

Power Systems

*Problem analysis, system parts, and
locations for the 7063-CR1*

IBM

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locations for the 7063-CR1*

IBM

Note

Before using this information and the product it supports, read the information in “Safety notices” on page v, “Notices” on page 47, the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125-5823.

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

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Safety notices

Safety notices may be printed throughout this guide:

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

World Trade safety information

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

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

German safety information

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

Laser safety information

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

Laser compliance

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

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

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

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

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

DANGER:

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

To Disconnect:

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

To Connect:

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

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

(R001 part 1 of 2):

DANGER: Observe the following precautions when working on or around your IT rack system:

- Heavy equipment—personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- 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 metalically connected to the interfaces that connect to the OSP (outside plant) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metalically to OSP wiring.

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

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

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

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

Beginning troubleshooting and problem analysis

This information provides a starting point for analyzing problems.

This information is the starting point for diagnosing and repairing systems. From this point, you are guided to the appropriate information to help you diagnose problems, determine the appropriate repair action, and then complete the necessary steps to repair the system.

Note: Update the system firmware to the latest level before you start problem analysis. If you update the system firmware, you will have the latest available fixes and improvements for error handling, reporting, and isolation. For instructions about updating the system firmware, see Getting fixes.

What type of problem are you dealing with?	Problem analysis procedure
You do not know the type of problem.	Go to "Determining the problem analysis procedure to perform."
A baseboard management controller (BMC) access problem occurred.	Go to "Resolving a BMC access problem" on page 2.
The system does not power on (the power button or the BMC power on command does not power on the system).	Go to "Resolving a power problem" on page 4.
A system firmware boot failure occurred (the system started but was not able to boot to the Petitboot menu).	Go to "Resolving a system firmware boot failure" on page 4.
A video graphics array (VGA) monitor problem occurred (the system started but no video is displayed on the monitor).	Go to "Resolving a VGA monitor problem" on page 5.
An operating system boot failure occurred (the system booted to the Petitboot menu but the operating system did not start).	Go to "Resolving an operating system boot failure" on page 6.
A processor, memory, power, or cooling hardware failure occurred.	Go to "Resolving a hardware problem" on page 7.
Missing or faulty PCIe adapter or device.	Go to "Collecting diagnostic data" on page 35. Then, go to "Contacting IBM service and support" on page 35.

Determining the problem analysis procedure to perform

Learn how to identify the correct problem analysis procedure to perform.

To determine the correct problem analysis procedure to perform, complete the following steps:

1. After you apply power to the system, are the power supply LEDs green (either steady or flashing)?

If	Then
Yes:	Continue with the next step.
No:	Go to "Resolving a power problem" on page 4.

2. Can you access the baseboard management controller (BMC) across the network?

If	Then
Yes:	Continue with the next step.
No:	Go to "Resolving a BMC access problem" on page 2.

3. Can you boot the system to the Petitboot menu?

If	Then
Yes:	Continue with the next step.
No:	Go to "Resolving a system firmware boot failure" on page 4.

4. Is video displayed on the video graphics array (VGA) monitor?

If	Then
Yes:	Continue with the next step.
No:	Go to "Resolving a VGA monitor problem" on page 5.

5. Can you start the operating system?

If	Then
Yes:	Continue with the next step.
No:	Go to "Resolving an operating system boot failure" on page 6.

6. Go to "Resolving a hardware problem" on page 7. **This ends the procedure.**

Resolving a BMC access problem

Learn how to identify the service action that is needed to resolve a baseboard management controller (BMC) access problem.

1. Are both ends of the network cable seated securely?

If	Then
Yes:	Continue with the next step.
No:	Seat both ends of the cable securely. If the problem persists, continue with the next step.

2. Power off the system and disconnect all ac power cords for 30 seconds. Then, reconnect the ac power cords and power on the system. Does the BMC access problem persist?

If	Then
Yes:	Continue with the next step.
No:	This ends the procedure.

3. Verify that the BMC network settings are correct.

- a. Power on the system by using the power button on the front of the system. Wait 1 - 2 minutes for the system to display the Petitboot menu.
- b. When the Petitboot menu is displayed, press any key to interrupt the boot process. Then, select **Exit to Shell**.
- c. Type the following command and press Enter:
`ipmitool lanprint 1`
- d. Verify that the MAC address and the IP address settings are correct. Then, continue with the next step.

Note: If the IP address setting is incorrect, go to [Configuring the firmware IP address website \(http://www.ibm.com/support/knowledgecenter/linuxonibm/liabw/liabwenablenetwork.htm\)](http://www.ibm.com/support/knowledgecenter/linuxonibm/liabw/liabwenablenetwork.htm). If the MAC address is 00:00:00:00:00:00, go to "Contacting IBM service and support" on page 35.

4. Are you able to log in to the BMC web interface?

If	Then
Yes:	To update the BMC firmware, click Maintenance > Firmware update . Select the firmware file and click upload . If the problem persists, go to step 11 on page 4.
No:	Continue with the next step.

5. Complete the following steps:

- a. Connect a VGA monitor to the system.
- b. Press the power button to power on the system.
- c. Boot the system to the Petitboot menu. From the Petitboot menu, select **Exit to shell**.

6. Are you mounting the storage that contains the pUpdate utility and the BMC firmware file from a network storage location?

If	Then
Yes:	Continue with the next step.
No:	Go to step 8.

7. To update the BMC firmware by using a network storage location, complete the following steps:

- a. Type `mkdir /tmp/media` and press Enter.
- b. Type the following command and press Enter:
`mount -t nfs xxx.xxx.xx.xx:/path/of/files /tmp/media`, where `xxx.xxx.xx.xx` is the IP address of the system to which you want to establish the connection.
- c. Type `cd /tmp/media` and press Enter.
- d. To update the BMC firmware, type the following command and press Enter:
`./pUpdate -f bmc.bin -i bt`, where `bmc.bin` is the name of the BMC image file.
- e. Allow at least 2 minutes for the BMC to reboot. Does the problem persist?

If	Then
Yes:	Go to step 11 on page 4.
No:	This ends the procedure.

8. Update the BMC firmware by using a USB device. Complete the following steps:

- a. Ensure that the USB device is formatted by using the **VFAT** file system.
- b. Insert the USB device into the system if you have not already done so.
- c. Type `mount` and press Enter.

Is the following output displayed?

```
/dev/mapper/sdb1 mounted on /var/petitboot/mnt/dev/sdb1
```

If	Then
Yes:	Continue with the next step.
No:	Go to step 10 on page 4.

9. Complete the following steps:

- a. Type `cd /var/petitboot/mnt/dev/sdb1` and press Enter.
- b. To update the BMC firmware, type the following command and press Enter:
`./pUpdate -f bmc.bin -i bt`, where `bmc.bin` is the name of the BMC image file.
- c. Allow at least 2 minutes for the BMC to reboot. Does the problem persist?

If	Then
Yes:	Go to step 11.
No:	This ends the procedure.

10. Complete the following steps:

- a. Type `mkdir /tmp/media` and press Enter.
- b. Type `mount /dev/mapper/sdb1 /tmp/media` and press Enter.
- c. Type `cd /tmp/media` and press Enter.
- d. To update the BMC firmware, type the following command and press Enter:
`./pUpdate -f bmc.bin -i bt`, where *bmc.bin* is the name of the BMC image file.
- e. Allow at least 2 minutes for the BMC to reboot. Does the problem persist?

If	Then
Yes:	Go to step 11.
No:	This ends the procedure.

11. Replace the system backplane. To identify the physical location and the removal and replacement procedure, see “7063-CR1 locations” on page 37. **This ends the procedure.**

Resolving a power problem

Learn how to identify the service action that is needed to resolve a power problem.

1. Is the identify LED on the front of the system flashing red slowly at 0.25 Hz? For more information about LEDs, see LEDs on the 7063-CR1 system.

If	Then
Yes:	Continue with the next step.
No:	No service action is required. This ends the procedure.

2. Perform the following actions, one at a time until the problem is resolved:

- a. Ensure that all of the power cords are fully seated in the power supplies.
- b. Ensure that the power supply is fully seated in the system.
- c. Ensure that the power supply fan is not blocked.
- d. Ensure that all of the power cords are fully seated in the power distribution units (PDUs) or wall outlets.
- e. If the power cords are plugged into PDUs, ensure that the PDUs are turned on.
- f. Replace the power cords.
- g. Replace the power supplies. To identify the physical location and the removal and replacement procedure, see “7063-CR1 locations” on page 37.

This ends the procedure.

Resolving a system firmware boot failure

Learn how to identify the service action that is needed to resolve a failure while booting your system firmware.

1. Does the baseboard management controller (BMC) respond to commands and are you able to access the BMC web interface?

Note: To determine whether the BMC responds to commands, run the following `ipmitool` command:

```
ipmitool -I lanplus -U <username> -P <password> -H <bmc ip or bmc hostname> chassis status
```

If	Then
Yes:	Continue with step 3.
No:	Continue with the next step.

2. Complete the following actions, one at a time, until the problem is resolved:
 - a. Reset the BMC remotely by entering the following command:
`ipmitool -I lanplus -U <username> -P <password> -H <bmc ip or bmc hostname> mc reset cold`
 - b. Disconnect the power cords from the system for 30 seconds. Reconnect the power cords, wait 5 minutes, and then go to step 1 on page 4.
 - c. Update the BMC firmware by using the pUpdate command with the block transfer (BT) option. For instructions, see “Resolving a BMC access problem” on page 2.
 - d. Replace the system backplane. To identify the physical location and the removal and replacement procedure, see “7063-CR1 locations” on page 37.

This ends the procedure.

3. After you pressed the power button, did the system turn on but fail to display the Petitboot menu?

If	Then
Yes:	Continue with the next step.
No:	This ends the procedure.

4. Complete the following actions, one at a time, until the problem is resolved:
 - a. Disconnect the power cords from the system for 30 seconds. Reconnect the power cords, wait 5 minutes, and then go to step 3.
 - b. Update the PNOR firmware. For instructions, see Getting fixes.
 - c. Replace the system backplane. To identify the physical location and the removal and replacement procedure, see “7063-CR1 locations” on page 37.

This ends the procedure.

Resolving a VGA monitor problem

Learn how to identify the service action that is needed to resolve a video graphics array (VGA) monitor problem.

1. Is the system powered on and is the VGA monitor connected to the VGA display port, but no video is displayed?

If	Then
Yes:	Continue with the next step.
No:	This ends the procedure.

