

Power Systems

Problem analysis, system parts, and locations for the IBM Power System S822LC (8335-GCA and 8335-GTA), and IBM Power System S812LC (8348-21C)

IBM

Power Systems

Problem analysis, system parts, and locations for the IBM Power System S822LC (8335-GCA and 8335-GTA), and IBM Power System S812LC (8348-21C)

IBM

Note

Before using this information and the product it supports, read the information in “Safety notices” on page v, “Notices” on page 93, 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.

© Copyright IBM Corporation 2015.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Safety notices	v
Beginning troubleshooting and problem analysis	1
Resolving a console access problem.	1
Resolving a boot failure.	1
Resolving a hardware problem	4
Resolving a GPU, PCIe adapter, or device problem	5
Resolving a RAID adapter problem.	5
Resolving a network adapter problem	7
Resolving a graphics processing unit problem	8
Resolving a storage device problem.	9
Identifying the location of the PCIe adapter by using the slot number	10
Identifying the location of the GPU by using the slot number	10
Identifying the location of the storage device	11
User guides for GPUs and PCIe adapters	12
Identifying a service action	13
Identifying a service action by using system event logs.	13
Identifying service action keywords in system event logs	17
Identifying a service action by using sensor and event information.	19
Identifying a service action by using sensor and event information for the 8335-GCA and 8335-GTA	19
Identifying a service action by using sensor and event information for the 8348-21C	37
Isolation procedures	54
EPUB_PRC_FIND_DECONFIGURE_PART isolation procedure	54
EPUB_PRC_SP_CODE isolation procedure	58
EPUB_PRC_PHYP_CODE isolation procedure	58
EPUB_PRC_ALL_PROCS isolation procedure	58
EPUB_PRC_ALL_MEMCRDS isolation procedure.	58
EPUB_PRC_LVL_SUPPORT isolation procedure	61
EPUB_PRC_MEMORY_PLUGGING_ERROR isolation procedure	61
EPUB_PRC_FSI_PATH isolation procedure	61
EPUB_PRC_PROC_AB_BUS isolation procedure	61
EPUB_PRC_PROC_XYZ_BUS isolation procedure.	62
EPUB_PRC_EIBUS_ERROR isolation procedure	63
EPUB_PRC_POWER_ERROR isolation procedure.	66
EPUB_PRC_MEMORY_UE isolation procedure	67
EPUB_PRC_HB_CODE isolation procedure.	67
EPUB_PRC_TOD_CLOCK_ERR isolation procedure	67
Verifying a repair	68
Collecting diagnostic data	69
Contacting IBM service and support	69
Finding parts and locations	71
8335-GCA and 8335-GTA locations.	71
8335-GCA and 8335-GTA parts	75
Finding parts and locations	81
8348-21C locations	81
8348-21C parts	86
Notices	93
Privacy policy considerations	94
Trademarks	95
Electronic emission notices	95
Class A Notices	95

Class B Notices	99
Terms and conditions.	102

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.
- 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.
- 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.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- 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. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. 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. Attach the power cords to the outlets.
5. 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)

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.



- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet 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.

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.

(R001)

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)



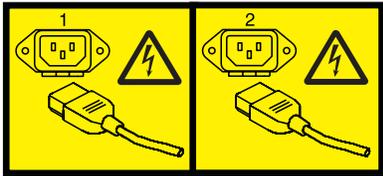
DANGER: Hazardous voltage, current, or energy levels are present inside any component that has this label attached. Do not open any cover or barrier that contains this label. (L001)

(L002)



DANGER: Rack-mounted devices are not to be used as shelves or work spaces. (L002)

(L003)



or



or



or



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

(L007)



CAUTION: A hot surface nearby. (L007)

(L008)



CAUTION: Hazardous moving parts nearby. (L008)

All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with IEC 60825 as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

CAUTION:

This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

(C026)

CAUTION:

Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. Although shining light into one end and looking into the other end of a disconnected optical fiber to verify the continuity of optic fibers may not injure the eye, this procedure is potentially dangerous. Therefore, verifying the continuity of optical fibers by shining light into one end and looking at the other end is not recommended. To verify continuity of a fiber optic cable, use an optical light source and power meter. (C027)

CAUTION:

This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

CAUTION:

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information: laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)

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)

(C048)

CAUTION regarding IBM provided VENDOR LIFT TOOL:

- Operation of LIFT TOOL by authorized personnel only.
- LIFT TOOL intended for use to assist, lift, install, remove units (load) up into rack elevations. It is not to be used loaded transporting over major ramps nor as a replacement for such designated tools like pallet jacks, walkies, fork trucks and such related relocation practices. When this is not practicable, specially trained persons or services must be used (for instance, riggers or movers).
- Read and completely understand the contents of LIFT TOOL operator's manual before using. Failure to read, understand, obey safety rules, and follow instructions may result in property damage and/or personal injury. If there are questions, contact the vendor's service and support. Local paper manual must remain with machine in provided storage sleeve area. Latest revision manual available on vendor's web site.
- Test verify stabilizer brake function before each use. Do not over-force moving or rolling the LIFT TOOL with stabilizer brake engaged.
- Do not move LIFT TOOL while platform is raised, except for minor positioning.

- Do not exceed rated load capacity. See LOAD CAPACITY CHART regarding maximum loads at center versus edge of extended platform.
- Only raise load if properly centered on platform. Do not place more than 200 lb (91 kg) on edge of sliding platform shelf also considering the load's center of mass/gravity (CoG).
- Do not corner load the platform tilt riser accessory option. Secure platform riser tilt option to main shelf in all four (4x) locations with provided hardware only, prior to use. Load objects are designed to slide on/off smooth platforms without appreciable force, so take care not to push or lean. Keep riser tilt option flat at all times except for final minor adjustment when needed.
- Do not stand under overhanging load.
- Do not use on uneven surface, incline or decline (major ramps).
- Do not stack loads.
- Do not operate while under the influence of drugs or alcohol.
- Do not support ladder against LIFT TOOL.
- Tipping hazard. Do not push or lean against load with raised platform.
- Do not use as a personnel lifting platform or step. No riders.
- Do not stand on any part of lift. Not a step.
- Do not climb on mast.
- Do not operate a damaged or malfunctioning LIFT TOOL machine.
- Crush and pinch point hazard below platform. Only lower load in areas clear of personnel and obstructions. Keep hands and feet clear during operation.
- No Forks. Never lift or move bare LIFT TOOL MACHINE with pallet truck, jack or fork lift.
- Mast extends higher than platform. Be aware of ceiling height, cable trays, sprinklers, lights, and other overhead objects.
- Do not leave LIFT TOOL machine unattended with an elevated load.
- Watch and keep hands, fingers, and clothing clear when equipment is in motion.
- Turn Winch with hand power only. If winch handle cannot be cranked easily with one hand, it is probably over-loaded. Do not continue to turn winch past top or bottom of platform travel. Excessive unwinding will detach handle and damage cable. Always hold handle when lowering, unwinding. Always assure self that winch is holding load before releasing winch handle.
- A winch accident could cause serious injury. Not for moving humans. Make certain clicking sound is heard as the equipment is being raised. Be sure winch is locked in position before releasing handle. Read instruction page before operating this winch. Never allow winch to unwind freely. Freewheeling will cause uneven cable wrapping around winch drum, damage cable, and may cause serious injury. (C048)

Power and cabling information for NEBS (Network Equipment-Building System) GR-1089-CORE

The following comments apply to the IBM servers that have been designated as conforming to NEBS (Network Equipment-Building System) GR-1089-CORE:

The equipment is suitable for installation in the following:

- Network telecommunications facilities
- Locations where the NEC (National Electrical Code) applies

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

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

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

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

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

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.

What type of problem are you dealing with?	Problem analysis procedure
A console access problem.	Go to "Resolving a console access problem."
A boot failure occurred.	Go to "Resolving a boot failure."
A processor, memory, power, or cooling hardware failure occurred.	Go to "Resolving a hardware problem" on page 4.
Missing or faulty graphics processing unit (GPU), PCIe adapter, disk drive, or solid-state drive.	Go to Resolving a GPU, PCIe adapter, or device problem.

Resolving a console access problem

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

1. Are both ends of the serial over LAN (SOL) cable seated securely?

If	Then
Yes:	Continue with the next step.
No:	Seat both ends of the SOL cable securely. This ends the procedure.

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 console access problem persist?

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

3. Replace the system backplane.

- If your system is an 8335-GCA or 8335-GTA, go to 8335-GCA and 8335-GTA locations to identify the physical location and the removal and replacement procedure. **This ends the procedure.**
- If your system is an 8348-21C, go to 8348-21C locations to identify the physical location and the removal and replacement procedure. **This ends the procedure.**

Resolving a boot failure

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

1. Are you here because of a system event log (SEL) with the value **OEM record c0** and OEM c0 specific log information **3a1503xxxxx**?

If	Then
Yes:	Continue with step 4 on page 2.
No:	Continue with the next step.

2. Are you here because of a SEL event with the value **OEM record c0** and OEM c0 specific log information **3a1504xxxxxx**?

If	Then
Yes:	Continue with step 8 on page 3.
No:	Continue with the next step.

3. 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 system boot successfully?

If	Then
Yes:	This ends the procedure.
No:	Go to “Resolving a hardware problem” on page 4. This ends the procedure.

4. Did the system complete the boot process successfully?

If	Then
Yes:	Continue with the next step.
No:	Continue with step 8 on page 3.

5. Determine whether the system booted from the primary or the golden side.

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

```
ipmitool sensor list | grep -i golden
```

- To run the command remotely over the LAN, enter the following command:

```
ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sensor list | grep -i golden
```

Do both of the returned records show 0x0080 in the data fields?

If	Then
Yes:	The error was temporary. No service action is required. This ends the procedure.
No:	One or both of the returned records have 0x0180 in the data fields. The system was booted from the golden side. Continue with the next step.

6. Search for processor deconfiguration SEL events that have a time stamp in close proximity to the time stamp of the event with value **OEM record c0** that sent you here. Processor deconfiguration SEL events are displayed in the following form:

- Processor CPU Func *x* | Transition to Non-recoverable | Asserted
- Processor CPU Core Func *x* | Processor Disabled | Asserted

Are processor deconfiguration events present?

If	Then
Yes:	Complete the service actions for the processor deconfiguration events. <ul style="list-style-type: none"> • If your system is an 8335-GCA or 8335-GTA, go to “Identifying a service action by using sensor and event information for the 8335-GCA and 8335-GTA” on page 19. This ends the procedure. • If your system is an 8348-21C, go to “Identifying a service action by using sensor and event information for the 8348-21C” on page 37. This ends the procedure.
No:	Continue with the next step.

7. Are there other types of SEL events that require a service action and have a time stamp in close proximity to the time stamp of the event with value **OEM record c0** that sent you here?

If	Then
Yes:	Complete the service actions for the SEL events that require service actions. <ul style="list-style-type: none"> • If your system is an 8335-GCA or 8335-GTA, go to “Identifying a service action by using sensor and event information for the 8335-GCA and 8335-GTA” on page 19. This ends the procedure. • If your system is an 8348-21C, go to “Identifying a service action by using sensor and event information for the 8348-21C” on page 37. This ends the procedure.
No:	If the boot problem persists, reload or update the system firmware image. Go to Getting fixes and reload the system firmware with the same level of firmware or update the system firmware with a more recent level of firmware. Then, reboot the system. This ends the procedure.

8. Search for processor deconfiguration SEL events that have a time stamp in close proximity to the time stamp of the event with value **OEM record c0** that sent you here. Processor deconfiguration SEL events are displayed in the following form:

- Processor CPU Func *x* | Transition to Non-recoverable | Asserted
- Processor CPU Core Func *x* | Processor Disabled | Asserted

Are processor deconfiguration events present?

If	Then
Yes:	Complete the service actions for the processor deconfiguration events. <ul style="list-style-type: none"> • If your system is an 8335-GCA or 8335-GTA, go to “Identifying a service action by using sensor and event information for the 8335-GCA and 8335-GTA” on page 19. This ends the procedure. • If your system is an 8348-21C, go to “Identifying a service action by using sensor and event information for the 8348-21C” on page 37. This ends the procedure.
No:	Continue with the next step.

9. Are there other types of SEL events that require a service action and have a time stamp in close proximity to the time stamp of the event with value **OEM record c0** that sent you here?

If	Then
Yes:	Complete the service actions for the SEL events that require service actions. <ul style="list-style-type: none"> • If your system is an 8335-GCA or 8335-GTA, go to “Identifying a service action by using sensor and event information for the 8335-GCA and 8335-GTA” on page 19. This ends the procedure. • If your system is an 8348-21C, go to “Identifying a service action by using sensor and event information for the 8348-21C” on page 37. This ends the procedure.
No:	Continue with the next step.

10. 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 system boot successfully?

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

11. Is the system an 8348-21C, and are all 32 of the DIMM locations populated with 32 GB DIMMs?

If	Then
Yes:	Continue with the next step.
No:	Go to step 13 on page 4.

12. Use the baseboard management controller (BMC) to update the system firmware. For instructions, see Updating the system firmware by using the BMC. Does the problem persist?

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

13. Replace the system backplane.

- If your system is an 8335-GCA or 8335-GTA, go to 8335-GCA and 8335-GTA locations to identify the physical location and the removal and replacement procedure. Then, continue with the next step.
- If your system is an 8348-21C, go to 8348-21C locations to identify the physical location and the removal and replacement procedure. Then, continue with the next step.

14. Does the problem persist?

If	Then
Yes:	Go to “Collecting diagnostic data” on page 69. Then, go to “Contacting IBM service and support” on page 69. This ends the procedure.
No:	This ends the procedure.

Resolving a hardware problem

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

1. If you have not already done so, manually boot the system.
2. Go to “Identifying a service action by using system event logs” on page 13. Then, continue with the next step.
3. Was a service action identified?

If	Then
Yes:	Continue with the next step.
No:	Go to step 5.

4. Did the service action fix the problem?

If	Then
Yes:	This ends the procedure.
No:	Go to step 5.

5. Go to “Resolving a GPU, PCIe adapter, or device problem” on page 5. Then, continue with the next step.
6. Was a service action identified?

If	Then
Yes:	Continue with the next step.
No:	Go to “Collecting diagnostic data” on page 69. Then, go to “Contacting IBM service and support” on page 69. This ends the procedure.

7. Did the service action fix the problem?

If	Then
Yes:	This ends the procedure.
No:	Go to “Collecting diagnostic data” on page 69. Then, go to “Contacting IBM service and support” on page 69. This ends the procedure.

Resolving a GPU, PCIe adapter, or device problem

Learn how to access log files, information to identify types of events, and a list of potential problems and service actions.

1. To identify the correct service procedure to perform by using operating system log information, complete the following steps:
 - a. Log in as the root user.
 - b. At the command prompt, type `dmesg` and press Enter.
2. Scan the operating system logs for the first occurrence of keywords, such as `fail`, `failure`, or `failed`. When you find a keyword that accompanies one or more of the resource names in the following table, a service action is required. Use the following table to determine the service procedure to perform for your type of problem.

Table 1. Resource names, examples, and service procedures for different types of operating system logs.

Resource name	Example of a log requiring a service action	Type of problem	Service procedure
aacraid	PCI error detected 2	RAID Note: This adapter is available only for 8348-21C systems.	Go to “Resolving a RAID adapter problem.”
eth1, eth2, eth3	Failed to re-initialize device	Network	Go to “Resolving a network adapter problem” on page 7.
NVRM	aborting RmInitAdapter failed!	Graphics	Go to “Resolving a graphics processing unit problem” on page 8.
ata1, ata2	SError: { RecovComm PHYRdyChg 10B8B Dispar }	Marvell storage adapter Note: This adapter is available only for 8348-21C systems.	Go to “Resolving a storage device problem” on page 9.
sda, sdb, sdc	FAILED Result	Storage	

Resolving a RAID adapter problem

Learn about the possible problems and service actions that you can perform to resolve a RAID adapter problem.

Note: To determine the location of the PCIe adapter, see “Identifying the location of the PCIe adapter by using the slot number” on page 10.

Table 2. RAID adapter problems and service actions.

Problem	Service action
System unable to find adapter	<ol style="list-style-type: none"> 1. Verify that the adapter is properly seated in a compatible slot. 2. Install the adapter in a different compatible slot. 3. Verify that the drivers for the adapter are installed. 4. Verify that the most recent firmware is installed on the system, or install the most recent firmware if it is not already installed. 5. Restart the system. 6. Replace the adapter. 7. Replace the system backplane. 8. Replace the central processing unit (CPU).
Adapter suddenly stops working	<ol style="list-style-type: none"> 1. If the system was recently installed, moved, serviced, or upgraded, verify that the adapter is seated properly and all associated cables are connected correctly. 2. Inspect the PCIe socket and verify that there is no dirt or debris in the socket. 3. Inspect the card and verify that it is not physically damaged. 4. Verify that all cables are properly seated and are not physically damaged. If you recently added one or more new adapters, remove them and then test to determine whether the failing adapter is functioning properly again. If the RAID adapter is functioning again, review the IBM support tips to confirm that there are no PCI address, driver, or firmware conflicts. Then, reinstall the new adapters again one at a time until all adapters function properly. 5. Replace the adapter. 6. Replace the system backplane. 7. Replace the CPU.
One or more drives are not recognized	<ol style="list-style-type: none"> 1. If more than one drive is not recognized, verify that the cables are properly attached to the RAID card. 2. Verify that the drive or drives are fully seated in the system. 3. Verify that all of the cables that attach to the backplane are properly seated. 4. Verify that the drive or drives are compatible with the RAID adapter. 5. Verify that the most recent firmware is installed for the RAID adapter, or install the most recent firmware if it is not already installed. 6. If more than one drive is not recognized, replace the drive. 7. Replace the RAID adapter. 8. Replace the system backplane. 9. Replace the cable or cables.

Table 2. RAID adapter problems and service actions (continued).

Problem	Service action
Other problems	For information about adapter diagnostics, see Supporting diagnostics. For information about adapter user information, see “User guides for GPUs and PCIe adapters” on page 12.

Resolving a network adapter problem

Learn about the possible problems and service actions that you can perform to resolve a network adapter problem.

Note: To determine the location of the PCIe adapter, see “Identifying the location of the PCIe adapter by using the slot number” on page 10.

Table 3. Network adapter problems and service actions.

Problem	Service action
System unable to find adapter	<ol style="list-style-type: none"> 1. Verify that the adapter is properly seated in a compatible slot. 2. Install the adapter in a different compatible slot. 3. Verify that the drivers for the adapter are installed. 4. Verify that the most recent firmware is installed on the system, or install the most recent firmware if it is not already installed. 5. Restart the system. 6. Replace the adapter. 7. Replace the system backplane. 8. Replace the central processing unit (CPU).
Adapter suddenly stops working	<ol style="list-style-type: none"> 1. If the system was recently installed, moved, serviced, or upgraded, verify that the adapter is seated properly and all associated cables are correctly connected. 2. Inspect the PCIe socket and verify that there is no dirt or debris in the socket. 3. Inspect the card and verify that it is not physically damaged. 4. Verify that all cables are properly seated and are not physically damaged. If you recently added one or more new adapters, remove them and then test to determine whether the failing adapter is functioning properly again. If the network adapter is functioning again, review the IBM support tips to confirm that there are no PCI address, driver, or firmware conflicts. Then, reinstall the new adapters again one at a time until all adapters function properly. 5. Replace the adapter. 6. Replace the system backplane. 7. Replace the CPU.

