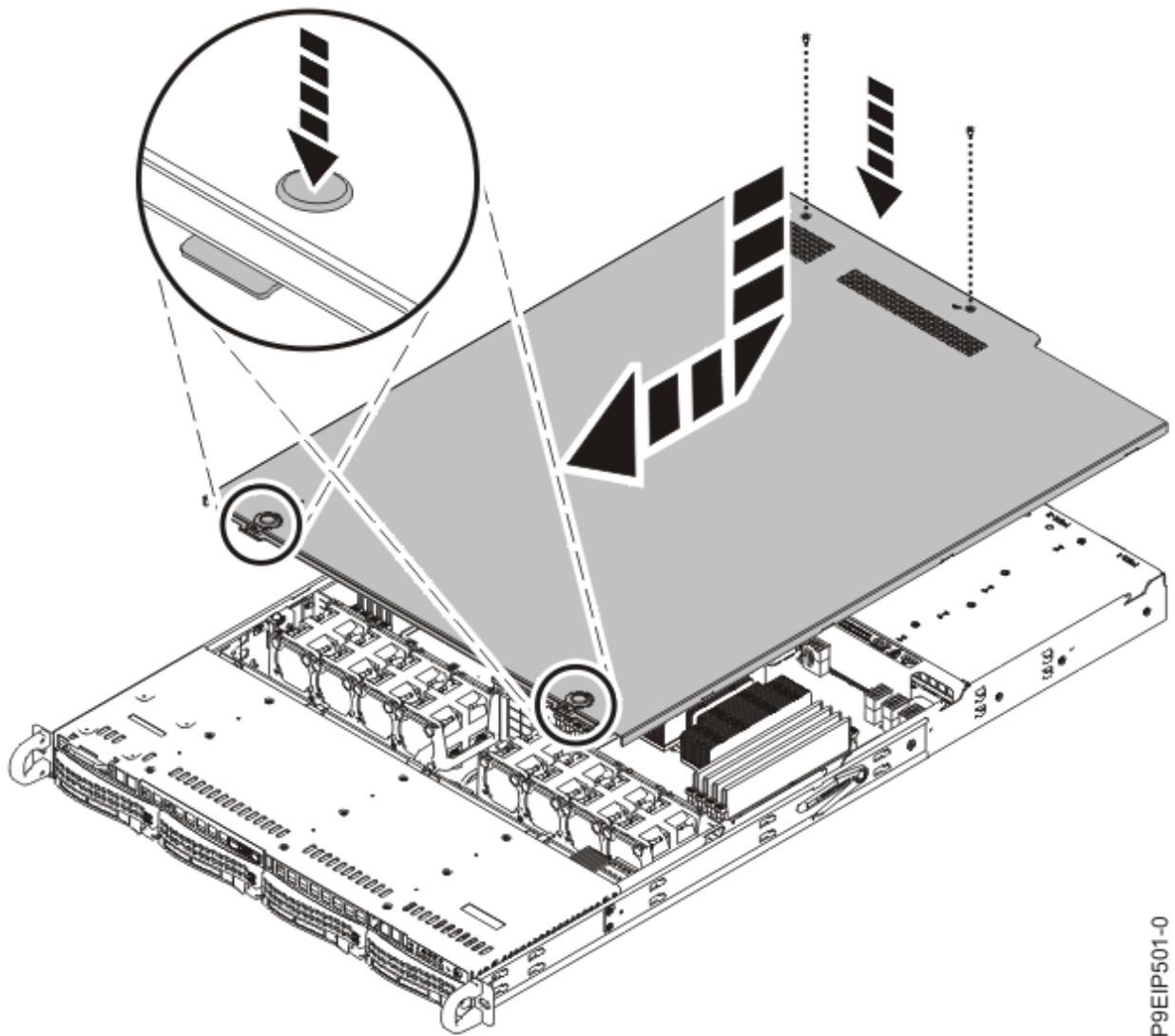
About this task



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

Procedure

1. Place the rear of the cover on the system. Pivot to front of the cover down until it rests on the system.
2. Slide the cover forwards until it latches into place as shown in [Figure 72 on page 93](#).



P9EIP501-0

Figure 72. Replacing and securing the cover

3. Replace the two cover screws **(2)** at the rear of the cover.

Service and operating positions for the 7063-CR1 system

Learn how to place an IBM 7063-CR1 Hardware Management Console system into the service or operating position.

Placing a 7063-CR1 system into the service position

Learn how to place an IBM 7063-CR1 Hardware Management Console system into the service position.