2. Complete the following steps, one at a time until the problem is resolved:
 - a. Ensure that the VGA cable is properly seated to the server port and to the monitor port.
 - b. Verify that your monitor and your VGA cable are working properly by testing them on a system that is known to be working properly. If the monitor or the VGA cable does not work properly, replace it.
 - c. Verify that the system is powered on by activating a serial over LAN (SOL) session through the baseboard management controller (BMC). If the system is not active, go to “Resolving a system firmware boot failure” on page 4.

- d. Replace the system backplane. To identify the physical location and the removal and replacement procedure, see “7063-CR1 locations” on page 37.

This ends the procedure.

Resolving an operating system boot failure

Learn how to identify the service action that is needed to resolve a failure while you boot the operating system.

1. Was the system recently installed, serviced, moved, or upgraded?

If	Then
Yes:	Ensure that all cables are properly seated in the connection path to the designated boot device. This ends the procedure.
No:	Continue with the next step.

2. Are you booting the operating system from a network location?

If	Then
Yes:	Continue with the next step.
No:	Continue with step 4.

3. Complete the following actions, one at a time until the problem is resolved:
 - a. Ensure that a problem does not exist with the connection to the network location.
 - b. Ensure that the adapter has a valid IP address for the network.
 - c. Replace the network adapter. To identify the physical location and the removal and replacement procedure, see “7063-CR1 locations” on page 37.
4. Petitboot displays all recognized bootable images to use by default. Is the boot image recognized by Petitboot?

If	Then
Yes:	Continue with step 15 on page 7.
No:	Select the Petitboot menu option to refresh boot images. If the problem persists, continue with the next step.

5. From the Petitboot menu, select **Exit to shell**. Is the `mvcli` utility already installed?

If	Then
Yes:	Continue with step 7.
No:	Continue with the next step.

6. Install the `mvcli` utility. For more information about installing the `mvcli` utility, go to `mvCLI` commands. Then, continue with the next step.
7. If you obtained the `mvcli` utility from a USB drive that is inserted into one of the USB ports of the system, type `/tmp/media/mvcli`. Otherwise, type `/tmp/mvcli`.
8. To check the status of the RAID virtual disk, type `info -o vd` and press Enter. To check the status of the physical disks, type `info -o pd` and press Enter. The output indicates the status of the drive. Is the boot drive recognized and in optimal status?

If	Then
Yes:	Reinstall the operating system on the boot drive. This ends the procedure.
No:	Continue with the next step.

- Are the drives properly seated in their respective drive bays?

Note: To identify the physical location and the removal and replacement procedure, see “7063-CR1 locations” on page 37.

If	Then
Yes:	Continue with the next step.
No:	Properly seat the drives in the drive bays. Then, go to step 4 on page 6.

- Refresh the Petitboot boot options. Is the boot image on the boot drive recognized?

If	Then
Yes:	Boot the operating system. Then, continue with step 15.
No:	Continue with the next step.

- From the Petitboot menu, select **Exit to shell**.
- If you obtained the `mvcli` utility from a USB drive that is inserted into one of the USB ports of the system, type `/tmp/media/mvcli`. Otherwise, type `/tmp/mvcli`.
- To check the status of the RAID virtual disk, type `info -o vd` and press Enter. To check the status of the physical disks, type `info -o pd` and press Enter. The output indicates the status of the drive. Are the drives that are known to be in the virtual drive recognized?

If	Then
Yes:	Reinstall the operating system on the boot drive. This ends the procedure.
No:	Continue with the next step.

- Complete the following actions, one at a time until the physical drives are recognized in the virtual drive:

Note: To identify the physical location and the removal and replacement procedure, see “7063-CR1 locations” on page 37.

- If the drive is connected directly to the system backplane, ensure that the SATA cables are properly seated in the disk drive backplane and in the system backplane.
- Replace the SATA cable.
- If the drive is connected directly to the system backplane, replace the system backplane.

This ends the procedure.

- Does an operating system error occur during the boot?

If	Then
Yes:	Recover the operating system by using the tools for the operating system. If that does not resolve the problem, reinstall the operating system. This ends the procedure.
No:	Reinstall the operating system. This ends the procedure.

Resolving a hardware problem

Learn how to identify the service action that is needed to resolve a hardware problem.

- If you have not already done so, manually boot the system.
- Go to “Identifying a service action by using FQPSPxxxxxxx events and system event logs” on page 8. Then, continue with the next step.

3. Was a service action identified?

If	Then
Yes:	Continue with the next step.
No:	Go to "Collecting diagnostic data" on page 35. Then, go to "Contacting IBM service and support" on page 35. This ends the procedure.

4. Did the service action fix the problem?

If	Then
Yes:	This ends the procedure.
No:	Go to "Collecting diagnostic data" on page 35. Then, go to "Contacting IBM service and support" on page 35. This ends the procedure.

Identifying a service action

Use the following procedures to help you identify the service action that is needed.

Identifying a service action by using FQPSPxxxxxxx events and system event logs

Examine FQPSPxxxxxxx events and system event logs (SELs) to identify a service action.

1. Are you able to log on to the Hardware Management Console (HMC)?

If	Then
Yes:	Continue with the next step.
No:	Go to step 4.

2. On the HMC, scan the serviceable events for system reference codes in the format FQPSPxxxxx. Did you find at least one system reference code in the format FQPSPxxxxxxx?

If	Then
Yes:	Continue with the next step.
No:	There are no FQPSPxxxxxxx events, which indicates that there are no serviceable system event logs. No service action is required. This ends the procedure.

3. To determine the service action, display the description of the FQPSPxxxxx serviceable event. **This ends the procedure.**

4. Can you boot the system to the Petitboot menu?

If	Then
Yes:	From the Petitboot menu, select Exit to shell . Then, continue with step 6 on page 9 and list SELs by using the Petitboot command line.
No:	Continue with the next step.

5. Is another system available with the Linux operating system and ipmitool installed?

If	Then
Yes:	Continue with the next step and list SELs remotely over the LAN.
No:	Go to "Collecting diagnostic data" on page 35. Then, go to "Contacting IBM service and support" on page 35.

6. Use the **ipmitool** command to examine SELs.

- To list SELs by using the Petitboot command line, use the following command:

```
ipmitool sel elist
```

- To list SELs remotely over the LAN, use the following command:

```
ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sel elist
```

7. Scan the SELs for an event with the value OEM record de. Did you find a SEL with the value OEM record de?

If	Then
Yes:	Continue with the next step.
No:	Go to step 9 on page 10.

8. The OEM record de specific log information is indicated by the rightmost digits of the SEL with the value OEM record de. Use Table 1 to determine the service action to perform.

Table 1. OEM record de specific log information and service action

OEM record de specific log information	Service action
00xxxxxxxx	Go to Getting fixes and update the system firmware to the most recent level of firmware that is available. If this SEL event continues to be logged, go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.
01xxxxxxxx	Go to the “EPUB_PRC_FIND_DECONFIGURE_PART isolation procedure” on page 28.
04xxxxxxxx	Go to the “EPUB_PRC_SP_CODE isolation procedure” on page 28.
05xxxxxxxx	Go to the “EPUB_PRC_PHYC_CODE isolation procedure” on page 29.
08xxxxxxxx	Go to the “EPUB_PRC_ALL_PROCS isolation procedure” on page 29.
09xxxxxxxx	Go to the “EPUB_PRC_ALL_MEMCRDS isolation procedure” on page 29.
0Axxxxxxxx	Go to Getting fixes and update the system firmware to the most recent level of firmware that is available. If this SEL event continues to be logged, go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.
10xxxxxxxx	Go to the “EPUB_PRC_LVL_SUPPORT isolation procedure” on page 30.
16xxxxxxxx	Go to Getting fixes and update the system firmware to the most recent level of firmware that is available. If this SEL event continues to be logged, go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.
1Cxxxxxxxx	Go to Getting fixes and update the system firmware to the most recent level of firmware that is available. If this SEL event continues to be logged, go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.
22xxxxxxxx	Go to the “EPUB_PRC_MEMORY_PLUGGING_ERROR isolation procedure” on page 30.

Table 1. OEM record de specific log information and service action (continued)

OEM record de specific log information	Service action
2Dxxxxxxxxx	Go to the “EPUB_PRC_FSI_PATH isolation procedure” on page 30.
30xxxxxxxxx	Go to the “EPUB_PRC_PROC_AB_BUS isolation procedure” on page 31.
31xxxxxxxxx	Go to the “EPUB_PRC_PROC_XYZ_BUS isolation procedure” on page 31.
34xxxxxxxxx	Go to Getting fixes and update the system firmware to the most recent level of firmware that is available. If this SEL event continues to be logged, go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.
37xxxxxxxxx	Go to the “EPUB_PRC_EIBUS_ERROR isolation procedure” on page 31.
3Fxxxxxxxxx	Go to the “EPUB_PRC_POWER_ERROR isolation procedure” on page 32.
4Dxxxxxxxxx	Go to Getting fixes and update the system firmware to the most recent level of firmware that is available. If this SEL event continues to be logged, go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.
4Fxxxxxxxxx	Go to the “EPUB_PRC_MEMORY_UE isolation procedure” on page 32.
55xxxxxxxxx	Go to the “EPUB_PRC_HB_CODE isolation procedure” on page 33.
56xxxxxxxxx	Go to the “EPUB_PRC_TOD_CLOCK_ERR isolation procedure” on page 34.
5Cxxxxxxxxx	Go to the “EPUB_PRC_COOLING_SYSTEM_ERR isolation procedure” on page 34.

This ends the procedure.

9. Scan the SELs for an event with the value OEM record df. Did you find a SEL with the value OEM record df?

If	Then
Yes:	Continue with the next step.
No:	Go to step 15 on page 11.

10. One or more events might be logged around the same time as the event with the value OEM record df. These events require a service action if they meet the following criteria:
- A service action keyword is present. For a list of service action keywords, see “Identifying service action keywords in system event logs” on page 13.
 - **Asserted** is in the description.
 - **OEM record** is not in the description.
 - The event has a time stamp close to the time stamp of the event with the value OEM record df.
11. Did you find any SEL events that require a service action as defined in step 10?

If	Then
Yes:	Continue with the next step.

If	Then
No:	Go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.

12. Did you find only one SEL event that requires a service action as defined in step 10 on page 10?

If	Then
Yes:	Continue with the next step.
No:	Go to step 14.

13. Record the SEL record ID for the event you identified in step 10 on page 10. The SEL record ID is indicated by the leftmost digits of the SEL. Use the **ipmitool** command to display the SEL details.