Table 3. Network adapter problems and service actions (continued).

Problem	Service action
Link indicator light on the adapter is off	<ol style="list-style-type: none"> 1. Verify that the cable functions properly by testing it with a known working connection. 2. Verify that the port or ports on the switch are enabled and functional. 3. Verify that the switch and adapter are compatible. 4. Replace the adapter.
Link light on the adapter is on, but there is no communication from the adapter	<ol style="list-style-type: none"> 1. Verify that the most recent driver is installed, or install the most recent driver if it is not already installed. 2. Verify that the adapter and its link have compatible settings, such as speed and duplex configuration.
Other problems	For information about adapter diagnostics, see Supporting diagnostics. For information about adapter user information, see "User guides for GPUs and PCIe adapters" on page 12.

Resolving a graphics processing unit problem

Learn about the possible problems and service actions that you can perform to resolve a graphics processing unit (GPU) problem.

Note: To determine the location of the GPU, see "Identifying the location of the GPU by using the slot number" on page 10.

Table 4. GPU problems and service actions

Problem	Service action
System unable to find GPU	<ol style="list-style-type: none"> 1. Verify that the GPU is properly seated in a compatible slot. 2. Install the GPU in a different compatible slot. 3. Verify that the drivers for the GPU are installed. 4. Verify that the most recent firmware is installed on the system, or install the most recent firmware if it is not already installed. 5. Restart the system. 6. Replace the GPU. 7. Replace the system backplane. 8. Replace the central processing unit (CPU).

Table 4. GPU problems and service actions (continued)

Problem	Service action
GPU suddenly stops working	<ol style="list-style-type: none"> 1. If the system was recently installed, moved, serviced, or upgraded, verify that the GPU is seated properly and all associated cables are connected correctly. 2. Inspect the PCIe socket and verify that there is no dirt or debris in the socket. 3. Inspect the card and verify that it is not physically damaged. 4. Verify that all cables are properly seated and are not physically damaged. If you recently added one or more new adapters, remove them and then test to determine whether the failing adapter is functioning properly again. If the graphics adapter is functioning properly again, review the IBM support tips to confirm that there are no PCI address, driver, or firmware conflicts. Then, reinstall the new adapters again one at a time until all adapters function properly. 5. Replace the GPU. 6. Replace the system backplane. 7. Replace the central processing unit (CPU).
Other problems	For information about adapter diagnostics, see Supporting diagnostics. For information about adapter user information, see "User guides for GPUs and PCIe adapters" on page 12.

Resolving a storage device problem

Learn about the possible problems and service actions that you can perform to resolve a storage device problem.

Note: To determine the location of the storage device, see "Identifying the location of the storage device" on page 11.

Table 5. Storage device problems and service actions

Problem	Service action
System unable to find storage device	<ol style="list-style-type: none"> 1. If the system was recently installed, moved, serviced, or upgraded, verify that the device is seated and installed properly. 2. Verify that the device is compatible with your system. 3. Verify that all internal cables are properly seated and are not physically damaged. 4. Verify that the most recent firmware is installed on the system, or install the most recent firmware if it is not already installed. 5. Replace the drive. 6. If your system is a 8348-21C, replace the system backplane or the storage mezzanine card. 7. Replace the cable. 8. If you have a RAID adapter installed, replace it.

Table 5. Storage device problems and service actions (continued)

Problem	Service action
Drive suddenly stops working	<ol style="list-style-type: none"> 1. Verify that all internal cables are properly seated and are not physically damaged. 2. Check the system logs to verify whether the system detected a problem. 3. Replace the drive. 4. If your system is a 8348-21C, replace the system backplane or the storage mezzanine card. 5. Replace the cable. 6. If you have a RAID adapter installed, replace it.
Other problems	Check the messages and resolve any other problems that were detected. Then, test the drive again. If the drive continues not to function, refer to the documentation for the drive.

Identifying the location of the PCIe adapter by using the slot number

The error message provides information to help you to determine the location of the PCIe adapter.

For example, the log might contain an error similar to the following text:

```
[131779.752714] EEH: PHB#0 failure detected, location: Slot5
```

Use the following table to map the slot number information in the operating system log to the PCIe adapter description and service action.

Table 6. Slot numbers, adapter descriptions, and service action for the 8335-GCA or 8335-GTA.

Slot information from log	PCIe adapter description	Service action
Slot1	PCIe adapter 1	Replace the PCIe adapter indicated in the PCIe adapter description column. Go to 8335-GCA and 8335-GTA locations to identify the physical location and the removal and replacement procedure.
Slot2	PCIe adapter 2	
Slot3	PCIe adapter 3	
Slot4	PCIe adapter 4	
Slot5	PCIe adapter 5	

Table 7. Slot numbers, adapter descriptions, and service action for the 8348-21C.

Slot information from log	PCIe adapter description	Service action
Slot1	PCIe adapter 1	Replace the PCIe adapter indicated in the PCIe adapter description column. Go to 8348-21C locations to identify the physical location and the removal and replacement procedure.
Slot2	PCIe adapter 2	
Slot3	PCIe adapter 3	
Slot4	PCIe adapter 4	

Identifying the location of the GPU by using the slot number

The error message provides information to help you to determine the location of the graphics processing unit (GPU).

For example, the log might contain an error similar to the following text:

```
[ 9288.123418] EEH: PHB#0 failure detected, location: Slot5
```

Use the following table to map the slot number information in the operating system log to the GPU description and service action.

Table 8. Slot numbers, adapter descriptions, and service action for the 8335-GCA or 8335-GTA

Slot information from log	PCIe adapter description	Service action
Slot5	GPU 2	Replace the PCIe adapter indicated in the PCIe adapter description column. Go to 8335-GCA and 8335-GTA locations to identify the physical location and the removal and replacement procedure.
Slot2	GPU 1	

Identifying the location of the storage device

Use this procedure to identify the location of a storage device.

1. Is there a disk drive or solid-state drive with an amber fault LED turned on solid?

If	Then
Yes:	Continue with step 2.
No:	Continue with step 3.

2. Replace the disk drive or solid-state drive.

If	Then
Yes:	If your system is an 8335-GCA or 8335-GTA, go to 8335-GCA and 8335-GTA locations to identify the removal and replacement procedure. This ends the procedure.
No:	If your system is an 8348-21C, go to 8348-21C locations to identify the removal and replacement procedure. This ends the procedure.

3. Is the system an 8335-GCA or 8335-GTA?

If	Then
Yes:	Continue with step 4.
No:	Continue with step 5.

4. To locate the device by using the device serial number, complete the following steps:

- a. The operating system log contains information about the device in the form `sdx`, where `x` is the letter associated with the drive that failed. Record the `sdx` information for the device that failed. For example, the failing device in the following operating system log is `sdb`:

```
blk_update_request: I/O error, dev sdb, sector 131072
```
- b. At the command prompt, type `hdparm -i /dev/sdx`, where `sdx` is the device information that you recorded in step 4a. Then, press Enter.
- c. Record the serial number of the device.
- d. Power off the system. Remove one device at a time until you identify the device with the serial number identified in step 4c. Replace only the device with the matching serial number. Reinstall the other devices. Go to 8335-GCA and 8335-GTA locations to identify the removal and replacement procedure. **This ends the procedure.**

5. The system is an 8348-21C. Are the devices controlled by a RAID adapter?

If	Then
Yes:	Continue with step 6.
No:	Continue with step 9.

6. To locate the device by using the identify LED, complete the following steps:
- The operating system log contains information about the device in the form `sdx`, where `x` is the letter associated with the drive that failed. Record the `sdx` information for the device that failed. For example, the failing device in the following operating system log is `sdb:[2614.698832]`
`blk_update_request: I/O error, dev sdb, sector 131072`
 - At the command prompt, type `hdparm -i /dev/sdx`, where `sdx` is the device information recorded in step 6a. Then, press Enter.
 - Record the serial number of the device.
 - At the command prompt, type `arcconf getconfig 1 PD` and press Enter. Find the reported channel and device numbers for the device that has the same serial number that you recorded in the previous step. Record the reported channel and device numbers.
 - At the command prompt, type `arcconf identify 1 device x y start`, where `x` is the reported channel number and `y` is the reported device number that you recorded in the previous step. Then, press Enter.
 Is the identify LED for one of the devices flashing?

If	Then
Yes:	Continue with the next step.
No:	Continue with step 9.

7. Replace the device with the flashing identify LED. Go to 8348-21C locations to identify the removal and replacement procedure. After you have replaced the device, continue with the next step.
8. At the command prompt, type `arcconf identify 1 device x y stop`, where `x` is the reported channel number and `y` is the reported device number that you recorded in step 6d. Then, press Enter. **This ends the procedure.**
9. To locate the device by using the device serial number, complete the following steps:
- The operating system log contains information about the device in the form `sdx`, where `x` is the letter associated with the drive that failed. Record the `sdx` information for the device that failed. For example, the failing device in the following operating system log is `sdb:[2614.698832]`
`blk_update_request: I/O error, dev sdb, sector 131072`
 - At the command prompt, type `hdparm -i /dev/sdx`, where `sdx` is the device information recorded in step 9a. Then, press Enter.
 - Record the serial number of the device.
 - Power off the system. Remove one device at a time until you identify the device with the serial number identified in step 9c. Replace only the device with the matching serial number. Reinstall the other devices. Go to 8348-21C locations to identify the removal and replacement procedure. **This ends the procedure.**

User guides for GPUs and PCIe adapters

Use this information to find the user guide for your graphics processing unit (GPU) or PCIe adapter.

Use the following table to find the user guide for the GPU or PCIe adapter that you are using.

Table 9. GPU and PCIe adapter user guides

Name	User guide
Broadcom	Broadcom website https://www.broadcom.com

Table 9. GPU and PCIe adapter user guides (continued)

Name	User guide
Emulex	Emulex website http://www.emulex.com/products/ethernet-networking-storage-connectivity/ethernet-networking-adapters/ibm-branded/selection-guide/
Marvell	Marvell website http://www.marvell.com/storage/system-solutions/sata-controllers/
Mellanox	Mellanox Technologies website https://mymellanox.force.com/support/VF_SerialSearch
NVIDIA	NVIDIA website http://www.nvidia.com
PMC-Sierra	PMC-Sierra website http://pmcs.com/
QLogic	QLogic website http://driverdownloads.qlogic.com/QLogicDriverDownloads_UI/IBM_Search.aspx

Identifying a service action

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

Identifying a service action by using system event logs

Use the Intelligent Platform Management Interface (IPMI) program to examine system event logs (SEs) to identify a service action.

- Use the **ipmitool** command to examine SELs.
 - To list SELs by using an in-band network, 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`
- 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 8 on page 14.

- 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 17.
 - Asserted** is in the description.
 - OEM record** is not in the description.
 - The event has a time stamp in close proximity to the time stamp of the event with the value **OEM record df**.
- Did you find any SEL events that require a service action as defined in step 3?

If	Then
Yes:	Continue with the next step.
No:	Go to “Collecting diagnostic data” on page 69. Then, go to “Contacting IBM service and support” on page 69.

5. Did you find only one SEL event that requires a service action as defined in step 3 on page 13?

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

6. Record the SEL record ID for the event you identified in step 3 on page 13. 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 an in-band network, 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, use the following information to determine the service action to perform:

- If your system is an 8335-GCA or 8335-GTA, go to “Identifying a service action by using sensor and event information for the 8335-GCA and 8335-GTA” on page 19.
- If your system is an 8348-21C, go to “Identifying a service action by using sensor and event information for the 8348-21C” on page 37.

This ends the procedure.

7. You identified more than one event in step 3 on page 13. The service actions for all of the events that were identified in step 3 on page 13 must be performed to successfully complete the repair. Record the SEL record IDs for the events that you identified in step 3 on page 13. 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 an in-band network, 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, use this information to determine the service action to perform:

- If your system is an 8335-GCA or 8335-GTA, go to “Identifying a service action by using sensor and event information for the 8335-GCA and 8335-GTA” on page 19.
- If your system is an 8348-21C, go to “Identifying a service action by using sensor and event information for the 8348-21C” on page 37.

This ends the procedure.

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

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

If	Then
Yes:	Continue with the next step.
No:	Go to step 11 on page 16.

10. The OEM c0 specific log information is indicated by the rightmost digits of the SEL with the value **OEM record c0**. If your system is an 8335-GCA or 8335-GTA, use Table 1 to determine the service action to perform. If your system is an 8348-21C, use Table 11 on page 16 to determine the service action to perform.

Table 10. OEM c0 specific log information, description, and service action for an 8335-GCA or 8335-GTA

OEM c0 specific log information	Description	Service action
320a01xxxxxx	Phy read failure	If you are viewing this event from the BMC, the missing or defective cable is now operational and no service action is required. Otherwise, replace the missing or failed LAN cable that attaches the console to the system.
320a02xxxxxx	Phy speed and duplex failure	
320exxxxxxx	OCC reset required	This event is for information only. No service action is required.
3a0400xxxxxx	Chassis soft power off	A user initiated power off request occurred. No service action is required.
3a0402xxxxxx	Chassis soft reboot	
3a0701xxxxxx	Request for PNOR access	This event is for information only. No service action is required.
3a0702xxxxxx	Release of PNOR access	
3a1100xxxxxx	Fan thread stopped	
3a1101xxxxxx	Fan thread started	Go to "Resolving a boot failure" on page 1.
3a1503xxxxxx	Primary side boot failed	
3a1504xxxxxx	Golden side boot failed	Go to "Resolving a boot failure" on page 1.
3a1601xxxxxx	Fan 1 failure	Replace Fan 1. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
3a1602xxxxxx	Fan 2 failure	Replace Fan 2. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
3a1603xxxxxx	Fan 3 failure	Replace Fan 3. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
3a1604xxxxxx	Fan 4 failure	Replace Fan 4. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.

Table 11. OEM c0 specific log information, description, and service action for an 8348-21C

OEM c0 specific log information	Description	Service action
320a01xxxxxx	Phy read failure	If you are viewing this event from the BMC, the missing or defective cable is now operational and no service action is required. Otherwise, replace the missing or failed LAN cable that attaches the console to the system.
320a02xxxxxx	Phy speed and duplex failure	
320exxxxxxx	OCC reset required	This event is for information only. No service action is required.
3a0400xxxxxx	Chassis soft power off	A user initiated power off request occurred. No service action is required.
3a0402xxxxxx	Chassis soft reboot	
3a0701xxxxxx	Request for PNOR access	This event is for information only. No service action is required.
3a0702xxxxxx	Release of PNOR access	
3a1100xxxxxx	Fan thread stopped	
3a1101xxxxxx	Fan thread started	
3a1503xxxxxx	Primary side boot failed	Go to “Resolving a boot failure” on page 1.
3a1504xxxxxx	Golden side boot failed	Go to “Resolving a boot failure” on page 1.
3a1601xxxxxx	Fan 1 failure	Replace Fan 1. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
3a1602xxxxxx	Fan 2 failure	Replace Fan 2. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
3a1603xxxxxx	Fan 3 failure	Replace Fan 3. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
3a1604xxxxxx	Fan 4 failure	Replace Fan 4. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
3a1605xxxxxx	Fan 5 failure	Replace Fan 5. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.

11. 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 17.
 - **Asserted** is in the description.
 - **OEM record** is not in the description.
12. Did you find one or more SEL events that require a service action as defined in step 11?

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

13. The service actions for all of the events that were identified in step 11 on page 16 must be performed to successfully complete the repair. Record the SEL record IDs for the events that you identified in step 11 on page 16. 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 an in-band network, 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, use this information to determine the service action to perform:

- If your system is an 8335-GCA or 8335-GTA, go to “Identifying a service action by using sensor and event information for the 8335-GCA and 8335-GTA” on page 19.
- If your system is an 8348-21C, go to “Identifying a service action by using sensor and event information for the 8348-21C” on page 37.

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, voltage, and current service action keywords

- Limit Exceeded
- Transition To Critical From Less Severe
- Transition To Critical From Non-recoverable
- Transition To Non-recoverable.

Fan service action keywords

- Transition To Critical From Less Severe
- Transition To Non-recoverable From Less Severe
- Transition To Critical From Non-recoverable
- Transition To 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

Power supply and All Pgood service action keywords

- Power Supply Failure Detected
- Predictive Failure
- Power Supply Input Lost AC DC
- Power Supply Input Lost or Out of Range
- Power Supply Input Out of Range but Present
- Configuration Error
- Transition To Critical From Less Severe
- Transition To Non-recoverable From Less Severe
- Transition To Critical From Non-recoverable
- Transition To Non-recoverable
- Redundancy Lost
- Non-redundant Insufficient Resources
- 240VA Power Down
- Interlock Power Down
- AC Lost
- Soft Power Control Failure
- Power Unit Failure Detected
- Predictive Failure

System firmware service action keywords

- System Firmware Error
- System Firmware Hang
- Transition To Critical From Less Severe
- Transition To Non-recoverable From Less Severe
- Transition To Critical From Non-recoverable
- Transition To Non-recoverable

System ACPI power state service action keywords

- Unknown

Watchdog service action keywords

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

System event service action keywords

- Undetermined system hardware failure

OS boot service action keywords

- Installation aborted
- Installation failed

Identifying a service action by using sensor and event information

You can use sensor and event information from the system event log (SEL) to determine a service action.

Identifying a service action by using sensor and event information for the 8335-GCA and 8335-GTA

You can use the sensor and event information from the system event log (SEL) to determine a service action to perform for the IBM Power® System S822LC (8335-GCA and 8335-GTA).