Before you begin

The systems must be removed from the rails for servicing.



or



or



CAUTION:

The weight of this part or unit is between 18 and 32 kg (39.7 and 70.5 lb). It takes two persons to safely lift this part or unit. (C009)

Notes:

- When you slide a system out of a rack, ensure that all stability plates are firmly installed to prevent the rack from toppling. Slide only one system out at a time.
- When the rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.

Procedure

1. Label and remove all cables from the rear of the system.
2. Remove the front screws **(A)** that secure the system to the rack from both sides of the system as shown in [Figure 73 on page 95](#).

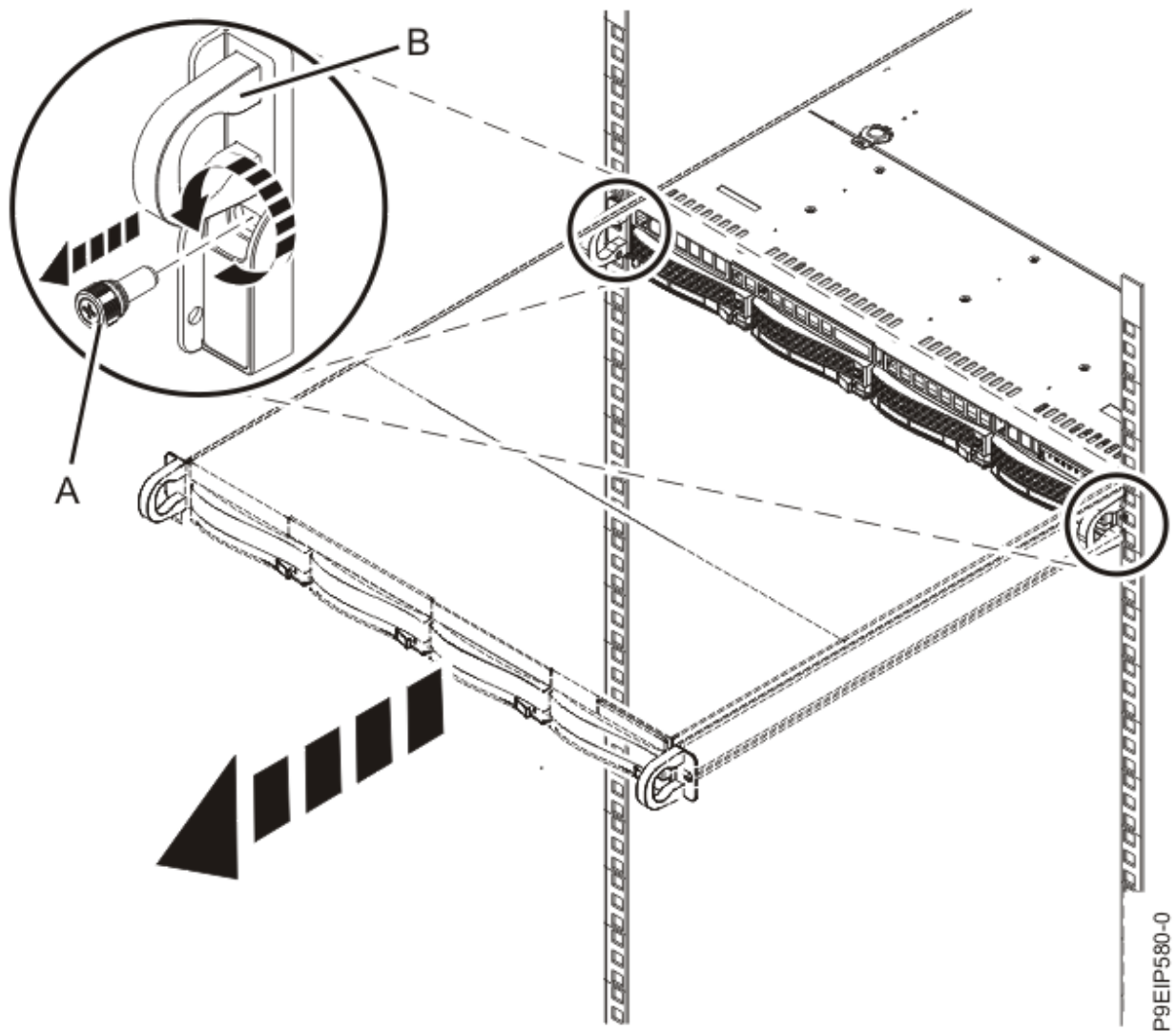


Figure 73. Removing the front screws and removing the system from the rack

3. Pull the system unit out of the rack.



CAUTION:

- The chassis rails only extend about half of the distance of the chassis. Once the safety latches are released, the chassis only slides forward a few inches before disengaging from the rails. Be prepared to support the full weight of the chassis as you remove it from the slide rails.
- The chassis contains most of the weight in the back side of the unit. When you remove the system, take care to be ready to support the weight by grasping the chassis closer to the back of the unit.