- To display SEL details by using the Petitboot command line, use the following command:

```
ipmitool sel get <SEL record ID>
```

Note: The SEL record ID must be entered in hexadecimal format. For example: 0x1a.

- To display SEL details remotely over the LAN, use the following command:

```
ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sel get <SEL record ID>
```

Note: The SEL record ID must be entered in hexadecimal format. For example: 0x1a.

The sensor ID field contains sensor information in the format sensor name (sensor ID). Record the sensor name, sensor ID, and event description. Then, go to “Identifying a service action by using sensor and event information for the 7063-CR1” on page 14 and use the sensor name, sensor ID, and event description that you recorded to determine the service action to perform. **This ends the procedure.**

14. You identified more than one event in step 10 on page 10. The service actions for all of the events that were identified in step 10 on page 10 must be performed to successfully complete the repair. Record the SEL record IDs for the events that you identified in step 10 on page 10. The SEL record ID is indicated by the leftmost digits of the SEL. Use the **ipmitool** command to display SEL details for each SEL record ID that you recorded.

- To display SEL details by using the Petitboot command line, use the following command:

```
ipmitool sel get <SEL record ID>
```

Note: The SEL record ID must be entered in hexadecimal format. For example: 0x1a.

- To display SEL details remotely over the LAN, use the following command:

```
ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sel get <SEL record ID>
```

Note: The SEL record ID must be entered in hexadecimal format. For example: 0x1a.

The sensor ID field contains sensor information in the format sensor name (sensor ID). Record the sensor name, sensor ID, and event description. Then, go to “Identifying a service action by using sensor and event information for the 7063-CR1” on page 14 and use the sensor name, sensor ID, and event description that you recorded to determine the service action to perform. **This ends the procedure.**

15. Scan the SEL for an event with the value OEM record c0.

16. Did you find an event with the value OEM record c0?

If	Then
Yes:	Continue with the next step.
No:	Go to step 18 on page 12.

17. The OEM record c0 specific log information is indicated by the rightmost digits of the SEL with the value OEM record c0. Use Table 2 to determine the service action to perform.

Table 2. OEM record c0 specific log information, description, and service action

OEM record c0 specific log information	Description	Service action
2aff6ffxxxx	A session audit event occurred	No service action is required.
cdxx6ffffff	An automatic shutdown event occurred due to high system temperature	<ul style="list-style-type: none"> • Search for SEL events that are related to high system temperature and resolve them. • Ensure that the room temperature meets the requirements that are specified for the system. • Ensure that there are no air flow obstructions at the front or at the rear of the system.
ceff6ffffff	A machine check event occurred	Search for serviceable SEL events and resolve them.
cff6ffffff	An unexpected problem occurred with the voltage regulator output	If a machine check event is present with a time stamp close to the time stamp of this event, search for serviceable SEL events and resolve them. If a machine check event is not present with a time stamp close to the time stamp of this event, reboot the system to recover from the system hang. If the problem persists, replace the system backplane.

18. One or more SEL events might require a service action. These events require a service action if they meet the following criteria:

- A service action keyword is present. For a list of service action keywords, see “Identifying service action keywords in system event logs” on page 13.
- **Asserted** is in the description.
- **OEM record** is not in the description.

19. Did you find one or more SEL events that require a service action as defined in step 18?

If	Then
Yes:	Continue with the next step.
No:	This ends the procedure.

20. The service actions for all of the events that were identified in step 18 must be performed to successfully complete the repair. Record the SEL record IDs for the events that you identified in step 18. The SEL record ID is indicated by the leftmost digits of the SEL. Use the ipmitool command to display SEL details for each SEL record ID that you recorded.

- To display SEL details by using the Petitboot command line, use the following command:
ipmitool sel get <SEL record ID>

Note: The SEL record ID must be entered in hexadecimal format. For example: 0x1a.

- To display SEL details remotely over the LAN, use the following command:
ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sel get <SEL record ID>

Note: The SEL record ID must be entered in hexadecimal format. For example: 0x1a.

The sensor ID field contains sensor information in the format sensor name (sensor ID). Record the sensor name, sensor ID, and event description. Then, go to “Identifying a service action by using sensor and event information for the 7063-CR1” on page 14 and use the sensor name, sensor ID, and event description that you recorded to determine the service action to perform.

This ends the procedure.

Identifying service action keywords in system event logs

System event logs (SELs) that have **Asserted** and any of the keywords indicated below in the description require a service action.

Temperature and voltage service action keywords

- Transition to Critical from Less Severe
- Transition to Critical from Non-recoverable
- Transition to Non-recoverable
- Transition to Non-recoverable from Less Severe
- Upper Critical - going high
- Upper Non-recoverable – going high

Backplane service action keywords

- State Asserted

Chassis service action keywords

- General Chassis intrusion

Fan service action keywords

- Transition to Critical from Less Severe
- Transition to Non-recoverable from Less Severe
- Transition to Critical from Non-recoverable
- Device Removed / Device Absent
- Transition to degraded
- Install error
- Redundancy lost
- Non-redundant insufficient resources

Memory service action keywords

- Configuration Error
- Transition to Non-recoverable
- Predictive Failure

Processor service action keywords

- IERR
- Transition to Non-recoverable
- Predictive Failure
- Device Disabled

Power supply service action keywords

- Power Supply Failure Detected
- Predictive Failure

- Power Supply Input Lost or AC DC
- Power Supply Input Lost Or Out of Range
- Power Supply Input Out of Range But Present

System event service action keywords

- Undetermined system hardware failure

Watchdog service action keywords

- Hard Reset
- Power Down
- Power Cycle
- Timer Interrupt

Identifying a service action by using sensor and event information for the 7063-CR1

You can use the sensor and event information from the system event log to determine a service action to perform for the 7063-CR1.

If you have not done so already, complete “Identifying a service action by using FQPSPxxxxxxx events and system event logs” on page 8. Then, use the following table to determine the service action to perform.

Table 3. Sensor information, event description, and service action for the 7063-CR1

Sensor name (Sensor ID)	Event description	Service action
System Temp (0x01)	<ul style="list-style-type: none"> • Transition to Critical from Less Severe • Transition to Non-recoverable from Less Severe • Transition to Critical from Non-recoverable • Upper Critical - going high • Upper Non-recoverable – going high 	Ensure that there are no air flow obstructions at the front or at the rear of the system. Ensure that the fans are operating properly.
	<ul style="list-style-type: none"> • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going low • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Upper Critical - going low • Upper Non-recoverable – going low 	No service action is required.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
Peripheral Temp (0x02)	<ul style="list-style-type: none"> • Transition to Critical from Less Severe • Transition to Non-recoverable from Less Severe • Transition to Critical from Non-recoverable • Upper Critical - going high • Upper Non-recoverable – going high 	Ensure that the room temperature meets the requirements that are specified for the system. Ensure that there are no air flow obstructions at the front or at the rear of the system.
	<ul style="list-style-type: none"> • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going low • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Upper Critical - going low • Upper Non-recoverable – going low 	No service action is required.
• OCC Active 1 (0x08)	Device Disabled	Replace CPU 1. Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> • State Deasserted • Device Enabled 	No service action is required.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU1 Temp (0x0B) 	<ul style="list-style-type: none"> • Transition to Critical from Less Severe • Transition to Non-recoverable from Less Severe • Transition to Critical from Non-recoverable • Upper Critical - going high • Upper Non-recoverable – going high 	<p>Ensure that there are no air flow obstructions at the front or at the rear of the system. Ensure that the fans are operating properly.</p>
	<ul style="list-style-type: none"> • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical - going low • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Upper Critical - going low • Upper Non-recoverable – going low 	<p>No service action is required.</p>