If you have not done so already, complete “Identifying a service action by using system event logs” on page 13. Then, use the following table to determine the service action to perform.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA

Sensor name (Sensor ID)	Event description	Service action
Watchdog (0x00)	<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	SEL events with OEM record c0 000e000 3a150xxxxxx indicate that a boot failed. Search for boot failure SEL events that have a time stamp in close proximity to the time stamp of this SEL event. If there are any present, go to “Resolving a boot failure” on page 1. If there are no boot failure SEL events and the system booted correctly, no service action is required.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
Host Status (0x04)	Unknown	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 each time you power on the system, go to “Collecting diagnostic data” on page 69. Then, go to “Contacting IBM service and support” on page 69.
	<ul style="list-style-type: none"> • S0/Go “Working” • S1 “Sleeping with system h/w & processor context maintained” • S2 “sleeping, processor context lost” • S3 “sleeping, processor & h/w context lost, memory retained” • S4 “non-volatile sleep / suspend-to disk” • S5 / G2: “soft-off” • S4 / S5: “soft-off” • G3 mechanical Off • Sleeping in an S1/S2/S3 State • G1: Sleeping • S5: entered by override • Legacy ON state • Legacy OFF state 	No service action is required.
FW Boot Progress (0x05)	<ul style="list-style-type: none"> • System Firmware Error • System Firmware Hang 	SEL events with OEM record c0 000e000 3a150xxxxxx indicate that a boot failed. Search for boot failure SEL events that have a time stamp in close proximity to the time stamp of this SEL event. If there are any present, go to “Resolving a boot failure” on page 1.
	System Firmware Progress	No service action is required.
<ul style="list-style-type: none"> • OCC 1 Active (0x08) • OCC 2 Active (0x09) 	Device Disabled	If the sensor name is OCC 1 Active, replace CPU 1. If the sensor name is OCC 2 Active, replace CPU 2. Go to 8335-GCA and 8335-GTA locations 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 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
Ambient Temp (0x0A)	<ul style="list-style-type: none"> • Upper Critical - going low • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Lower Critical - going low • Upper Non-recoverable – going low • Upper Non-recoverable – going high 	No service action is required.
	Upper Critical - going high	Ensure that the room temperature meets the requirements that are specified for the system. Ensure that no obstructions are blocking air flow to the system.
<ul style="list-style-type: none"> • CPU1 Temp (0x0B) • CPU2 Temp (0x0D) 	<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 • Lower Critical - going low • Upper Non-recoverable – going low • Upper Non-recoverable – going high 	No service action is required.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU Func 1 (0x0C) • CPU Func 2 (0x0E) 	<ul style="list-style-type: none"> • IERR • Transition to Non-recoverable • Predictive Failure 	If the sensor name is CPU Func 1, replace CPU 1. If the sensor name is CPU Func 2, replace CPU 2. Go to 8335-GCA and 8335-GTA locations 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 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
All Pgood (0x1C)	<ul style="list-style-type: none"> • Interlock Power Down • Power Off Power Down • Power Cycle • 240VA Power Down 	No service action is required.
	<ul style="list-style-type: none"> • AC Lost • Soft Power Control Failure 	<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. • Ensure that the system was not powered off.
	<ul style="list-style-type: none"> • Power Unit Failure Detected • Predictive Failure 	<ul style="list-style-type: none"> • Ensure that ac power is supplied to the rack. • Ensure that the power supply cords are plugged tightly into the power supplies and the rack PDU unit. • Ensure that the system was not powered off. • Check for service action required SEL events for the power supply sensor. If any exist, follow the service action that is specified in the "Identifying a service action by using sensor and event information for the 8335-GCA and 8335-GTA" on page 19.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • DIMM Func 1 (0x1E) • DIMM Func 2 (0x1F) • DIMM Func 3 (0x20) • DIMM Func 4 (0x21) • DIMM Func 5 (0x22) • DIMM Func 6 (0x23) • DIMM Func 7 (0x24) • DIMM Func 8 (0x25) • DIMM Func 9 (0x26) • DIMM Func 10 (0x27) • DIMM Func 11 (0x28) • DIMM Func 12 (0x29) • DIMM Func 13 (0x2A) • DIMM Func 14 (0x2B) • DIMM Func 15 (0x2C) • DIMM Func 16 (0x2D) • DIMM Func 17 (0x2E) • DIMM Func 18 (0x2F) • DIMM Func 19 (0x30) • DIMM Func 20 (0x31) • DIMM Func 21 (0x32) • DIMM Func 22 (0x33) • DIMM Func 23 (0x34) • DIMM Func 24 (0x35) • DIMM Func 25 (0x36) • DIMM Func 26 (0x37) 	<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"> • DIMM Func 27 (0x38) • DIMM Func 28 (0x39) • DIMM Func 29 (0x3A) • DIMM Func 30 (0x3B) • DIMM Func 31 (0x3C) • DIMM Func 32 (0x3D) 	<ul style="list-style-type: none"> • Transition to Non-recoverable • Predictive Failure 	If the sensor name is DIMM Func 1, replace DIMM 1. If the sensor name is DIMM Func 2, replace DIMM 2. And so on. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • DIMM Func 1 (0x1E) • DIMM Func 2 (0x1F) • DIMM Func 3 (0x20) • DIMM Func 4 (0x21) • DIMM Func 5 (0x22) • DIMM Func 6 (0x23) • DIMM Func 7 (0x24) • DIMM Func 8 (0x25) • DIMM Func 9 (0x26) • DIMM Func 10 (0x27) • DIMM Func 11 (0x28) • DIMM Func 12 (0x29) • DIMM Func 13 (0x2A) • DIMM Func 14 (0x2B) • DIMM Func 15 (0x2C) • DIMM Func 16 (0x2D) • DIMM Func 17 (0x2E) • DIMM Func 18 (0x2F) • DIMM Func 19 (0x30) • DIMM Func 20 (0x31) • DIMM Func 21 (0x32) • DIMM Func 22 (0x33) • DIMM Func 23 (0x34) • DIMM Func 24 (0x35) • DIMM Func 25 (0x36) • DIMM Func 26 (0x37) • DIMM Func 27 (0x38) • DIMM Func 28 (0x39) • DIMM Func 29 (0x3A) • DIMM Func 30 (0x3B) • DIMM Func 31 (0x3C) • DIMM Func 32 (0x3D) 	Configuration Error	<p>Complete the following steps:</p> <ol style="list-style-type: none"> 1. If the sensor name is DIMM Func 1, ensure that DIMM 1 is seated properly. If the sensor name is DIMM Func 2, ensure that DIMM 2 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 DIMM Func 1, replace DIMM 1. If the sensor name is DIMM Func 2, replace DIMM 2. And so on. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU Core Func 1 (0x3E) • CPU Core Func 2 (0x3F) • CPU Core Func 3 (0x40) 	<ul style="list-style-type: none"> • IERR • Transition to Non-recoverable • Predictive Failure 	Replace system processor CPU 1. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
<ul style="list-style-type: none"> • CPU Core Func 4 (0x41) • CPU Core Func 5 (0x42) • CPU Core Func 6 (0x43) • CPU Core Func 7 (0x44) • CPU Core Func 8 (0x45) • CPU Core Func 9 (0x46) • CPU Core Func 10 (0x47) • CPU Core Func 11 (0x48) • CPU Core Func 12 (0x49) 	<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.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU Core Func 13 (0x4A) • CPU Core Func 14 (0x4B) • CPU Core Func 15 (0x4C) • CPU Core Func 16 (0x4D) • CPU Core Func 17 (0x4E) • CPU Core Func 18 (0x4F) • CPU Core Func 19 (0x50) • CPU Core Func 20 (0x51) • CPU Core Func 21 (0x52) • CPU Core Func 22 (0x53) • CPU Core Func 23 (0x54) • CPU Core Func 24 (0x55) 	<ul style="list-style-type: none"> • IERR • Transition to Non-recoverable • Predictive Failure 	Replace system processor CPU 2. Go to 8335-GCA and 8335-GTA locations 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.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • Mem Buf Func 1 (0x56) • Mem Buf Func 2 (0x57) • Mem Buf Func 3 (0x58) • Mem Buf Func 4 (0x59) • Mem Buf Func 5 (0x5A) • Mem Buf Func 6 (0x5B) • Mem Buf Func 7 (0x5C) • Mem Buf Func 8 (0x5D) 	<ul style="list-style-type: none"> • Uncorrectable Memory Error • Memory Device Disabled • 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 • Memory Scrub Failed • 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"> • Configuration Error • Transition to Non-recoverable • Predictive Failure 	If the sensor name is Mem Buf Func 1, replace memory riser 1. If the sensor name is Mem Buf Func 2, replace memory riser 2. And so on. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
Boot Count (0x5F)	None	No service action is required.
Motherboard Flt (0x60)	State Deasserted	No service action is required.
	State Asserted	Replace the system backplane. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
System Event (0x61)	Undetermined system hardware failure	Go to "Collecting diagnostic data" on page 69. Then, go to "Contacting IBM service and support" on page 69.
	<ul style="list-style-type: none"> • System Reconfigured • OEM System boot event • Entry added to auxiliary log • PEF Action • Timestamp Clock Sync • Transition State Active • Transition State Idle • Transition State Busy 	No service action is required.
Activate Pwr Lt (0x62)	None	No service action is required.
<ul style="list-style-type: none"> • Ref Clock Fault (0x63) • PCI Clock Fault (0x64) 	<ul style="list-style-type: none"> • State Deasserted • State Asserted 	No service action is required.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • DIMM1 Temp (0x69) • DIMM2 Temp (0x6A) • DIMM3 Temp (0x6B) • DIMM4 Temp (0x6C) • DIMM5 Temp (0x6D) • DIMM6 Temp (0x6E) • DIMM7 Temp (0x6F) • DIMM8 Temp (0x70) • DIMM9 Temp (0x71) • DIMM10 Temp (0x72) • DIMM11 Temp (0x73) • DIMM12 Temp (0x74) • DIMM13 Temp (0x75) • DIMM14 Temp (0x76) • DIMM15 Temp (0x77) • DIMM16 Temp (0x78) • DIMM17 Temp (0x79) • DIMM18 Temp (0x7A) • DIMM19 Temp (0x7B) • DIMM20 Temp (0x7C) • DIMM21 Temp (0x7D) • DIMM22 Temp (0x7E) • DIMM23 Temp (0x7F) • DIMM24 Temp (0x80) • DIMM25 Temp (0x81) • DIMM26 Temp (0x82) • DIMM27 Temp (0x83) • DIMM28 Temp (0x84) • DIMM29 Temp (0x85) • DIMM30 Temp (0x86) • DIMM31 Temp (0x87) • DIMM32 Temp (0x88) 	<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 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU Core Temp 1 (0x89) • CPU Core Temp 2 (0x8A) • CPU Core Temp 3 (0x8B) • CPU Core Temp 4 (0x8C) • CPU Core Temp 5 (0x8D) • CPU Core Temp 6 (0x8E) • CPU Core Temp 7 (0x8F) • CPU Core Temp 8 (0x90) • CPU Core Temp 9 (0x91) • CPU Core Temp 10 (0x92) • CPU Core Temp 11 (0x93) • CPU Core Temp 12 (0x94) 	<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.
<ul style="list-style-type: none"> • CPU Core Temp 13 (0x95) • CPU Core Temp 14 (0x96) • CPU Core Temp 15 (0x97) • CPU Core Temp 16 (0x98) • CPU Core Temp 17 (0x99) • CPU Core Temp 18 (0x9A) • CPU Core Temp 19 (0x9B) • CPU Core Temp 20 (0x9C) • CPU Core Temp 21 (0x9D) • CPU Core Temp 22 (0x9E) • CPU Core Temp 23 (0x9F) • CPU Core Temp 24 (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 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • 12V Sense (0xA1) • Proc0 Power (0xA2) • Proc1 Power (0xA3) • PCIE Proc0 Pwr (0xA6) • PCIE Proc1 Pwr (0xA7) • GPU Sense (0xAA) • Mem Cache Power (0xAB) • Mem Proc0 Pwr (0xAC) • Mem Proc1 Pwr (0xAD) • Fan Power A (0xB0) 	<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"> • TOD Clock Fault (0xB1) • APSS Fault (0xB2) 	<ul style="list-style-type: none"> • State Deasserted • State Asserted 	No service action is required.
PS Derating Factor (0xB4)	None	No service action is required.
OS Boot (0xB5)	<ul style="list-style-type: none"> • Installation aborted • Installation failed 	Ensure that the operating system boot image is loaded. Ensure that the disk drive or solid-state drive is ready. Reload the operating system boot image.
	<ul style="list-style-type: none"> • A: boot completed • C: boot completed • PXE boot completed • Diagnostic boot completed • CD-ROM boot completed • ROM boot completed • Boot completed - device not specified • Installation started • Installation completed 	No service action is required.
PCI (0xB6)	<ul style="list-style-type: none"> • State Deasserted • State Asserted 	No service action is required.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • GPU Func 1 (0xB8) • GPU Func 2 (0xB9) • GPU Func 3 (0xBA) • GPU Func 4 (0xBB) 	<ul style="list-style-type: none"> • Uncorrectable Memory Error • Parity • Memory Scrub Failed • Memory Device Disabled • Configuration Error • Memory Automatically Throttled 	If the sensor name is GPU Func 1 or GPU Func 2, replace GPU 1. If the sensor name is GPU Func 3 or GPU Func 4, replace GPU 2. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> • Correctable Memory Error • Parity • Correctable Memory Error Logging Limit Reached • Presence Detected • Spare • Critical Over temperature 	No service action is required.
<ul style="list-style-type: none"> • GPU Temp 1 (0xBC) • GPU Temp 2 (0xBD) • GPU Temp 3 (0xBE) • GPU Temp 4 (0xBF) 	<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.
<ul style="list-style-type: none"> • Mem Buf Temp 1 (0xC0) • Mem Buf Temp 2 (0xC1) • Mem Buf Temp 3 (0xC2) • Mem Buf Temp 4 (0xC3) • Mem Buf Temp 5 (0xC4) • Mem Buf Temp 6 (0xC5) • Mem Buf Temp 7 (0xC6) • Mem Buf Temp 8 (0xC7) 	<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 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU Diode 1 (0xC8) • CPU Diode 2 (0xCB) 	<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 	<p>No service action is required.</p>

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
Checkstop (0xC9)	IERR	<p>If this event immediately precedes a system power off, no service action is required. Otherwise, search for SEL events that meet the following criteria:</p> <ul style="list-style-type: none"> • The event has a time stamp in close proximity to the time stamp of this event. • A service action keyword is present. For a list of service action keywords, see “Identifying service action keywords in system event logs” on page 17. • Asserted is in the description. <p>If you found a SEL event that matches the criteria, perform the service action that is indicated in this table for the SEL event. Otherwise, go to “Collecting diagnostic data” on page 69. Then, go to “Contacting IBM service and support” on page 69.</p>
	<ul style="list-style-type: none"> • Thermal Trip • Configuration Error • Processor Automatically Throttled • Correctable Machine Check Error • Processor Presence Detected 	No service action is required.
	<ul style="list-style-type: none"> • FRB1 BIST Failure • FRB2 Hang In POST Failure • FRB3 Processor Startup Initialization Failure • SMBIOS Uncorrectable CPU Complex Error • Processor Disabled • Terminator Presence Detected • Machine Check Exception 	Go to “Collecting diagnostic data” on page 69. Then, go to “Contacting IBM service and support” on page 69.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> PSU Fault 1 (0xCD) PSU Fault 2 (0xCE) 	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 PSU Fault 1, replace PSU 1. If the sensor name is PSU Fault 2, replace PSU 2. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> Predictive Failure Power Supply Input Out of Range But Present 	If the sensor name is PSU Fault 1, replace PSU 1. If the sensor name is PSU Fault 2, replace PSU 2. Go to 8335-GCA and 8335-GTA locations 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 	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 PDU unit for both system power supplies. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
	Configuration Error	Ensure that both power supplies are securely seated in the system. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> Presence Detected Power Supply Inactive 	No service action is required.
BIOS Golden Side (0xD2)	None	Go to “Resolving a boot failure” on page 1 and follow the service action for a system event log (SEL) with the value OEM record c0 and OEM c0 specific log information 3a1504xxxxxx.
BMC Golden Side (0xD3)	None	Go to “Resolving a boot failure” on page 1 and follow the service action for a system event log (SEL) with the value OEM record c0 and OEM c0 specific log information 3a1504xxxxxx.

Table 12. Sensor information, event description, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • Fan 1 (0xD4) • Fan 2 (0xD5) • Fan 3 (0xD6) • Fan 4 (0xD7) 	<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 Fan 1, replace Fan 1. If the sensor name is Fan 2, replace Fan 2. And so on. Go to 8335-GCA and 8335-GTA locations 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 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.

Identifying a service action by using sensor and event information for the 8348-21C

You can use the sensor and event information from the system event log to determine a service action to perform for the IBM Power System S812LC (8348-21C).

If you have not done so already, complete “Identifying a service action by using system event logs” on page 13. Then, use the following table to determine the service action to perform.

