Power Systems

Servicing the 7063-CR1

IBM

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IBM

This edition applies to IBM Power Systems™ servers that contain the POWER8® processor and to all associated models.

Contents

Safety notices

Safety notices may be printed throughout this guide:

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

World Trade safety information

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

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

German safety information

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

Laser safety information

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

Laser compliance

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

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

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:
- If IBM supplied the power cord(s), connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
  - For AC power, disconnect all power cords from their AC power source.
  - For racks with a DC power distribution panel (PDP), disconnect the customer's DC power source to the PDP.
- When connecting power to the product ensure all power cables are properly connected.

– For racks with AC power, connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
– For racks with a DC power distribution panel (PDP), connect the customer's DC power source to the PDP. Ensure that the proper polarity is used when attaching the DC power and DC power return wiring.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.
- Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements.
- Do not continue with the inspection if any unsafe conditions are present.
- Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords, turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.

DANGER:
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

  To Disconnect:
  1. Turn off everything (unless instructed otherwise).
  2. For AC power, remove the power cords from the outlets.
  3. For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source.
  4. Remove the signal cables from the connectors.
  5. Remove all cables from the devices.

  To Connect:
  1. Turn off everything (unless instructed otherwise).
  2. Attach all cables to the devices.
  3. Attach the signal cables to the connectors.
  4. For AC power, attach the power cords to the outlets.
  5. For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP.
  6. Turn on the devices.

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

(R001 part 1 of 2):

DANGER: Observe the following precautions when working on or around your IT rack system:
- Heavy equipment–personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- 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).

- 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 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. 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.

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

- Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:
  - Remove all devices in the 32U position (compliance ID RACK-001 or 22U (compliance ID RR001) and above.
  - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.
  - Ensure that there are little-to-no empty U-levels between devices installed in the rack cabinet below the 32U (compliance ID RACK-001 or 22U (compliance ID RR001) level, unless the received configuration specifically allowed it.
- If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.
- If the rack cabinet you are relocating was supplied with removable outriggers they must be reinstalled before the cabinet is relocated.
- Inspect the route that you plan to take to eliminate potential hazards.
- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.
- Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.
- Do not use a ramp inclined at more than 10 degrees.
- When the rack cabinet is in the new location, complete the following steps:
  - Lower the four leveling pads.
  - Install stabilizer brackets on the rack cabinet.
  - 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)
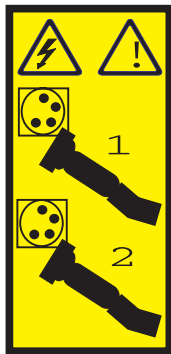
DANGER: Rack-mounted devices are not to be used as shelves or work spaces. (L002)

(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 many 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)

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°C (212°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 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 platform tilt riser accessory option. Secure platform riser tilt option to main shelf in all four (4x) 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 option flat at all times except for final minor 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.
- 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. (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). 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.
* Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements.
* Do not continue with the inspection if any unsafe conditions are present.

- Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords, turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.

DANGER:
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

  To Disconnect:
  1. Turn off everything (unless instructed otherwise).
  2. For AC power, remove the power cords from the outlets.
  3. For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source.
  4. Remove the signal cables from the connectors.
  5. Remove all cables from the devices.

  To Connect:
  1. Turn off everything (unless instructed otherwise).
  2. Attach all cables to the devices.
  3. Attach the signal cables to the connectors.
  4. For AC power, attach the power cords to the outlets.
  5. For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP.
  6. Turn on the devices.

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

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 the system on.

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 70

on page 70 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 in the IBM 7063-CR1 Hardware Management Console systems.

Procedure

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

   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.

2. Locate the drive to replace.

   a. Install the `mvcli` utility if it is not already installed. For more information, see "mvCLI commands" on page 70.

   b. Run the following `mvcli` command.

   ```
   info -o pd
   ```

   The information shows the drives, their serial numbers, and their positions.

   c. Record the model, serial number, and position of the drive to replace. It is possible that failed drive might not return information; such that only the working drive returns information.

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 handle **(B)** towards you. If the handle is not all the way out, the drive cannot slide out of the system. Remove the drive from the system, supporting the bottom of the drive. If the drive does not match the model and serial number you wrote down in the previous step, reinstall the drive in the drive bay you removed it from, and check the other drive bay.
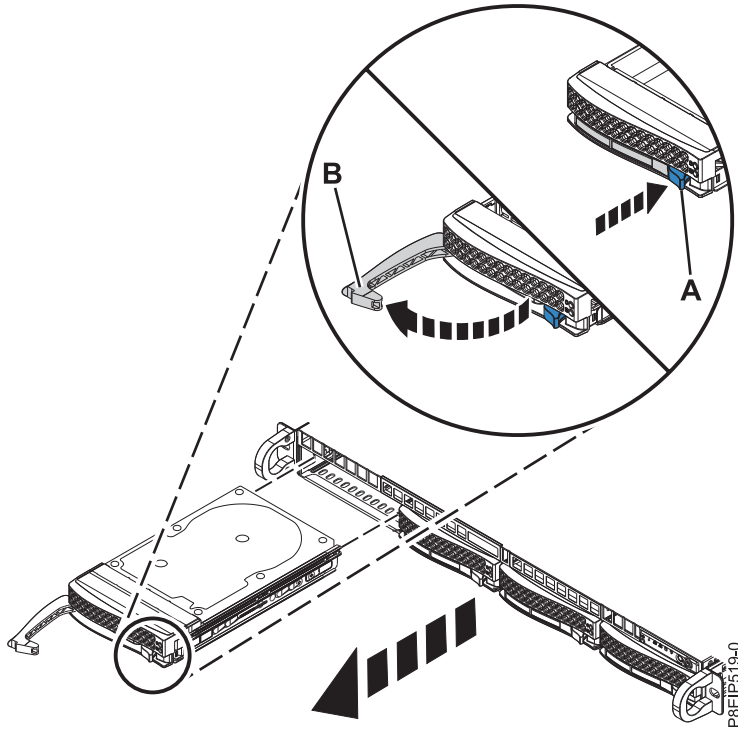
Figure 1. Removing a disk drive

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 3 though 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 four screws (two screws on each side), as shown in Figure 2 on page 5.
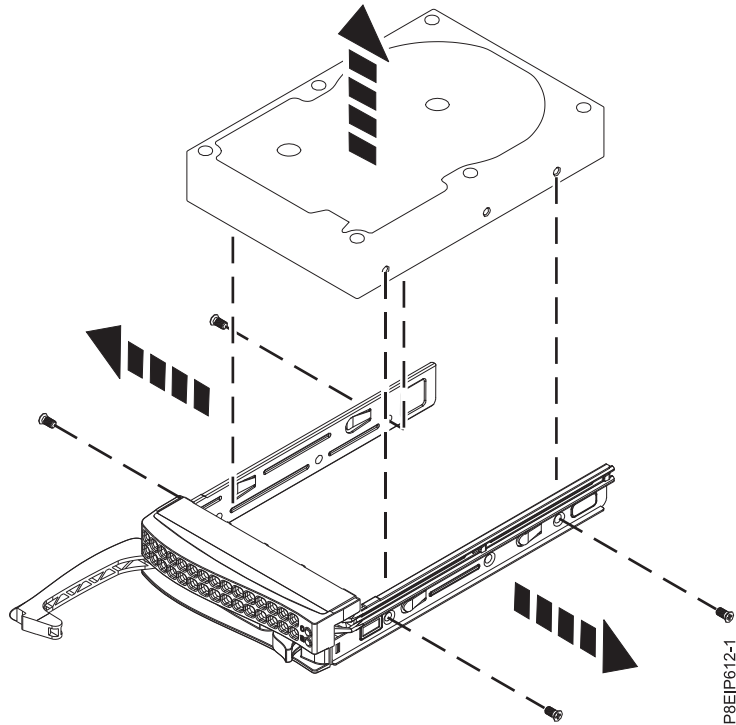
Figure 2. Removing the 3.5-inch disk drive from the drive tray

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 attached. If not, attach it 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 four screws (two screws on each side).
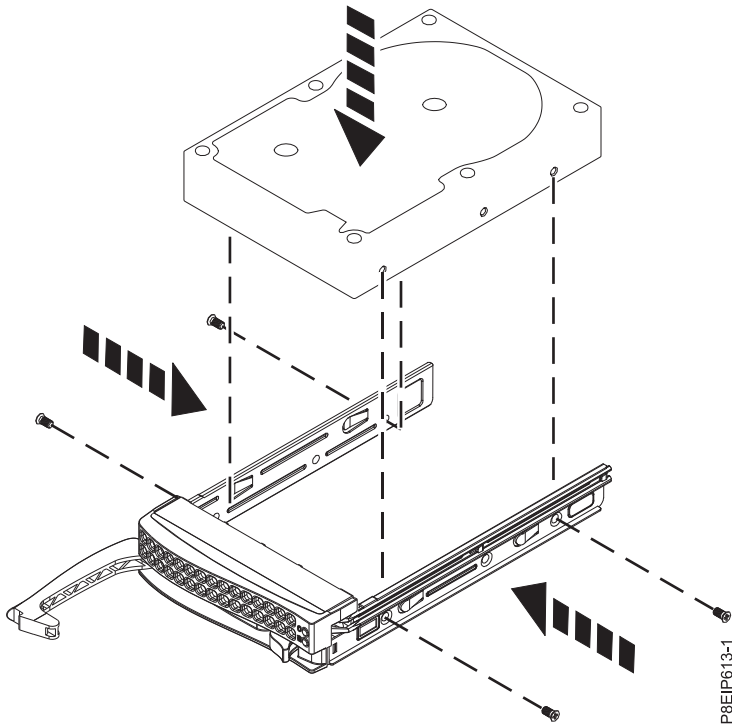
Figure 3. Mounting the 3.5-inch disk drive in the drive tray

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.
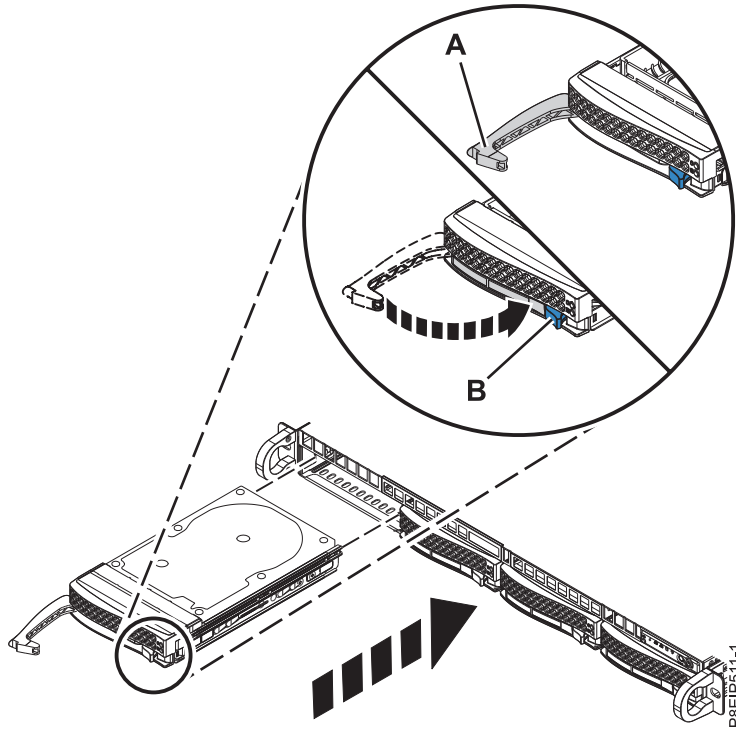
Figure 4. Disk drive lock detail

5. If the rebuild does not start automatically, initiate the rebuild manually on the disk drive that was replaced.

   a. To see if the rebuild has started automatically, run this command from the **mvcli** command line:

      ```
      info -o vd
      ```

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

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

      the procedure is complete. If not, continue with the next step.

   b. Verify that the newly installed drive is blank. Run the command:

      ```
      info -o vd
      ```

      Select one of the following:

      - If only one drive is listed, go to step 5c.
      - If two drives are listed, the newly installed or replaced drive has an operating system on it, which must be deleted. Run the 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 5c.

   c. Start the drive rebuild.

      - If the disk drive in the first bay was replaced, run this command from the mvcli command line:

        ```
        rebuild -a start -l 0 -d 0
        ```

      - If the disk drive in the second bay was replaced, run this command from the mvcli command line:

        ```
        rebuild -a start -l 0 -d 1
        ```

d. The rebuild operation can take several hours. Check the status of the rebuild by running this command from the mvcli command line:

```
info -o vd
```

If the rebuild is "paused", restart the rebuild by running this command for a drive in the first bay:

```
rebuild -a resume -l 0 -d 1
```

Or by running this command for a drive in the second bay:

```
rebuild -a resume -l 1 -d 0
```

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

Learn how to remove the disk drive backplane 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 66.

Procedure

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

   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.

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 9. Using your thumb, press the release latch on the connector to remove the cable.
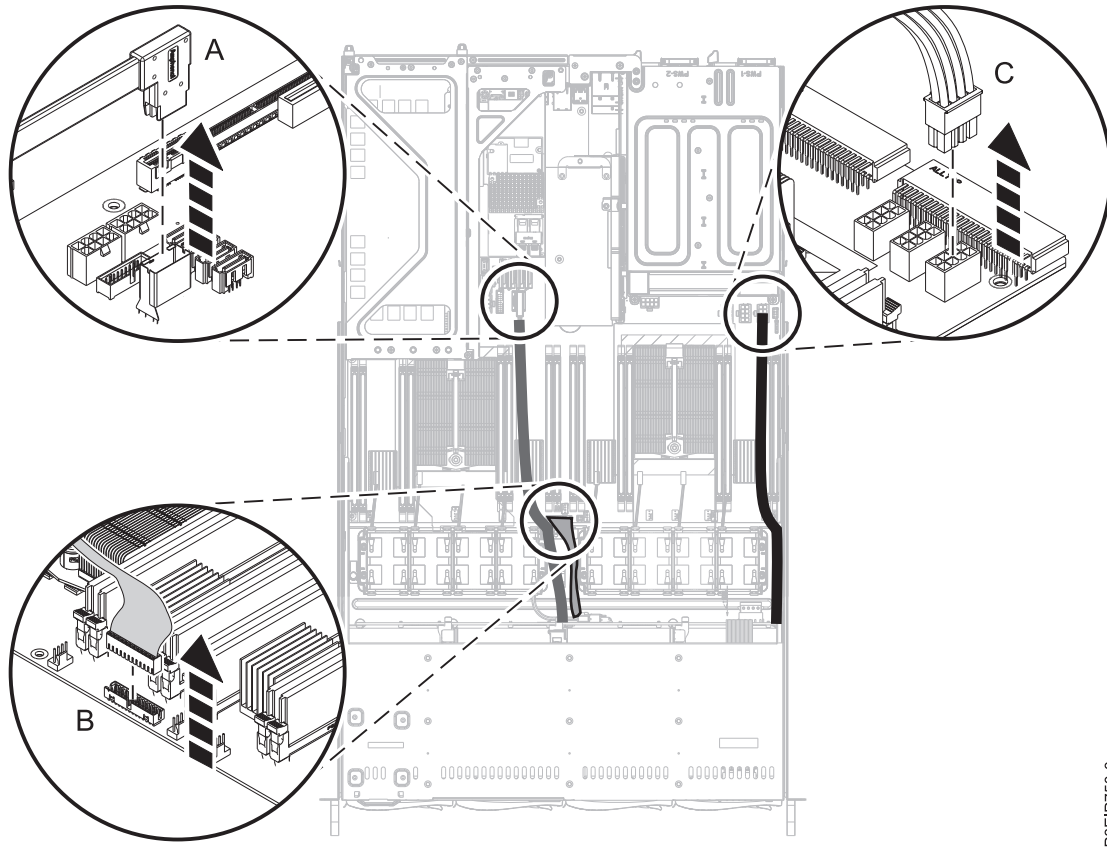
Figure 5. Disconnecting the drive signal and power cables

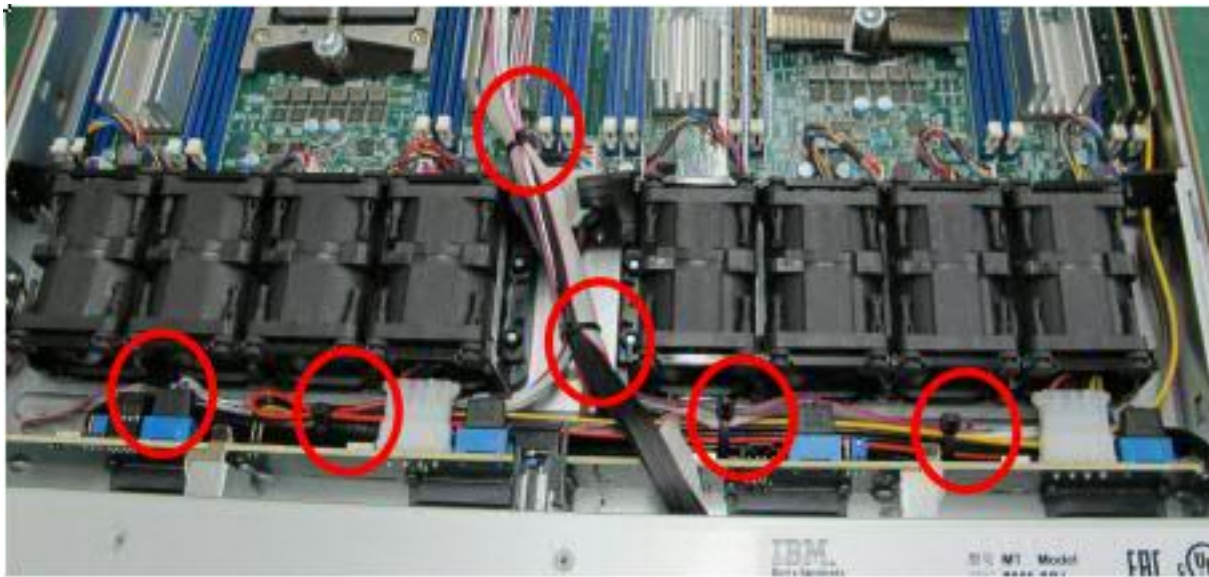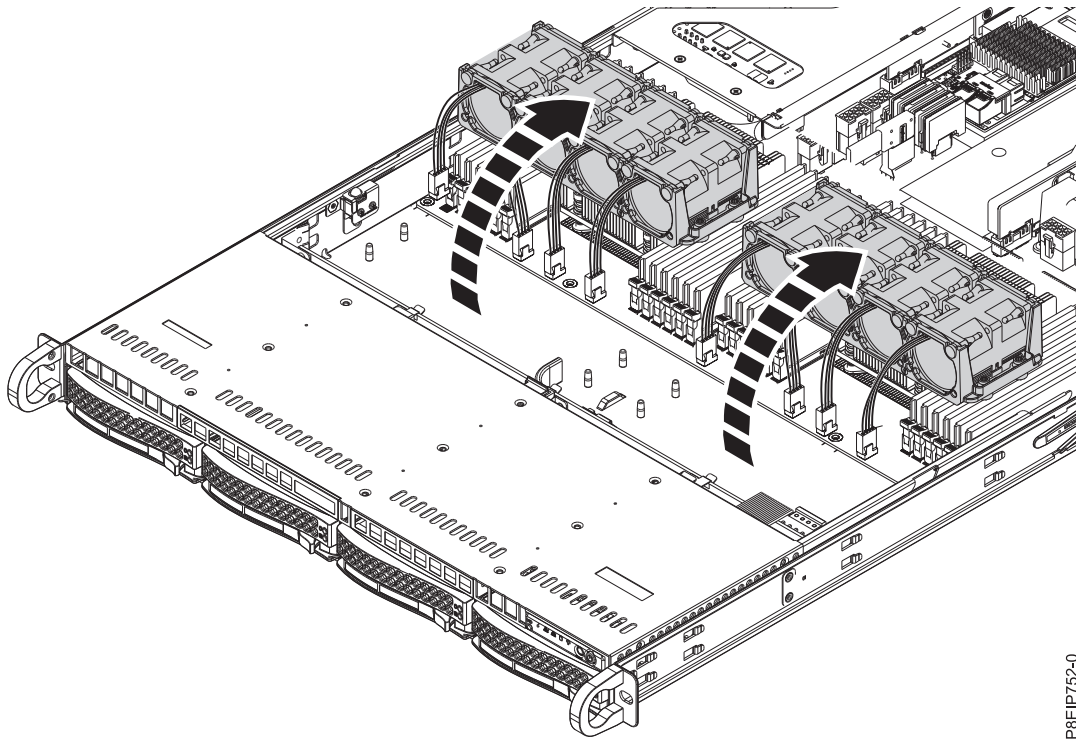3. If needed, carefully cut the ties that secure the cables.