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU Func 1 (0x0C) 	<ul style="list-style-type: none"> • IERR • Transition to Non-recoverable • Predictive Failure 	Replace CPU 1. Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> • Thermal Trip • FRB1 BIST Failure • FRB2 Hang In POST Failure • FRB3 Processor Startup Initialization Failure • Configuration Error • SMBIOS Uncorrectable CPU Complex Error • Processor Disabled • Terminator Presence Detected • Processor Automatically Throttled • Machine Check Exception • Correctable Machine Check Error • State Deasserted • Device Disabled • Transition to Critical from Less Severe • Transition to Non-recoverable from Less Severe • Transition to Critical from Non-recoverable • Processor Presence Detected • State Asserted • Device Enabled • Transition to OK • Transition to Non-Critical from OK • Transition to Non-Critical from More Severe • Monitor • Informational 	No service action is required.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • P1M1-DIMMA Func (0x10) • P1M1-DIMMB Func (0x11) • P1M2-DIMMA Func (0x14) • P1M2-DIMMB Func (0x15) 	<ul style="list-style-type: none"> • Memory Device Disabled • Uncorrectable Memory Error • Memory Scrub Failed • State Deasserted • Device Disabled • Transition to Critical from Less Severe • Transition to Non-recoverable from Less Severe • Transition to Critical from Non-recoverable • Correctable Memory Error • Parity • Correctable Memory Error Logging Limit Reached • Memory Automatically Throttled • Critical Over temperature • Presence Detected • Spare • State Asserted • Device Enabled • Transition to OK • Transition to Non-Critical from OK • Transition to Non-Critical from More Severe • Monitor • Informational 	No service action is required.
	<ul style="list-style-type: none"> • Transition to Non-recoverable • Predictive Failure 	If the sensor name is P1M1-DIMMA Func, replace P1M1-DIMMA. If the sensor name is P1M1-DIMMB Func, replace P1M1-DIMMB. And so on. Go to "7063-CR1 locations" on page 37 to identify the physical location and removal and replacement procedure.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • P1M1-DIMMA Func (0x10) • P1M1-DIMMB Func (0x11) • P1M2-DIMMA Func (0x14) • P1M2-DIMMB Func (0x15) 	Configuration Error	<p>Complete the following steps:</p> <ol style="list-style-type: none"> 1. If the sensor name is P1M1-DIMMA Func, ensure that P1M1-DIMMA is seated properly. If the sensor name is P1M1-DIMMB Func, ensure that P1M1-DIMMB is seated properly. And so on. 2. If you recently installed or replaced memory DIMMs, ensure that the DIMMs are plugged in the correct memory slots. 3. If the sensor name is P1M1-DIMMA Func, replace P1M1-DIMMA. If the sensor name is P1M1-DIMMB Func, replace P1M1-DIMMB. And so on. Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure.
Backplane Fault (0x34)	State Deasserted	No service action is required.
	State Asserted	Replace the system backplane. Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure.
System Event (0x35)	Undetermined system hardware failure	Go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.
	<ul style="list-style-type: none"> • System Reconfigured • OEM System boot event • Entry added to auxiliary log • PEF Action • Timestamp Clock Sync 	No service action is required.
<ul style="list-style-type: none"> • Membuf Func 1 (0x40) • Membuf Func 2 (0x41) • Membuf Func 3 (0x42) • Membuf Func 4 (0x43) 	<ul style="list-style-type: none"> • Configuration Error • Transition to Non-recoverable • Predictive Failure 	Replace the system backplane. Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure.
<ul style="list-style-type: none"> • Turbo Allowed (0x48) • TPM Required (0x49) 	<ul style="list-style-type: none"> • State Deasserted • State Asserted 	No service action is required.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> SAS Temp (0x4A) HDD Temp (0x4B) 	<ul style="list-style-type: none"> Transition to Critical from Less Severe Transition to Non-recoverable from Less Severe Transition to Critical from Non-recoverable Upper Critical - going high Upper Non-recoverable – going high 	<p>Ensure that the ambient temperature is within operating specifications.</p> <p>Ensure that there are no blockages to the air inlet and outlets. If blockages are found, remove them. Ensure that all of the fans are working properly by looking for serviceable events related to fans and resolving them.</p>
	<ul style="list-style-type: none"> Lower Non-critical – going low Lower Non-critical – going high Lower Critical – going low Lower Critical – going high Lower Non-recoverable – going low Lower Non-recoverable – going high Upper Non-critical – going low Upper Non-critical – going high Upper Critical - going low Upper Non-recoverable – going low 	No service action is required.
HDD Status (0x4C)	<ul style="list-style-type: none"> State Deasserted State Asserted 	No service action is required.
MB_10G Temp (0x5A)	<ul style="list-style-type: none"> Transition to Critical from Less Severe Transition to Non-recoverable from Less Severe Transition to Critical from Non-recoverable Upper Critical - going high Upper Non-recoverable – going high 	<p>Ensure that there are no air flow obstructions at the front or at the rear of the system. Ensure that the fans are operating properly.</p>
	<ul style="list-style-type: none"> Lower Non-critical – going low Lower Non-critical – going high Lower Critical – going low Lower Critical – going high Lower Non-recoverable – going low Lower Non-recoverable – going high Upper Non-critical – going low Upper Non-critical – going high Upper Critical - going low Upper Non-recoverable – going low 	No service action is required.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • Mem Buf Temp 1 (0x5E) • Mem Buf Temp 2 (0x5F) • Mem Buf Temp 3 (0x60) • Mem Buf Temp 4 (0x61) 	<ul style="list-style-type: none"> • Transition to Critical from Less Severe • Transition to Non-recoverable from Less Severe • Transition to Critical from Non-recoverable • Upper Critical - going high • Upper Non-recoverable – going high 	Ensure that there are no air flow obstructions at the front or at the rear of the system. Ensure that the fans are operating properly.
	<ul style="list-style-type: none"> • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going low • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Upper Critical - going low • Upper Non-recoverable – going low 	No service action is required.
<ul style="list-style-type: none"> • P1M1-DIMMA Temp (0x66) • P1M1-DIMMB Temp (0x67) • P1M2-DIMMA Temp (0x6A) • P1M2-DIMMB Temp (0x6B) 	<ul style="list-style-type: none"> • Transition to Critical from Less Severe • Transition to Non-recoverable from Less Severe • Transition to Critical from Non-recoverable • Upper Critical - going high • Upper Non-recoverable – going high 	Ensure that there are no air flow obstructions at the front or at the rear of the system. Ensure that the fans are operating properly.
	<ul style="list-style-type: none"> • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going low • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Upper Critical - going low • Upper Non-recoverable – going low 	No service action is required.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
VBAT (0x9C)	<ul style="list-style-type: none"> • Transition to Non-recoverable • Lower Non-recoverable – going low 	Replace the time-of-day battery. Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going low • Lower Critical – going high • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Upper Critical - going low • Upper Critical - going high • Upper Non-recoverable – going low • Upper Non-recoverable – going high 	No service action is required.
Total Power (0xA0)	<ul style="list-style-type: none"> • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going low • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Upper Critical - going low • Upper Critical - going high • Upper Non-recoverable – going low • Upper Non-recoverable – going high 	No service action is required.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU1 Power (0xA2) • PCIE CPU1 Pwr (0xA6) 	<ul style="list-style-type: none"> • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going low • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Upper Critical - going low • Upper Critical - going high • Upper Non-recoverable – going low • Upper Non-recoverable – going high 	No service action required.
<ul style="list-style-type: none"> • Freq Limit OT 1 (0xA8) • Mem Thrttl OT 1 (0xAA) • Freq Limit OT 2 (0xAC) • Mem Thrttl OT 2 (0xAE) 	Performance Met	<p>If Asserted is in the event description, no service action is required.</p> <p>If Deasserted is in the event description, ensure that the ambient temperature is within operating specifications. Ensure that there are no blockages to the air inlet and outlets. If blockages are found, remove them. Ensure that all of the fans are working properly by looking for serviceable events related to fans and resolving them.</p>
	Performance Lags	<p>If Deasserted is in the event description, no service action is required.</p> <p>If Asserted is in the event description, ensure that the ambient temperature is within operating specifications. Ensure that there are no blockages to the air inlet and outlets. If blockages are found, remove them. Ensure that all of the fans are working properly by looking for serviceable events related to fans and resolving them.</p>

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • Freq Limit Pwr 1 (0xA9) • Freq Limit Pwr 2 (0xAD) 	Performance Met	<p>If Asserted is in the event description, no service action is required.</p> <p>If Deasserted is in the event description, ensure that both power supplies are working properly. Search for serviceable events related to system power and voltage and resolve them. Ensure all fans are working properly by looking for serviceable events related to fans and resolving them.</p>
	Performance Lags	<p>If Deasserted is in the event description, no service action is required.</p> <p>If Asserted is in the event description, ensure that both power supplies are working properly. Search for serviceable events related to system power and voltage and resolve them. Ensure all fans are working properly by looking for serviceable events related to fans and resolving them.</p>
<ul style="list-style-type: none"> • CPU Core Temp 1 (0xB0) • CPU Core Temp 2 (0xB1) • CPU Core Temp 3 (0xB2) • CPU Core Temp 4 (0xB3) • CPU Core Temp 5 (0xB4) • CPU Core Temp 6 (0xB5) • CPU Core Temp 7 (0xB6) • CPU Core Temp 8 (0xB7) • CPU Core Temp 9 (0xB8) • CPU Core Temp 10 (0xB9) • CPU Core Temp 11 (0xBA) • CPU Core Temp 12 (0xBB) 	<ul style="list-style-type: none"> • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going low • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Upper Critical - going low • Upper Critical - going high • Upper Non-recoverable – going low • Upper Non-recoverable – going high 	No service action is required.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU Core Func 1 (0xC8) • CPU Core Func 2 (0xC9) • CPU Core Func 3 (0xCA) • CPU Core Func 4 (0xCB) • CPU Core Func 5 (0xCC) • CPU Core Func 6 (0xCD) • CPU Core Func 7 (0xCE) • CPU Core Func 8 (0xCF) • CPU Core Func 9 (0xD0) • CPU Core Func 10 (0xD1) • CPU Core Func 11 (0xD2) • CPU Core Func 12 (0xD3) 	<ul style="list-style-type: none"> • IERR • Transition to Non-recoverable • Predictive Failure 	Replace system processor CPU 1. Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> • FRB1 BIST Failure • FRB2 Hang In POST Failure • FRB3 Processor Startup Initialization Failure • Configuration Error • SMBIOS Uncorrectable CPU Complex Error • Processor Disabled • Terminator Presence Detected • Machine Check Exception • Correctable Machine Check Error • State Deasserted • Device Disabled • Transition to Critical from Less Severe • Transition to Non-recoverable from Less Severe • Transition to Critical from Non-recoverable • Thermal Trip • Processor Automatically Throttled • Processor Presence Detected • State Asserted • Device Enabled • Transition to OK • Transition to Non-Critical from OK • Transition to Non-Critical from More Severe • Monitor • Informational 	No service action is required.
Chassis Intru (0xE2)	<ul style="list-style-type: none"> • Drive Bay intrusion • I/O Card area intrusion • Processor area intrusion • System unplugged from LAN • Unauthorized dock • FAN area intrusion 	No service action is required.
	General Chassis intrusion	Ensure that the top cover is properly installed on the system. See Installing the service access cover on an 7063-CR1 system.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • FAN1 (0xE3) • FAN2 (0xE4) • FAN3 (0xE5) • FAN4 (0xE6) • FAN5 (0xE7) • FAN6 (0xE8) • FAN7 (0xE9) • FAN8 (0xEA) 	<ul style="list-style-type: none"> • Transition to Critical from Less Severe • Transition to Non-recoverable from Less Severe • Transition to Critical from Non-recoverable 	If the sensor name is FAN1, replace Fan 1. If the sensor name is FAN2, replace Fan 2. And so on. Go to "7063-CR1 locations" on page 37 to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going low • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Upper Critical - going low • Upper Critical - going high • Upper Non-recoverable – going low • Upper Non-recoverable – going high • Device Inserted/Device Present 	No service action is required.
	<ul style="list-style-type: none"> • Device Removed/Device Absent • Transition to degraded • Install error • Redundancy lost • Non-redundant insufficient resources 	Ensure that all fans are seated securely. Go to "7063-CR1 locations" on page 37 to identify the physical location and removal and replacement procedure.

Table 3. Sensor information, event description, and service action for the 7063-CR1 (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • PS1 Status (0xF3) • PS2 Status (0xF4) 	<ul style="list-style-type: none"> • Predictive Failure • Power Supply Input Out of Range But Present 	If the sensor name is PS1 Status, replace PSU 1. If the sensor name is PS2 Status, replace PSU 2. Go to "7063-CR1 locations" on page 37 to identify the physical location and removal and replacement procedure.
	Power Supply Failure Detected	An assert event immediately followed by a deassert event indicates that a power cycle of the system occurred. No service action is required. If there is no deassert event immediately following the assert event, replace the power supply. If the sensor name is PS1 Status, replace PSU 1. If the sensor name is PS2 Status, replace PSU 2. Go to "7063-CR1 locations" on page 37 to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> • Power Supply Input Lost or AC DC • Power Supply Input Lost Or Out Of Range 	<ul style="list-style-type: none"> • Ensure that ac power is supplied to the rack. • Ensure that the system power cords are plugged tightly into both the power supply and the rack power distribution unit (PDU) for both system power supplies.
	<ul style="list-style-type: none"> • State Deasserted • State Asserted • Presence Detected 	No service action is required.
Watchdog (0xFF)	<ul style="list-style-type: none"> • Timer Expired • Reserved1 • Reserved2 • Reserved3 • Reserved4 	No service action is required.
	<ul style="list-style-type: none"> • Hard Reset • Power Down • Power Cycle • Timer Interrupt 	Search for serviceable SEL events that have a time stamp close to the time stamp of this SEL event. If you found a serviceable SEL event, perform the service action that is indicated in this table for the SEL event. If you cannot boot the system to the Petitboot menu, go to "Resolving a system firmware boot failure" on page 4.