Table 13. Sensor information, event description, and service action for the 8348-21C

Sensor name (Sensor ID)	Event description	Service action
Watchdog (0x00)	<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 	SEL events with OEM record c0 000e000 3a150xxxxxx indicate that a boot failed. Search for boot failure SEL events that have a time stamp in close proximity to the time stamp of this SEL event. If there are any present, go to “Resolving a boot failure” on page 1. If there are no boot failure SEL events and the system booted correctly, no service action is required.
Host Status (0x04)	Unknown	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 each time you power on the system, go to “Collecting diagnostic data” on page 69. Then, go to “Contacting IBM service and support” on page 69.
	<ul style="list-style-type: none"> • S0/Go “Working” • S1 “Sleeping with system h/w & processor context maintained” • S2 “sleeping, processor context lost” • S3 “sleeping, processor & h/w context lost, memory retained” • S4 “non-volatile sleep / suspend-to disk” • S5 / G2: “soft-off” • S4 / S5: “soft-off” • G3 mechanical Off • Sleeping in an S1/S2/S3 State • G1: Sleeping • S5: entered by override • Legacy ON state • Legacy OFF state 	No service action is required.
FW Boot Progress (0x05)	<ul style="list-style-type: none"> • System Firmware Error • System Firmware Hang 	SEL events with OEM record c0 000e000 3a150xxxxxx indicate that a boot failed. Search for boot failure SEL events that have a time stamp in close proximity to the time stamp of this SEL event. If there are any present, go to “Resolving a boot failure” on page 1.
	System Firmware Progress	No service action is required.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
OCC Active (0x08)	Device Disabled	Replace the system processor. Go to 8348-21C locations 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.
Ambient Temp (0x0A)	<ul style="list-style-type: none"> • Upper Critical - going low • Lower Non-critical – going low • Lower Non-critical – going high • Lower Critical – going high • Lower Non-recoverable – going low • Lower Non-recoverable – going high • Upper Non-critical – going low • Upper Non-critical – going high • Lower Critical - going low • Upper Non-recoverable – going low • Upper Non-recoverable – going high 	No service action is required.
	Upper Critical - going high	Ensure that the room temperature meets the requirements that are specified for the system. Ensure that no obstructions are blocking air flow to the system.
CPU Temp (0x64)	<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 • Lower Critical - going low • Upper Non-recoverable – going low • Upper Non-recoverable – going high 	No service action is required.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
CPU Func (0x4E)	<ul style="list-style-type: none"> • IERR • Transition to Non-recoverable • Predictive Failure 	Replace the system processor. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> • Processor Disabled • Thermal Trip • FRB1 BIST Failure • FRB2 Hang In POST Failure • FRB3 Processor Startup Initialization Failure • Configuration Error • SMBIOS Uncorrectable CPU Complex Error • 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 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
All Pgood (0x1C)	<ul style="list-style-type: none"> • Interlock Power Down • Power Off Power Down • Power Cycle • 240VA Power Down 	No service action is required.
	<ul style="list-style-type: none"> • AC Lost • Soft Power Control Failure 	<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. • Ensure that the system was not powered off.
	<ul style="list-style-type: none"> • Power Unit Failure Detected • Predictive Failure 	<ul style="list-style-type: none"> • Ensure that ac power is supplied to the rack. • Ensure that the power supply cords are plugged tightly into the power supplies and the rack PDU unit. • Ensure that the system was not powered off. • Check for service action required SEL events for the power supply sensor. If any exist, follow the service action that is specified in the "Identifying a service action by using sensor and event information for the 8348-21C" on page 37.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • DIMM Func 0 (0x1E) • DIMM Func 1 (0x1F) • DIMM Func 2 (0x20) • DIMM Func 3 (0x21) • DIMM Func 4 (0x22) • DIMM Func 5 (0x23) • DIMM Func 6 (0x24) • DIMM Func 7 (0x25) • DIMM Func 8 (0x26) • DIMM Func 9 (0x27) • DIMM Func 10 (0x28) • DIMM Func 11 (0x29) • DIMM Func 12 (0x2A) • DIMM Func 13 (0x2B) • DIMM Func 14 (0x2C) • DIMM Func 15 (0x2D) • DIMM Func 16 (0x2E) • DIMM Func 17 (0x2F) • DIMM Func 18 (0x30) • DIMM Func 19 (0x31) • DIMM Func 20 (0x32) • DIMM Func 21 (0x33) • DIMM Func 22 (0x34) • DIMM Func 23 (0x35) • DIMM Func 24 (0x36) • DIMM Func 25 (0x37) 	<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"> • DIMM Func 26 (0x38) • DIMM Func 27 (0x39) • DIMM Func 28 (0x3A) • DIMM Func 29 (0x3B) • DIMM Func 30 (0x3C) • DIMM Func 31 (0x3D) 	<ul style="list-style-type: none"> • Transition to Non-recoverable • Predictive Failure 	If the sensor name is DIMM Func 0, replace DIMM 0. If the sensor name is DIMM Func 1, replace DIMM 1. And so on. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • DIMM Func 0 (0x1E) • DIMM Func 1 (0x1F) • DIMM Func 2 (0x20) • DIMM Func 3 (0x21) • DIMM Func 4 (0x22) • DIMM Func 5 (0x23) • DIMM Func 6 (0x24) • DIMM Func 7 (0x25) • DIMM Func 8 (0x26) • DIMM Func 9 (0x27) • DIMM Func 10 (0x28) • DIMM Func 11 (0x29) • DIMM Func 12 (0x2A) • DIMM Func 13 (0x2B) • DIMM Func 14 (0x2C) • DIMM Func 15 (0x2D) • DIMM Func 16 (0x2E) • DIMM Func 17 (0x2F) • DIMM Func 18 (0x30) • DIMM Func 19 (0x31) • DIMM Func 20 (0x32) • DIMM Func 21 (0x33) • DIMM Func 22 (0x34) • DIMM Func 23 (0x35) • DIMM Func 24 (0x36) • DIMM Func 25 (0x37) • DIMM Func 26 (0x38) • DIMM Func 27 (0x39) • DIMM Func 28 (0x3A) • DIMM Func 29 (0x3B) • DIMM Func 30 (0x3C) • DIMM Func 31 (0x3D) 	Configuration Error	<p>Complete the following steps:</p> <ol style="list-style-type: none"> 1. If the sensor name is DIMM Func 0, ensure that DIMM 0 is seated properly. If the sensor name is DIMM Func 1, ensure that DIMM 1 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 DIMM Func 0, replace DIMM 0. If the sensor name is DIMM Func 1, replace DIMM 1. And so on. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU Core Func 1 (0x3E) • CPU Core Func 2 (0x3F) • CPU Core Func 3 (0x40) 	<ul style="list-style-type: none"> • IERR • Transition to Non-recoverable • Predictive Failure 	Replace the system processor. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
<ul style="list-style-type: none"> • CPU Core Func 4 (0x41) • CPU Core Func 5 (0x42) • CPU Core Func 6 (0x43) • CPU Core Func 7 (0x44) • CPU Core Func 8 (0x45) • CPU Core Func 9 (0x46) • CPU Core Func 10 (0x47) • CPU Core Func 11 (0x48) • CPU Core Func 12 (0x49) 	<ul style="list-style-type: none"> • Processor Disabled • FRB1 BIST Failure • FRB2 Hang In POST Failure • FRB3 Processor Startup Initialization Failure • Configuration Error • SMBIOS Uncorrectable CPU Complex Error • 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.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • Mem Buf Func 0 (0x4A) • Mem Buf Func 1 (0x4B) • Mem Buf Func 2 (0x4C) • Mem Buf Func 3 (0x4D) 	<ul style="list-style-type: none"> • Uncorrectable Memory Error • Memory Device Disabled • 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 • Memory Scrub Failed • 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"> • Configuration Error • Transition to Non-recoverable • Predictive Failure 	Replace the system backplane. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
Boot Count (0x50)	None	No service action is required.
Backplane Fault (0x51)	State Deasserted	No service action is required.
	State Asserted	Replace the system backplane. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
System Event (0x52)	Undetermined system hardware failure	Go to "Collecting diagnostic data" on page 69. Then, go to "Contacting IBM service and support" on page 69.
	<ul style="list-style-type: none"> • System Reconfigured • OEM System boot event • Entry added to auxiliary log • PEF Action • Timestamp Clock Sync • Transition State Active • Transition State Idle • Transition State Busy 	No service action is required.
Activate Pwr Lt (0x53)	None	No service action is required.
<ul style="list-style-type: none"> • Ref Clock Fault (0x54) • PCI Clock Fault (0x55) 	<ul style="list-style-type: none"> • State Deasserted • State Asserted 	No service action is required.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • DIMM Temp 0 (0x69) • DIMM Temp 1 (0x6A) • DIMM Temp 2 (0x6B) • DIMM Temp 3 (0x6C) • DIMM Temp 4 (0x6D) • DIMM Temp 5 (0x6E) • DIMM Temp 6 (0x6F) • DIMM Temp 7 (0x70) • DIMM Temp 8 (0x71) • DIMM Temp 9 (0x72) • DIMM Temp 10 (0x73) • DIMM Temp 11 (0x74) • DIMM Temp 12 (0x75) • DIMM Temp 13 (0x76) • DIMM Temp 14 (0x77) • DIMM Temp 15 (0x78) • DIMM Temp 16 (0x79) • DIMM Temp 17 (0x7A) • DIMM Temp 18 (0x7B) • DIMM Temp 19 (0x7C) • DIMM Temp 20 (0x7D) • DIMM Temp 21 (0x7E) • DIMM Temp 22 (0x7F) • DIMM Temp 23 (0x80) • DIMM Temp 24 (0x81) • DIMM Temp 25 (0x82) • DIMM Temp 26 (0x83) • DIMM Temp 27 (0x84) • DIMM Temp 28 (0x85) • DIMM Temp 29 (0x86) • DIMM Temp 30 (0x87) • DIMM Temp 31 (0x88) 	<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 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • CPU Core Temp 1 (0x89) • CPU Core Temp 2 (0x8A) • CPU Core Temp 3 (0x8B) • CPU Core Temp 4 (0x8C) • CPU Core Temp 5 (0x8D) • CPU Core Temp 6 (0x8E) • CPU Core Temp 7 (0x8F) • CPU Core Temp 8 (0x90) • CPU Core Temp 9 (0x91) • CPU Core Temp 10 (0x92) • CPU Core Temp 11 (0x93) • CPU Core Temp 12 (0x94) 	<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.
<ul style="list-style-type: none"> • Mem Proc0 Pwr (0xA1) • Mem Proc1 Pwr (0xA2) • Mem Proc2 Pwr (0xA3) • Mem Proc3 Pwr (0xA4) • Proc0 Power (0xA5) • PCIE Proc0 Pwr (0xA6) • Fan Power A (0xA9) • Mem Cache Power (0xAC) • GPU Power (0xAD) 	<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"> • TOD Clock Fault (0x56) • APSS Fault (0x57) 	<ul style="list-style-type: none"> • State Deasserted • State Asserted 	No service action is required.
PS Derating Fac (0x58)	None	No service action is required.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
OS Boot (0x5A)	<ul style="list-style-type: none"> • Installation aborted • Installation failed 	Ensure that the operating system boot image is loaded. Ensure that the disk drive or solid-state drive is ready. Reload the operating system boot image.
	<ul style="list-style-type: none"> • A: boot completed • C: boot completed • PXE boot completed • Diagnostic boot completed • CD-ROM boot completed • ROM boot completed • Boot completed - device not specified • Installation started • Installation completed 	No service action is required.
PCI (0x5B)	<ul style="list-style-type: none"> • State Deasserted • State Asserted 	No service action is required.
<ul style="list-style-type: none"> • Mem Buf Temp 0 (0x65) • Mem Buf Temp 1 (0x66) • Mem Buf Temp 2 (0x67) • Mem Buf Temp 3 (0x68) 	<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 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
CPU Diode Sensor (0x0B)	<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 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
Checkstop (0x0C)	IERR	<p>If this event immediately precedes a system power off, no service action is required. Otherwise, search for SEL events that meet the following criteria:</p> <ul style="list-style-type: none"> • The event has a time stamp in close proximity to the time stamp of this event. • A service action keyword is present. For a list of service action keywords, see “Identifying service action keywords in system event logs” on page 17. • Asserted is in the description. <p>If you found a SEL event that matches the criteria, perform the service action that is indicated in this table for the SEL event. Otherwise, go to “Collecting diagnostic data” on page 69. Then, go to “Contacting IBM service and support” on page 69.</p>
	<ul style="list-style-type: none"> • Thermal Trip • Configuration Error • Processor Automatically Throttled • Correctable Machine Check Error • Processor Presence Detected 	No service action is required.
	<ul style="list-style-type: none"> • FRB1 BIST Failure • FRB2 Hang In POST Failure • FRB3 Processor Startup Initialization Failure • SMBIOS Uncorrectable CPU Complex Error • Processor Disabled • Terminator Presence Detected • Machine Check Exception 	Go to “Collecting diagnostic data” on page 69. Then, go to “Contacting IBM service and support” on page 69.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> PSU Fault 1 (0x5D) PSU Fault 2 (0x5E) 	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 PSU Fault 1, replace PSU 1. If the sensor name is PSU Fault 2, replace PSU 2. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> Predictive Failure Power Supply Input Out of Range But Present 	If the sensor name is PSU Fault 1, replace PSU 1. If the sensor name is PSU Fault 2, replace PSU 2. Go to 8348-21C locations 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 	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 PDU unit for both system power supplies. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
	Configuration Error	Ensure that both power supplies are securely seated in the system. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
	<ul style="list-style-type: none"> Presence Detected Power Supply Inactive 	No service action is required.
BIOS Golden Side (0x5C)	None	Go to “Resolving a boot failure” on page 1 and follow the service action for a system event log (SEL) with the value OEM record c0 and OEM c0 specific log information 3a1504xxxxx.
BMC Golden Side (0x60)	None	Go to “Resolving a boot failure” on page 1 and follow the service action for a system event log (SEL) with the value OEM record c0 and OEM c0 specific log information 3a1504xxxxx.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
<ul style="list-style-type: none"> • Fan 1 (0xB3) • Fan 2 (0xB4) • Fan 3 (0xB5) • Fan 4 (0xB6) • Fan 5 (0xB7) 	<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.
Quick power drop (0x0D)	<ul style="list-style-type: none"> • IERR • Thermal Trip • FRB1 BIST Failure • FRB2 Hang In POST Failure • FRB3 Processor Startup Initialization Failure • Configuration Error • SMBIOS Uncorrectable CPU Complex Error • Processor Presence Detected • Processor Disabled • Terminator Presence Detected • Processor Automatically Throttled • Machine Check Exception • Correctable Machine Check Error 	No service action is required.
<ul style="list-style-type: none"> • IO A Power (0xA7) • IO B Power (0xA8) • Storage Power A (0xAA) • Storage Power B (0xAB) 		No service action is required.

Table 13. Sensor information, event description, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Event description	Service action
CPU VDD Volt (0x0E)	<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.

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. Perform the service action indicated for system event logs that occurred prior to the problem that you are working on. Go to “Identifying a service action by using system event logs” on page 13. Then, continue with the next step.
2. Does the problem persist?

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

3. Use the `ipmitool` command to examine sensor information.
 - To list sensor information by using an in-band network, use the following command:
`ipmitool sdr elist`
 - To list sensor information remotely over the LAN, use the following command:
`ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sdr elist`
4. Scan the sensor information for sensors with a status of **Processor Disabled** or **Memory Device Disabled**. Did you find any sensors with a status of **Processor Disabled** or **Memory Device Disabled**?

If	Then
Yes:	Continue with the next step.
No:	Go to “Contacting IBM service and support” on page 69. This ends the procedure.

5. If your system is an 8335-GCA or 8335-GTA, use Table 14 to determine the service action to perform. If your system is an 8348-21C, use Table 15 on page 57 to determine the service action to perform.

Table 14. Sensor information, sensor status, and service action for the 8335-GCA and 8335-GTA

Sensor name (Sensor ID)	Sensor status	Service action
<ul style="list-style-type: none"> • CPU Func 1 (0x0C) • CPU Core Func 1 (0x3E) • CPU Core Func 2 (0x3F) • CPU Core Func 3 (0x40) • CPU Core Func 4 (0x41) • CPU Core Func 5 (0x42) • CPU Core Func 6 (0x43) • CPU Core Func 7 (0x44) • CPU Core Func 8 (0x45) • CPU Core Func 9 (0x46) • CPU Core Func 10 (0x47) • CPU Core Func 11 (0x48) • CPU Core Func 12 (0x49) 	Processor Disabled	Replace system processor CPU 1. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
<ul style="list-style-type: none"> • CPU Func 2 (0x0E) • CPU Core Func 13 (0x4A) • CPU Core Func 14 (0x4B) • CPU Core Func 15 (0x4C) • CPU Core Func 16 (0x4D) • CPU Core Func 17 (0x4E) • CPU Core Func 18 (0x4F) • CPU Core Func 19 (0x50) • CPU Core Func 20 (0x51) • CPU Core Func 21 (0x52) • CPU Core Func 22 (0x53) • CPU Core Func 23 (0x54) • CPU Core Func 24 (0x55) 	Processor Disabled	Replace system processor CPU 2. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.

Table 14. Sensor information, sensor status, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Sensor status	Service action
<ul style="list-style-type: none"> • DIMM Func 1 (0x1E) • DIMM Func 2 (0x1F) • DIMM Func 3 (0x20) • DIMM Func 4 (0x21) • DIMM Func 5 (0x22) • DIMM Func 6 (0x23) • DIMM Func 7 (0x24) • DIMM Func 8 (0x25) • DIMM Func 9 (0x26) • DIMM Func 10 (0x27) • DIMM Func 11 (0x28) • DIMM Func 12 (0x29) • DIMM Func 13 (0x2A) • DIMM Func 14 (0x2B) • DIMM Func 15 (0x2C) • DIMM Func 16 (0x2D) • DIMM Func 17 (0x2E) • DIMM Func 18 (0x2F) • DIMM Func 19 (0x30) • DIMM Func 20 (0x31) • DIMM Func 21 (0x32) • DIMM Func 22 (0x33) • DIMM Func 23 (0x34) • DIMM Func 24 (0x35) • DIMM Func 25 (0x36) • DIMM Func 26 (0x37) • DIMM Func 27 (0x38) • DIMM Func 28 (0x39) • DIMM Func 29 (0x3A) • DIMM Func 30 (0x3B) • DIMM Func 31 (0x3C) • DIMM Func 32 (0x3D) 	Memory Device Disabled	If the sensor name is DIMM Func 1, replace DIMM 1. If the sensor name is DIMM Func 2, replace DIMM 2. And so on. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.

Table 15. Sensor information, sensor status, and service action for the 8348-21C

Sensor name (Sensor ID)	Sensor status	Service action
<ul style="list-style-type: none"> • CPU Func (0x4E) • CPU Core Func 1 (0x3E) • CPU Core Func 2 (0x3F) • CPU Core Func 3 (0x40) • CPU Core Func 4 (0x41) • CPU Core Func 5 (0x42) • CPU Core Func 6 (0x43) • CPU Core Func 7 (0x44) • CPU Core Func 8 (0x45) • CPU Core Func 9 (0x46) • CPU Core Func 10 (0x47) • CPU Core Func 11 (0x48) • CPU Core Func 12 (0x49) 	Processor Disabled	Replace the system processor. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.
<ul style="list-style-type: none"> • DIMM Func 0 (0x1E) • DIMM Func 1 (0x1F) • DIMM Func 2 (0x20) • DIMM Func 3 (0x21) • DIMM Func 4 (0x22) • DIMM Func 5 (0x23) • DIMM Func 6 (0x24) • DIMM Func 7 (0x25) • DIMM Func 8 (0x26) • DIMM Func 9 (0x27) • DIMM Func 10 (0x28) • DIMM Func 11 (0x29) • DIMM Func 12 (0x2A) • DIMM Func 13 (0x2B) • DIMM Func 14 (0x2C) • DIMM Func 15 (0x2D) • DIMM Func 16 (0x2E) • DIMM Func 17 (0x2F) • DIMM Func 18 (0x30) • DIMM Func 19 (0x31) • DIMM Func 20 (0x32) • DIMM Func 21 (0x33) • DIMM Func 22 (0x34) • DIMM Func 23 (0x35) • DIMM Func 24 (0x36) • DIMM Func 25 (0x37) • DIMM Func 26 (0x38) • DIMM Func 27 (0x39) • DIMM Func 28 (0x3A) • DIMM Func 29 (0x3B) • DIMM Func 30 (0x3C) • DIMM Func 31 (0x3D) 	Memory Device Disabled	If the sensor name is DIMM Func 0, replace DIMM 0. If the sensor name is DIMM Func 1, replace DIMM 1. And so on. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.

6. Does the problem persist?

If	Then
No:	This ends the procedure.
Yes:	Go to “Contacting IBM service and support” on page 69. This ends the procedure.

EPUB_PRC_SP_CODE isolation procedure

A problem has been 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. **This ends the procedure.**

EPUB_PRC_PHYP_CODE isolation procedure

A problem has been 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. **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 16. EPUB_PRC_ALL_PROCS service actions

System	Service action
8335-GCA or 8335-GTA	Replace system processor CPU 1. If replacing system processor CPU 1 does not resolve the problem, replace system processor CPU 2. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure. This ends the procedure.
8348-21C	Replace the system processor. Go to 8348-21C locations to identify the physical location and removal and replacement procedure. 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.

- Use the `ipmitool` command to examine sensor information.
 - To list sensor information by using an in-band network, use the following command:
`ipmitool sdr elist`
 - To list sensor information remotely over the LAN, use the following command:
`ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sdr elist`
- Scan the sensor information for sensors with a status of **Memory Device Disabled**. Did you find any sensors with a status of **Memory Device Disabled**?