4. Using two people, release the rail safety latches and remove the system from the rails.

The safety latches work in opposite directions; the latch on one side moves up while the latch on the other side moves down.

5. Carefully set the system on a table with an appropriate ESD surface.

Placing a 7063-CR1 system into the operating position

Learn how to place an IBM 7063-CR1 Hardware Management Console system into the operating position.

About this task



CAUTION:

or



or



The weight of this part or unit is between 18 and 32 kg (39.7 and 70.5 lb). It takes two persons to safely lift this part or unit. (C009)

Procedure

1. Using two people, one on each side of the system, lift the system from the table.
2. Align the system rails on each side of the system with the rack slide rails.
3. Push the system into the rack until you hear each rail click into place.
4. Before releasing your hold on the system, ensure that the rails are engaged by sliding the system forward into service lock position. Check that the rails are properly seated. If the rails are not fully engaged, the system could drop.
5. Release the rail safety latches **(A)**, as shown in [Figure 74 on page 97](#), then push the system fully into the rack by using the handles **(B)**.

The safety latches work in opposite directions; the latch on one side moves up while the latch on the other side moves down.

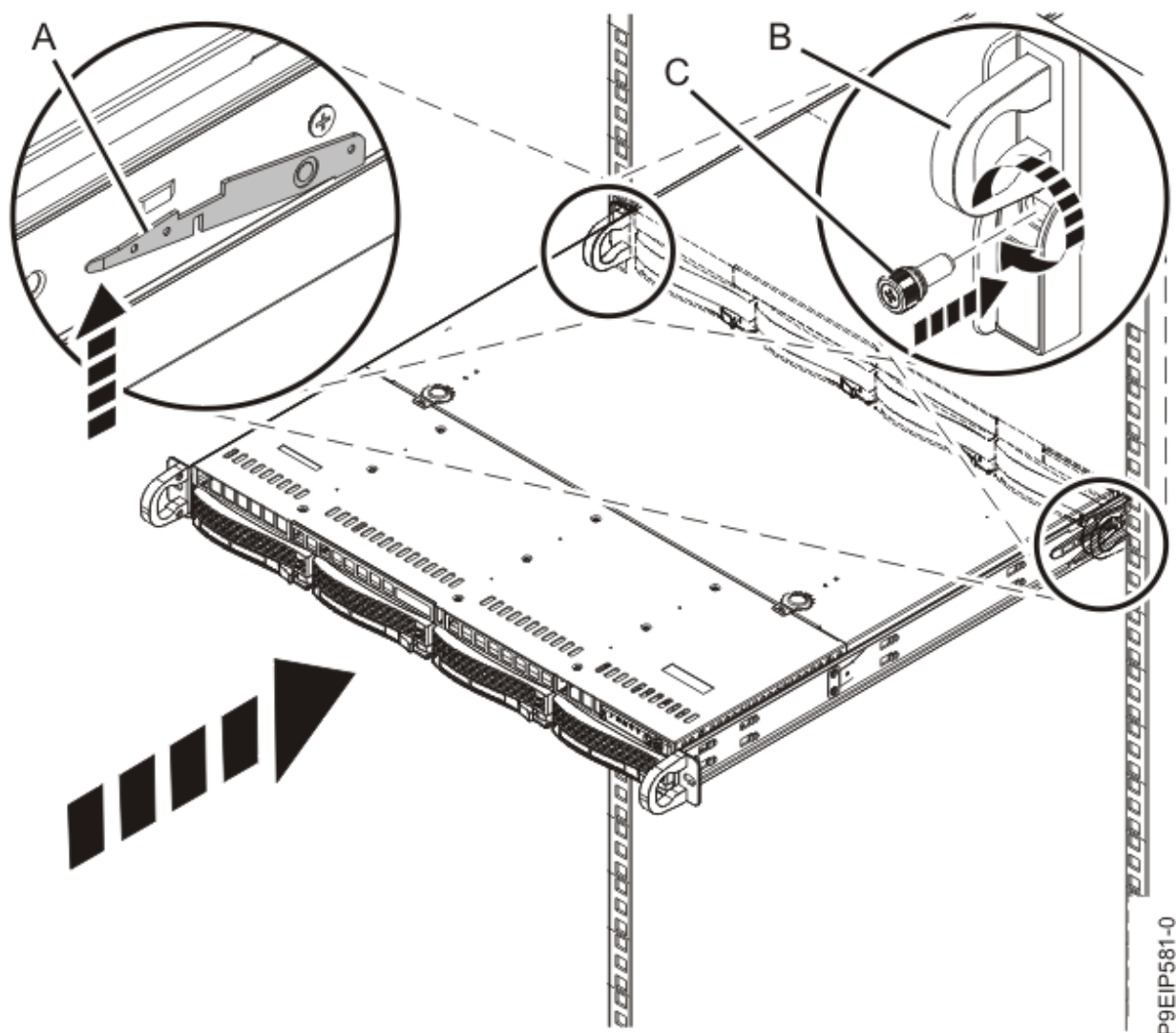


Figure 74. Placing the system into the operating position

6. Fasten the two front screws **(C)** to secure the system to the rack.
7. Using your labels, reconnect the cables at the rear of the system unit.
8. If you removed the storage drives, using your labels, replace the drives in their proper locations.
9. If you removed the power supplies, replace them.

For instructions, see [“Replacing a power supply in the 7063-CR1 system” on page 33.](#)

Removing and replacing power cords

Learn how to disconnect and connect the power cords on IBM 7063-CR1 Hardware Management Console systems.

Disconnecting the power cords from a 7063-CR1 system

Learn how to disconnect the power cords from an IBM 7063-CR1 Hardware Management Console system.

Before you begin

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 power sources to the system are disconnected.

Procedure

1. Identify the system unit that you are servicing in the rack.
2. Label and disconnect the power cords from the system unit as shown in [Figure 75 on page 98](#).

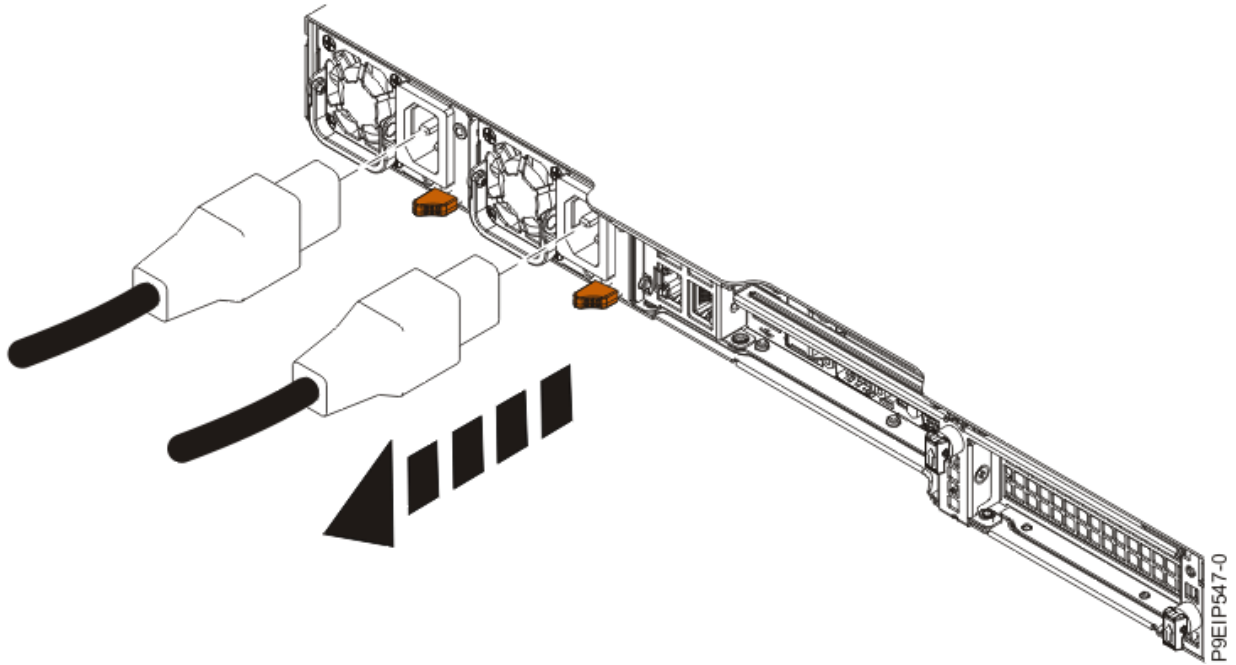


Figure 75. Removing the power cords from the system

Connecting the power cords to a 7063-CR1 system

Learn how to connect the power cords to an IBM 7063-CR1 Hardware Management Console system.