Isolation procedures

Use this information to isolate problems that might occur with your system.

EPUB_PRC_FIND_DECONFIGURE_PART isolation procedure

A part vital to the system has been deconfigured.

1. Can you boot the system to the Petitboot menu?

If	Then
Yes:	From the Petitboot menu, select Exit to shell . Then, continue with step 3 and list SELs by using the Petitboot command line.
No:	Continue with the next step.

2. Is another system available with the Linux operating system and ipmitool installed?

If	Then
Yes:	Continue with the next step and list SELs remotely over the LAN.
No:	Go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.

3. Use the `ipmitool` command to examine system event logs (SELs).

- To list SELs by using the Petitboot command line, use the following command:

```
ipmitool sel elist
```

- To list SELs remotely over the LAN, use the following command:

```
ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sel elist
```

4. Identify all SELs with the value OEM record df and **Correctable Machine Check Error** or **Transition to Non-recoverable** in the description. Did you find one or more SELs with the value OEM record df and **Correctable Machine Check Error** or **Transition to Non-recoverable** in the description?

If	Then
Yes:	Continue with the next step.
No:	Go to “Contacting IBM service and support” on page 35. This ends the procedure.

5. For each of the SELs that you identified in step 4, determine the sensor name that is associated with each SEL. Replace the following items, one at a time, until the problem is resolved:

Note: To identify the physical location and removal and replacement procedure, see “7063-CR1 locations” on page 37.

- If the sensor name is CPU Func 1 or CPU Core Func *x*, where *x* is 1 - 12, replace system processor CPU 1.

Does the problem persist?

If	Then
Yes:	Replace the system backplane. If the replacement of the system backplane does not resolve the problem, go to “Contacting IBM service and support” on page 35. This ends the procedure.
No:	This ends the procedure.

EPUB_PRC_SP_CODE isolation procedure

A problem was detected in the system firmware.

Update the system firmware image. Go to Getting fixes and update the system firmware with the most recent level of firmware. Then, reboot the system. If the system firmware update does not resolve the problem, go to “Contacting IBM service and support” on page 35. **This ends the procedure.**

EPUB_PRC_PHYP_CODE isolation procedure

A problem was detected in the system firmware.

Update the system firmware image. Go to Getting fixes and update the system firmware with the most recent level of firmware. Then, reboot the system. If the system firmware update does not resolve the problem, go to “Contacting IBM service and support” on page 35. **This ends the procedure.**

EPUB_PRC_ALL_PROCS isolation procedure

A problem was detected with a system processor.

Use the following table to determine the service action:

Table 4. EPUB_PRC_ALL_PROCS service actions

System	Service action
7063-CR1	Replace the following items, one at a time, in the order that is shown until the problem is resolved: <ol style="list-style-type: none">1. System processor CPU 12. System backplane Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure. If the replacement of the system processor and the system backplane does not resolve the problem, go to “Contacting IBM service and support” on page 35. This ends the procedure.

EPUB_PRC_ALL_MEMCRDS isolation procedure

A problem was detected with a memory DIMM, but it cannot be isolated to a specific memory DIMM.

1. Can you boot the system to the Petitboot menu?

If	Then
Yes:	From the Petitboot menu, select Exit to shell . Then, continue with step 3 and list SELs by using the Petitboot command line.
No:	Continue with the next step.

2. Is another system available with the Linux operating system and ipmitool installed?

If	Then
Yes:	Continue with the next step and list SELs remotely over the LAN.
No:	Go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.

3. Use the `ipmitool` command to examine system event logs (SELs).

- To list SELs by using the Petitboot command line, use the following command:

```
ipmitool sel elist
```

- To list SELs remotely over the LAN, use the following command:

```
ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sel elist
```

4. Identify all SELs with the value OEM record df and **Transition to Non-recoverable** in the description. Did you find one or more SELs with the value OEM record df and **Transition to Non-recoverable** in the description?

If	Then
Yes:	Continue with the next step.
No:	Go to “Contacting IBM service and support” on page 35. This ends the procedure.

5. For each of the SELs that you identified in step 4 on page 29, determine the sensor name that is associated with each SEL. Replace the following items, one at a time, until the problem is resolved:

Note: To identify the physical location and removal and replacement procedure, see “7063-CR1 locations” on page 37.

- If the sensor name is Membuf Func *x*, replace the system backplane.
- If the sensor name is P1M1-DIMMA Func, replace P1M1-DIMMA. If the sensor name is P1M1-DIMMB Func, replace P1M1-DIMMB. And so on.

Does the problem persist?

If	Then
Yes:	If you have not already done so, replace the system backplane. If the replacement of the system backplane does not resolve the problem, go to “Contacting IBM service and support” on page 35. This ends the procedure.
No:	This ends the procedure.

EPUB_PRC_LVL_SUPPORT isolation procedure

Contact your next level of support for assistance.

Go to “Contacting IBM service and support” on page 35.

EPUB_PRC_MEMORY_PLUGGING_ERROR isolation procedure

Memory DIMMs are plugged in a configuration that is not valid.

The memory configuration must be four 8 GB memory modules of the same type. The four memory modules plug into these positions: P1M1-DIMMA, P1M1-DIMMB, P1M2-DIMMA, and P1M2-DIMMB. To identify the physical location and removal and replacement procedure, see “7063-CR1 locations” on page 37. **This ends the procedure.**

EPUB_PRC_FSI_PATH isolation procedure

The system detected an error with the FSI path.

Use the following table to determine the service action:

Table 5. EPUB_PRC_FSI_PATH service actions

System	Service action
7063-CR1	<p>Replace the following items, one at a time, in the order that is shown until the problem is resolved:</p> <ol style="list-style-type: none"> 1. System processor CPU 1 2. System backplane <p>Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure. If the replacement of the system processor and the system backplane does not resolve the problem, go to “Contacting IBM service and support” on page 35. This ends the procedure.</p>

EPUB_PRC_PROC_AB_BUS isolation procedure

A diagnostic function detected an external processor interface problem.

Use the following table to determine the service action:

Table 6. EPUB_PRC_PROC_AB_BUS service actions

System	Service action
7063-CR1	<p>Replace the system backplane. If replacing the system backplane does not resolve the problem, replace system processor CPU 1. Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure.</p> <p>If replacing the system backplane and the system processor does not resolve the problem, go to “Contacting IBM service and support” on page 35. This ends the procedure.</p>

EPUB_PRC_PROC_XYZ_BUS isolation procedure

A diagnostic function detected an internal processor interface problem.

Use the following table to determine the service action:

Table 7. EPUB_PRC_PROC_XYZ_BUS service actions

System	Service action
7063-CR1	<p>Replace system processor CPU 1. If replacing the system processor does not resolve the problem, replace the system backplane. Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure.</p> <p>If replacing the system backplane and the system processor does not resolve the problem, go to “Contacting IBM service and support” on page 35. This ends the procedure.</p>

EPUB_PRC_EIBUS_ERROR isolation procedure

A bus error occurred.

1. Can you boot the system to the Petitboot menu?

If	Then
Yes:	From the Petitboot menu, select Exit to shell . Then, continue with step 3 and list SELs by using the Petitboot command line.
No:	Continue with the next step.

2. Is another system available with the Linux operating system and ipmitool installed?

If	Then
Yes:	Continue with the next step and list SELs remotely over the LAN.
No:	Go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.

3. Use the `ipmi tool` command to examine system event logs (SELs).

- To list SELs by using the Petitboot command line, use the following command:
ipmitool sel elist
- To list SELs remotely over the LAN, use the following command:
ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sel elist

4. Identify all SELs with the value OEM record df and **Correctable Machine Check Error** or **Transition to Non-recoverable** in the description. Did you find one or more SELs with the value OEM record df and **Correctable Machine Check Error** or **Transition to Non-recoverable** in the description?

If	Then
Yes:	Continue with the next step.
No:	Go to “Contacting IBM service and support” on page 35. This ends the procedure.

5. For each of the SELs that you identified in step 4, determine the sensor name that is associated with each SEL. Replace the following items, one at a time, until the problem is resolved:

Note: To identify the physical location and removal and replacement procedure, see “7063-CR1 locations” on page 37.

- If the sensor name is CPU Func 1 or CPU Core Func *x*, where *x* is 1 - 12, replace system processor CPU 1.

Does the problem persist?

If	Then
Yes:	Replace the system backplane. If the replacement of the system backplane does not resolve the problem, go to “Contacting IBM service and support” on page 35. This ends the procedure.
No:	This ends the procedure.

EPUB_PRC_POWER_ERROR isolation procedure

A power problem occurred.

Perform the service action indicated for any system event logs that are related to power and occurred prior to the problem that you are working on. Go to “Identifying a service action by using FQPSPxxxxxxx events and system event logs” on page 8. **This ends the procedure.**

EPUB_PRC_MEMORY_UE isolation procedure

An uncorrectable memory problem occurred.

1. Look for system event logs that are related to memory and occurred around the same time as the problem that you are working on. Go to “Identifying a service action by using FQPSPxxxxxxx events and system event logs” on page 8. Did you find any system event logs that are related to memory?

If	Then
Yes:	Perform the service actions indicated for the system event logs that are related to memory. This ends the procedure.
No:	Continue with the next step.

2. Use the following table to determine the service action:

Table 8. EPUB_PRC_MEMORY_UE service actions

System	Service action
7063-CR1	<p>Replace system processor CPU 1.</p> <p>Go to “7063-CR1 locations” on page 37 to identify the physical location and removal and replacement procedure. This ends the procedure.</p>

EPUB_PRC_HB_CODE isolation procedure

The service processor detected a problem during the early boot process.

1. Update the system firmware image. Go to Getting fixes and update the system firmware with the most recent level of firmware. Then, reboot the system. Does the problem persist?

If	Then
Yes:	Continue with the next step.
No:	This ends the procedure.