Figure 6. Cable tie locations

4. Move the fan housings out of the way as shown in Figure 7 on page 10. 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 3.

6. Remove the disk drive backplane as shown in Figure 8 on page 11.

   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)**.

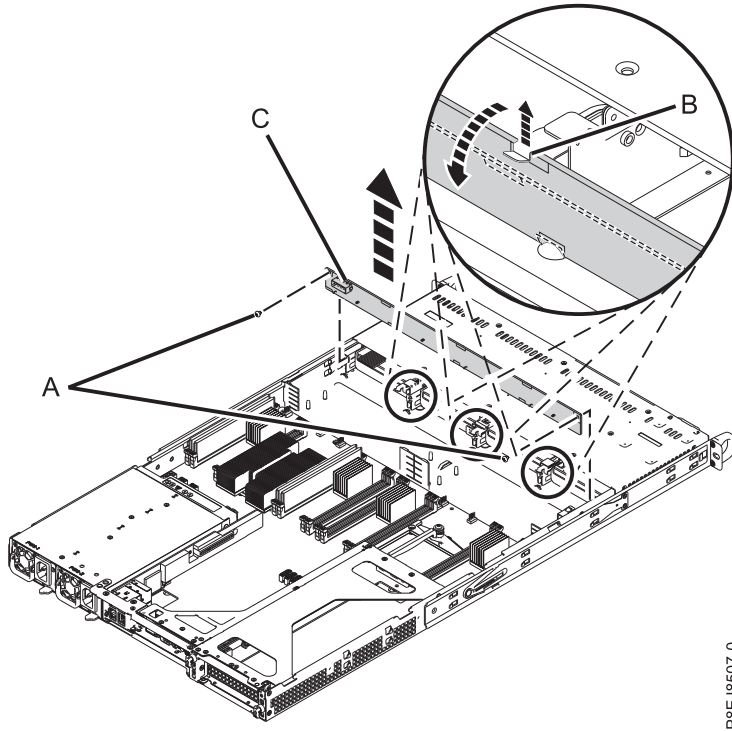   c. Lift the disk drive backplane **(C)** from the system.

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

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 attached. If not, attach it 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 12.
    a. Insert the disk drive backplane **(A)** into the system using the alignment slots **(B)** in the chassis.
    b. Snap the card 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.
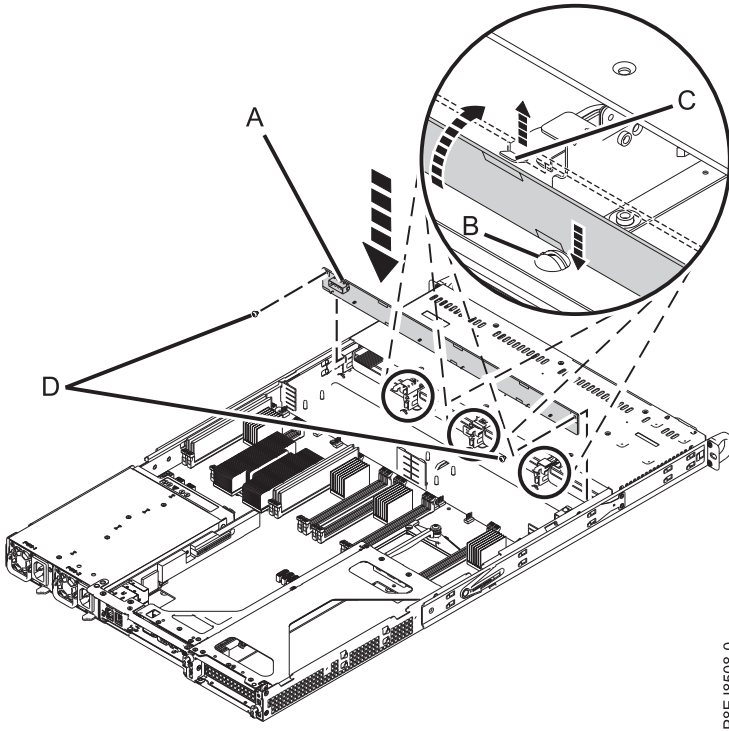
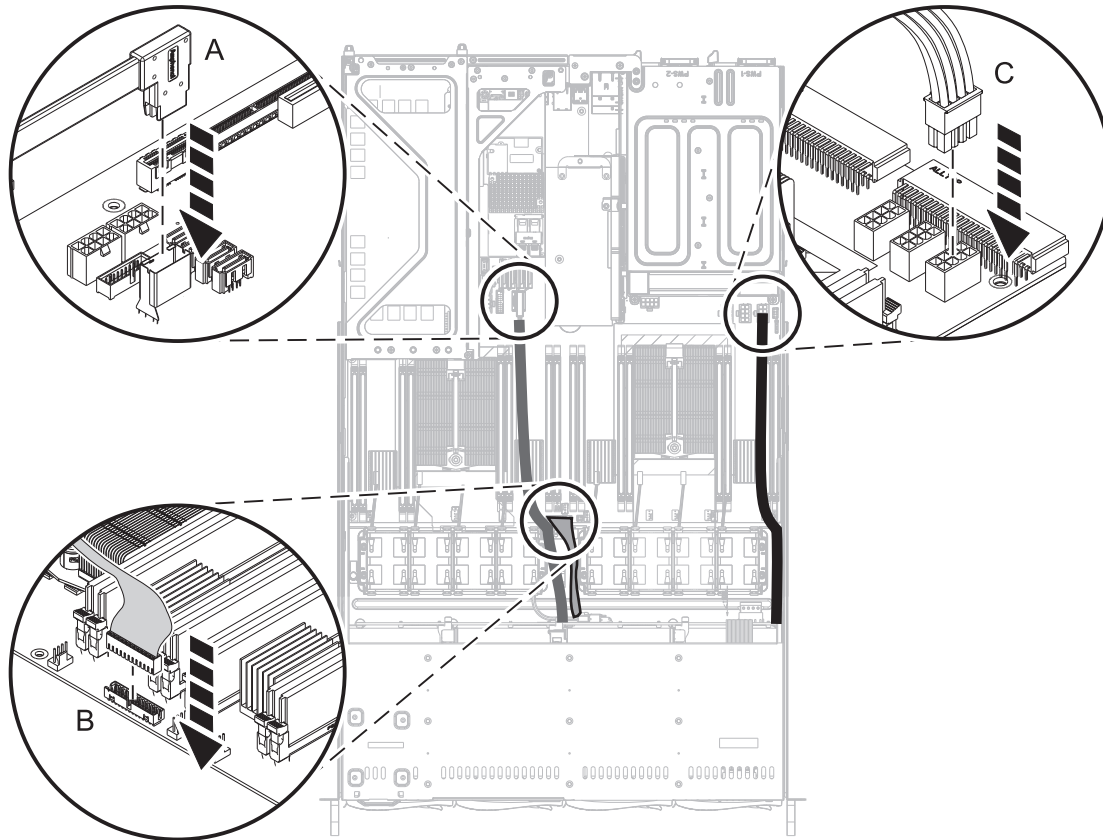*Figure 9. Installing the disk drive backplane*

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

Figure 10. Connecting the drive signal and power cables

7. Replace the fans. For instructions, see "Replacing a system fan in the 7063-CR1" on page 17.

What to do next

Prepare the system for operation. For instructions, see "Preparing the 7063-CR1 system for operation after you remove and replace internal parts" on page 68.

Removing and replacing fans in the 7063-CR1

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

Removing a system fan from the 7063-CR1

Learn how to remove the fans in 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 66.

Procedure

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

   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.

2. Remove the processor air baffle as shown in Figure 11 on page 15. Carefully unsnap and lift the processor air baffle from the system.
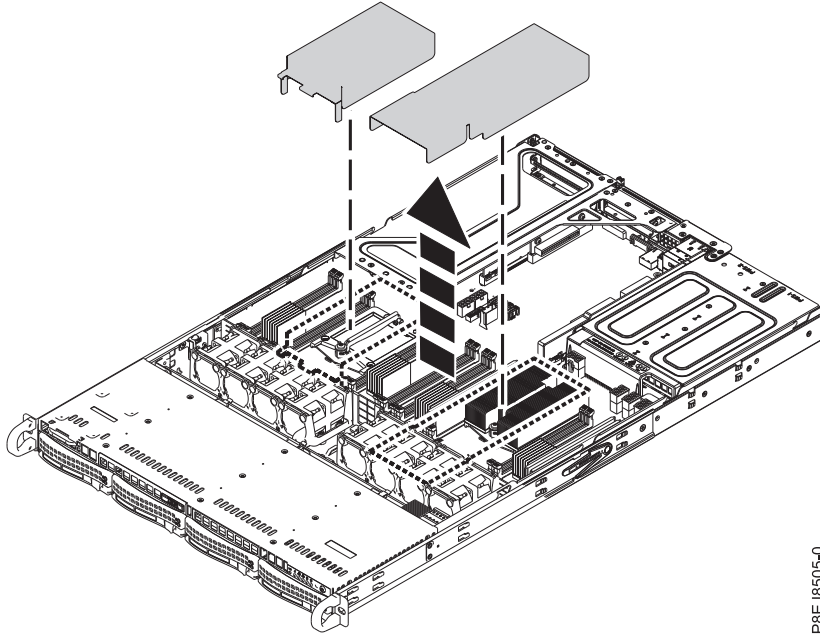
P8EJ8505-0

Figure 11. Removing the processor air baffle

3. Lift the holder for the fans as shown in Figure 12. The fans are easier to remove when the holder is slightly lifted.
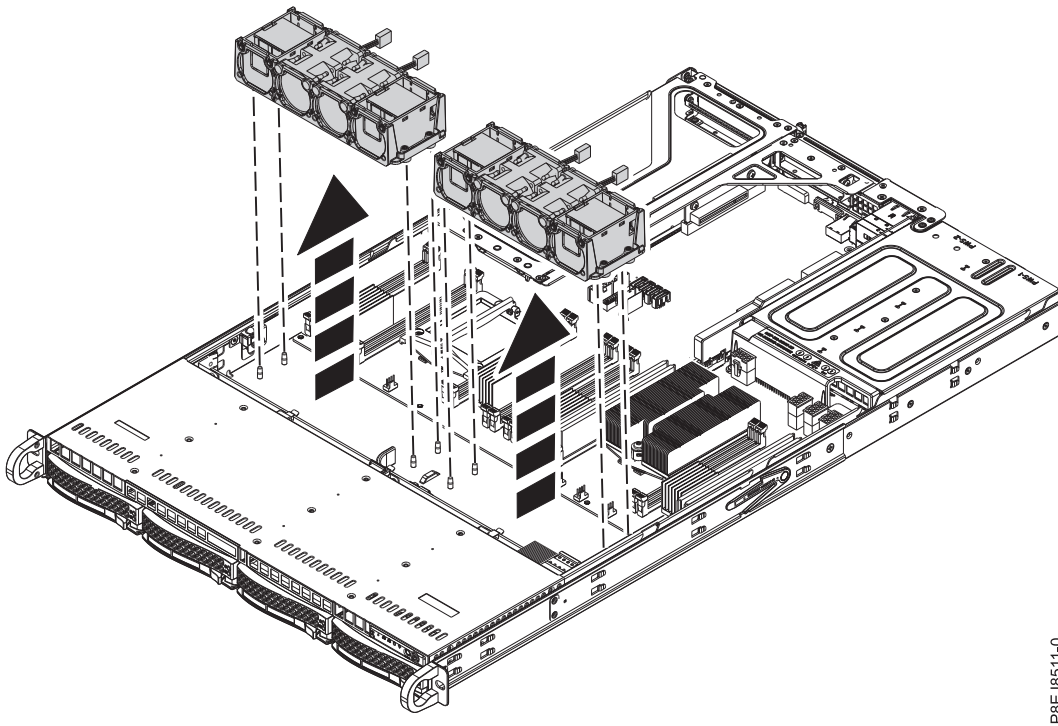
P8EJ8511-0

Figure 12. Removing the fan holder

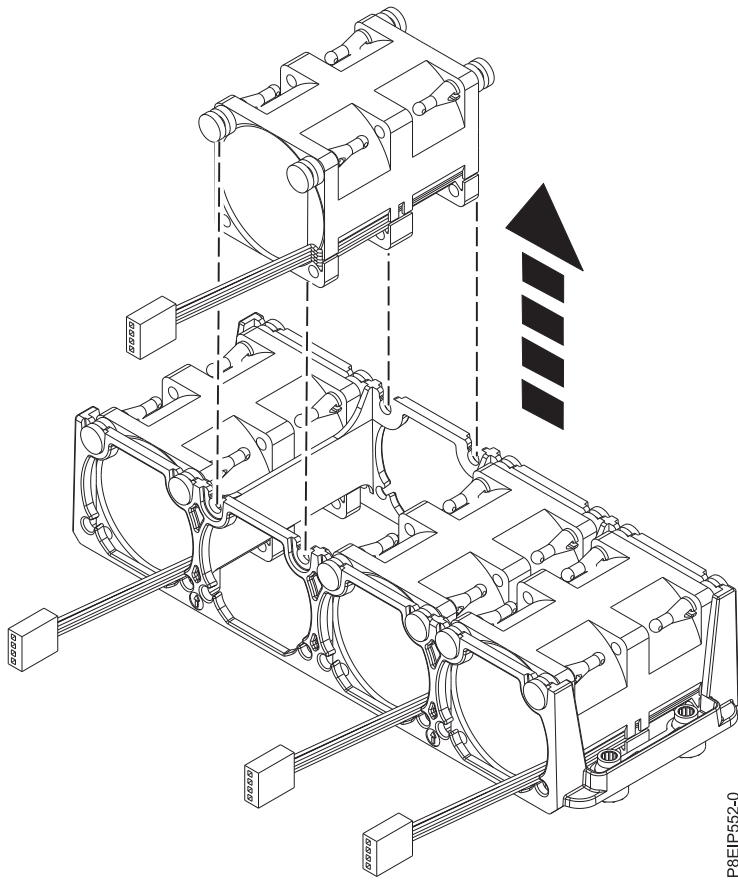4. Push the fan up from the holder as shown in Figure 13 on page 16.

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 17. Do not pull on the wires. Feed the cable through the fan holder.
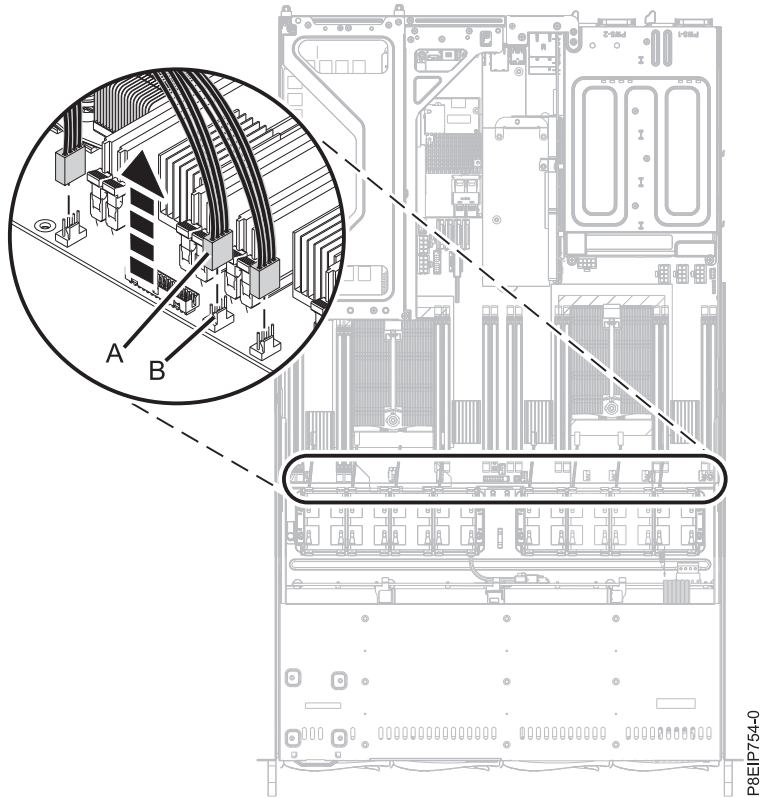
Figure 14. Disconnecting the fan cable

Replacing a system fan in the 7063-CR1

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

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap attached. If not, attach it now.
2. With the fan holder lifted, push the fan into the housing as shown in Figure 15 on page 18. Pass the fan wires through the fan holder. Align the standoffs in the fan with the slots in the fan holder.
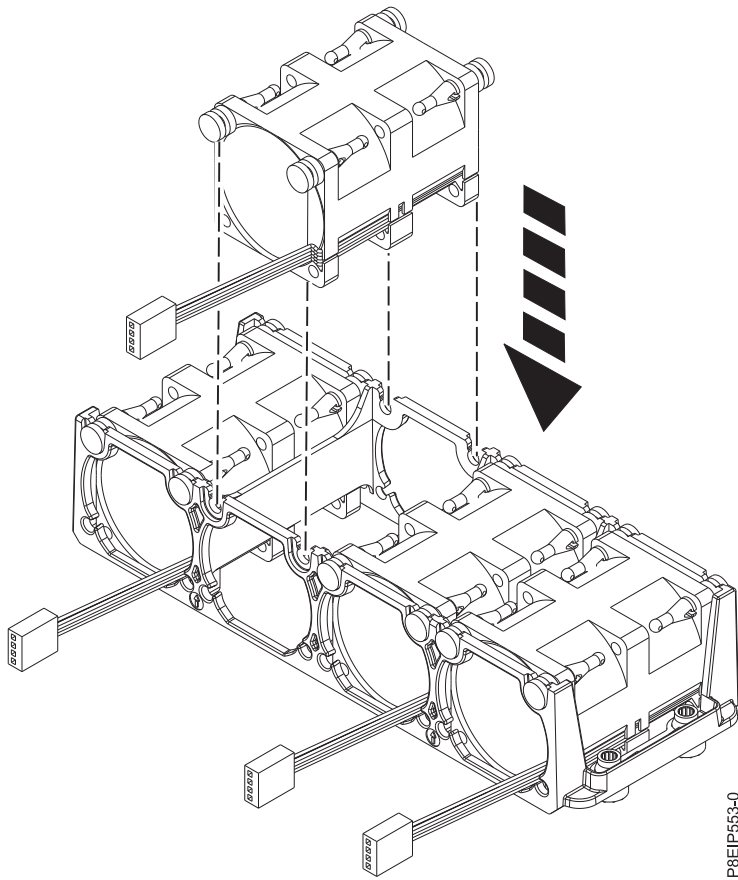
Figure 15. Replacing a fan