If	Then
Yes:	Continue with the next step.
No:	Go to “Contacting IBM service and support” on page 69. This ends the procedure.

3. If your system is an 8335-GCA or 8335-GTA, use Table 17 to determine the service action to perform. If your system is an 8348-21C, use Table 18 on page 60 to determine the service action to perform.

Table 17. Sensor information, sensor status, and service action for the 8335-GCA and 8335-GTA

Sensor name (Sensor ID)	Sensor status	Service action
<ul style="list-style-type: none"> • DIMM Func 1 (0x1E) • DIMM Func 2 (0x1F) • DIMM Func 3 (0x20) • DIMM Func 4 (0x21) • DIMM Func 5 (0x22) • DIMM Func 6 (0x23) • DIMM Func 7 (0x24) • DIMM Func 8 (0x25) • DIMM Func 9 (0x26) • DIMM Func 10 (0x27) • DIMM Func 11 (0x28) • DIMM Func 12 (0x29) • DIMM Func 13 (0x2A) • DIMM Func 14 (0x2B) • DIMM Func 15 (0x2C) • DIMM Func 16 (0x2D) • DIMM Func 17 (0x2E) • DIMM Func 18 (0x2F) • DIMM Func 19 (0x30) • DIMM Func 20 (0x31) • DIMM Func 21 (0x32) • DIMM Func 22 (0x33) • DIMM Func 23 (0x34) • DIMM Func 24 (0x35) • DIMM Func 25 (0x36) • DIMM Func 26 (0x37) • DIMM Func 27 (0x38) • DIMM Func 28 (0x39) • DIMM Func 29 (0x3A) • DIMM Func 30 (0x3B) • DIMM Func 31 (0x3C) • DIMM Func 32 (0x3D) 	Memory Device Disabled	If the sensor name is DIMM Func 1, replace DIMM 1. If the sensor name is DIMM Func 2, replace DIMM 2. And so on. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.

Table 18. Sensor information, sensor status, and service action for the 8348-21C

Sensor name (Sensor ID)	Sensor status	Service action
<ul style="list-style-type: none"> • DIMM Func 0 (0x1E) • DIMM Func 1 (0x1F) • DIMM Func 2 (0x20) • DIMM Func 3 (0x21) • DIMM Func 4 (0x22) • DIMM Func 5 (0x23) • DIMM Func 6 (0x24) • DIMM Func 7 (0x25) • DIMM Func 8 (0x26) • DIMM Func 9 (0x27) • DIMM Func 10 (0x28) • DIMM Func 11 (0x29) • DIMM Func 12 (0x2A) • DIMM Func 13 (0x2B) • DIMM Func 14 (0x2C) • DIMM Func 15 (0x2D) • DIMM Func 16 (0x2E) • DIMM Func 17 (0x2F) • DIMM Func 18 (0x30) • DIMM Func 19 (0x31) • DIMM Func 20 (0x32) • DIMM Func 21 (0x33) • DIMM Func 22 (0x34) • DIMM Func 23 (0x35) • DIMM Func 24 (0x36) • DIMM Func 25 (0x37) • DIMM Func 26 (0x38) • DIMM Func 27 (0x39) • DIMM Func 28 (0x3A) • DIMM Func 29 (0x3B) • DIMM Func 30 (0x3C) • DIMM Func 31 (0x3D) 	Memory Device Disabled	If the sensor name is DIMM Func 0, replace DIMM 0. If the sensor name is DIMM Func 1, replace DIMM 1. And so on. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.

4. Does the problem persist?

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

5. Replace all of the memory DIMMs.

- If your system is an 8335-GCA or 8335-GTA, go to 8335-GCA and 8335-GTA locations to identify the physical location and the removal and replacement procedure. **This ends the procedure.**
- If your system is an 8348-21C, go to 8348-21C locations to identify the physical location and the removal and replacement procedure. **This ends the procedure.**

6. Does the problem persist?

If	Then
No:	This ends the procedure.
Yes:	Go to “Contacting IBM service and support” on page 69. 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 69.

EPUB_PRC_MEMORY_PLUGGING_ERROR isolation procedure

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

- If your system is an 8335-GCA or 8335-GTA, go to Plugging rules for memory in the 8335-GCA system.
- If your system is an 8348-21C, go to Placement rules for memory in the 8348-21C system.

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 19. EPUB_PRC_FSI_PATH service actions

System	Service action
8335-GCA or 8335-GTA	<p>Replace system processor CPU 1. If replacing system processor CPU 1 does not resolve the problem, replace system processor CPU 2. If replacing both system processors does not resolve the problem, replace the system backplane.</p> <p>Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure. This ends the procedure.</p>
8348-21C	<p>Replace the system processor. If replacing the system processor does not resolve the problem, replace the system backplane.</p> <p>Go to 8348-21C locations to identify the physical location and removal and replacement procedure. 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 20. EPUB_PRC_PROC_AB_BUS service actions

System	Service action
8335-GCA or 8335-GTA	<p>Replace the system backplane. If replacing the system backplane does not resolve the problem, replace system processor CPU 1. If replacing system processor CPU 1 does not resolve the problem, replace system processor CPU 2. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.</p> <p>If replacing the system backplane and both system processors does not resolve the problem, go to "Contacting IBM service and support" on page 69. This ends the procedure.</p>
8348-21C	<p>Replace the system backplane. If replacing the system backplane does not resolve the problem, replace the system processor. Go to 8348-21C locations 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 69. 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 21. EPUB_PRC_PROC_XYZ_BUS service actions

System	Service action
8335-GCA or 8335-GTA	<p>Replace system processor CPU 1. If replacing system processor CPU 1 does not resolve the problem, replace system processor CPU 2. If replacing both system processors does not resolve the problem, replace the system backplane. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.</p> <p>If replacing the system backplane and both system processors does not resolve the problem, go to "Contacting IBM service and support" on page 69. This ends the procedure.</p>
8348-21C	<p>Replace the system processor. If replacing the system processor does not resolve the problem, replace the system backplane. Go to 8348-21C locations 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 69. This ends the procedure.</p>

EPUB_PRC_EIBUS_ERROR isolation procedure

A bus error occurred.

1. Perform the service action indicated for system event logs that occurred prior to the problem that you are working on. Go to “Identifying a service action by using system event logs” on page 13. Then, continue with the next step.
2. Does the problem persist?

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

3. Use the `ipmitool` command to examine sensor information.
 - To list sensor information by using an in-band network, use the following command:
`ipmitool sdr elist`
 - To list sensor information remotely over the LAN, use the following command:
`ipmitool -I lanplus -U <username> -P <password> -H <BMC IP address or BMC hostname> sdr elist`
4. Scan the sensor information for sensors with a status of **Processor Disabled** or **Memory Device Disabled**. Did you find any sensors with a status of **Processor Disabled** or **Memory Device Disabled**?

If	Then
Yes:	Continue with the next step.
No:	Go to “Contacting IBM service and support” on page 69. This ends the procedure.

5. If your system is an 8335-GCA or 8335-GTA, use Table 22 to determine the service action to perform. If your system is an 8348-21C, use Table 23 on page 65 to determine the service action to perform.

Table 22. Sensor information, sensor status, and service action for the 8335-GCA and 8335-GTA

Sensor name (Sensor ID)	Sensor status	Service action
<ul style="list-style-type: none"> • CPU Func 1 (0x0C) • CPU Core Func 1 (0x3E) • CPU Core Func 2 (0x3F) • CPU Core Func 3 (0x40) • CPU Core Func 4 (0x41) • CPU Core Func 5 (0x42) • CPU Core Func 6 (0x43) • CPU Core Func 7 (0x44) • CPU Core Func 8 (0x45) • CPU Core Func 9 (0x46) • CPU Core Func 10 (0x47) • CPU Core Func 11 (0x48) • CPU Core Func 12 (0x49) 	Processor Disabled	Replace system processor CPU 1. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.

Table 22. Sensor information, sensor status, and service action for the 8335-GCA and 8335-GTA (continued)

Sensor name (Sensor ID)	Sensor status	Service action
<ul style="list-style-type: none"> • CPU Func 2 (0x0E) • CPU Core Func 13 (0x4A) • CPU Core Func 14 (0x4B) • CPU Core Func 15 (0x4C) • CPU Core Func 16 (0x4D) • CPU Core Func 17 (0x4E) • CPU Core Func 18 (0x4F) • CPU Core Func 19 (0x50) • CPU Core Func 20 (0x51) • CPU Core Func 21 (0x52) • CPU Core Func 22 (0x53) • CPU Core Func 23 (0x54) • CPU Core Func 24 (0x55) 	Processor Disabled	Replace system processor CPU 2. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.
<ul style="list-style-type: none"> • DIMM Func 1 (0x1E) • DIMM Func 2 (0x1F) • DIMM Func 3 (0x20) • DIMM Func 4 (0x21) • DIMM Func 5 (0x22) • DIMM Func 6 (0x23) • DIMM Func 7 (0x24) • DIMM Func 8 (0x25) • DIMM Func 9 (0x26) • DIMM Func 10 (0x27) • DIMM Func 11 (0x28) • DIMM Func 12 (0x29) • DIMM Func 13 (0x2A) • DIMM Func 14 (0x2B) • DIMM Func 15 (0x2C) • DIMM Func 16 (0x2D) • DIMM Func 17 (0x2E) • DIMM Func 18 (0x2F) • DIMM Func 19 (0x30) • DIMM Func 20 (0x31) • DIMM Func 21 (0x32) • DIMM Func 22 (0x33) • DIMM Func 23 (0x34) • DIMM Func 24 (0x35) • DIMM Func 25 (0x36) • DIMM Func 26 (0x37) • DIMM Func 27 (0x38) • DIMM Func 28 (0x39) • DIMM Func 29 (0x3A) • DIMM Func 30 (0x3B) • DIMM Func 31 (0x3C) • DIMM Func 32 (0x3D) 	Memory Device Disabled	If the sensor name is DIMM Func 1, replace DIMM 1. If the sensor name is DIMM Func 2, replace DIMM 2. And so on. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure.

Table 23. Sensor information, sensor status, and service action for the 8348-21C

Sensor name (Sensor ID)	Sensor status	Service action
<ul style="list-style-type: none"> • CPU Func (0x4E) • CPU Core Func 1 (0x3E) • CPU Core Func 2 (0x3F) • CPU Core Func 3 (0x40) • CPU Core Func 4 (0x41) • CPU Core Func 5 (0x42) • CPU Core Func 6 (0x43) • CPU Core Func 7 (0x44) • CPU Core Func 8 (0x45) • CPU Core Func 9 (0x46) • CPU Core Func 10 (0x47) • CPU Core Func 11 (0x48) • CPU Core Func 12 (0x49) 	Processor Disabled	Replace the system processor. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.

Table 23. Sensor information, sensor status, and service action for the 8348-21C (continued)

Sensor name (Sensor ID)	Sensor status	Service action
<ul style="list-style-type: none"> • DIMM Func 0 (0x1E) • DIMM Func 1 (0x1F) • DIMM Func 2 (0x20) • DIMM Func 3 (0x21) • DIMM Func 4 (0x22) • DIMM Func 5 (0x23) • DIMM Func 6 (0x24) • DIMM Func 7 (0x25) • DIMM Func 8 (0x26) • DIMM Func 9 (0x27) • DIMM Func 10 (0x28) • DIMM Func 11 (0x29) • DIMM Func 12 (0x2A) • DIMM Func 13 (0x2B) • DIMM Func 14 (0x2C) • DIMM Func 15 (0x2D) • DIMM Func 16 (0x2E) • DIMM Func 17 (0x2F) • DIMM Func 18 (0x30) • DIMM Func 19 (0x31) • DIMM Func 20 (0x32) • DIMM Func 21 (0x33) • DIMM Func 22 (0x34) • DIMM Func 23 (0x35) • DIMM Func 24 (0x36) • DIMM Func 25 (0x37) • DIMM Func 26 (0x38) • DIMM Func 27 (0x39) • DIMM Func 28 (0x3A) • DIMM Func 29 (0x3B) • DIMM Func 30 (0x3C) • DIMM Func 31 (0x3D) 	Memory Device Disabled	If the sensor name is DIMM Func 0, replace DIMM 0. If the sensor name is DIMM Func 1, replace DIMM 1. And so on. Go to 8348-21C locations to identify the physical location and removal and replacement procedure.

6. Does the problem persist?

If	Then
No:	This ends the procedure.
Yes:	Go to “Contacting IBM service and support” on page 69. 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 system event logs” on page 13. **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 system event logs” on page 13. 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 24. EPUB_PRC_MEMORY_UE service actions

System	Service action
8335-GCA or 8335-GTA	Replace system processor CPU 1. If replacing system processor CPU 1 does not resolve the problem, replace system processor CPU 2. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure. This ends the procedure.
8348-21C	Replace the system processor. Go to 8348-21C locations to identify the physical location and removal and replacement procedure. This ends the procedure.

EPUB_PRC_HB_CODE isolation procedure

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

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. **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 25. EPUB_PRC_TOD_CLOCK_ERR service actions

System	Service action
8335-GCA or 8335-GTA	Replace the system backplane. If replacing the system backplane does not resolve the problem, replace system processor CPU 1. If replacing system processor CPU 1 does not resolve the problem, replace system processor CPU 2. Go to 8335-GCA and 8335-GTA locations to identify the physical location and removal and replacement procedure. If replacing the system backplane and both system processors does not resolve the problem, go to “Contacting IBM service and support” on page 69. This ends the procedure.

Table 25. EPUB_PRC_TOD_CLOCK_ERR service actions (continued)

System	Service action
8348-21C	<p>Replace the system backplane. If replacing the system backplane does not resolve the problem, replace the system processor. Go to 8348-21C locations 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 69. This ends the procedure.</p>

Verifying a repair

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

1. Power on the system.
2. Did you replace a graphics processing unit (GPU), PCIe adapter, disk drive, or solid-state drive?

If	Then
Yes:	Go to step 5.
No:	Continue with the next step.

3. Scan the system event logs (SELs) for serviceable events that occurred after system hardware was replaced. For information about SELs that require a service action, see "Identifying a service action by using system event logs" on page 13.
4. Did any serviceable SEL events occur after hardware was replaced?

If	Then
Yes:	The problem is not resolved. Go to "Identifying a service action by using system event logs" on page 13 and complete the service actions indicated. This ends the procedure.
No:	The problem is resolved. This ends the procedure.

5. Use the following table to determine the verification action to complete:

Table 26. Determining a verification action for GPUs, PCIe adapters, and devices

Adapter type	Verification action
Devices that are controlled by a RAID adapter	<p>Complete the following steps:</p> <ol style="list-style-type: none"> 1. Install the arconf utility for the RAID adapter. 2. Type ARCCONF GETSMARTSTATS 1 at the command prompt and press Enter. 3. Verify that the self-monitoring, analysis and reporting technology system (SMART) health assessment for the device passed.
Devices that are not controlled by a RAID adapter	<p>Complete the following steps:</p> <ol style="list-style-type: none"> 1. Install the smartmontools utility. 2. Type apt-get install smartmontools at the command prompt and press Enter. 3. At the command prompt, type smartctl --all /dev/sdx, where x is the letter that is associated with the drive. 4. Verify that the SMART health assessment passed.

Table 26. Determining a verification action for GPUs, PCIe adapters, and devices (continued)

Adapter type	Verification action
GPU	Complete the following steps: 1. Type <code>nvidia-smi -L</code> at the command prompt and press Enter. Verify that the GPU is listed. 2. Type <code>nvidia-smi -q</code> at the command prompt and press Enter. Verify that no errors are listed.
Network adapter	Complete the following steps: 1. At the command prompt, type <code>ethtool ethx</code> , where <i>x</i> is the number of the physical port that you are testing. Verify that the connection speed that is indicated in the output is correct. 2. Perform a ping test to verify the network connectivity.
RAID adapter	Complete the following steps: 1. Install the <code>arconf</code> utility for the RAID adapter. 2. Type <code>ARCCONF GETLOGS 1 STATS</code> at the command prompt and press Enter. 3. Verify that usage statistics are returned. The presence of usage statistics indicates that the adapter is functioning properly.

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. Is the operating system available?

If	Then
Yes:	Continue with step 2.
No:	Continue with step 3.

2. To collect diagnostic data from the operating system, complete the following steps:
 - a. Log in as root user.
 - b. At the command prompt, type `sosreport` and press Enter.
 - c. You are prompted for additional information. When the command is complete, the location of the output file is displayed. Note the location of the output file. Then, continue with the next step.
3. To collect system event logs, complete the following steps:
 - a. Go to the IBM Support Portal(http://www.ibm.com/support/entry/portal/product/power/scale-out_lc).
 - b. From the **Downloads** list, click **Scale-out LC system event log collection tool**.
 - c. Follow the instructions to install and run the system event log collection tool. Then, continue with the next step.
4. 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 collect logs and contact support, 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/entry/portal/product/power/scale-out_lc).

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

Table 27. 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.

8335-GCA and 8335-GTA locations

Use this information to find the location of a FRU in the system unit.

Rack views

The following diagrams show field-replaceable unit (FRU) layouts in the system. Use these diagrams with the following tables.

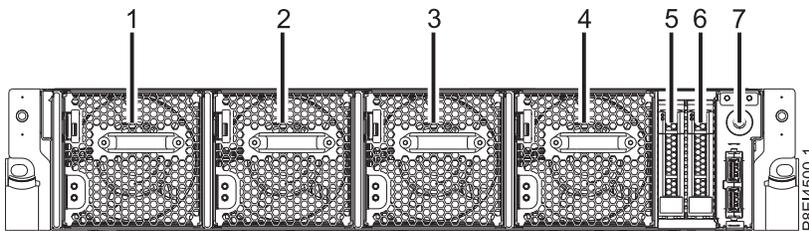


Figure 1. Front view

Table 28. Front view locations

Index number	FRU description	FRU removal and replacement procedures
1	Fan 1	See Removing and replacing a fan in the 8335-GCA or 8335-GTA.
2	Fan 2	
3	Fan 3	
4	Fan 4	
5	HDD 0	See Removing and replacing a disk drive in the 8335-GCA or 8335-GTA.
6	HDD 1	
7	Power switch and power switch cable	See Removing and replacing the power switch and cable for 8335-GCA or 8335-GTA.