2. Can you boot the system to the Petitboot menu?

If	Then
Yes:	From the Petitboot menu, select Exit to shell . Then, continue with step 4 and list SELs by using the Petitboot command line.
No:	Continue with the next step.

3. Is another system available with the Linux operating system and ipmitool installed?

If	Then
Yes:	Continue with the next step and list SELs remotely over the LAN.
No:	Go to “Collecting diagnostic data” on page 35. Then, go to “Contacting IBM service and support” on page 35.

4. Use the ipmitool command to examine system event logs (SELs).

- To list SELs by using the Petitboot command line, use the following command:

```
ipmitool sel elist
```

- To list SELs remotely over the LAN, use the following command:

```
ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sel elist
```

5. Identify all SELs with the value OEM record df and **Correctable Machine Check Error** or **Transition to Non-recoverable** in the description. Did you find one or more SELs with the value OEM record df and **Correctable Machine Check Error** or **Transition to Non-recoverable** in the description?

If	Then
Yes:	Continue with the next step.
No:	Go to “Contacting IBM service and support” on page 35. This ends the procedure.

6. For each of the SELs that you identified in step 5, determine the sensor name that is associated with each SEL. Replace the following items, one at a time, until the problem is resolved:

Note: To identify the physical location and removal and replacement procedure, see “7063-CR1 locations” on page 37.

- If the sensor name is CPU Func 1 or CPU Core Func x , where x is 1 - 12, replace system processor CPU 1.

Does the problem persist?

If	Then
Yes:	Replace the system backplane. If the replacement of the system backplane does not resolve the problem, go to "Contacting IBM service and support" on page 35. This ends the procedure.
No:	This ends the procedure.

EPUB_PRC_TOD_CLOCK_ERR isolation procedure

A diagnostic function detected a problem with the time of day or clock function.

Use the following table to determine the service action:

Table 9. EPUB_PRC_TOD_CLOCK_ERR service actions

System	Service action
7063-CR1	<p>Replace the system backplane. If replacing the system backplane does not resolve the problem, replace system processor CPU 1. Go to "7063-CR1 locations" on page 37 to identify the physical location and removal and replacement procedure.</p> <p>If replacing the system backplane and the system processor does not resolve the problem, go to "Contacting IBM service and support" on page 35. This ends the procedure.</p>

EPUB_PRC_COOLING_SYSTEM_ERR isolation procedure

One or more processor sensors detected an over temperature condition.

To resolve the over temperature condition, complete the following steps:

1. Is the room temperature less than 35°C (95°F)?

If	Then
No:	Bring the room temperature to within the allowable operating range. This ends the procedure.
Yes:	Continue with the next step.

2. Are the system front and rear doors free of obstructions?

If	Then
No:	The system must be free of obstructions for proper air flow. Remove any obstructions. This ends the procedure.
Yes:	Continue with the next step.

3. Perform the service action indicated for any system event logs that are related to fans and occurred prior to the problem that you are working on. Go to "Identifying a service action by using FQPSPxxxxxx events and system event logs" on page 8. **This ends the procedure.**

Verifying a repair

Learn how to verify hardware operation after you make repairs to the system.

1. Power on the system.

2. Did any serviceable events occur after hardware was replaced? To determine whether a serviceable event occurred, see “Identifying a service action by using FQPSPxxxxxx events and system event logs” on page 8.

If	Then
Yes:	The problem is not resolved. Go to “Identifying a service action by using FQPSPxxxxxx events and system event logs” on page 8 and complete the service actions indicated. This ends the procedure.
No:	The problem is resolved. This ends the procedure.

Collecting diagnostic data

Learn how to collect diagnostic data to send to IBM service and support.

To collect diagnostic data, complete the following steps:

1. Are you able to log on to the Hardware Management Console (HMC)?

If	Then
Yes:	Continue with the next step.
No:	Go to step 3.

2. Collect diagnostic data from the 7063-CR1 by using the **PEDBG** command on the HMC. To collect diagnostic data, go to Version 7 or 8 HMC: Collecting PEDBG from the HMC and complete the steps that are indicated. Send the data that you collected during this procedure to IBM service and support. **This ends the procedure.**
3. Can you boot the system to the Petitboot menu or is another system available that has the Linux operating system?

If	Then
Yes:	Continue with the next step.
No:	Go to “Contacting IBM service and support.”

4. To collect system event logs, complete the following steps:
 - a. Go to the IBM Support Portal (<http://www.ibm.com/support/home/>).
 - b. In the search field, enter your machine type and model. Then, click the correct product support entry for your system.
 - c. From the **Downloads** list, click **Scale-out LC System Event Log Collection Tool**.
 - d. Follow the instructions to install and run the system event log collection tool. Then, continue with the next step.
5. Send the data that you collected during this procedure to IBM service and support. **This ends the procedure.**

Contacting IBM service and support

You can contact IBM service and support by telephone or through the IBM Support Portal.

Before you contact IBM service and support, go to “Beginning troubleshooting and problem analysis” on page 1 and complete all of the service actions indicated. If the service actions do not resolve the problem, or if you are directed to contact support, go to “Collecting diagnostic data.” Then, use the information below to contact IBM service and support.

Customers in the United States, United States territories, or Canada can place a hardware service request online. To place a hardware service request online, go to the IBM Support Portal (<http://www.ibm.com/support/home/>).

For up-to-date telephone contact information, go to the Directory of worldwide contacts website (www.ibm.com/planetwide/).

Table 10. Service and support contacts

Type of problem	Call
<ul style="list-style-type: none"> • Advice • Migrating • "How to" • Operating • Configuring • Ordering • Performance • General information 	<ul style="list-style-type: none"> • 1-800-IBM-CALL (1-800-426-2255) • 1-800-IBM-4YOU (1-800-426-4968)
<p>Software:</p> <ul style="list-style-type: none"> • Fix information • Operating system problem • IBM application program • Loop, hang, or message <p>Hardware:</p> <ul style="list-style-type: none"> • IBM system hardware broken • Hardware reference code • IBM input/output (I/O) problem • Upgrade 	<p>1-800-IBM-SERV (1-800-426-7378)</p>

Finding parts and locations

Locate physical part locations and identify parts with system diagrams.

Locate the FRU

Use the graphics and tables to locate the field-replaceable unit (FRU) and identify the FRU part number.

7063-CR1 locations

Use this information to find the location of a field-replaceable unit (FRU) in the system unit.

Rack views

The following diagrams show FRU layouts in the system. Use these diagrams with the following tables.

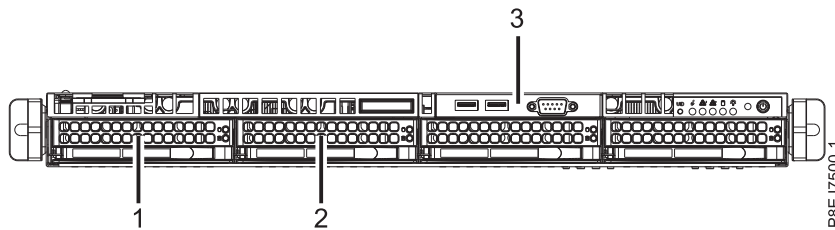


Figure 1. Front view

Table 11. Front view locations

Index number	FRU description	FRU removal and replacement procedures
1	HDD 0	See Removing and replacing a storage drive in the 7063-CR1.
2	HDD 1	
3	USB cable and connectors	See Removing and replacing the USB cable and connectors in the 7063-CR1. Note: Your 7063-CR1 might include a front serial port; however, this port is not supported.

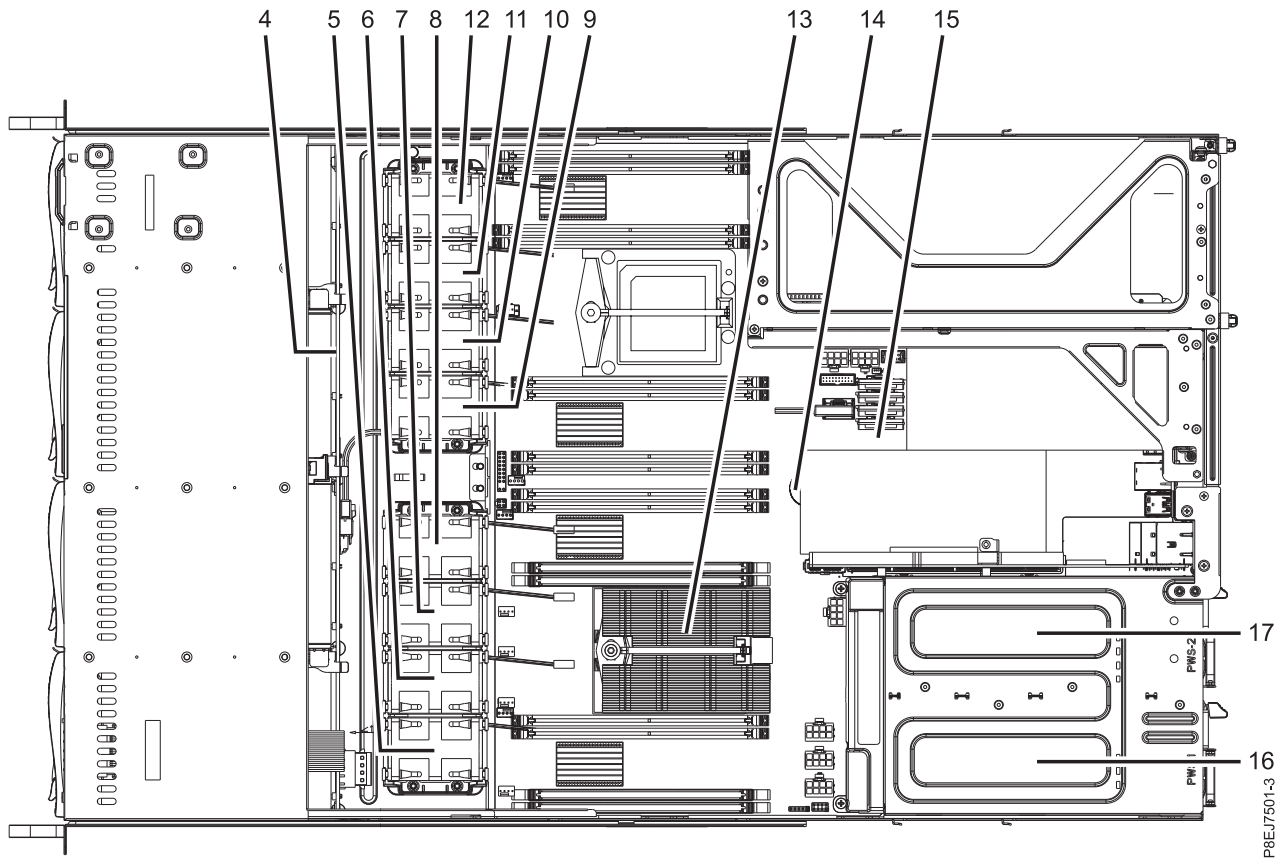


Figure 2. Top view

Table 12. Top view locations

Index number	FRU description	FRU removal and replacement procedures
4	Disk drive backplane	See Removing and replacing the disk drive backplane in the 7063-CR1.
5	Fan 1	See Removing and replacing fans in the 7063-CR1.
6	Fan 2	See Removing and replacing fans in the 7063-CR1.
7	Fan 3	See Removing and replacing fans in the 7063-CR1.
8	Fan 4	See Removing and replacing fans in the 7063-CR1.
9	Fan 5	See Removing and replacing fans in the 7063-CR1.
10	Fan 6	See Removing and replacing fans in the 7063-CR1.
11	Fan 7	See Removing and replacing fans in the 7063-CR1.
12	Fan 8	See Removing and replacing fans in the 7063-CR1.
13	CPU 1	See Removing and replacing a system processor module in the 7063-CR1.