3. 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 16 on page 19. 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.
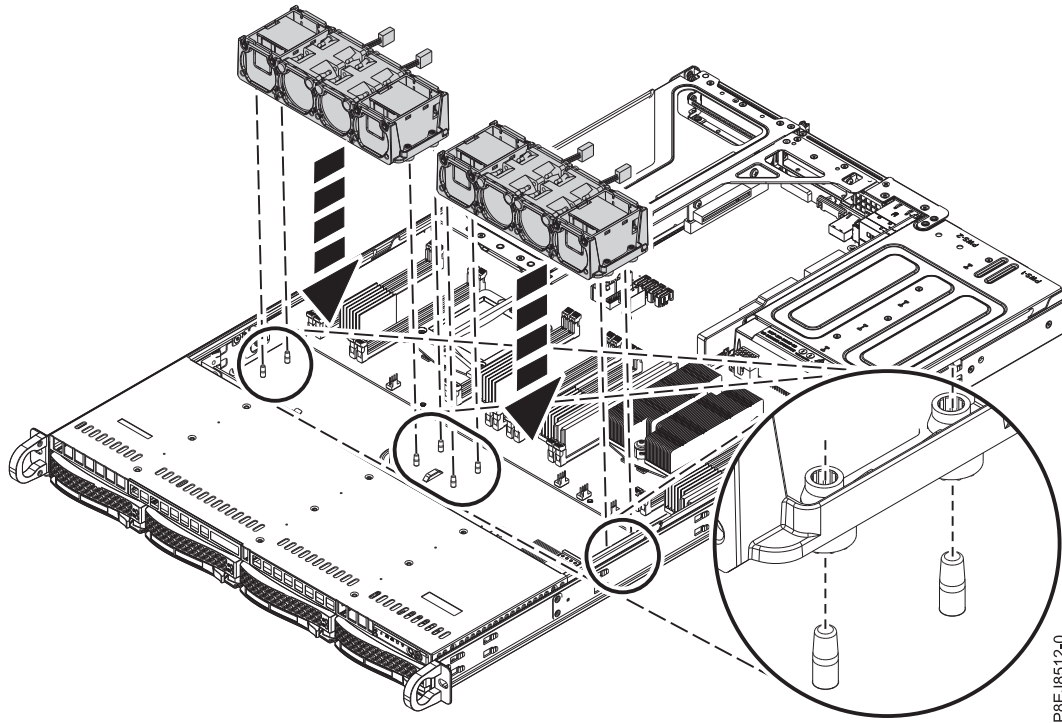
Figure 16. Aligning the fan holder

4. Connect the fan cable to the system backplane, as shown in Figure 17.
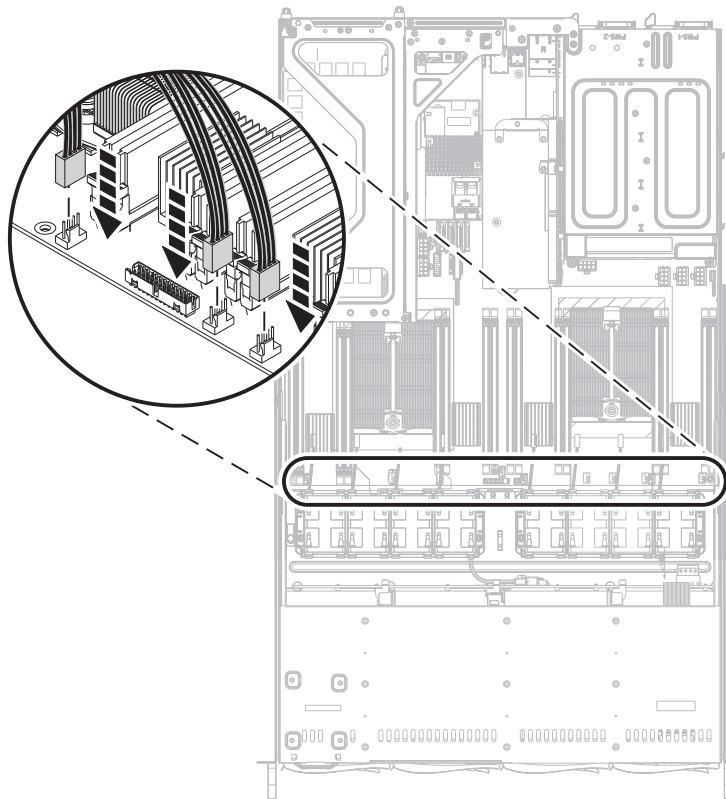
Figure 17. Connecting fan cables to the system backplane

5. Install the system processor air baffle as shown in Figure 18. Insert the edge of the system processor air baffle into the fan support. Then, carefully press the system processor air baffle down into place.
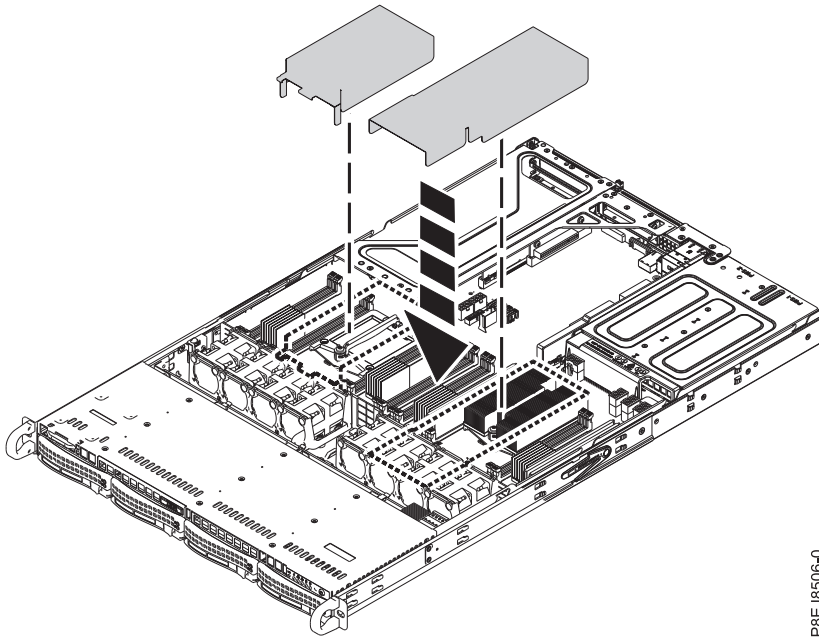
Figure 18. Installing the system processor air baffle

What to do next

Prepare the system for operation. For instructions, see "Preparing the 7063-CR1 system for operation after you remove and replace internal parts" on page 68.

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 66.

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.

   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.

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.
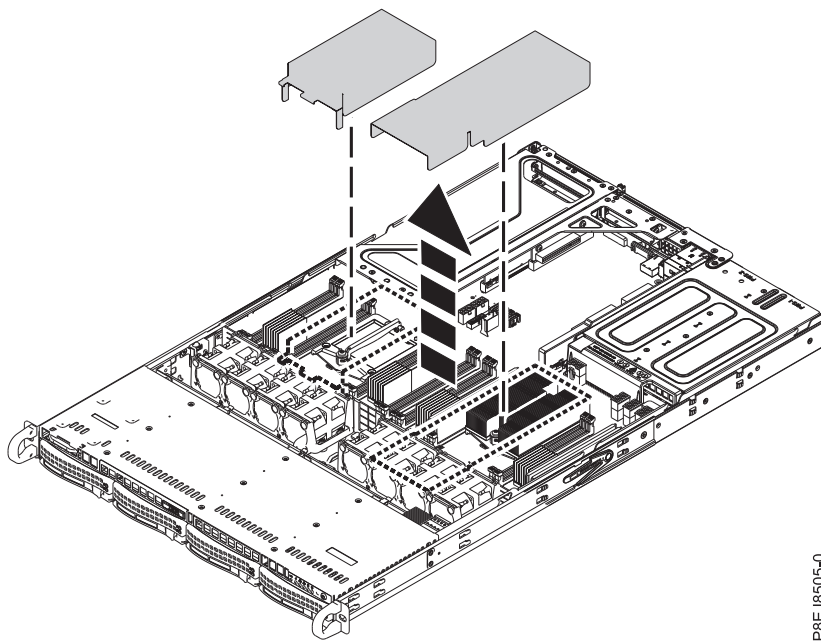
Figure 19. Removing the processor air baffle

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 20 on page 22. 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.
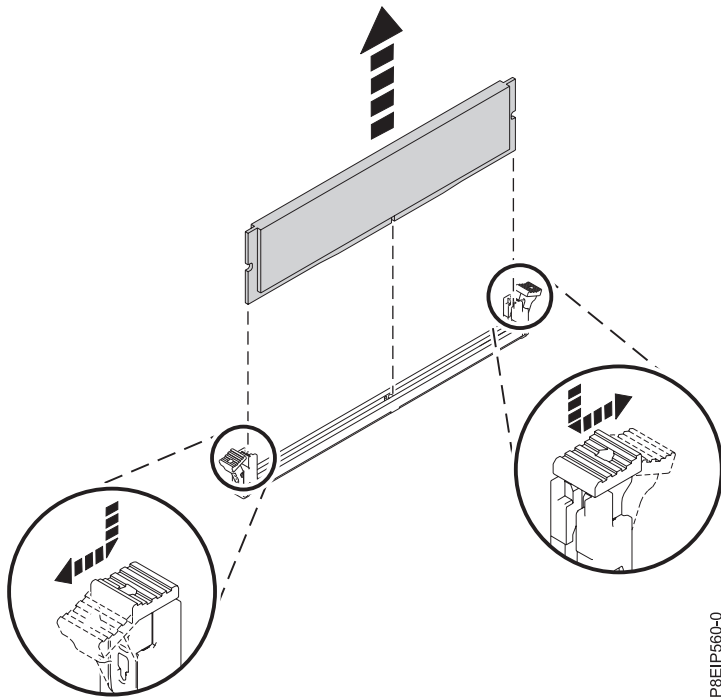
P8EIP560-0

Figure 20. 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.
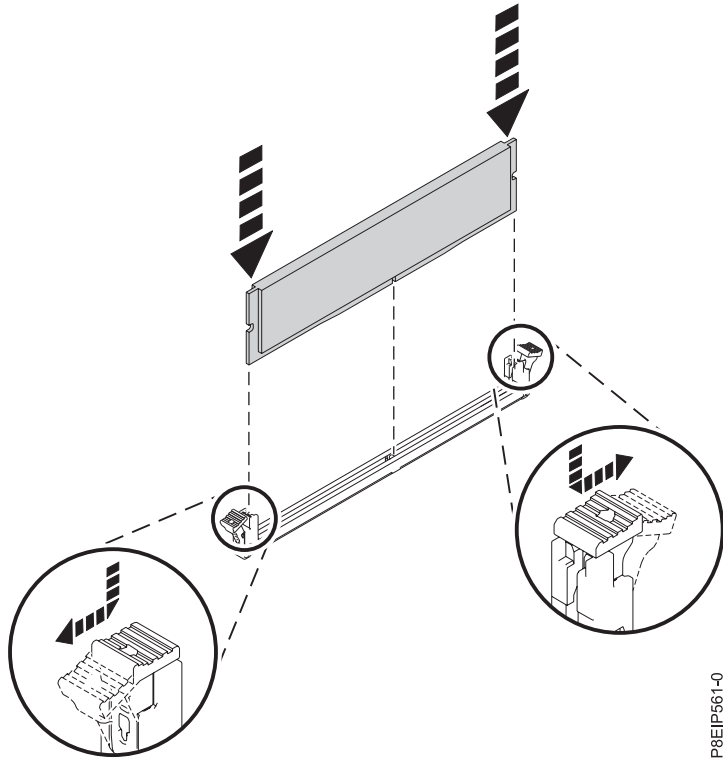
Figure 21. Inserting the memory DIMM

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.
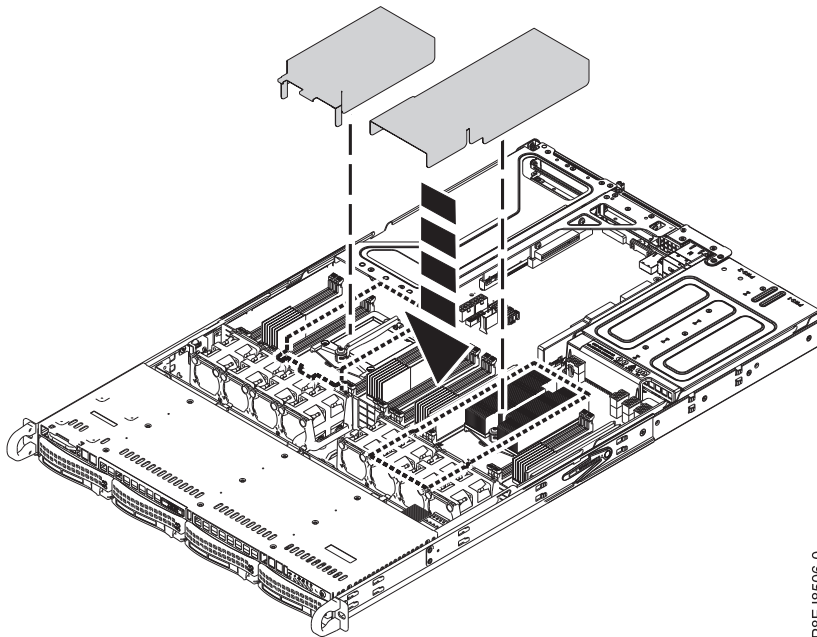
Figure 22. Installing the system processor air baffle

What to do next

Prepare the system for operation. For instructions, see "Preparing the 7063-CR1 system for operation after you remove and replace internal parts" on page 68.

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 66.

Procedure

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

    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.

2. Label and remove any Ethernet cables that extend out of the adapter. See Figure 23.
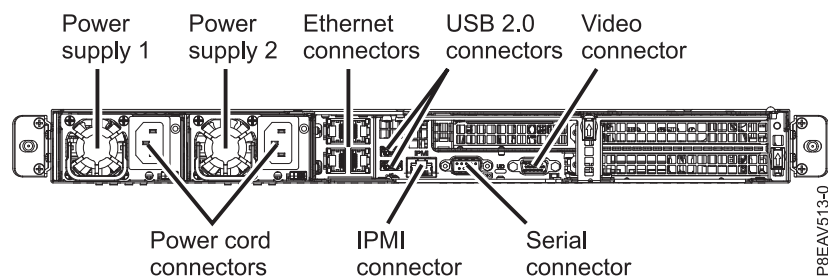
Figure 23. PCIe adapter positions

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 24 on page 25.

    b. Lift the PCIe adapter riser at points **(A)** and **(B)** from the system backplane.
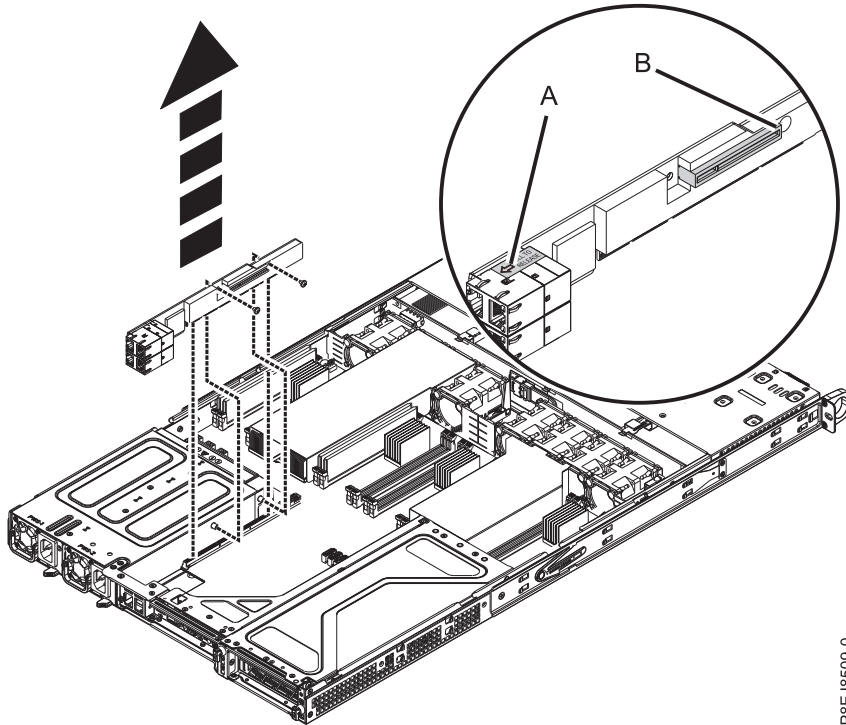
Figure 24. Removing the PCIe riser screws

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 attached. If not, attach it now.
2. Refer to the PCIe adapter position as shown in Figure 25.
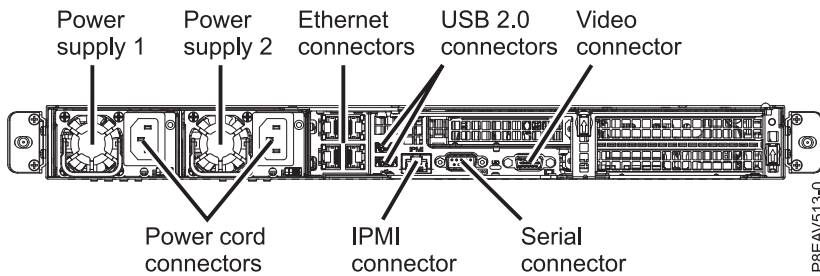
Figure 25. PCIe adapter positions

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 26 on page 26.
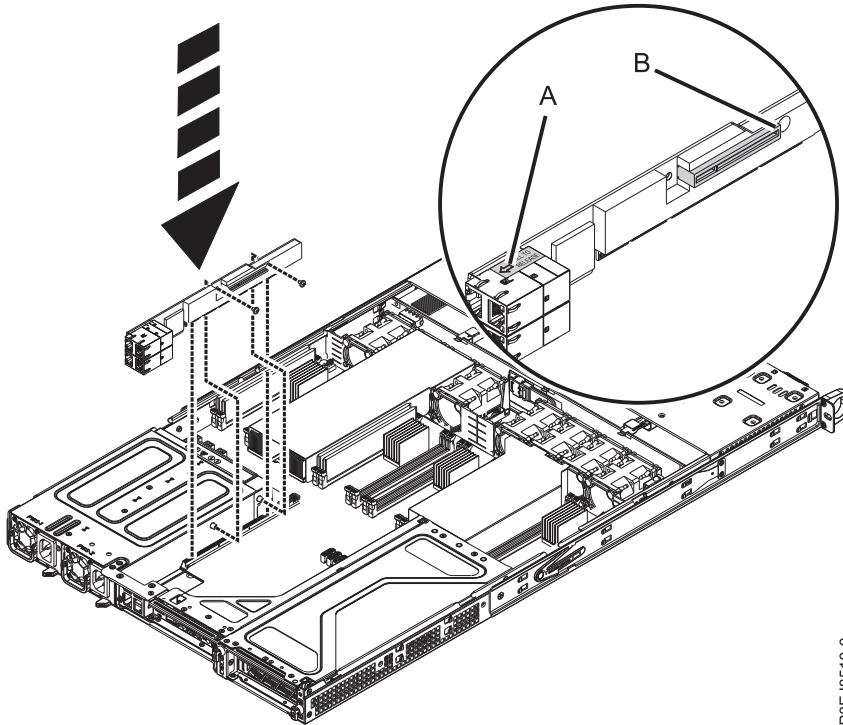
Figure 26. Replacing the PCIe riser screws

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

What to do next

Prepare the system for operation. For instructions, see "Preparing the 7063-CR1 system for operation after you remove and replace internal parts" on page 68.