Procedure

Using your labels, reconnect the power cords to the system unit as shown in [Figure 76 on page 99](#).

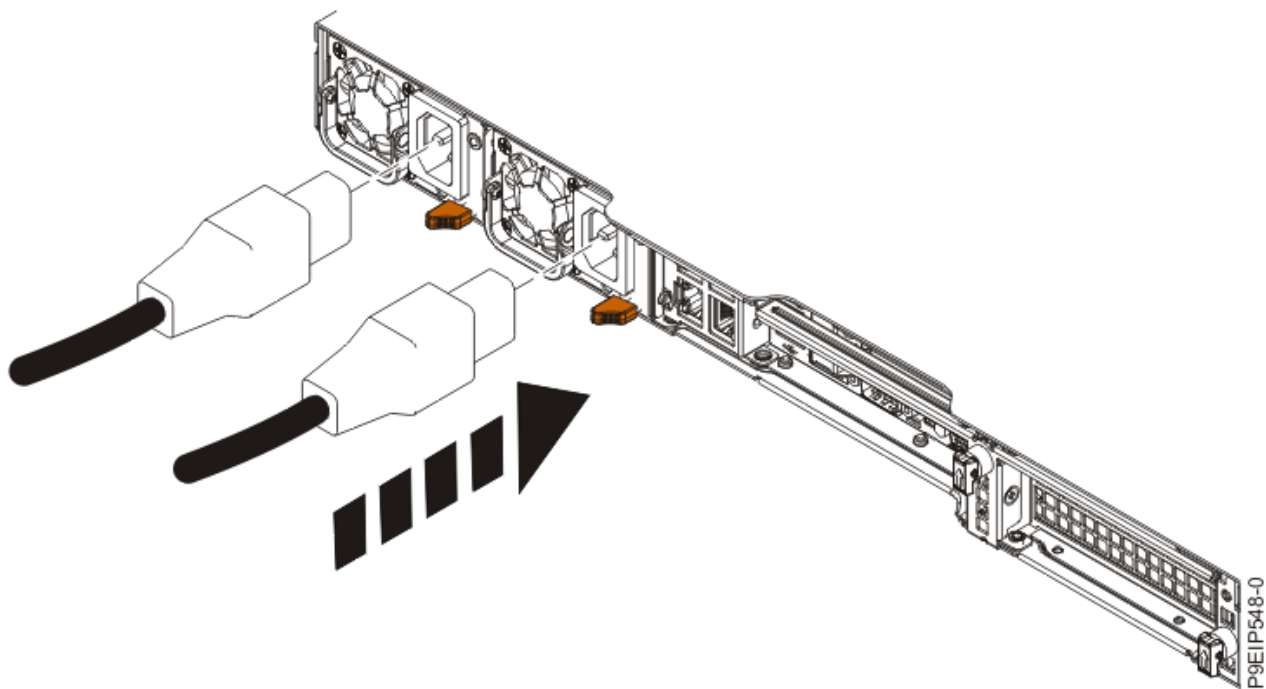


Figure 76. Connecting the power cords to the system

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

Overview

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

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

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

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

Keyboard navigation

This product uses standard navigation keys.

Interface information

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

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

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

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Related accessibility information

In addition to standard IBM help desk and support websites, IBM has a TTY telephone service for use by deaf or hard of hearing customers to access sales and support services:

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

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Class A Notices

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

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 (A)/NMB-3(A)

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.

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

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

Germany Notice

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

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.

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

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、P F C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、P F C回路付)
- 換算係数 : 0

Japan Voluntary Control Council for Interference (VCCI) Notice

この装置は、クラスA 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

Korea Notice

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

People's Republic of China Notice

声 明

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

Russia Notice

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

Taiwan Notice

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

IBM Taiwan Contact Information:

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

United States Federal Communications Commission (FCC) Notice

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

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

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

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

Class B Notices

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

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

Canada Notice

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

European Community and Morocco Notice

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

German Notice

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

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

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

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

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

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

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

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
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 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
仕様ページ参照

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

高調波電流規格 JIS C 61000-3-2 適合品

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

高調波電流規格 JIS C 61000-3-2 準用品

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

- 回路分類 : 6 (単相、P F C回路付)
- 換算係数 : 0

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

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、P F C回路付)
- 換算係数 : 0

Japan Voluntary Control Council for Interference (VCCI) Notice

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VCCI-B

Taiwan Notice

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 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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