Table 12. Top view locations (continued)

Index number	FRU description	FRU removal and replacement procedures
14	Time-of-day battery	See Removing and replacing the time-of-day battery in the 7063-CR1.
15	System backplane	See Removing and replacing the system backplane in the 7063-CR1.
16	PSU 1	See Removing and replacing a power supply in the 7063-CR1.
17	PSU 2	See Removing and replacing a power supply in the 7063-CR1.

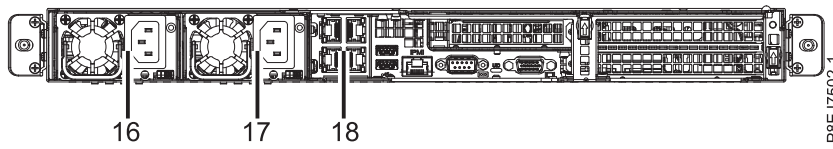


Figure 3. Rear view

Table 13. Rear view locations

Index number	FRU description	FRU removal and replacement procedures
16	PSU 1	See Removing and replacing a power supply in the 7063-CR1.
17	PSU 2	See Removing and replacing a power supply in the 7063-CR1.
18	PCIe adapter (UIO Network)	See Removing and replacing PCIe adapters in the 7063-CR1.

Memory locations

The following diagram shows memory DIMMs and their corresponding field-replaceable unit (FRU) layouts in the system. Use this diagram with the following table.

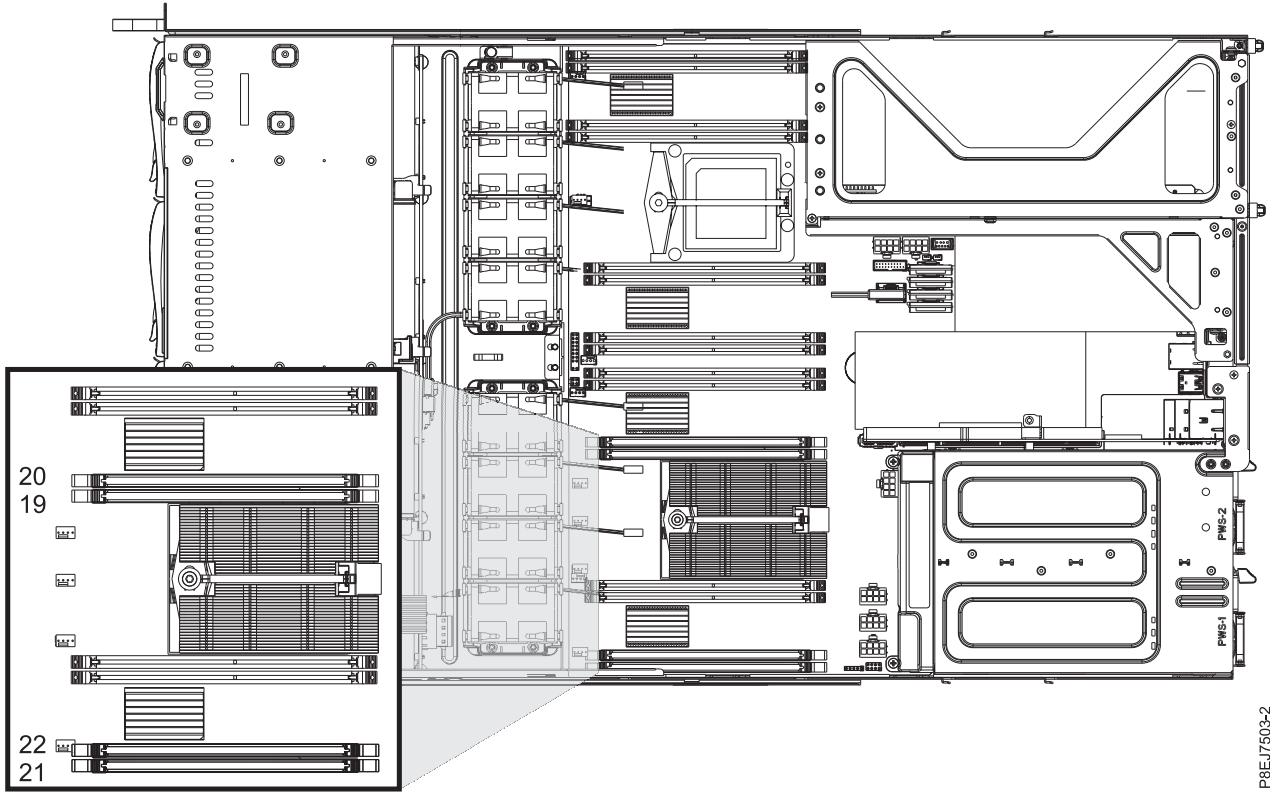


Figure 4. Memory locations

The following table provides the memory locations.

Table 14. Memory locations

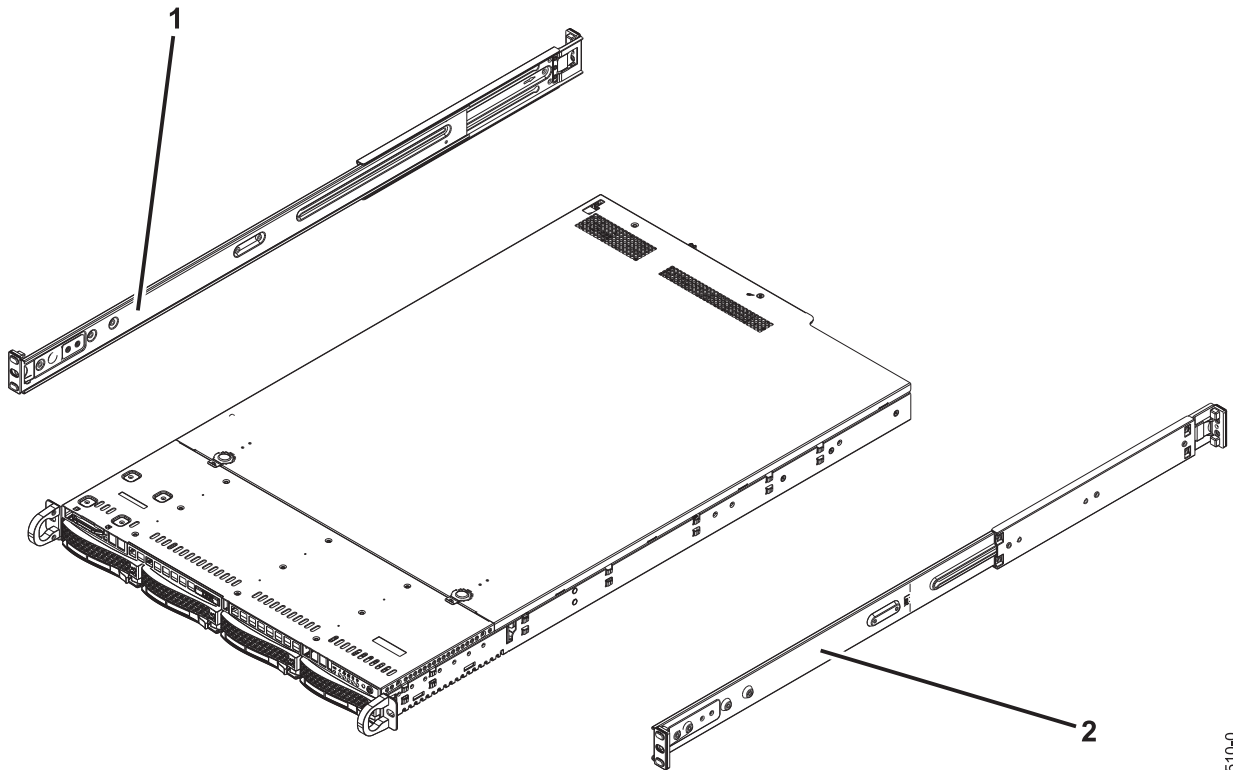
Index number	FRU description	FRU removal and replacement procedures
19	P1M1-DIMMA	See Removing and replacing memory in the 7063-CR1.
20	P1M1-DIMMB	
21	P1M2-DIMMA	
22	P1M2-DIMMB	

7063-CR1 parts

Use this information to find the field-replaceable unit (FRU) part number.

After you identify the part number of the part that you want to order, go to Advanced Part Exchange Warranty Service. Registration is required. If you are not able to identify the part number, go to Contacting IBM service and support.