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

Learn how to remove power supplies in 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.

   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.

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 80.

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 27.

   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.
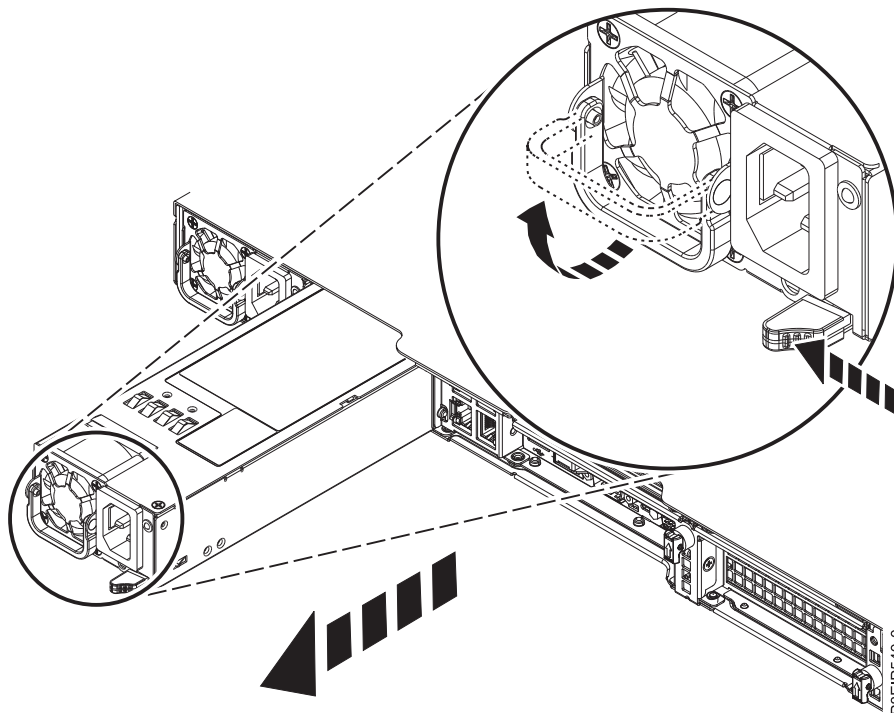
Figure 27. Removing a power supply from the system

Replacing a power supply in the 7063-CR1

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 attached. If not, attach it now.

2. Align the power supply with the bay as shown in Figure 28. 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.
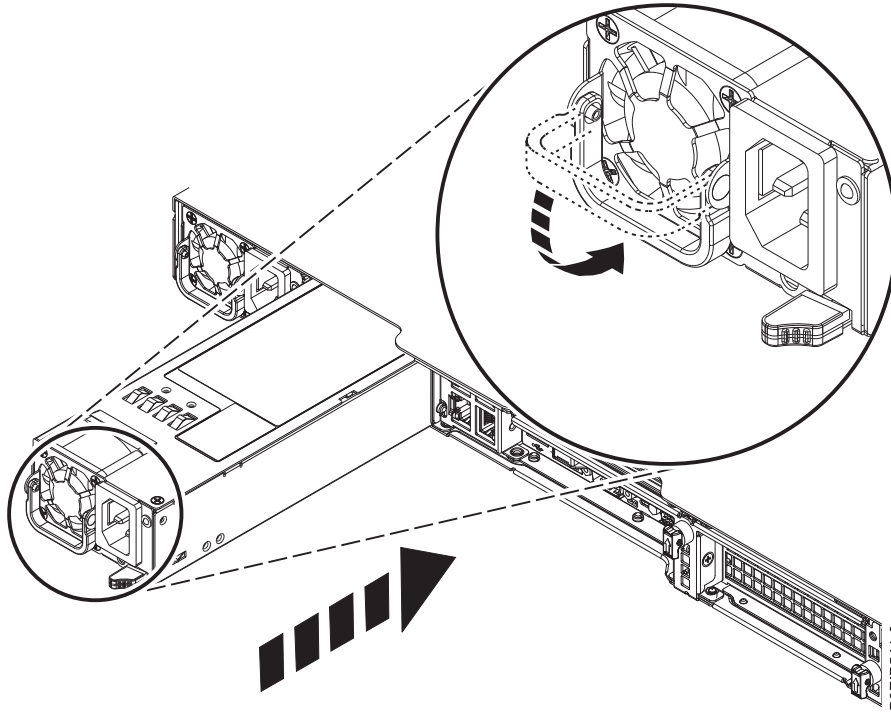
Figure 28. Replacing a power supply in the system

3. Reconnect the power cord. For instructions, see "Connecting the power cords to a 7063-CR1 system" on page 80.

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 to remove the system backplane in the 7063-CR1

Learn how to prepare to remove 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.

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 66.

Removing the system backplane in the 7063-CR1

Learn how to remove the system backplane in 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.
   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.
2. Remove both power supplies from the system. For instructions, see "Removing a power supply from the 7063-CR1" on page 26.

3. Label where the USB cable **(B)** and the serial cable **(A)** plug into the system backplane and unplug both cables.
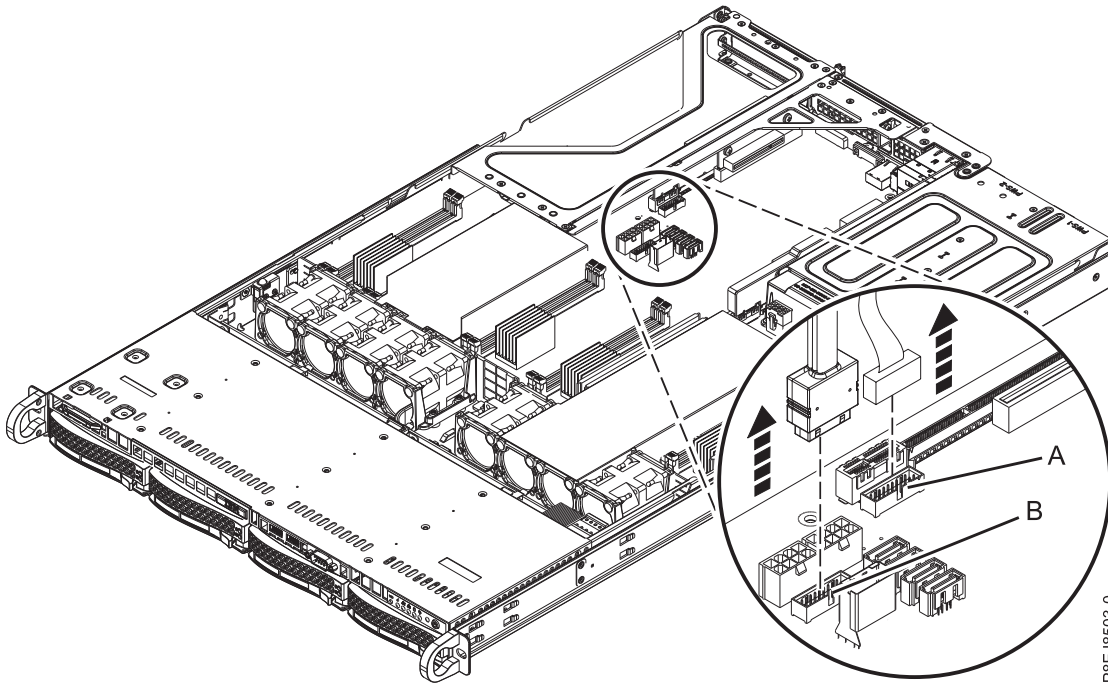
Figure 29. Disconnecting the USB and serial cables

4. Remove the processor air baffle as shown in Figure 30. Carefully unsnap and lift the processor air baffle from the system.
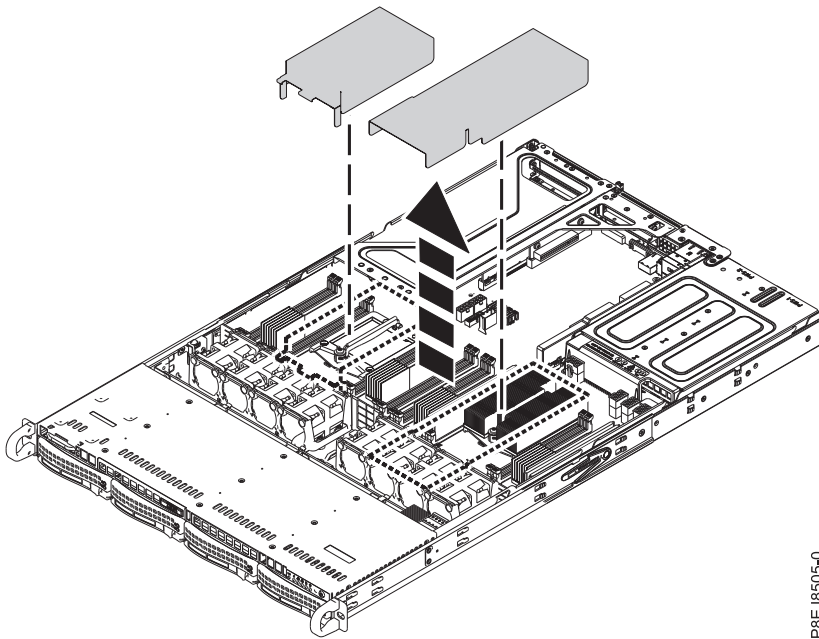
Figure 30. Removing the processor air baffle

5. Label and remove the memory DIMMs, recording their slot locations. For instructions, see "Removing and replacing memory in the 7063-CR1" on page 20.

6. Remove all the fans and housings from the system. For instructions, see "Removing a system fan from the 7063-CR1" on page 13.
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 24.
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 31.
   c. Turn the system over, right side up.
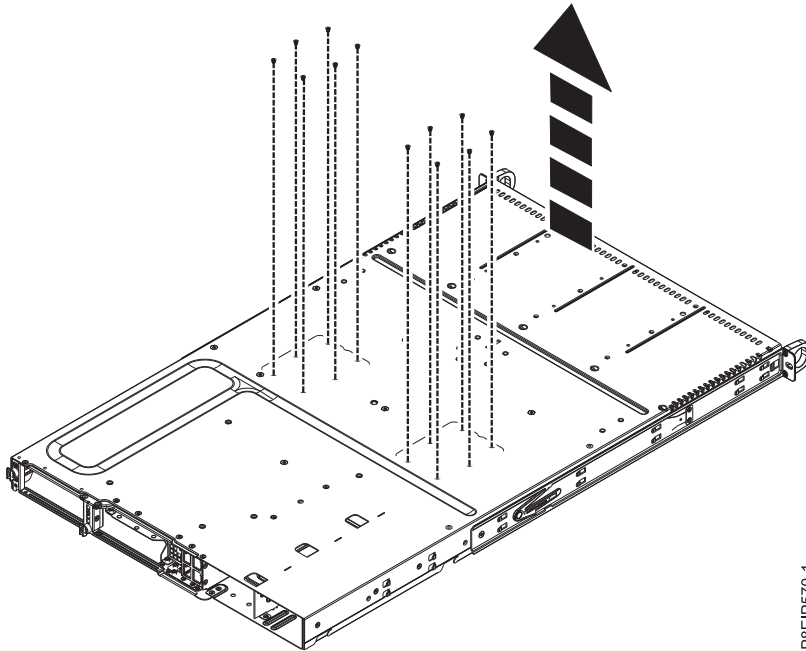
Figure 31. Processor socket screws on bottom of chassis

9. If needed, carefully cut the ties that secure the cables.
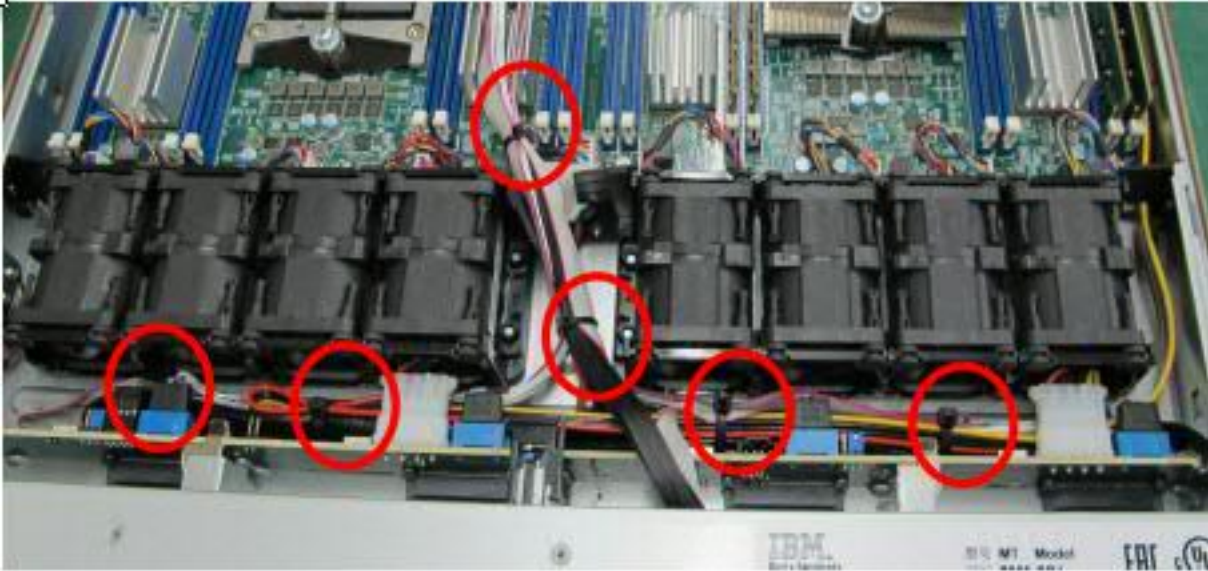
Figure 32. Cable tie locations

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" on page 8.

11. Remove the operator panel cable from the system backplane as shown in Figure 33.
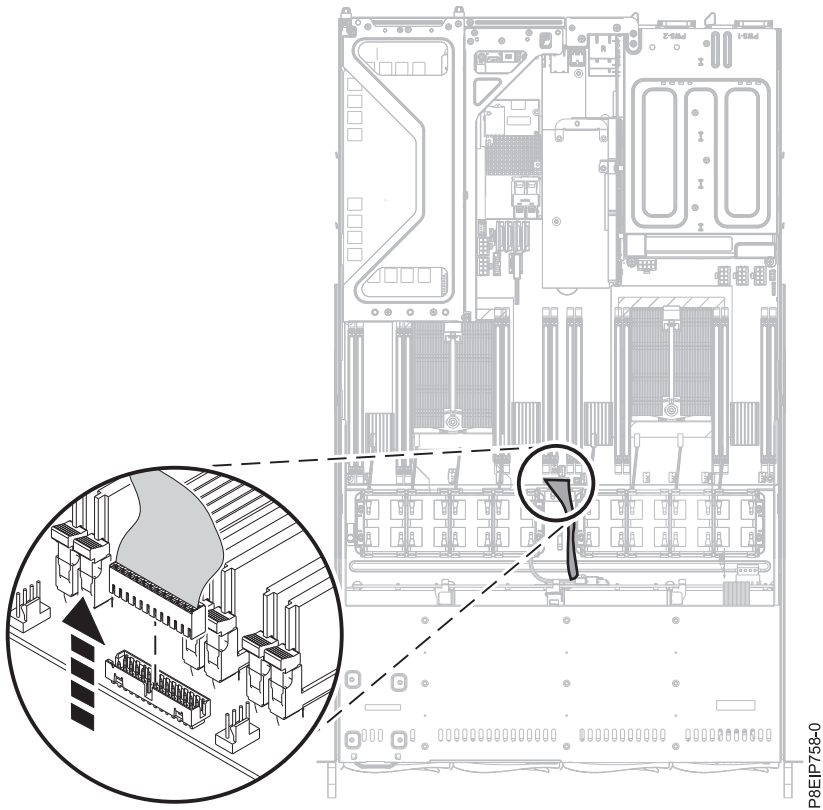
Figure 33. Removing the operator panel cable

12. Remove the 14 screws from the system backplane. The screw locations are shown in Figure 34.
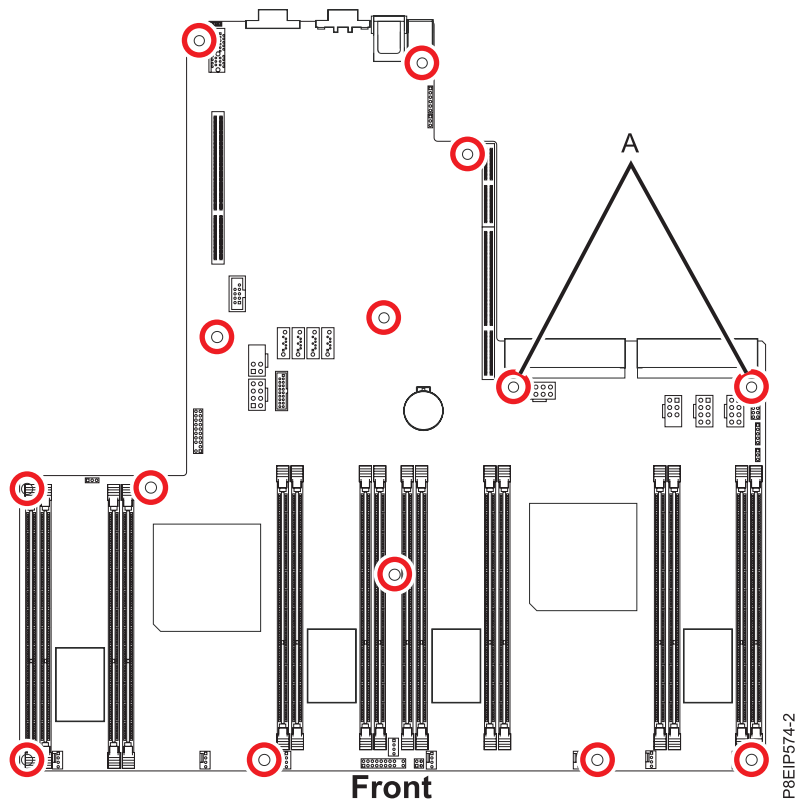
Figure 34. Screw locations. The two screws at **(A)** are black and slightly longer.