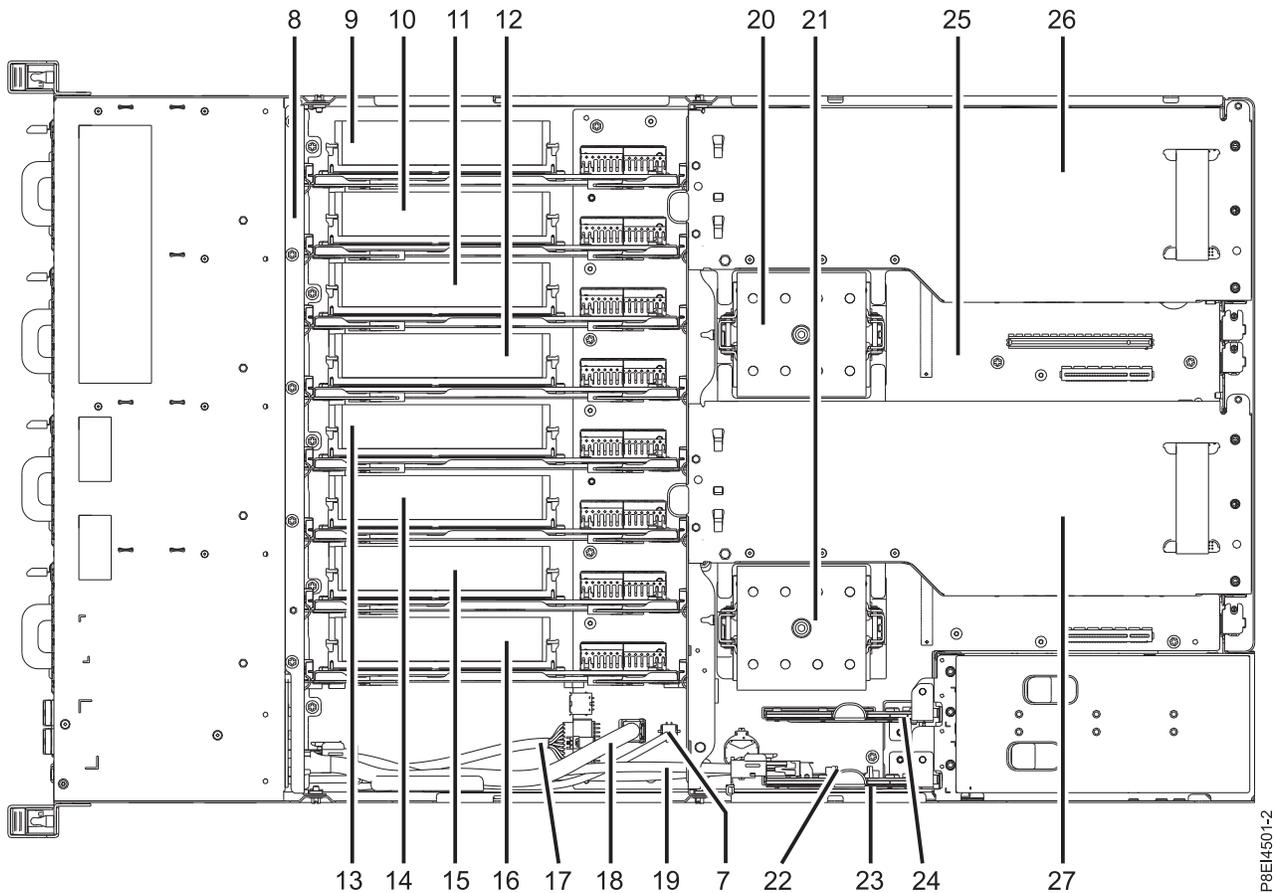


Figure 2. Top view

Table 29. Top view locations

Index number	FRU description	FRU removal and replacement procedures
7	Power switch and power switch cable	See Removing and replacing the power switch and cable for 8335-GCA or 8335-GTA.
8	Disk drive and fan card	See Removing and replacing the disk drive and fan card in the 8335-GCA or 8335-GTA.
9	Memory riser 1	See Removing and replacing memory risers in the 8335-GCA or 8335-GTA.
10	Memory riser 2	
11	Memory riser 3	
12	Memory riser 4	
13	Memory riser 5	
14	Memory riser 6	
15	Memory riser 7	
16	Memory riser 8	
17	Front USB cable with connector	See Removing and replacing the front USB cable for 8335-GCA or 8335-GTA.

Table 29. Top view locations (continued)

Index number	FRU description	FRU removal and replacement procedures
18	Disk and fan signal cable	See Removing and replacing the disk and fan signal cable in the 8335-GCA or 8335-GTA.
19	Fan power cable	See Removing and replacing the fan power cable in the 8335-GCA or 8335-GTA.
20	CPU 1	See Removing and replacing a system processor module for the 8335-GCA or 8335-GTA.
21	CPU 2	
22	Time-of-day battery	See Removing and replacing the time-of-day battery in the 8335-GCA or 8335-GTA.
23	Power riser with time-of-day battery	See Removing and replacing power risers in the 8335-GCA or 8335-GTA.
24	Power riser without time-of-day battery	
25	System backplane	See Removing and replacing the system backplane in the 8335-GCA or 8335-GTA.
26	GPU 2 or PCIe adapter 5	If the FRU is a GPU, see Removing and replacing a graphics processing unit for the 8335-GCA or 8335-GTA. If the FRU is a PCIe adapter, see Removing and replacing a PCIe adapter in a PCIe riser of the 8335-GCA or 8335-GTA.
27	GPU 1 or PCIe adapter 2	

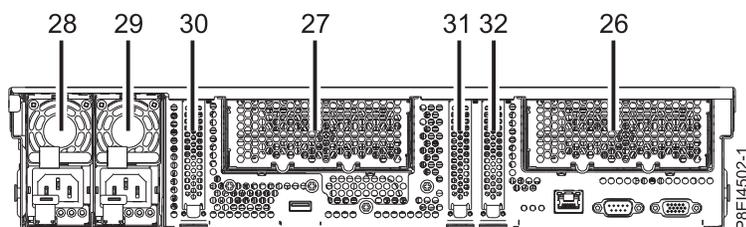


Figure 3. Rear view

Table 30. Rear view locations

Index number	FRU description	FRU removal and replacement procedures
26	GPU 2 or PCIe adapter 5	If the FRU is a GPU, see Removing and replacing a graphics processing unit for the 8335-GCA or 8335-GTA. If the FRU is a PCIe adapter, see Removing and replacing a PCIe adapter in a PCIe riser of the 8335-GCA or 8335-GTA.
27	GPU 1 or PCIe adapter 2	
28	PSU 2	See Removing and replacing a power supply in the 8335-GCA or 8335-GTA.
29	PSU 1	

Table 30. Rear view locations (continued)

Index number	FRU description	FRU removal and replacement procedures
30	PCIe adapter 1	See Removing and replacing a PCIe adapter on the system backplane of the 8335-GCA or 8335-GTA.
31	PCIe adapter 3	
32	PCIe adapter 4	

Memory locations

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

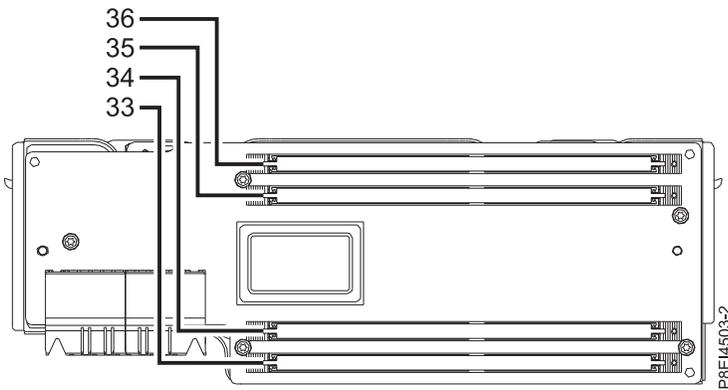


Figure 4. Memory locations on memory riser cards

The following table provides the memory locations on the memory riser cards.

Table 31. Memory locations on memory riser cards.

Index number	Memory riser card	FRU description	FRU removal and replacement procedures
33	Memory riser 1	DIMM 1	See Removing and replacing memory DIMMs in the 8335-GCA or 8335-GTA.
	Memory riser 2	DIMM 5	
	Memory riser 3	DIMM 9	
	Memory riser 4	DIMM 13	
	Memory riser 5	DIMM 17	
	Memory riser 6	DIMM 21	
	Memory riser 7	DIMM 25	
	Memory riser 8	DIMM 29	

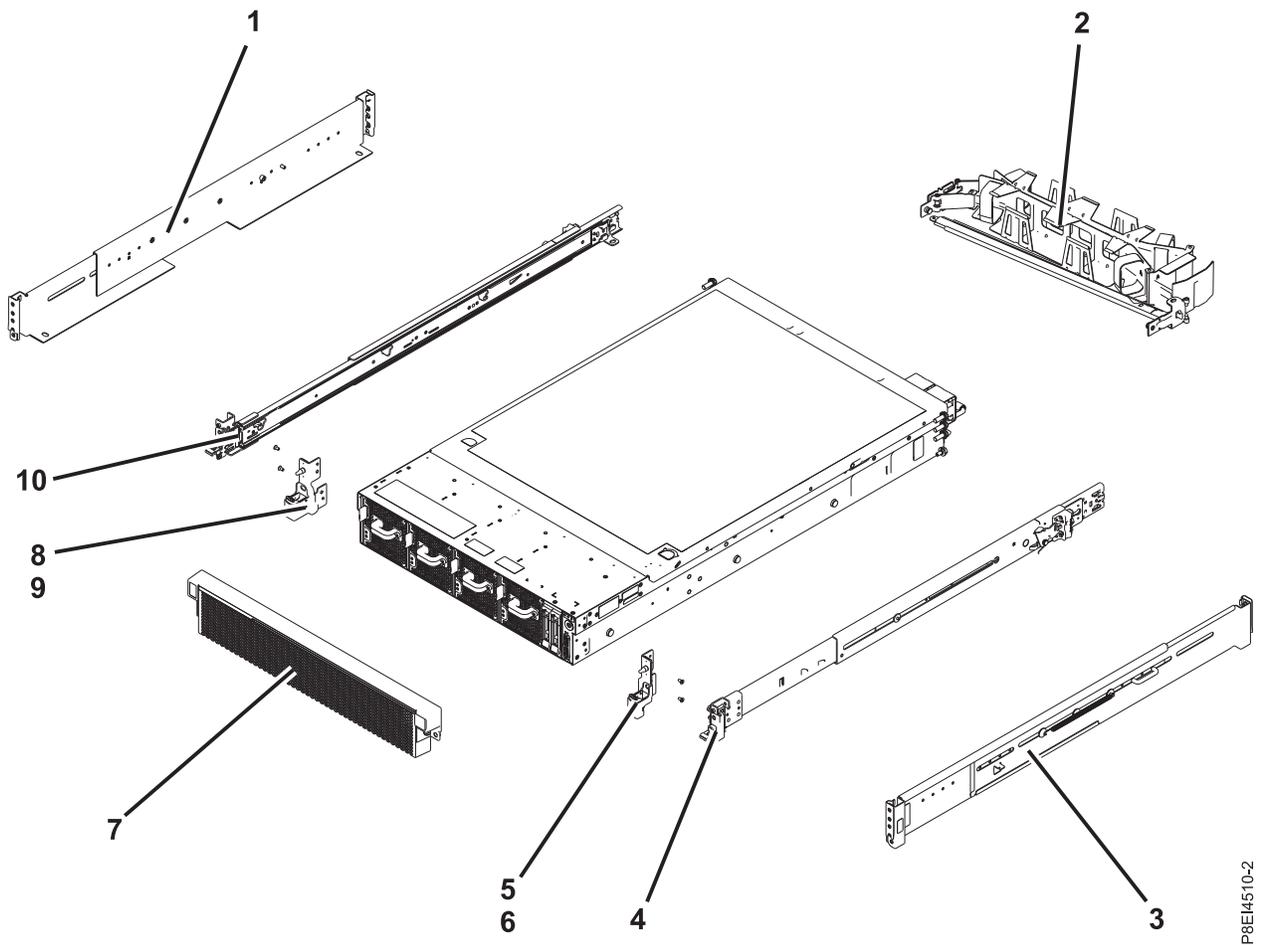
Table 31. Memory locations on memory riser cards (continued).

Index number	Memory riser card	FRU description	FRU removal and replacement procedures
34	Memory riser 1	DIMM 2	See Removing and replacing memory DIMMs in the 8335-GCA or 8335-GTA.
	Memory riser 2	DIMM 6	
	Memory riser 3	DIMM 10	
	Memory riser 4	DIMM 14	
	Memory riser 5	DIMM 18	
	Memory riser 6	DIMM 22	
	Memory riser 7	DIMM 26	
	Memory riser 8	DIMM 30	
35	Memory riser 1	DIMM 3	See Removing and replacing memory DIMMs in the 8335-GCA or 8335-GTA.
	Memory riser 2	DIMM 7	
	Memory riser 3	DIMM 11	
	Memory riser 4	DIMM 15	
	Memory riser 5	DIMM 19	
	Memory riser 6	DIMM 23	
	Memory riser 7	DIMM 27	
	Memory riser 8	DIMM 31	
36	Memory riser 1	DIMM 4	See Removing and replacing memory DIMMs in the 8335-GCA or 8335-GTA.
	Memory riser 2	DIMM 8	
	Memory riser 3	DIMM 12	
	Memory riser 4	DIMM 16	
	Memory riser 5	DIMM 20	
	Memory riser 6	DIMM 24	
	Memory riser 7	DIMM 28	
	Memory riser 8	DIMM 32	

8335-GCA and 8335-GTA parts

Use this information to find the FRU part number.

Rack final assembly



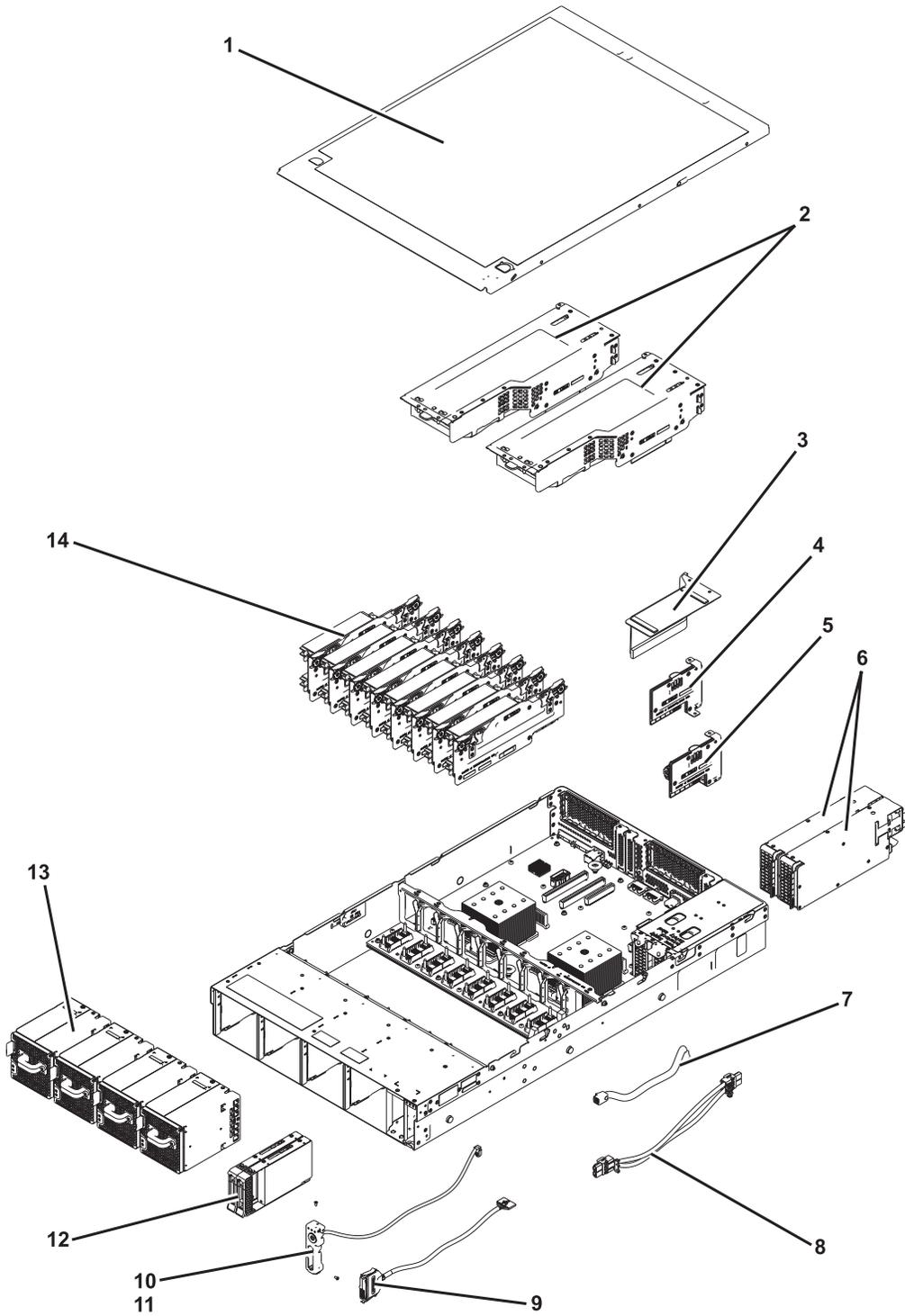
P8E14510-2

Figure 5. Rack final assembly

Table 32. Rack final assembly part numbers

Index number	Part number	Units per assembly	Description
1	45W8836	1	Fixed rail kit - contains left and right fixed rails and attaching screws
2	74Y9063	1	Cable management arm assembly
3	45W8836	1	Fixed rail kit - contains left and right fixed rails and attaching screws
4	00E4260	1	Slide rail kit - contains left and right slide rails and attaching screws
5		1	Electronic Industries Association (EIA) bracket (right side)
6		2	Attaching screw for EIA bracket (right side)
7	00E4501	1	Bezel
8		1	EIA bracket (left side)
9		2	Attaching screw for EIA bracket (left side)
10	00E4260	1	Slide rail kit - contains left and right slide rails and attaching screws