Rack final assembly



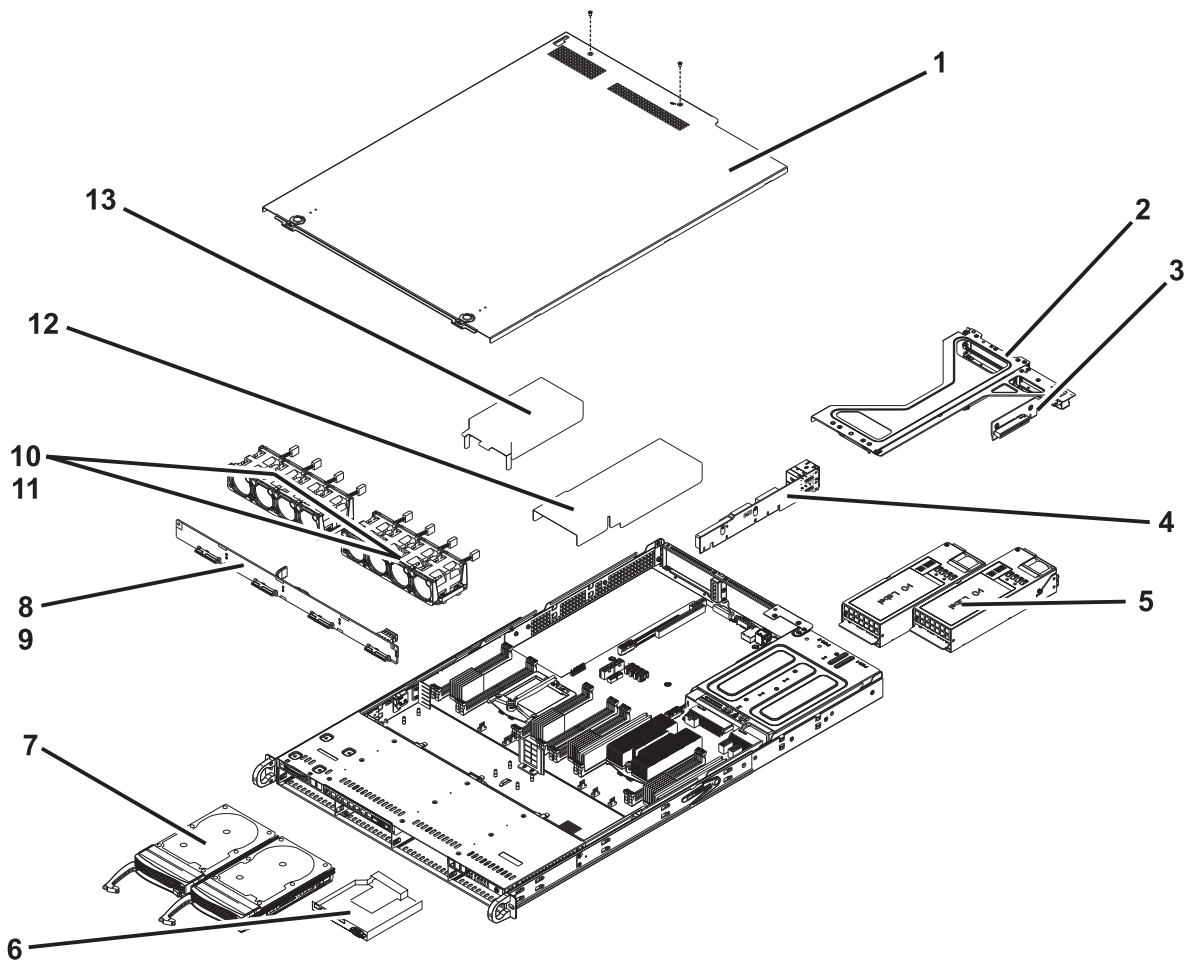
P8F-17510-0

Figure 5. Rack final assembly

Table 15. Rack final assembly part numbers

Index number	Part number	Units per assembly	Description
1	MCP-290-00052-0N	1	Slide rail kit - contains left and right slide rails and attaching screws
2	MCP-290-00052-0N	1	Slide rail kit - contains left and right slide rails and attaching screws

System parts



PRF17511-1

Figure 6. System parts

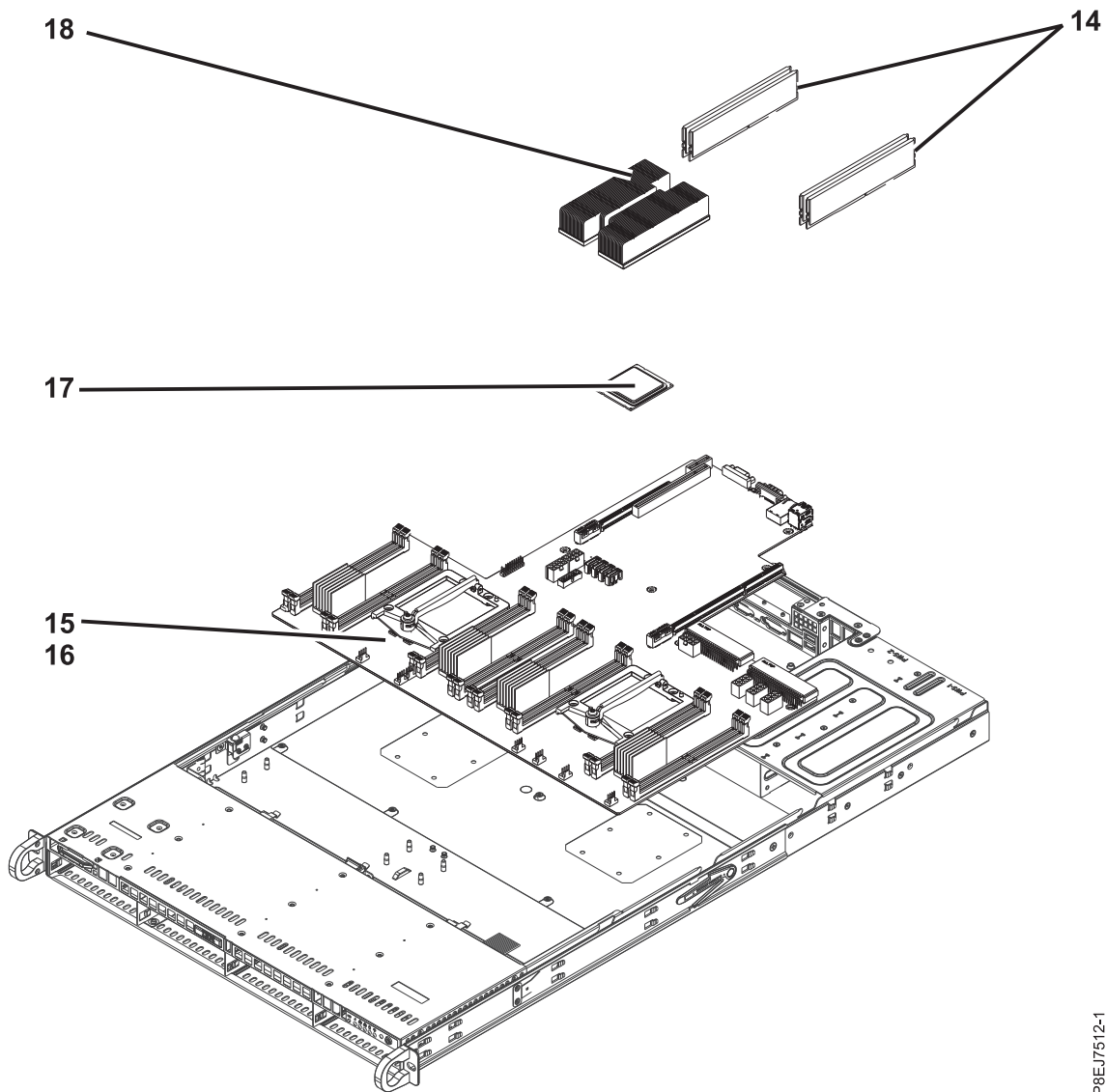
Table 16. System parts

Index number	Part number	Units per assembly	Description
1		1	Top cover assembly
		2	Screws
2		1	PCIe cage
3	RSC-R1UW-E8R	1	PCIe riser
4	AOC-UR-i4XTF	1	1U UIO NIC PCIe adapter with integrated 4-port 10 GbE Base-T (RJ-45), Intel XL710, and CAPI
5	PWS-1K02A-1R	2	Power supply
6	MCP-220-00129-0B	1	USB cable and connectors Note: Your 7063-CR1 might include a front serial port; however, this port is not supported.

Table 16. System parts (continued)

Index number	Part number	Units per assembly	Description
7	HDD-T2000-ST2000NM0125	2	2 TB 3.5 inch SATA disk drive
	MCP-220-00075-0E-IB001	4	Disk drive tray
8	BPN-SAS3-815TQ-N4	1	Disk drive backplane
9		2	Screws
10	FAN-0141L4	8	Fan
11		2	Fan holder
12	MCP-310-81909-0B	1	Air baffle (right side)
13	MCP-310-81908-0B	1	Air baffle (left side)

Additional system parts



PREJ7512-1

Figure 7. Additional system parts

Table 17. Additional system parts

Index number	Part number	Units per assembly	Description
14	MEM-DR480L-CL03-ER24	4	8 GB, 2400 MHz 1RX8 DDR4 RDIMM (Micron Technology, Inc.)
15	MBD-P8DTU-HMC-IB02J	1	System backplane
16		14	Screws
17	PP8-MP01HL709-6C	1	6 core 2.095 GHz system processor module
18	SNK-P0052P-IB001	1	Heat sink kit (includes heat sink and thermal interface material)

Table 18. Miscellaneous parts

Description	Part number
Rail adapter bracket kit for the 7014-T42 rack - contains 4 brackets to adapt to round holes	MCP-290-81904-0N
Mini-SAS data transfer cable	CBL-SAST-0880
Drive power cable	CBL-PWEX-0673

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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)

For more information about the commitment that IBM has to accessibility, see IBM Accessibility (www.ibm.com/able).

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Electronic emission notices

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.

VCCI Statement - Japan

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

This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

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.

高調波電流規格 JIS C 61000-3-2 準用品

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- 回路分類 : 6 (単相、PFC回路付)
- 換算係数 : 0

This statement explains the JEITA statement for products greater than 20 A per phase, three-phase.

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- 回路分類 : 5 (3相、PFC回路付)
- 換算係数 : 0

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

声 明

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

Declaration: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may need to perform practical action.

Electromagnetic Interference (EMI) Statement - Taiwan

警告使用者：

這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

The following is a summary of the EMI Taiwan statement above.

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

IBM Taiwan Contact Information:

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

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

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Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

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

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

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

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

Generelle Informationen:

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

Electromagnetic Interference (EMI) Statement - Russia

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Class B Notices

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

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM-authorized dealers. IBM is not responsible for any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate this 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 (B)/NMB-3(B)

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
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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.

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- 回路分類：6（単相、PFC回路付）
- 換算係数：0

This statement explains the JEITA statement for products greater than 20 A per phase, three-phase.

高調波電流規格 JIS C 61000-3-2 準用品

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

- 回路分類 : 5 (3相、PFC回路付)
- 換算係数 : 0

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Germany Compliance Statement

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

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

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

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