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 35 on page 34.
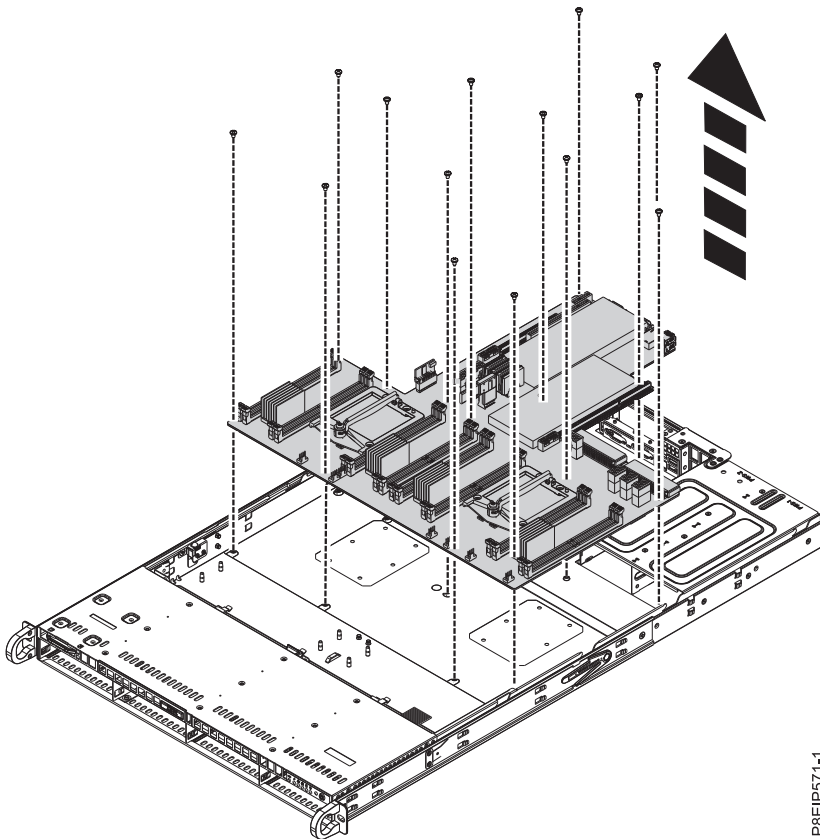
Figure 35. Lifting out the system backplane

14. Place the system backplane on an ESD mat.

Replacing the system backplane in the 7063-CR1

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 attached. If not, attach it 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 up in the direction that is shown in Figure 36 on page 35.
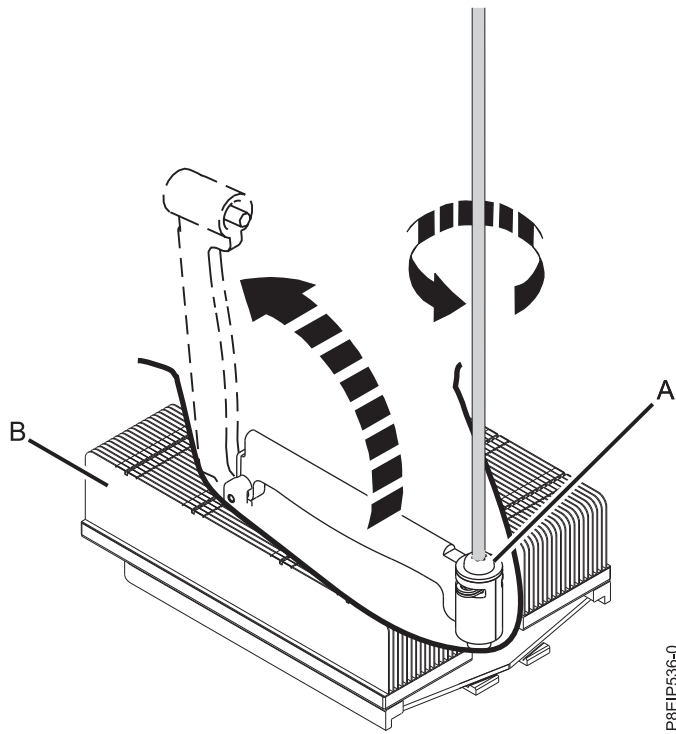
Figure 36. Loosening heat sink load arm screw

4. Grip the heat sink and remove it by lifting straight up as shown in Figure 37.
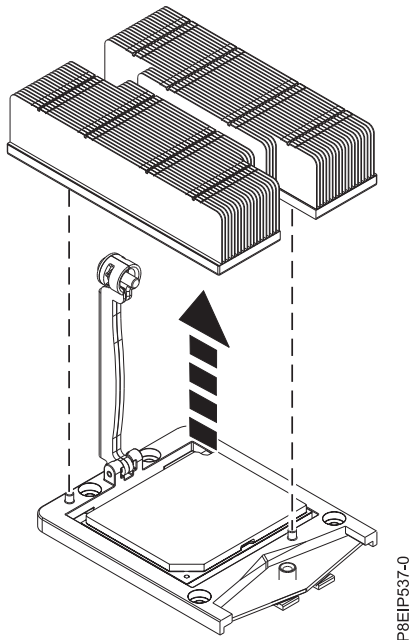
Figure 37. Removing the heat sink

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 38. 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.
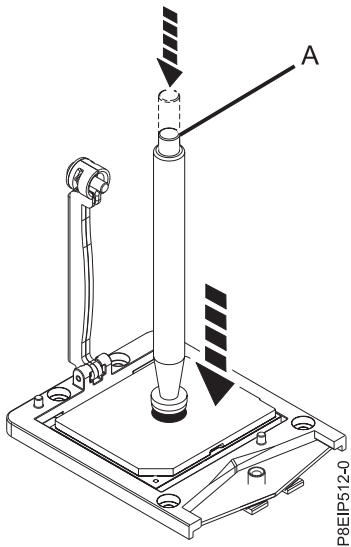
Figure 38. Lowering the removal tool onto the system processor module

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 39 on page 37. Align the beveled corner of the processor with the beveled corner on the socket. Use care to lower the tool evenly without tilting the processor.

       Note: Do not attempt to slide the tool and the system processor module in any direction while the system processor module is touching the socket.
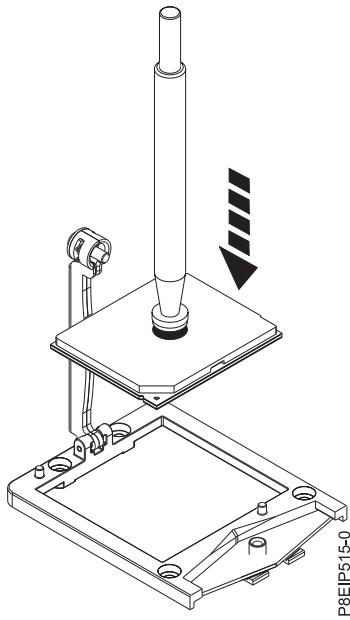
Figure 39. Lowering the processor into the socket

  b. After the system processor module is properly aligned, press the top of the pen to release it from the processor. Lift the pen off the processor.

11. Move the processor heat sink to the processor. 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 40.
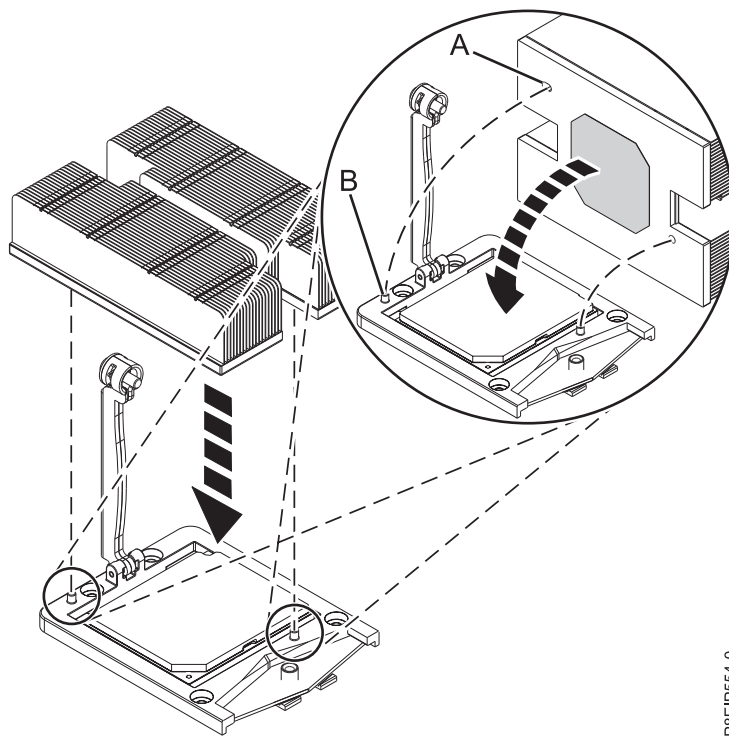
Figure 40. Installing the heat sink

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 41.

   Note: Do not overtighten the load arm screw.

The following steps continue installing components into the new system backplane:
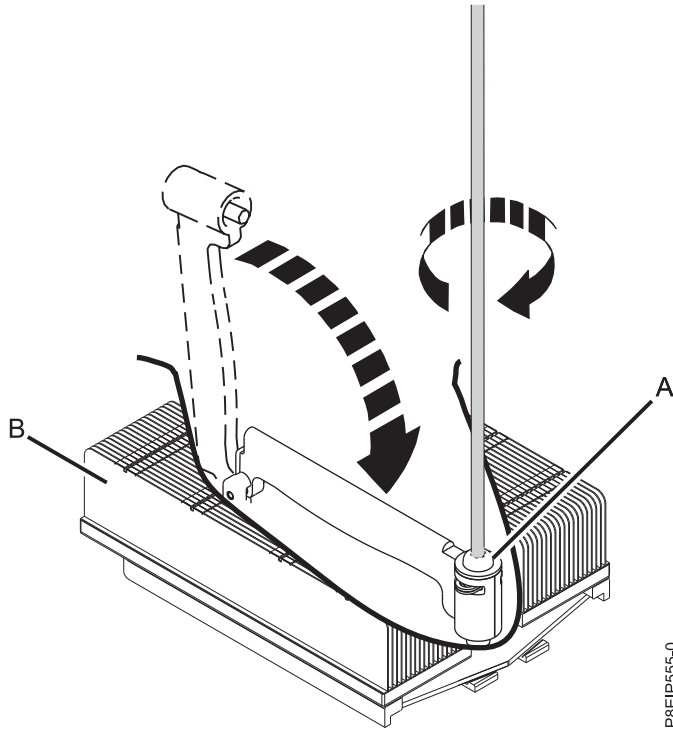
Figure 41. Tightening the load arm screw

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 42 on page 39.
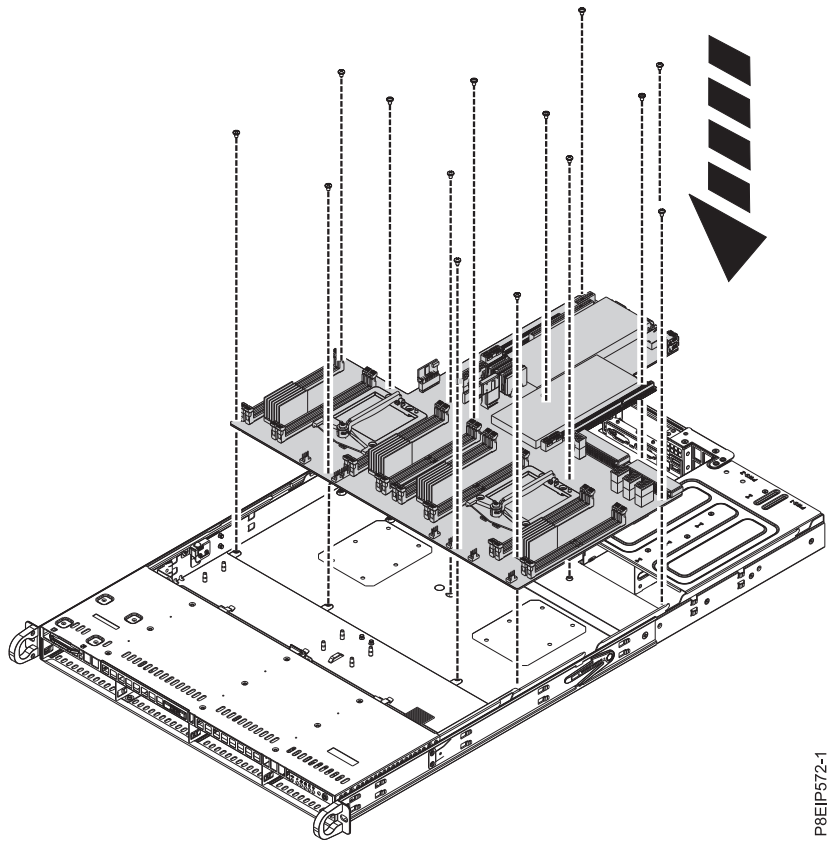
Figure 42. Replacing the system backplane

14. Align and screw the 14 screws into the system backplane. The screw locations are shown in Figure 43 on page 40.
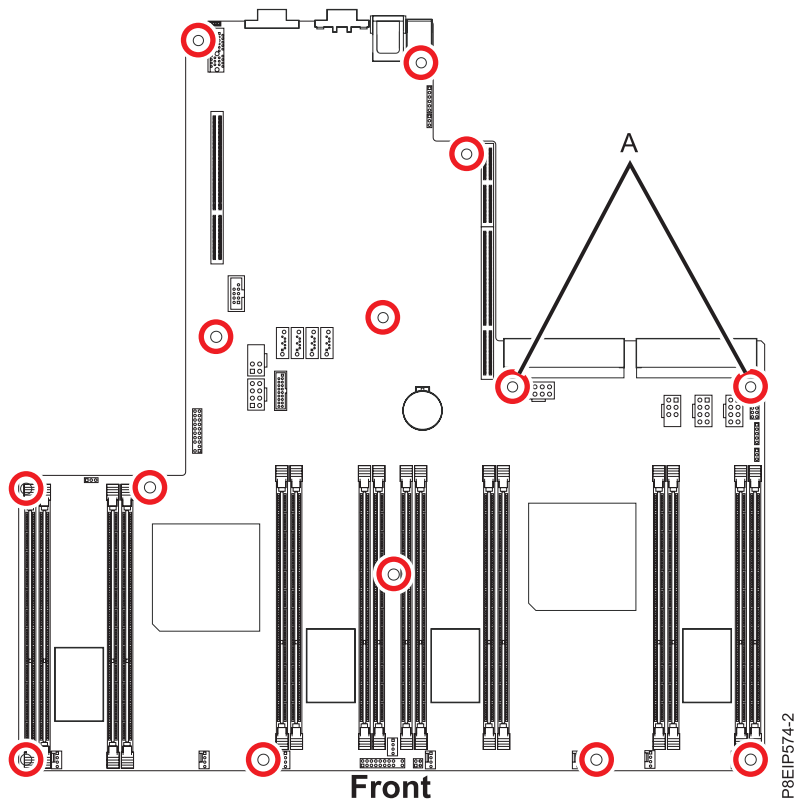
Figure 43. Screw locations. The two screws at **(A)** are black and slightly longer.

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" on page 11.

16. Replace the operator panel cable into the system backplane as shown in Figure 44 on page 41.
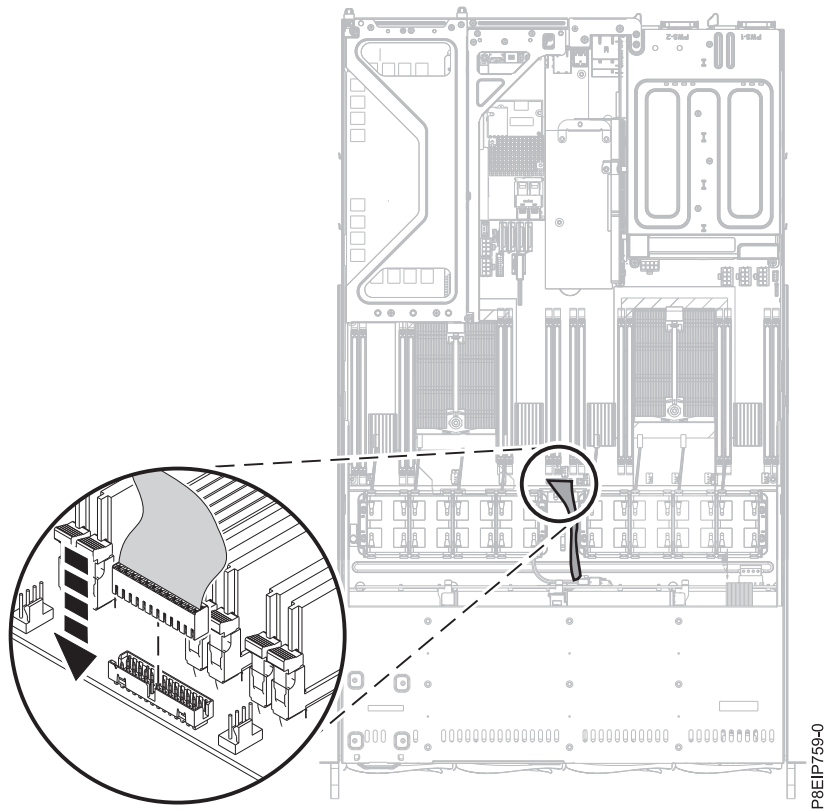
Figure 44. Replacing the operator panel cable

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 45 on page 42.

    c. Turn the system over, right side up.
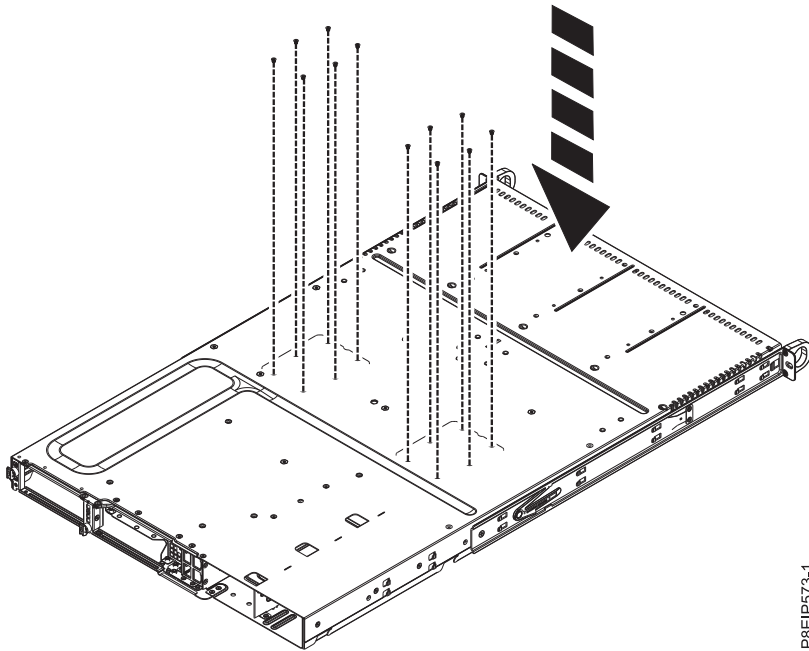
Figure 45. Processor socket screws on bottom of chassis

18. Using your labels, replace the PCIe risers and adapters. For instructions, see "Replacing a PCIe adapter in the 7063-CR1 system" on page 25.

19. Replace the eight fan power connectors into the system backplane. For instructions, see "Replacing a system fan in the 7063-CR1" on page 17.

20. Using your labels, replace the memory DIMMs. For instructions, see "Removing and replacing memory in the 7063-CR1" on page 20.