System parts



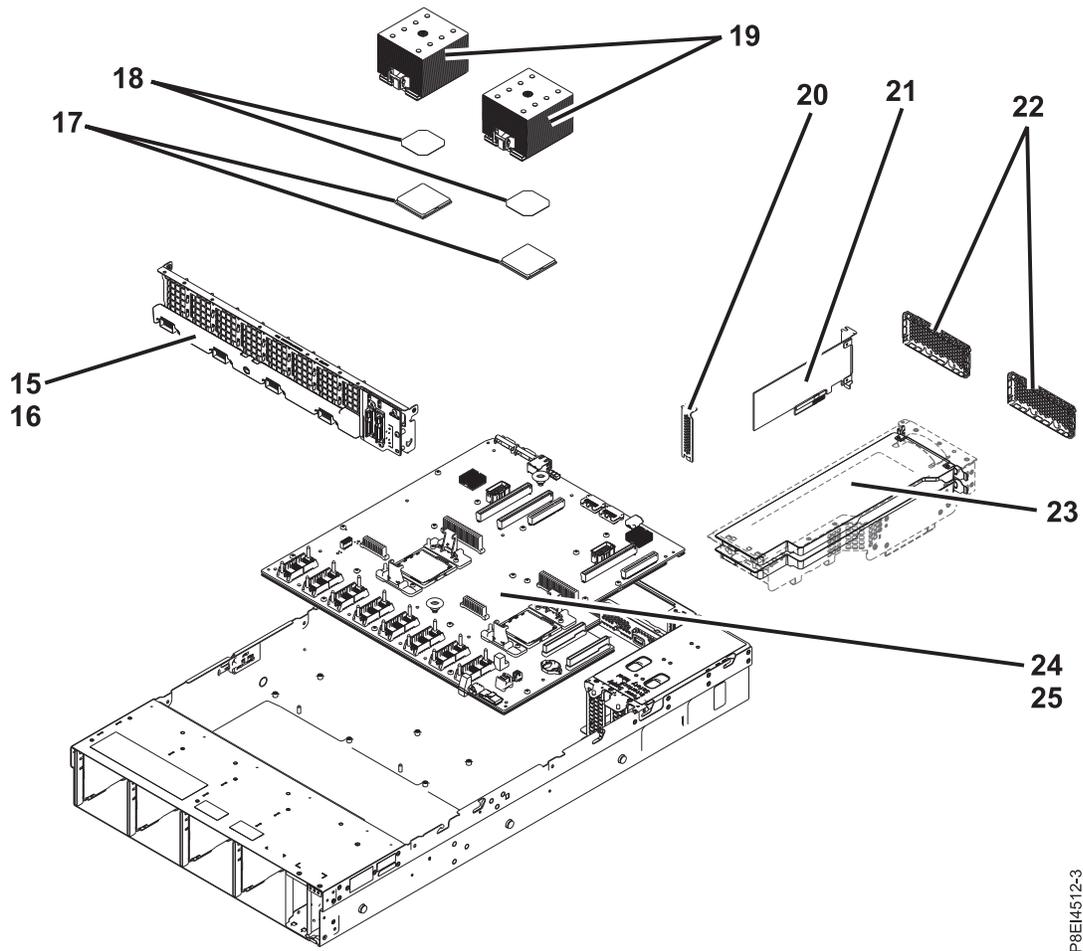
P8E4511-2

Figure 6. System parts

Table 33. System parts

Index number	Part number	Units per assembly	Description
1		1	Top access cover assembly
2	00E4485	1	Graphics processing unit (GPU) riser with GPU
	00E4484	2	GPU riser without GPU Note: Requires two riser fillers. See index 23 in Table 34 on page 79 for the riser filler part number.
	00E4475	2	PCIe riser Notes: <ul style="list-style-type: none"> • If a PCIe adapter is present, one riser filler is required. See index 21 in Table 34 on page 79 for PCIe adapter part numbers and index 23 in Table 34 on page 79 for the riser filler number. • If a PCIe adapter is not present, two riser fillers are required. See index 23 in Table 34 on page 79 for the riser filler number.
3		1	Power riser cover
4	00E4473	1	Power riser without time-of-day battery slot
5	00E4474	1	Power riser with time-of-day battery slot Note: The power riser part number does not include the time-of-day battery. The time-of-day battery is a CR2450N lithium battery.
6	00FX893	2	Power supply
7	00E4482	1	Disk and fan signal cable
8	00E4481	1	Fan power cable
9	00E4483	1	Front USB cable with connector
10	00E4525	1	Power switch and power switch cable
11		2	Screw
12	00E4252	2	Drive filler
	00LY266	2	1 TB disk drive
	00LY409	2	480 GB solid-state drive
	00LY410	2	480 GB solid-state drive
	00LY411	2	960 GB solid-state drive
	00LY412	2	960 GB solid-state drive
13	00E4256	4	Fan
14	00E4251	8	Memory riser filler
	00LY064	8	Memory riser
	78P4489	32	4 GB, 1600 Mhz DDR3 RDIMM
	78P4490	32	8 GB, 1600 Mhz DDR3 RDIMM
	78P4491	32	16 GB, 1600 Mhz DDR3 RDIMM
	78P4492	32	32 GB, 1333 Mhz DDR3 RDIMM

Additional system parts



P8E14512-3

Figure 7. Additional system parts

Table 34. Additional system parts.

Index number	Part number	Units per assembly	Description
15	00E4472	1	Disk drive and fan card
16	00E4476	1	Screw kit Note: The screw kit includes 12 screws for the disk drive and fan card and 16 screws for the system backplane.
17	01AF287	2	8 core 3.625 GHz system processor module
	01AF288	2	10 core 3.259 GHz system processor module
18	01AF286	2	Heat sink kit (includes heat sink and thermal interface material)
19	01AF286	2	Heat sink kit (includes heat sink and thermal interface material)
20	46K5109	3	PCI filler

Table 34. Additional system parts (continued).

Index number	Part number	Units per assembly	Description
21	00WT013	3	ConnectX-4 EDR InfiniBand 1-port adapter
	00WT075	3	ConnectX-4 EDR InfiniBand 2-port adapter
	74Y4064	3	PCIe2 low profile 4-port 1 GbE adapter
	00E2715	3	PCIe2 low profile 4-port (10 Gb + 1 GbE) SR + RJ45 adapter
	00FW105	3	PCIe3 low profile 2-port 40 GbE NIC RoCE QSFP+ adapter
	00E2714	3	PCIe2 low profile 2-port 10 GbE BaseT RJ45 adapter
	00E9266	3	PCIe2 16 Gb 2-port Fibre Channel adapter
22	00E4255	2	Graphics processing unit (GPU) shield
23	00E4514	2	Riser fillers for the GPU riser or the PCIe riser
24	00E4470	1	System backplane
25	00E4476	1	Screw kit Note: The screw kit includes 12 screws for the disk drive and fan card and 16 screws for the system backplane.

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.

8348-21C locations

Use this information to find the location of a FRU in the system unit.

Rack views

The following diagrams show field-replaceable unit (FRU) layouts in the system. Use these diagrams with the following tables.

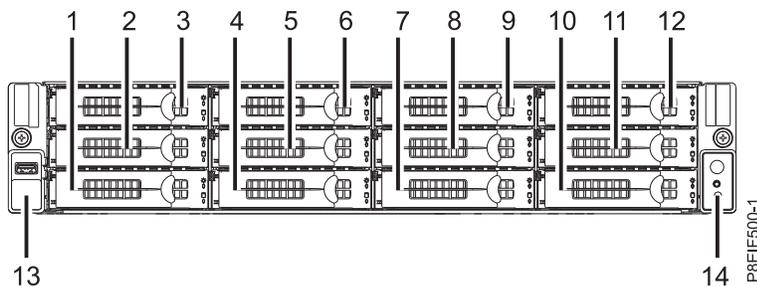


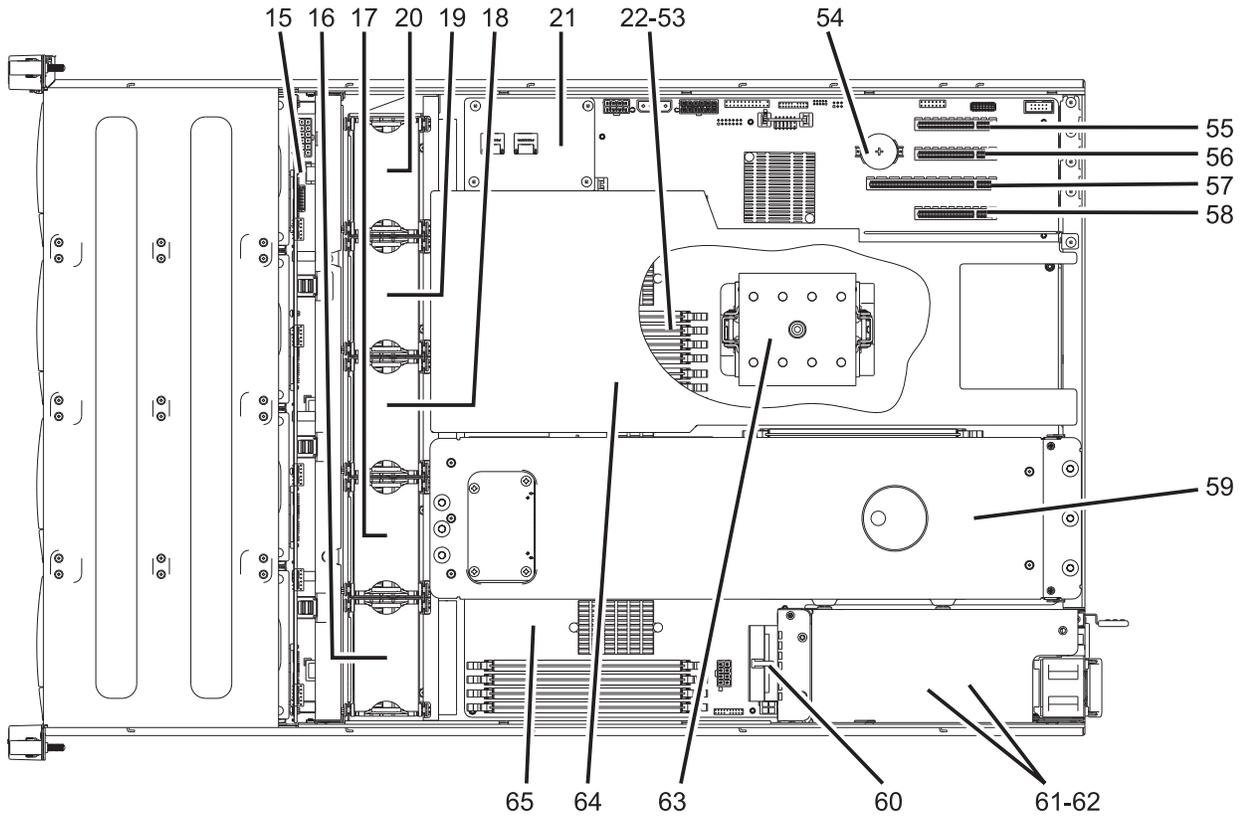
Figure 8. Front view

Table 35. Front view locations

Index number	FRU description	FRU removal and replacement procedures
1	HDD 0	See Removing and replacing a front drive in the 8348-21C.
2	HDD 1	
3	HDD 2	
4	HDD 3	
5	HDD 4	
6	HDD 5	
7	HDD 6	
8	HDD 7	
9	HDD 8	
10	HDD 9	
11	HDD 10	
12	HDD 11	
13	Front USB and cable	See Removing and replacing the front USB and cable in the 8348-21C.

Table 35. Front view locations (continued)

Index number	FRU description	FRU removal and replacement procedures
14	Power switch and cable	See Removing and replacing the power switch and cable in the 8348-21C.



P8EIF501-3

Figure 9. Top view

Table 36. Top view locations

Index number	FRU description	FRU removal and replacement procedures
15	Disk drive backplane	See Removing and replacing the disk drive backplane in the 8348-21C.
16	Fan 1	See Removing and replacing a fan in the 8348-21C.
17	Fan 2	
18	Fan 3	
19	Fan 4	
20	Fan 5	
21	Storage mezzanine card	See Removing and replacing the storage mezzanine card and cable in the 8348-21C.
22 - 53	DIMM 0 - 31 Note: For more information about DIMM locations, see table 5.	See Removing and replacing memory in the 8348-21C.

Table 36. Top view locations (continued)

Index number	FRU description	FRU removal and replacement procedures
54	Time-of-day battery	See Removing and replacing the time-of-day battery in the 8348-21C.
55	PCIe adapter 1	See Removing and replacing a PCIe adapter in the 8348-21C.
56	PCIe adapter 2	
57	PCIe adapter 3	
58	PCIe adapter 4	
59	Rear drive tray assembly Note: The rear drive tray in the rear drive tray assembly contains HDD 12 and HDD 13.	See Removing and replacing the rear drive tray assembly in the 8348-21C.
60	Power distribution board	See Removing and replacing the power distribution board and cables in the 8348-21C.
61	PSU 1	See Removing and replacing power supplies in the 8348-21C.
62	PSU 2	
63	CPU	See Removing and replacing the system processor module in the 8348-21C.
64	Processor air baffle	See Removing and replacing the processor air baffle in the 8348-21C.
65	System backplane	See Removing and replacing the system backplane in the 8348-21C.

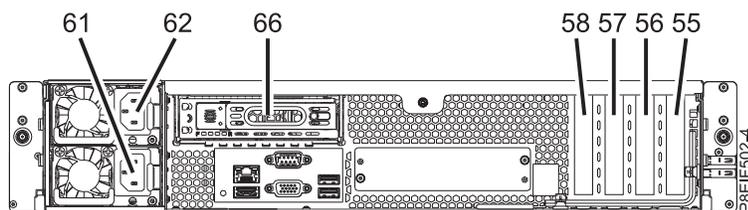
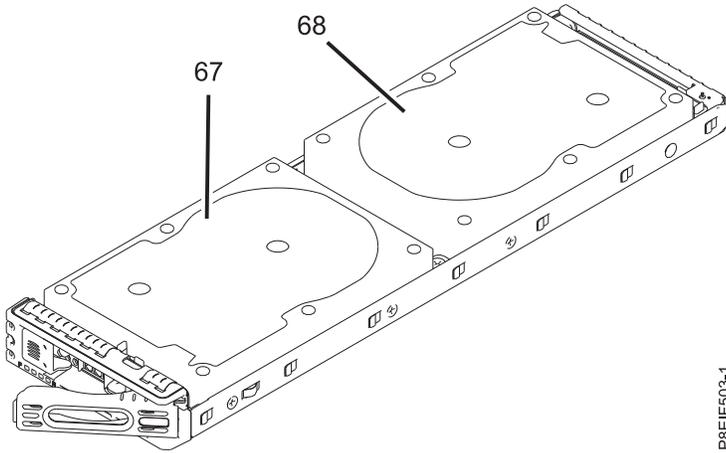


Figure 10. Rear view

Table 37. Rear view locations

Index number	FRU description	FRU removal and replacement procedures
55	PCIe adapter 1	See Removing and replacing a PCIe adapter in the 8348-21C.
56	PCIe adapter 2	
57	PCIe adapter 3	
58	PCIe adapter 4	
61	PSU 1	See Removing and replacing power supplies in the 8348-21C.
62	PSU 2	
66	Rear drive tray	See Removing and replacing a rear drive in the 8348-21C.



P8EIF503-1

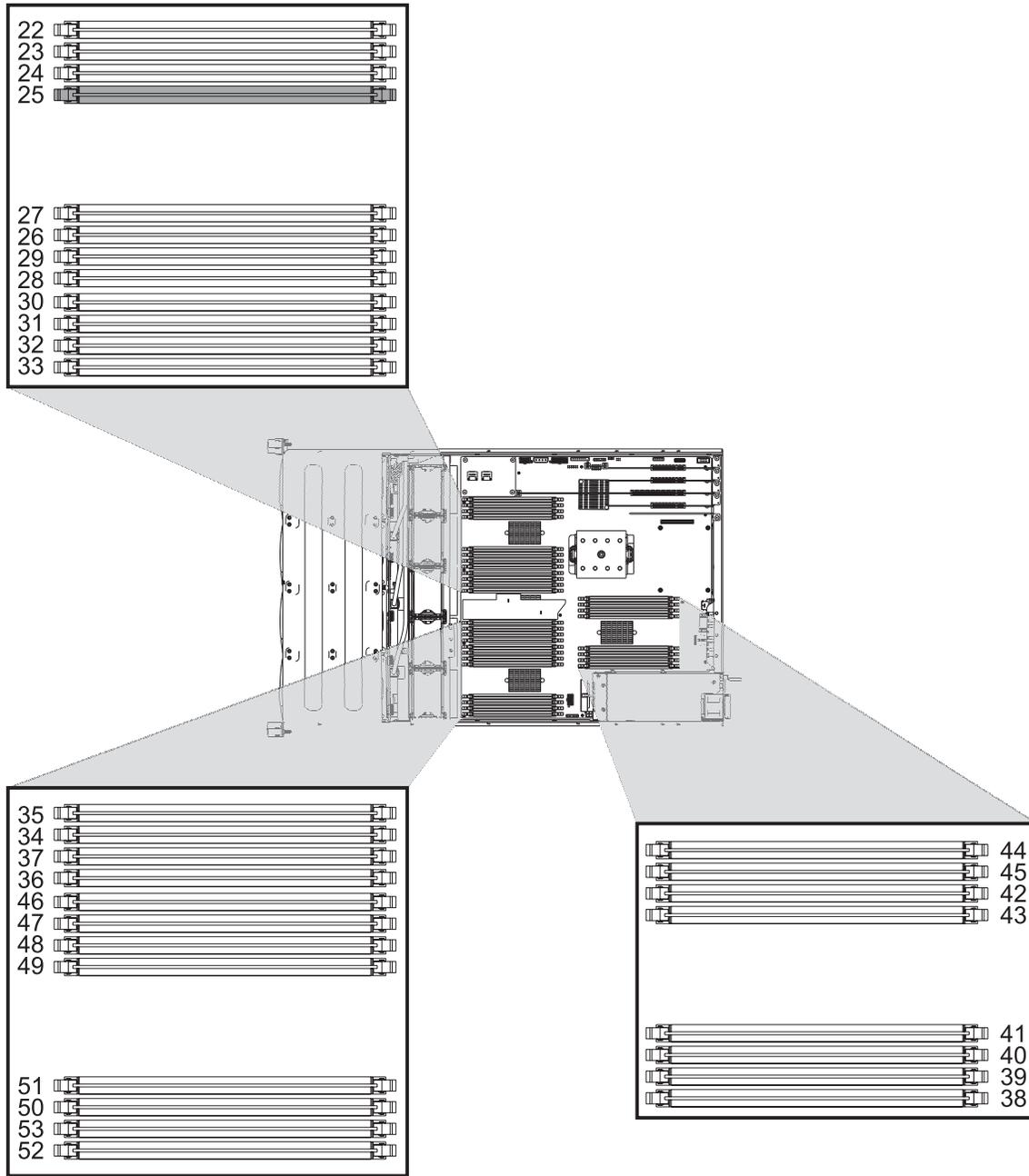
Figure 11. Rear drive tray top view

Table 38. Rear drive tray top view locations

Index number	FRU description	FRU removal and replacement procedures
67	HDD 12	See Removing and replacing a rear drive in the 8348-21C.
68	HDD 13	

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.



P8E1F504-1

Figure 12. Memory locations on the system backplane

The following table provides the memory locations on the system backplane.

Table 39. Memory locations on the system backplane.

Index number	FRU description	FRU removal and replacement procedures
22	DIMM 0	See Removing and replacing memory in the 8348-21C.
23	DIMM 1	
24	DIMM 2	
25	DIMM 3	
26	DIMM 4	
27	DIMM 5	
28	DIMM 6	
29	DIMM 7	
30	DIMM 8	
31	DIMM 9	
32	DIMM 10	
33	DIMM 11	
34	DIMM 12	
35	DIMM 13	
36	DIMM 14	
37	DIMM 15	
38	DIMM 16	
39	DIMM 17	
40	DIMM 18	
41	DIMM 19	
42	DIMM 20	
43	DIMM 21	
44	DIMM 22	
45	DIMM 23	
46	DIMM 24	
47	DIMM 25	
48	DIMM 26	
49	DIMM 27	
50	DIMM 28	
51	DIMM 29	
52	DIMM 30	
53	DIMM 31	

8348-21C parts

Use this information to find the FRU part number.

Rack final assembly

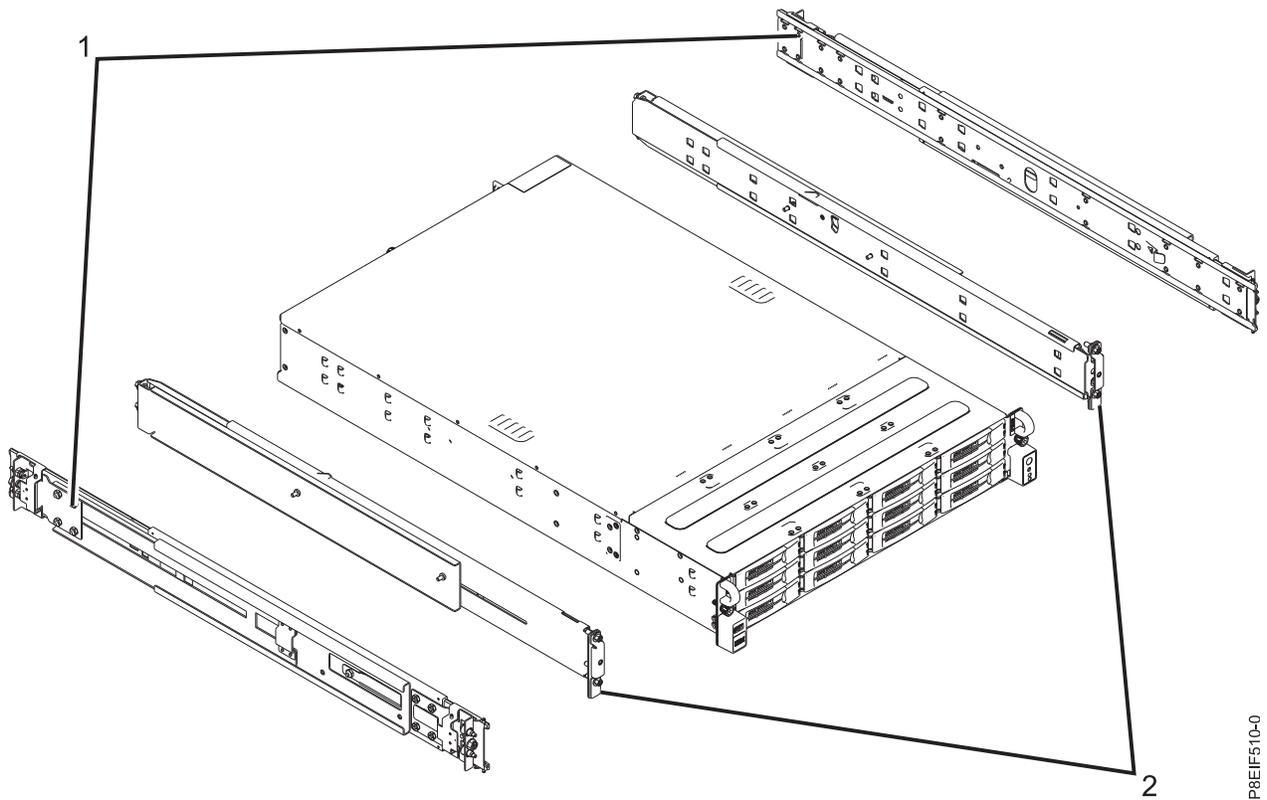


Figure 13. Rack final assembly

Table 40. Rack final assembly part numbers.

Index number	Part number	Units per assembly	Description
1	01AF405	2	Fixed rail
2		1	Slide rail kit - contains left and right slide rails and attaching screws

System parts

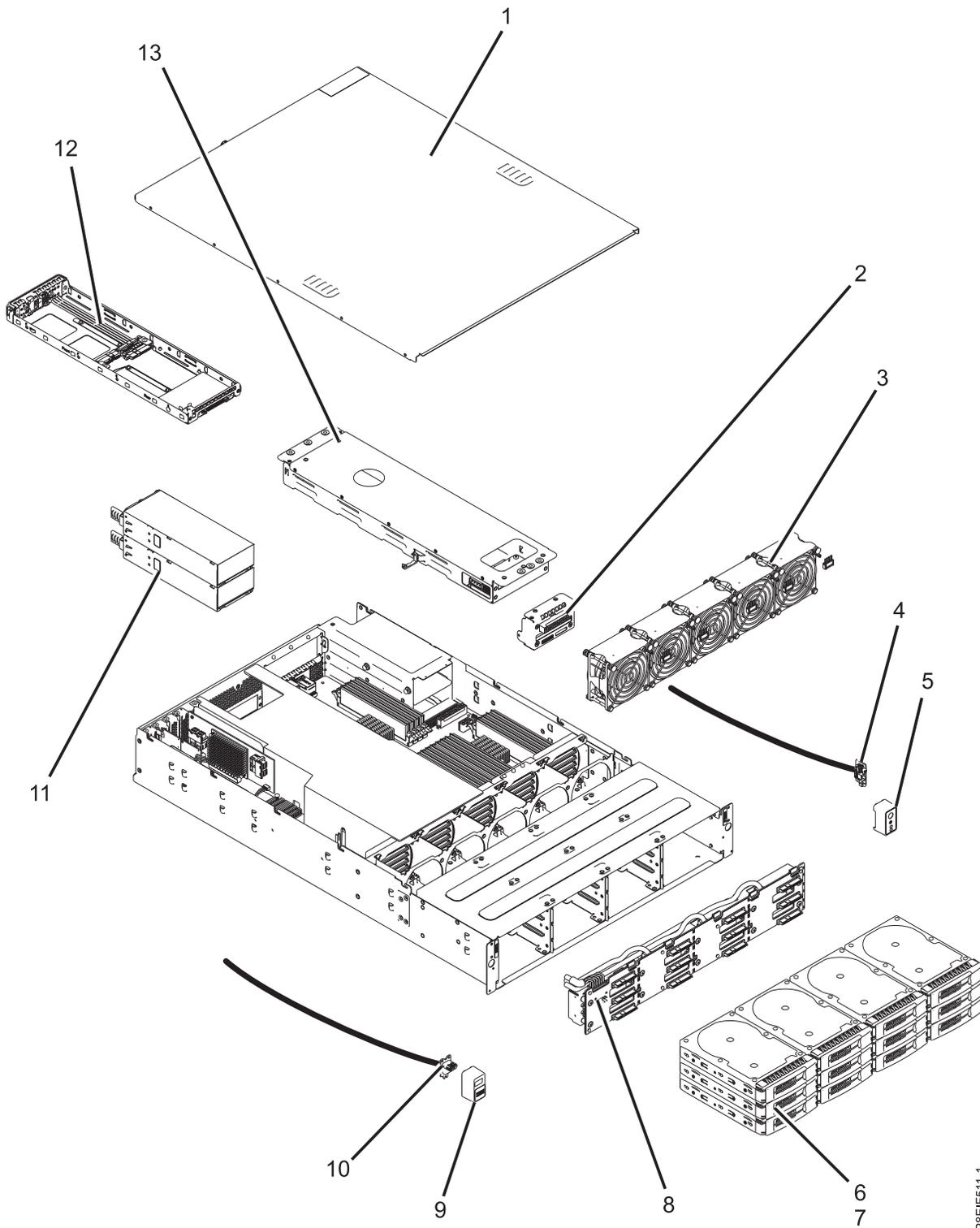


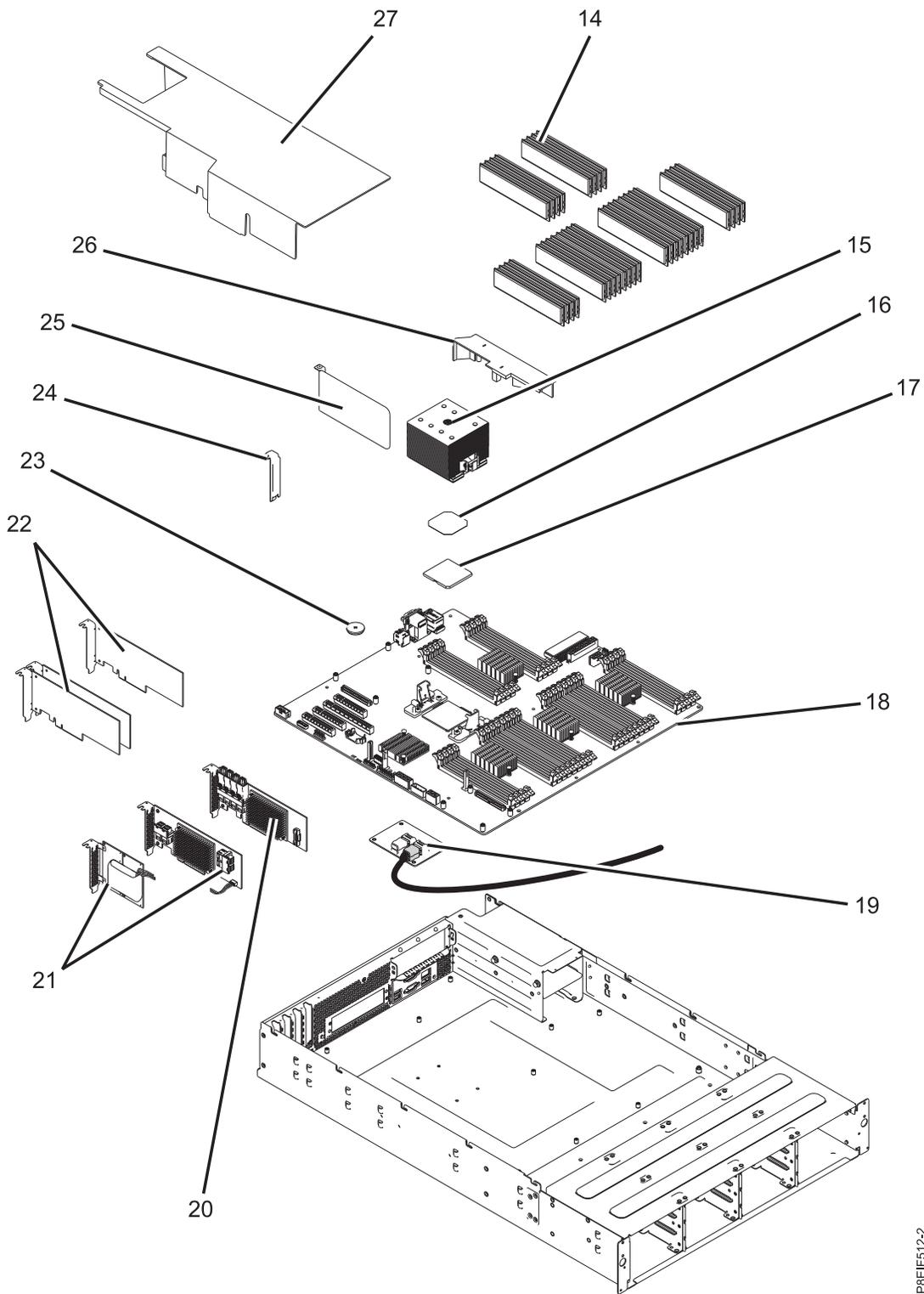
Figure 14. System parts

P8EIF511-1

Table 41. System parts.

Index number	Part number	Units per assembly	Description
1		1	Top access cover assembly
2	01AF251	1	Power distribution board, cable, and power supply control cable
3	01AF243	5	Fan
4	01AF252	1	Power switch card and cable
5		1	Power switch bezel
6	01AF246	12	Front drive carriers
7	00LY397	14	960 GB solid-state drive
	00LY398	14	1 TB disk drive
	00LY399	14	6 TB disk drive
8	01AF249	1	Disk drive backplane
		1	700 mm SAS cable
		1	800 mm SAS cable
		1	900 mm SAS cable
		1	Disk drive backplane power cable
		1	Fan control cable
9	01AF252	1	USB bezel
10		1	USB card and cable
11	01AF244	2	Power supply
12	01AF245		Rear drive tray
13		1	Rear drive tray assembly (includes rear drive tray, internal backplane, and internal power cable for internal backplane)

Additional system parts



P8EIF512-2

Figure 15. Additional system parts

Table 42. Additional system parts.

Index number	Part number	Units per assembly	Description
14	78P4489	32	4 GB, 1600 MHz DDR3 DIMM
	78P4490	32	8 GB, 1600 MHz DDR3 DIMM
	78P4491	32	16 GB, 1600 MHz DDR3 DIMM
	78P4492	32	32 GB, 1600 MHz DDR3 DIMM
15	01AF286	1	Heat sink Note: The heat sink kit includes the heat sink and thermal interface material.
16		1	Thermal interface material Note: The heat sink kit includes the thermal interface material.
17	01AF287	1	8 core 3.625 GHz system processor module
	01AF288	1	10 core 3.259 GHz system processor module
18	01AF250	1	System backplane
19	01AF247	1	Storage mezzanine card and mini SAS cable
20	00WV552	1	PCIe3 low profile 6 Gb SAS/SATA RAID adapter (FC EC3Y) Note: This adapter is also known as a PMC Adaptec RAID 71605E adapter.
21	00WV554	1	PCIe3 low profile 12 Gb SAS/SATA RAID adapter with 1 GB protected write cache (FC EC3S) Notes: <ul style="list-style-type: none"> The supercapacitor module card is shipped together with the PCIe Gen3 SAS/SATA RAID adapter as a single FRU and therefore must also be removed when the SAS RAID adapter is removed. This adapter is also known as a PMC Adaptec RAID 81605Z adapter.
22	00E2714	3	PCIe2 low profile 2-port 10 GbE BaseT RJ45 adapter
	74Y4064	4	PCIe2 low profile 4-port 1 GbE adapter
	00E2715	4	PCIe2 low profile 4-port (10 Gb + 1 GbE) SR + RJ45 adapter
	00FW105	4	PCIe3 low profile 2-port 40 GbE NIC RoCE QSFP+ adapter
	10N9824	4	PCIe low profile 2-port 8 Gb Fibre Channel adapter
23		1	Time-of-day battery Note: The time-of-day battery is a CR2032 lithium battery.
24	01AF248	1	PCIe filler
25		1	Air divider next to PCIe adapters
26		1	Air duct under rear drive tray assembly
27	01AF241	1	Processor air baffle

Notices

This information was developed for products and services that are offered in the USA. This material may be available from IBM in other languages. However, you may be required to own a copy of the product or product version in that language in order to access it.

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

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

*IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
United States of America*

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and

cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

All IBM prices shown are IBM's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

If you are viewing this information in softcopy, the photographs and color illustrations may not appear.

The drawings and specifications contained herein shall not be reproduced in whole or in part without the written permission of IBM.

IBM has prepared this information for use with the specific machines indicated. IBM makes no representations that it is suitable for any other purpose.

IBM's computer systems contain mechanisms designed to reduce the possibility of undetected data corruption or loss. This risk, however, cannot be eliminated. Users who experience unplanned outages, system failures, power fluctuations or outages, or component failures must verify the accuracy of operations performed and data saved or transmitted by the system at or near the time of the outage or failure. In addition, users must establish procedures to ensure that there is independent data verification before relying on such data in sensitive or critical operations. Users should periodically check IBM's support websites for updated information and fixes applicable to the system and related software.

Homologation statement

This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

Privacy policy considerations

IBM Software products, including software as a service solutions, ("Software Offerings") may use cookies or other technologies to collect product usage information, to help improve the end user experience, to tailor interactions with the end user, or for other purposes. In many cases no personally identifiable information is collected by the Software Offerings. Some of our Software Offerings can help enable you to collect personally identifiable information. If this Software Offering uses cookies to collect personally identifiable information, specific information about this offering's use of cookies is set forth below.

This Software Offering does not use cookies or other technologies to collect personally identifiable information.

If the configurations deployed for this Software Offering provide you as the customer the ability to collect personally identifiable information from end users via cookies and other technologies, you should seek your own legal advice about any laws applicable to such data collection, including any requirements for notice and consent.

For more information about the use of various technologies, including cookies, for these purposes, see IBM's Privacy Policy at <http://www.ibm.com/privacy> and IBM's Online Privacy Statement at <http://www.ibm.com/privacy/details> the section entitled "Cookies, Web Beacons and Other Technologies" and the "IBM Software Products and Software-as-a-Service Privacy Statement" at <http://www.ibm.com/software/info/product-privacy>.

Trademarks

IBM, the IBM logo, and [ibm.com](http://www.ibm.com) are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at Copyright and trademark information at www.ibm.com/legal/copytrade.shtml.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

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

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC 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.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

European Community contact:
IBM Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 (0) 800 225 5423 or +49 (0) 180 331 3233
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

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

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.

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline (products less than or equal to 20 A per phase)

高調波ガイドライン適合品

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline with Modifications (products greater than 20 A per phase)

高調波ガイドライン準用品

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

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 업무용(A급)으로 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Germany Compliance Statement

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

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

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

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:
"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) 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 Regulations, Abteilung M372
IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 (0) 800 225 5423 or +49 (0) 180 331 3233
email: halloibm@de.ibm.com

Generelle Informationen:

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

Electromagnetic Interference (EMI) Statement - Russia

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

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

This Class B digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC 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.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication equipment.

European Community contact:
IBM Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 (0) 800 225 5423 or +49 (0) 180 331 3233
email: halloibm@de.ibm.com

VCCI Statement - Japan

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。 VCCI-B

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline (products less than or equal to 20 A per phase)

高調波ガイドライン適合品

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline with Modifications (products greater than 20 A per phase)

高調波ガイドライン準用品

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

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 가정용(B급)으로 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

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 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse B ein.

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

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse B

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

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:

International Business Machines Corp.

New Orchard Road

Armonk, New York 10504

Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:

IBM Deutschland GmbH

Technical Regulations, Abteilung M372

IBM-Allee 1, 71139 Ehningen, Germany

Tel: +49 (0) 800 225 5423 or +49 (0) 180 331 3233

email: halloibm@de.ibm.com

Generelle Informationen:

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

Terms and conditions

Permissions for the use of these publications are granted subject to the following terms and conditions.

Applicability: These terms and conditions are in addition to any terms of use for the IBM website.

Personal Use: You may reproduce these publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative works of these publications, or any portion thereof, without the express consent of IBM.

Commercial Use: You may reproduce, distribute and display these publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these publications, or reproduce, distribute or display these publications or any portion thereof outside your enterprise, without the express consent of IBM.

Rights: Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the publications or any information, data, software or other intellectual property contained therein.

IBM reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the publications is detrimental to its interest or, as determined by IBM, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

IBM MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.



Printed in USA