21. Install the system processor air baffle as shown in Figure 46 on page 43. Insert the edge of the system processor air baffle into the fan support. Then, carefully press the system processor air baffle down into place.
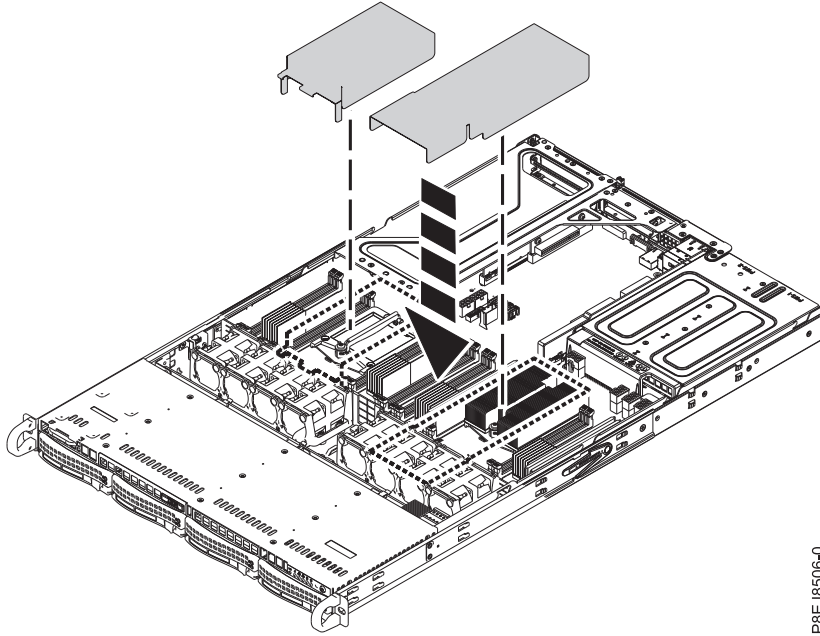
Figure 46. Installing the system processor air baffle

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.
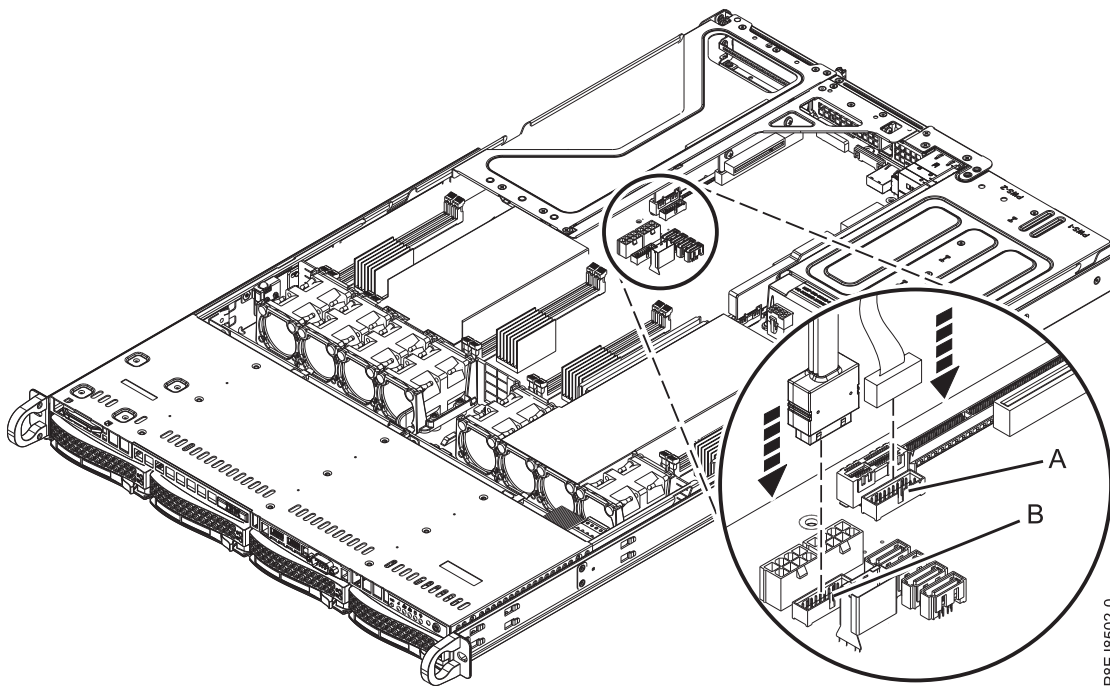
Figure 47. Reconnecting the USB cable

23. Replace both power supplies in the system. For instructions, see "Replacing a power supply in the 7063-CR1" on page 27.

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

Learn how to prepare the 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 you remove and replace internal parts" on page 68.
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.

   a. Select **Hardware Management Console** from the boot menu.

   b. Contact IBM Support to obtain the pesh password to become root on the HMC.

   c. 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).

      1) 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)

      2) 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:

       1) Run the following command to check the value:

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

       2) 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 69.

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

    a. Click **Select product**.

    b. Choose **Power** from the **Product Group** drop-down field.

    c. Choose **Power Hardware Management Console** from the **Product** drop-down field.

    d. Choose **7063-CR1** from the **Select from Power Hardware Management Console** drop-down field.

    e. Choose the most recent machine code available from the **Select from 7063-CR1** drop-down field.

      Note: The remaining steps might vary slightly depending on the download option you choose.

    f. Choose the most recent service pack available. Then, click **Continue**.

    g. Choose the download option you prefer. Then, click **Continue**.

    h. Specify the serial number for your machine. Then, click **Continue**.

    i. Click on download link next to the file with the extension .pnor to download the PNOR image file.

6. Update the PNOR firmware.

    a. Connect to the BMC using the IP address you set in 2 on page 44. 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 system folder 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 using the BMC interface until the PNOR update is complete.

7. Start the system. For instructions, see "Starting the 7063-CR1 system" on page 69.

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**.

      1) Navigate to the device you want; sda2 and press **Enter**.

      2) 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 69.

    b. Start the system. For instructions, see "Starting the 7063-CR1 system" on page 69.

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/POWER8/p8ej6/p8ej6_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 66.

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.

   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.

2. Open the packaging of the new system processor module and place the cover upside down next to the tray, as shown in Figure 48. The cover is used for the system processor module that you are replacing.

P8EDE620-0
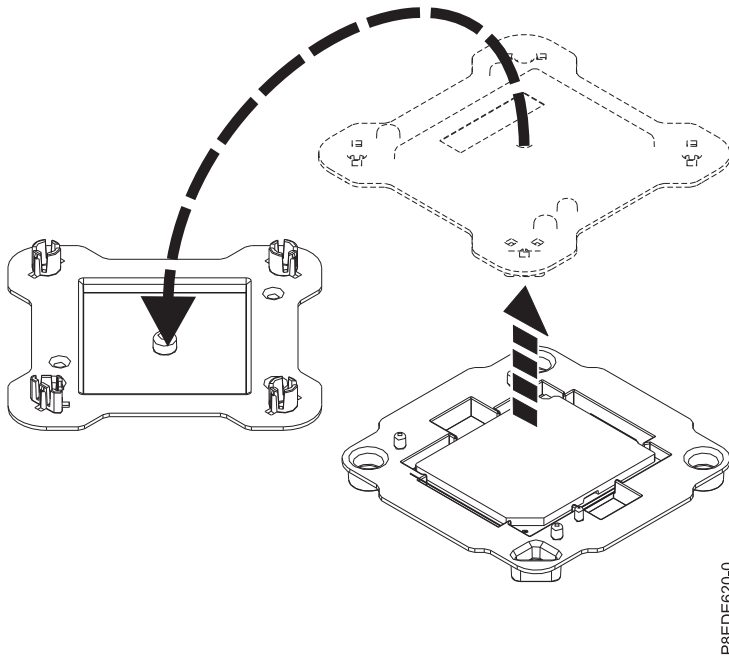
Figure 48. Opening the system processor module packaging

3. Remove the processor air baffle as shown in Figure 49 on page 48. Carefully unsnap and lift the processor air baffle from the system.
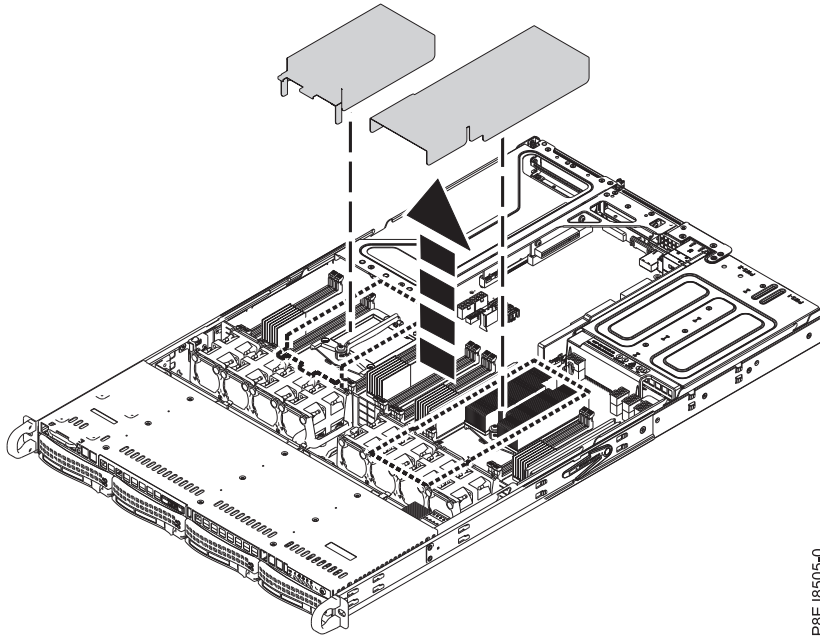
Figure 49. Removing the processor air baffle

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 50.
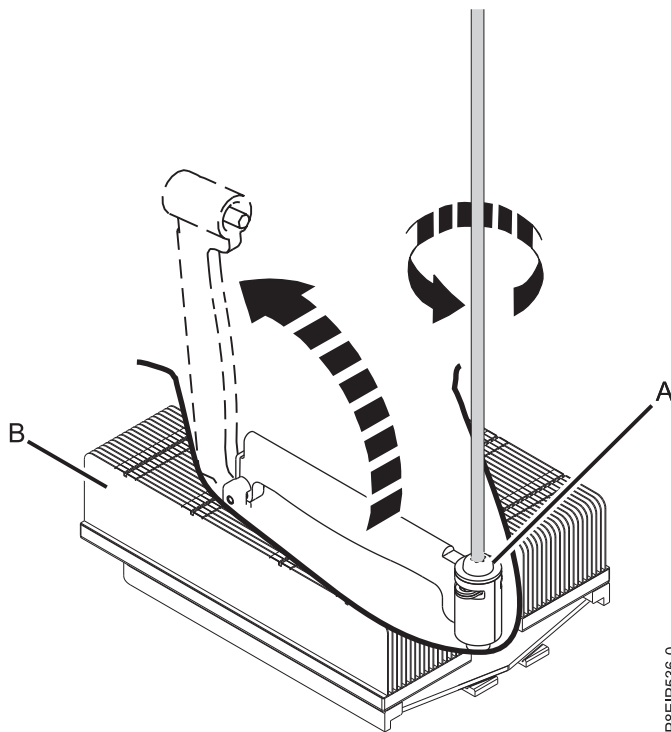
Figure 50. Loosening the load arm screw of the heat sink

5. Grip the heat sink and remove it by lifting straight up as shown in Figure 51 on page 49.
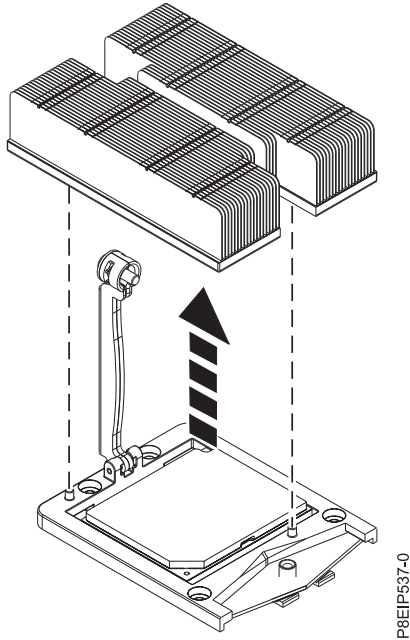
Figure 51. Removing the heat sink

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 52. 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 processor in case the vacuum seal releases early.
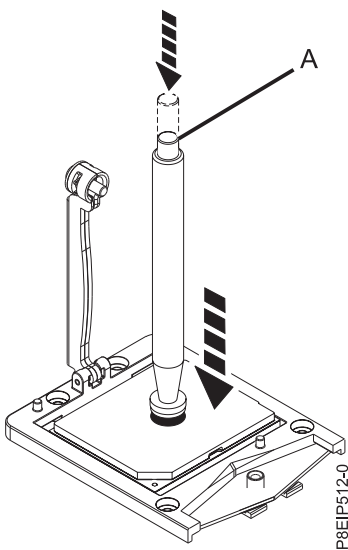
Figure 52. Locking the vacuum pen to the system processor module

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 53. 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.
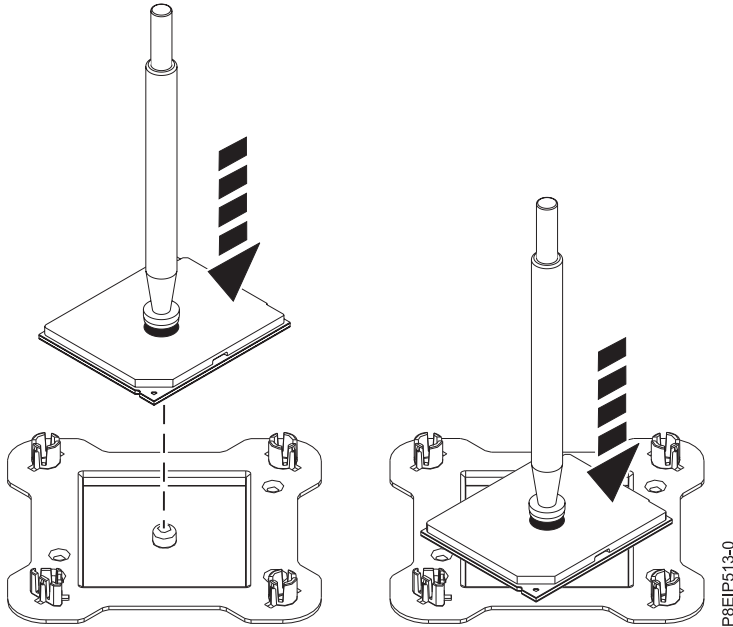
Figure 53. Placing the processor at an angle on the top cover of the packaging

10. Press the top of the pen to release the system processor module onto the cover.
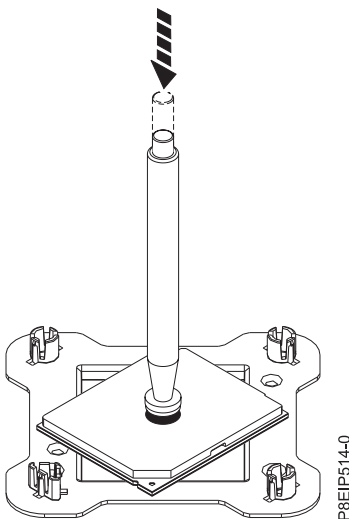
Figure 54. Releasing the pen

Replacing a system processor module for the 7063-CR1

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 attached. If not, attach it 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 55. 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.
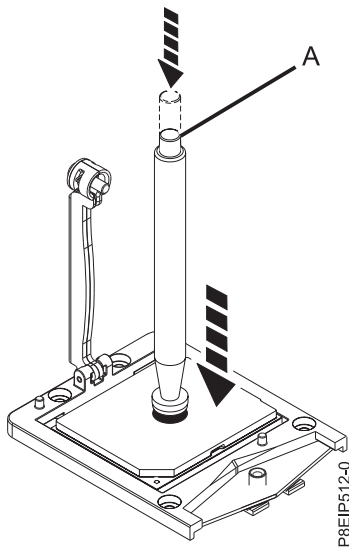
Figure 55. Lowering the removal tool onto the system processor module

4. Install the system processor module:

   a. Lower the pen and system processor module onto the socket as shown in Figure 56 on page 52. Align the beveled corner of the processor with the beveled corner on the socket. Use care to lower the tool evenly without tilting the processor.

   Note: Do not attempt to slide the tool and the system processor module in any direction while the system processor module is touching the socket.
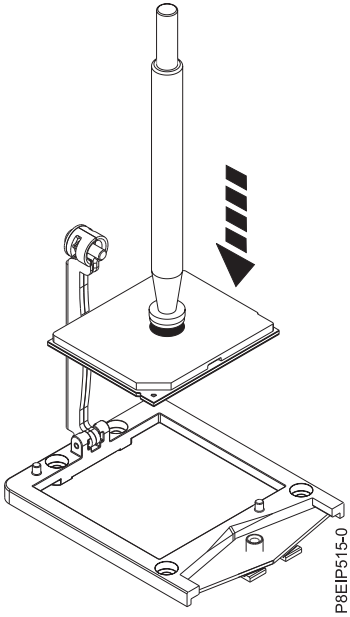
Figure 56. Lowering the processor into the socket

   b. After the system processor module is properly aligned, press the top of the pen to release it from the processor. Lift the pen off the processor.

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 57.
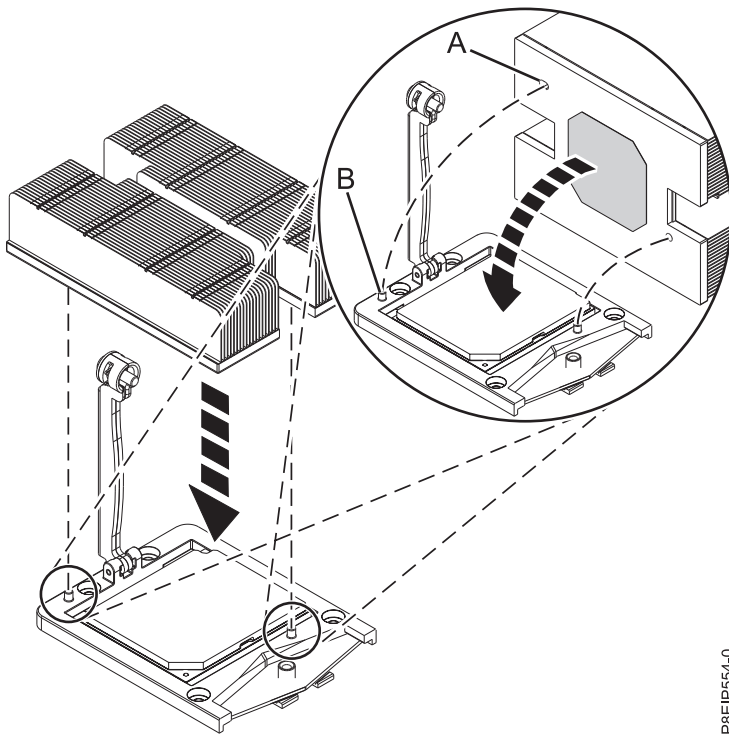
Figure 57. Installing the heat sink

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 58.

   Note: Do not overtighten the load arm screw.
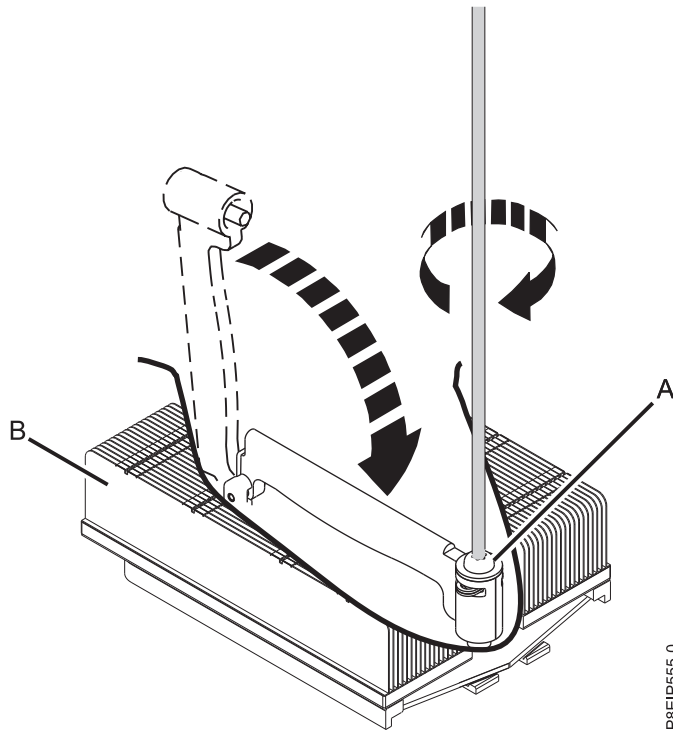
Figure 58. Tightening the load arm screw

7. Install the system processor air baffle as shown in Figure 59 on page 54. Insert the edge of the system processor air baffle into the fan support. Then, carefully press the system processor air baffle down into place.
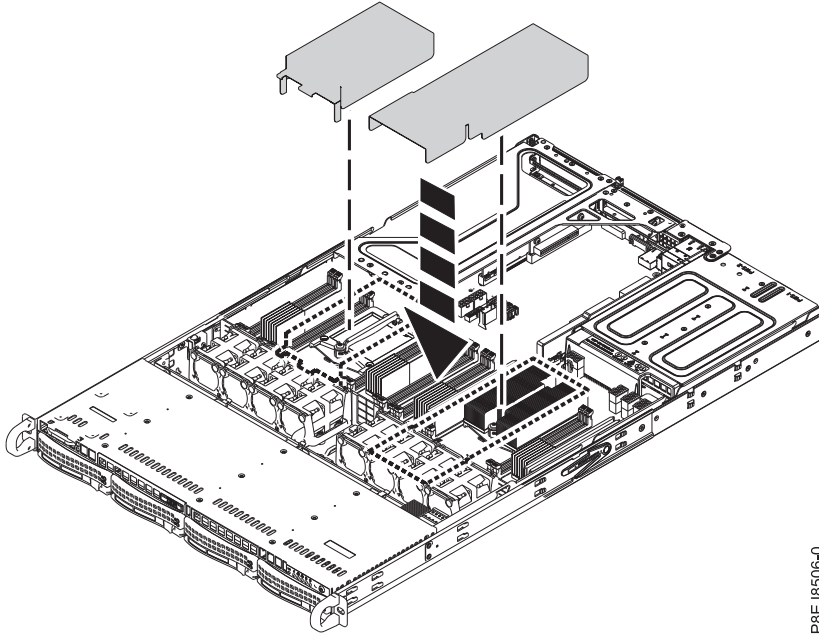
Figure 59. Installing the system processor air baffle

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 60.
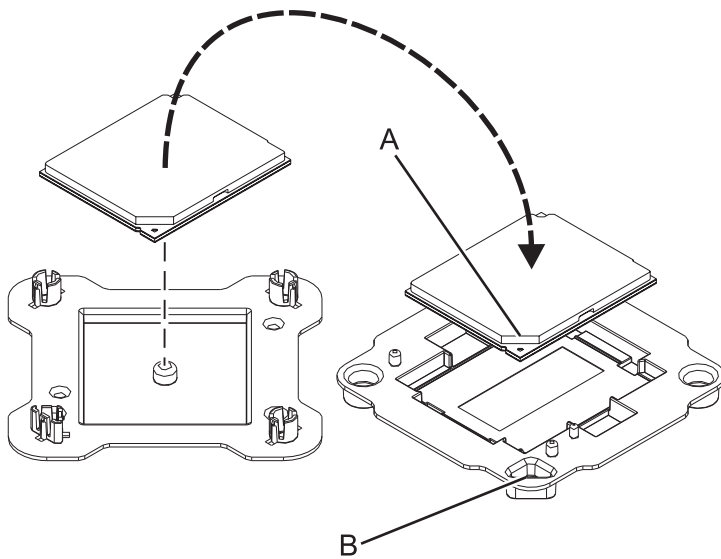
Figure 60. Placing the system processor module into the shipping tray

What to do next

Prepare the system for operation. For instructions, see "Preparing the 7063-CR1 system for operation after you remove and replace internal parts" on page 68.

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 66.

Procedure

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

   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.

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 battery. Lift the battery as shown in Figure 61 on page 56. When you remove the battery, do not use a metallic tool to disengage it from its slot.
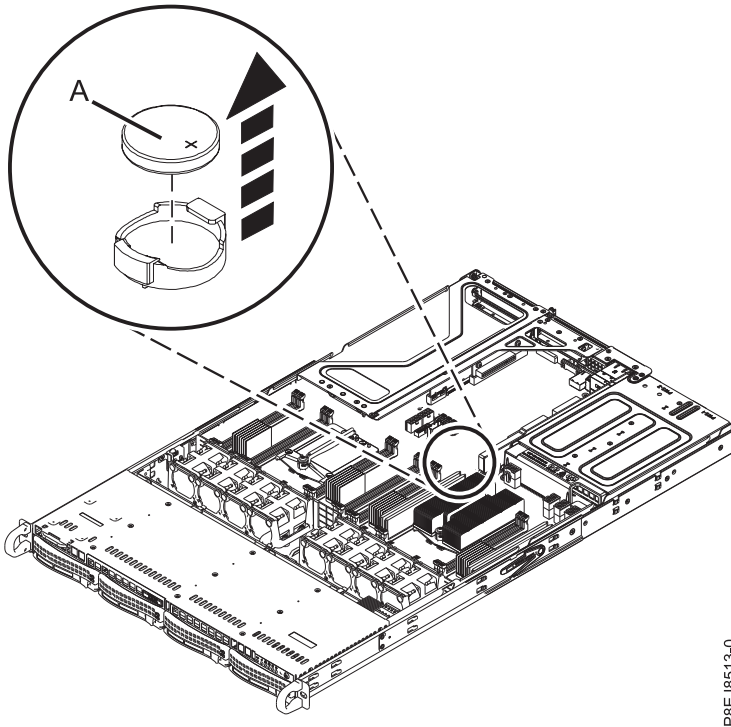
Figure 61. Time-of-day battery location

3. To replace the time-of-day battery, use your thumb to press the spring latch toward the back 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 you remove and replace internal parts" on page 68.

You need to set the system's time after you replace the 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 connectors in the 7063-CR1

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

Removing the USB cable and connectors from the 7063-CR1

Learn how to remove the USB cable and connectors in 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 66.

Procedure

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

   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.

2. Label where the USB cable **(B)** and the serial cable **(A)** plug into the system backplane and unplug both cables.
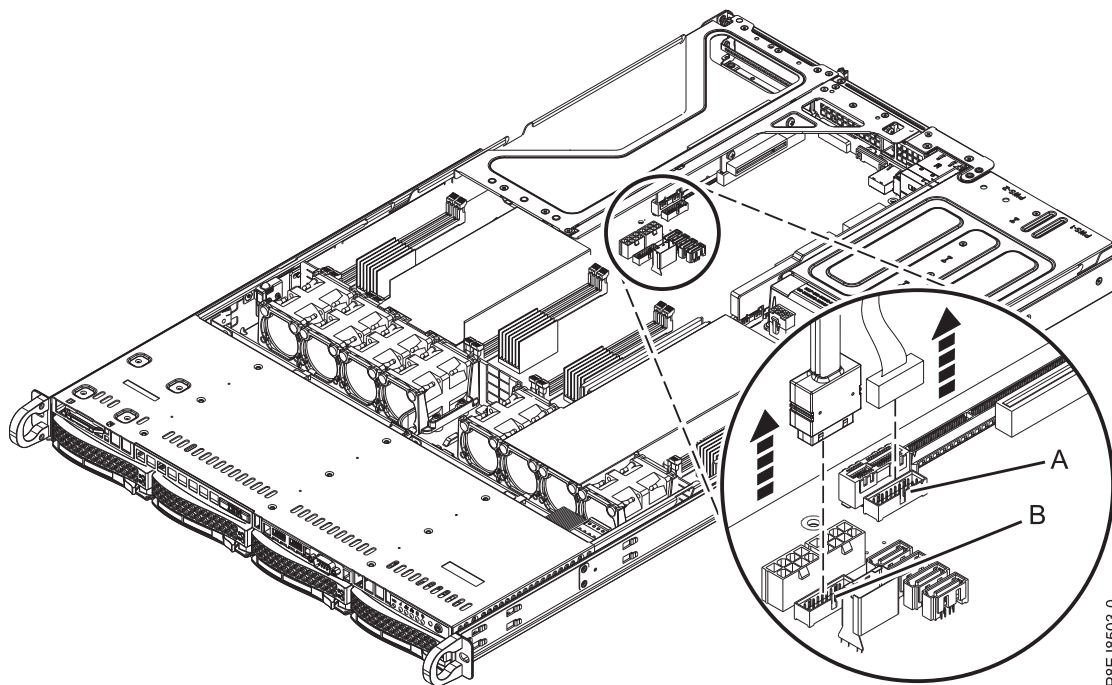
Figure 62. Disconnecting the USB and serial cables

3. Remove the USB cable and connectors as shown in Figure 63 on page 58.

   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 connectors out of the front of the chassis.

   a. Slide the USB cable and connectors out of the front of the system, being careful not to catch the cable on the chassis as you remove the cable.
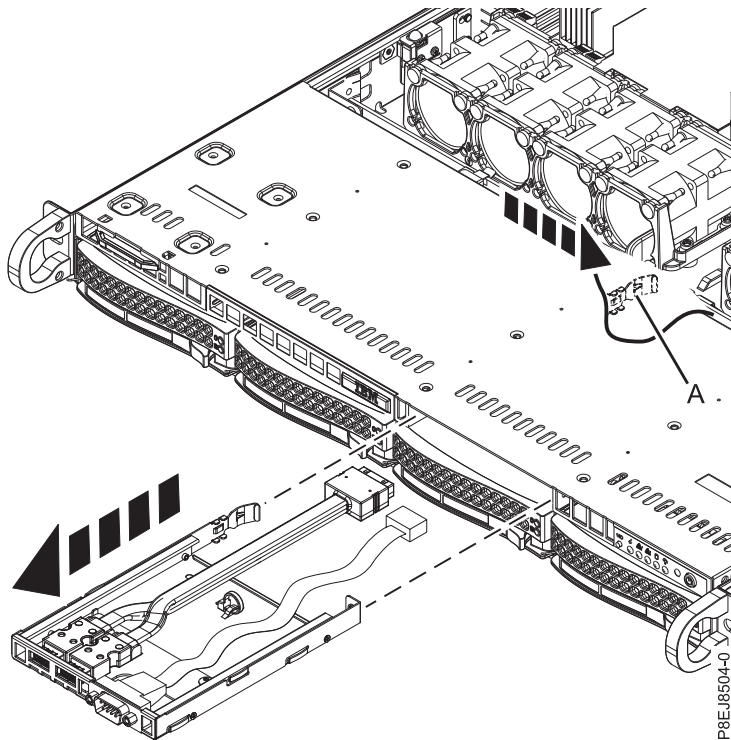
Figure 63. Removing the USB cable and connectors

Replacing the USB cable and connectors in the 7063-CR1

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

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap attached. If not, attach it now.
2. Route the USB and serial cables in through the front of the system, then slide the USB cable and connectors into of the front of the system as shown in Figure 64 on page 59, until it clicks into place.
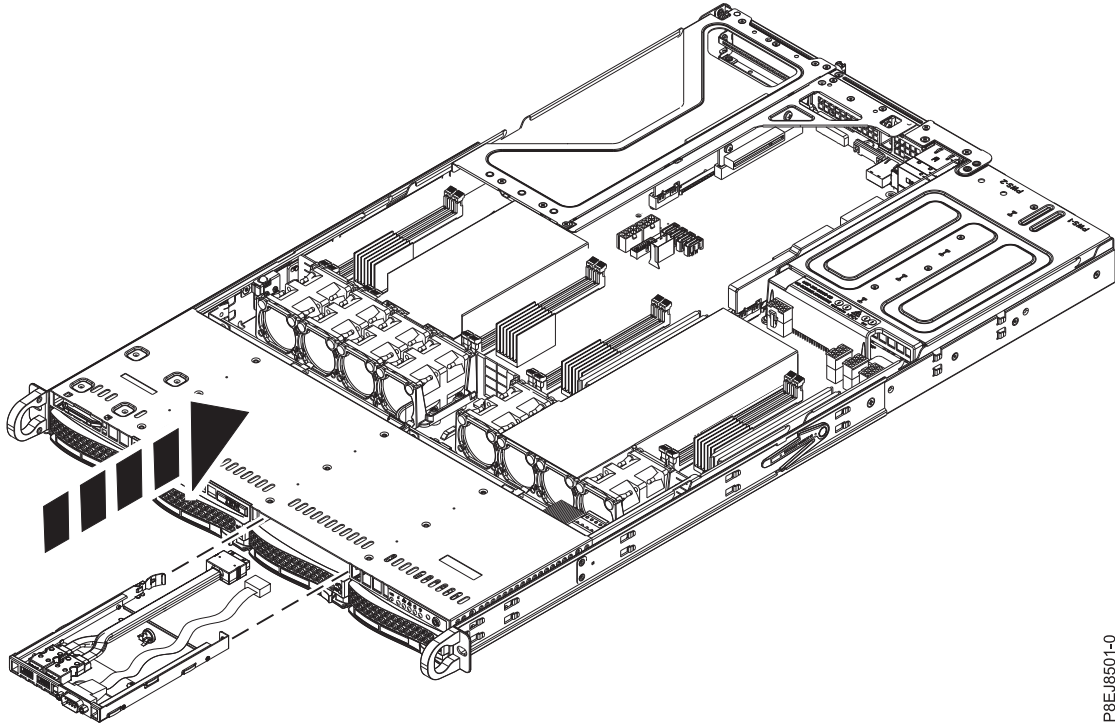
Figure 64. Inserting the USB cable and connectors

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.
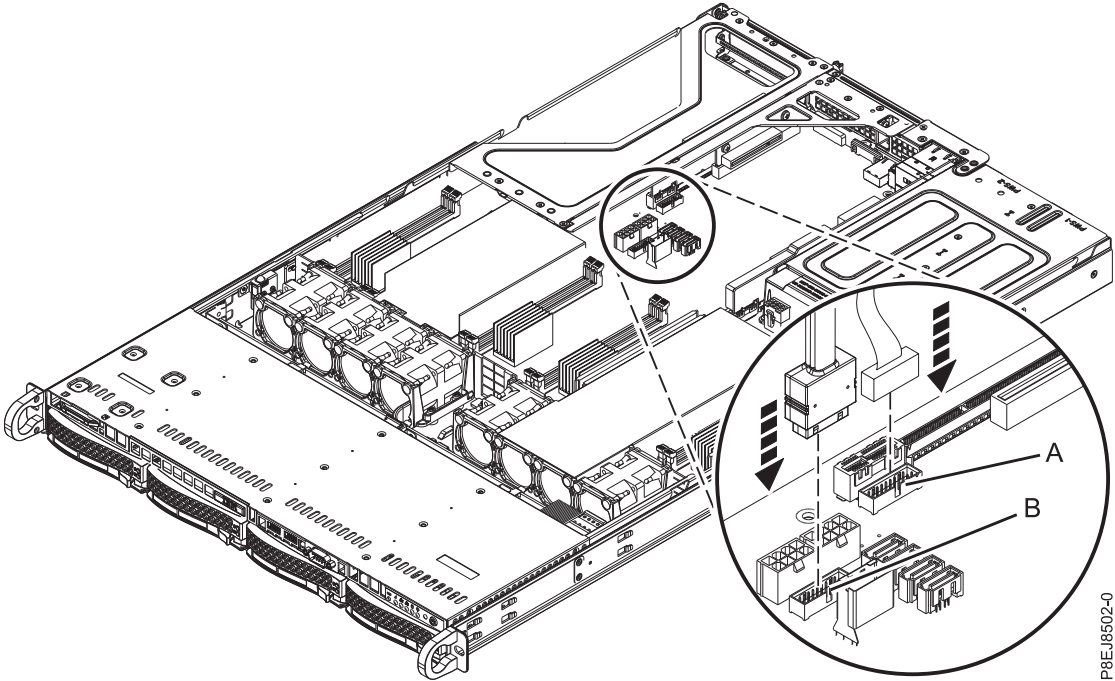
Figure 65. Reconnecting the USB cable

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.
* Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements.
* Do not continue with the inspection if any unsafe conditions are present.
* Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords, turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.

DANGER:
* Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:
1. Turn off everything (unless instructed otherwise).
2. For AC power, remove the power cords from the outlets.
3. For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source.
4. Remove the signal cables from the connectors.
5. Remove all cables from the devices.

To Connect:
1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. For AC power, attach the power cords to the outlets.
5. For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP.
6. Turn on the devices.

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

(R001 part 1 of 2):

DANGER: Observe the following precautions when working on or around your IT rack system:
- Heavy equipment–personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- 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).

- 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 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. 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.

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 or terra-cotta on a part of the hardware indicates a touch point where you can grip the hardware to remove it from or install it in the system, or open or close a latch. Terra-cotta might also indicate that the part can be removed and replaced with the system or logical partition powered on.
5. Ensure that you have access to a medium flat-blade screwdriver, a Phillips screwdriver, and a pair of scissors.
6. If parts are incorrect, missing, or visibly damaged, do the following steps:
   - If you are replacing a part, contact the provider of your parts or next level of support.
   - If you are installing a feature, contact one of the following service organizations:
     - The provider of your parts or next level of support.
     - In the United States, the IBM Rochester Manufacturing Automated Information Line (R-MAIL) at 1-800-300-8751.

   In countries and regions outside of the United States, 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 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 66.
- 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.
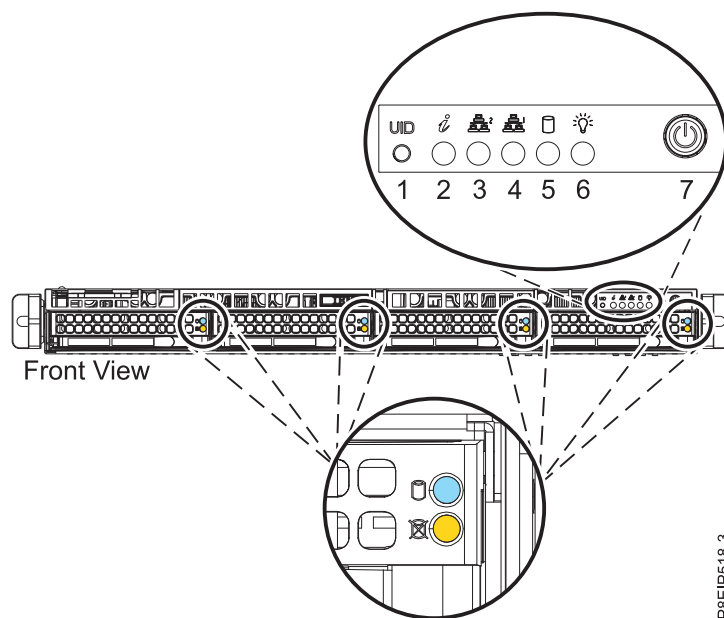
Figure 66. LEDs on the front of the system

LEDs are also located on the rear of the system; see Figure 67 on page 65.

The identify LED is at **(2)**. Turn it on by using a system identify command or by pressing the UID button.
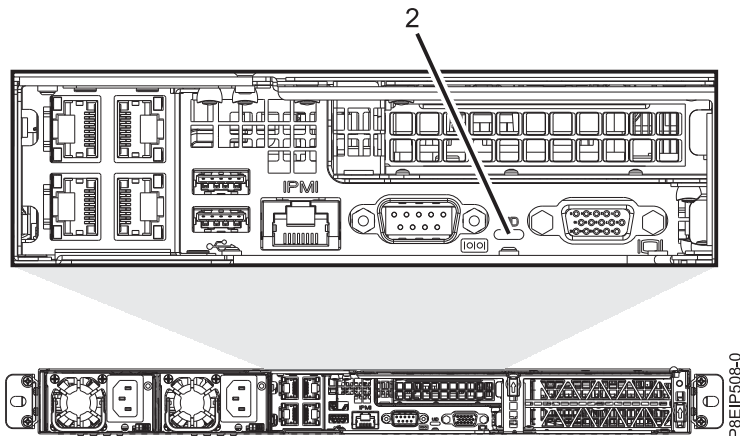
Figure 67. LEDs on the rear of the system

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 61.
2. Identify the part and the system that you will be working on. For instructions, see "Identifying the system that contains the part to replace" on page 64.
3. Attach the electrostatic discharge (ESD) wrist strap.

   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.
4. Stop the system. For instructions, see "Stopping the 7063-CR1 system" on page 69.
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 80.

   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)
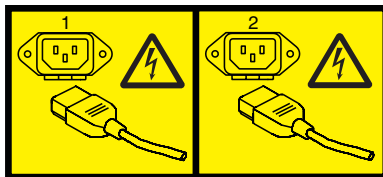
   or
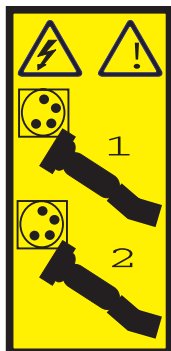
   or

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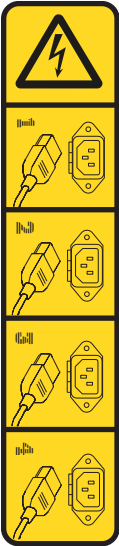
or
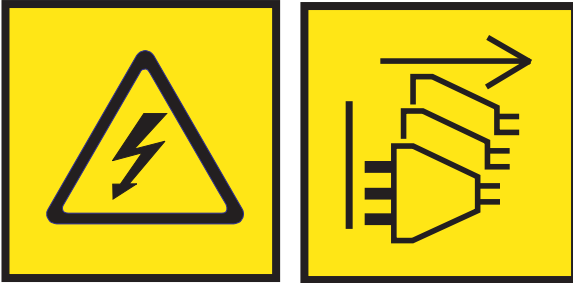
DANGER: Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

(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 77.

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 75.

Preparing the 7063-CR1 system for operation after you remove and replace internal parts

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

Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap attached. If not, attach it now.

2. Replace the service access cover. For instructions, see "Installing the service access cover on a 7063-CR1 system" on page 76.

3. Place the system into the operating position. For instructions, see "Placing a 7063-CR1 system into the operating position" on page 78.

   (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 80.

5. Start the system. For instructions, see "Starting the 7063-CR1 system" on page 69.

6. Verify the installed part. For instructions, see Verifying a repair (www.ibm.com/support/knowledgecenter/POWER8/p8ej5/p8ej5_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 68. You may have to press the switch for 0.5 to 3 seconds.
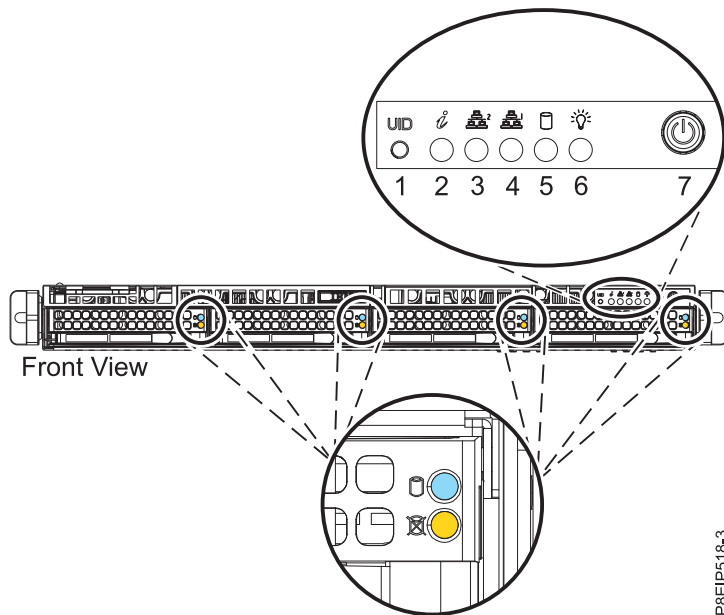
Figure 68. Power switch for 7063-CR1

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 then 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 drive is mounted, from the petiboot shell, run this command :

  ```
  mount
  ```

  If the USB drive mounted automatically, is will show the 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 drive as rear-write. At the petitboot shell, unmount the drive using this command:

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

  – At the petitboot shell, re-mount the 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:              0
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 Info
ID      Attribute Name         Current Worst  Threshhold   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            0000000001AA   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 70.
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 buss 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 for 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 80.

   (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 69 on page 76, 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.

Figure 69. 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.
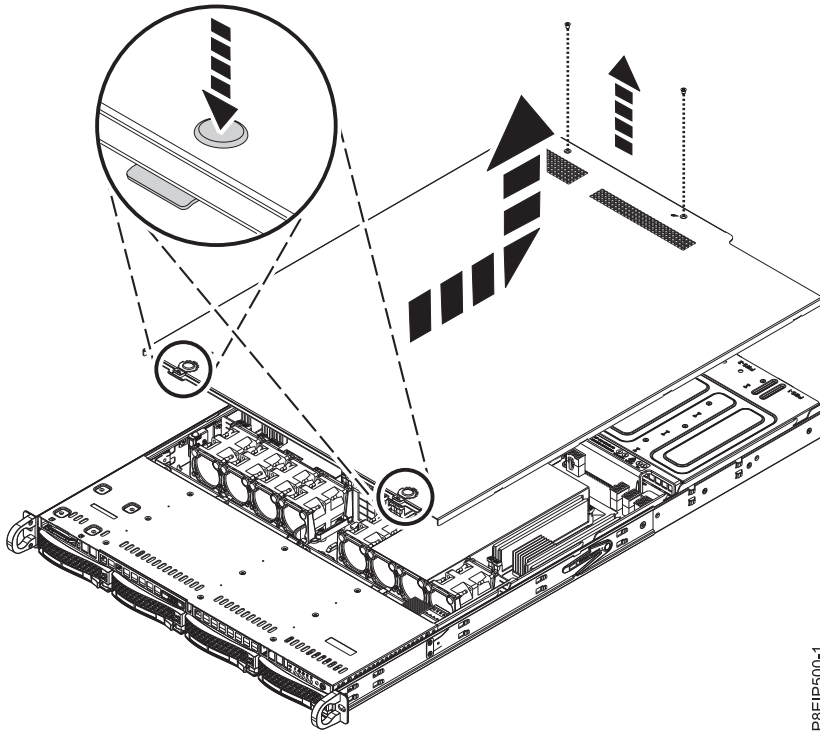
Procedure

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 70 on page 77.
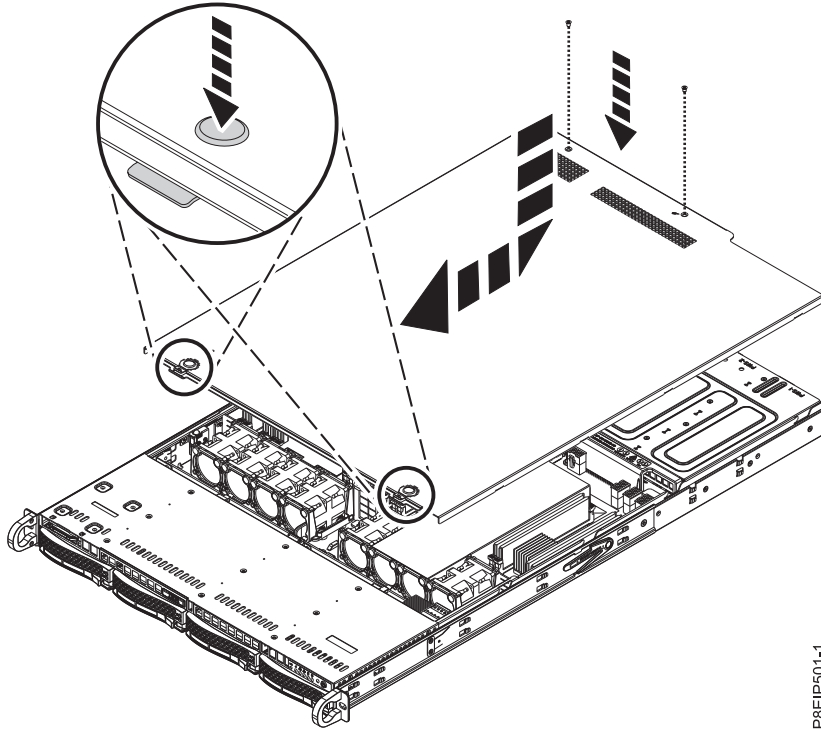
Figure 70. Replacing and securing the cover

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.

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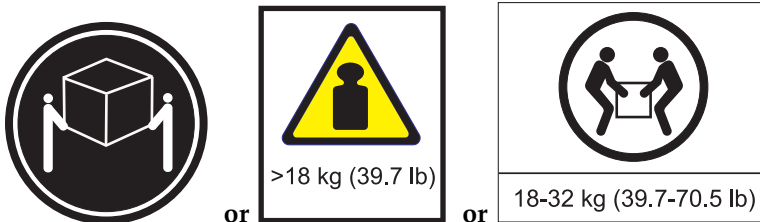
The weight of this part or unit is between 18 and 32 kg (39.7 and 70.5 lb). It takes two persons to safely lift this part or unit. (C009)

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 71.
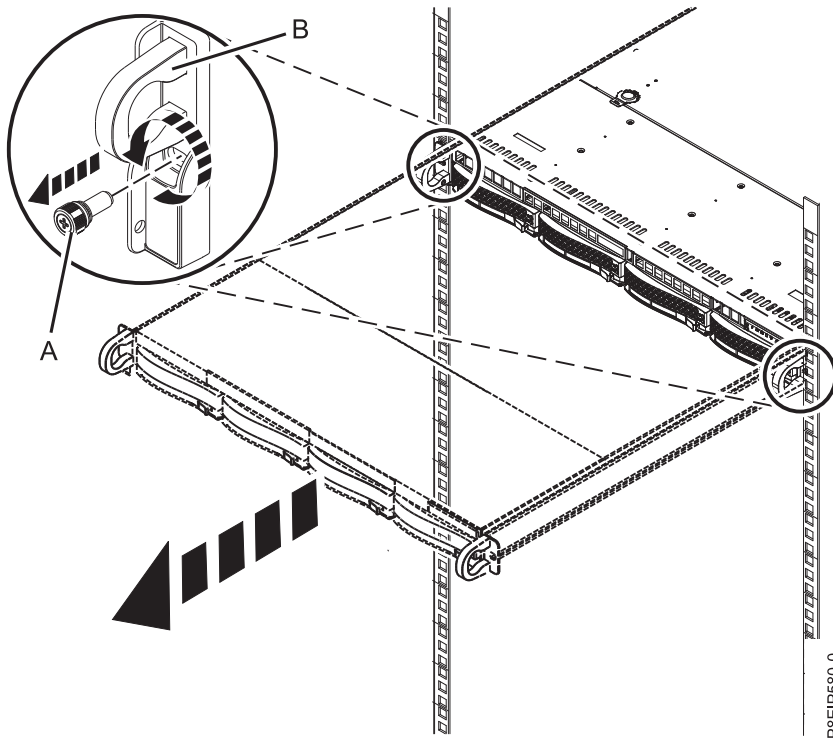
Figure 71. Removing the front screws and removing the system from the rack

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:
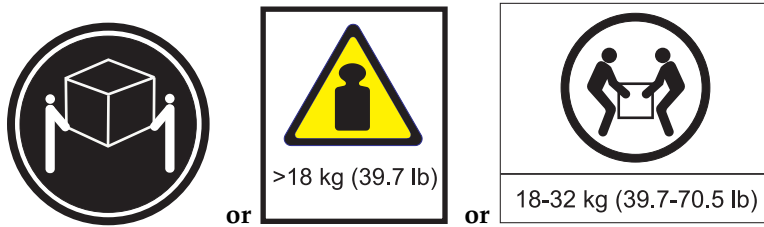
>18 kg (39.7 lb)   or   18-32 kg (39.7-70.5 lb)

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 72, 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.
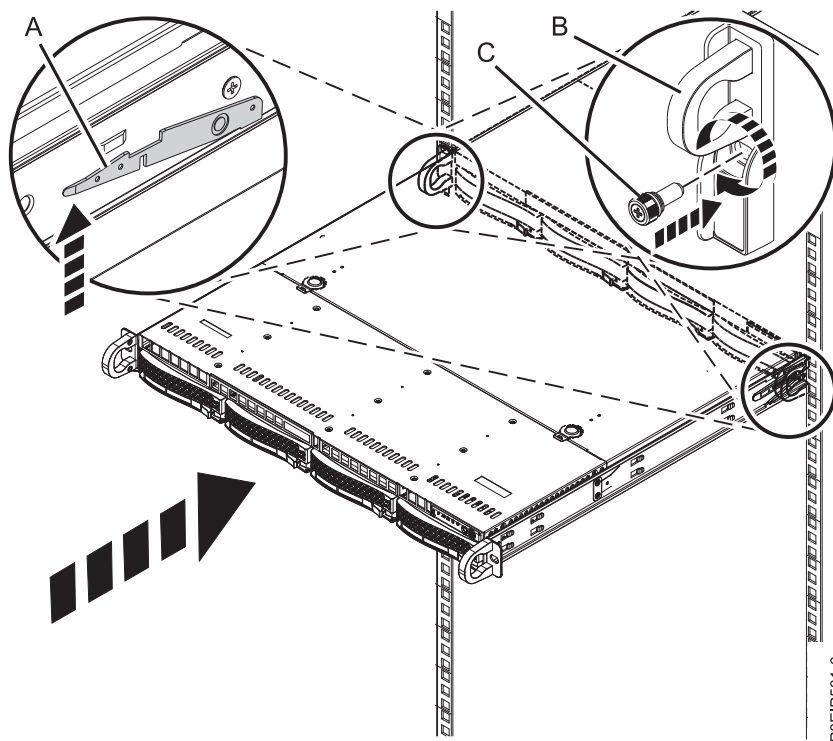
Figure 72. Placing the system into the operating position

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" on page 27.

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 73.
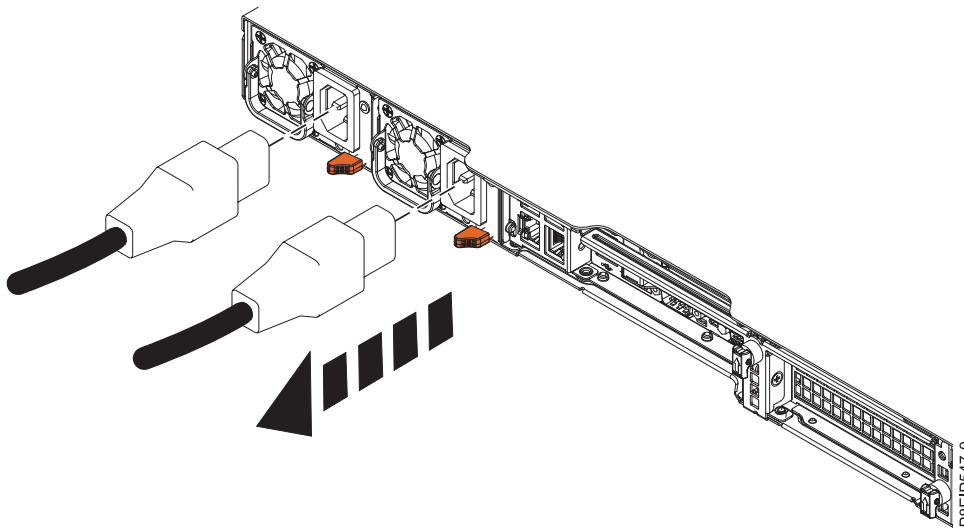
Figure 73. Removing the power cords from the system

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 74 on page 81.

Figure 74. Connecting the power cords to the system

Notices

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IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent 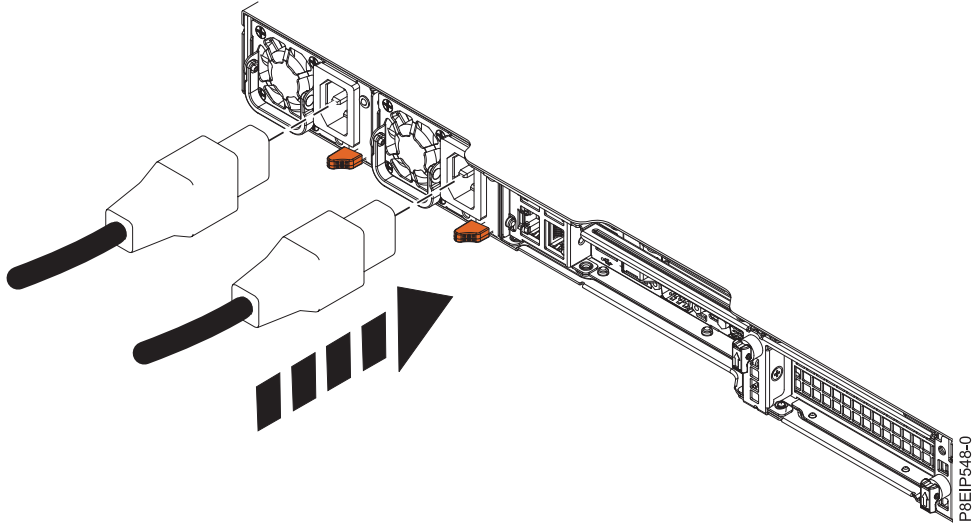product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

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Accessibility features for IBM Power Systems servers

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

Overview

The IBM Power Systems servers include the following major accessibility features:
- Keyboard-only operation
- Operations that use a screen reader

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

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

Keyboard navigation

This product uses standard navigation keys.

Interface information

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

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

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

Vendor software

The IBM Power Systems servers include certain vendor software that is not covered under the IBM license agreement. IBM makes no representation about the accessibility features of these products. Contact the vendor for accessibility information about its products.

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

Class A Notices

The following Class A statements apply to the IBM servers that contain the POWER8 processor and its features unless designated as electromagnetic compatibility (EMC) Class B in the feature information.

Federal Communications Commission (FCC) Statement

Note: 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. 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.

Industry Canada Compliance Statement

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

European Community Compliance Statement

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

European Community contact:
IBM Deutschland GmbH
Technical Regulations, Abteilung M456

IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 800 225 5426
email: halloibm@de.ibm.com

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

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

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Japan Electronics and Information Technology Industries Association Statement

This statement explains the Japan JIS C 61000-3-2 product wattage compliance.

（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 explains the Japan Electronics and Information Technology Industries Association (JEITA) statement for 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 explains the JEITA statement for products greater than 20 A, single phase.

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Electromagnetic Interference (EMI) Statement - People's Republic of China

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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。

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種情況下，使用者會被要
求採取某些適當的對策。

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

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Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
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
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- 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.
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CAN ICES-3 (B)/NMB-3(B)

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仕様ページ参照

This statement explains the Japan Electronics and Information Technology Industries Association (JEITA) statement for 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 explains the JEITA statement for products greater than 20 A, single phase.

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・換算係数 ： 0

IBM Taiwan Contact Information

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台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

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Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

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

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

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