

ESCALA

PL6460R

Service Guide



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ESCALA

PL6460R

Service Guide

Hardware

July 2008

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FRANCE

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Safety and environmental 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.

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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

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. (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)

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.

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This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/index.shtml>.

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Remarque : Cette marque s'applique uniquement aux pays de l'Union Européenne et à la Norvège.

L'étiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques (DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers l'Union européenne. Conformément à la directive, ladite étiquette précise que le produit sur lequel elle est apposée ne doit pas être jeté mais être récupéré en fin de vie.

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Battery return program

This product may contain sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to <http://www.ibm.com/ibm/environment/products/index.shtml> or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and other battery packs from IBM Equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Please have the IBM part number listed on the battery available prior to your call.

For Taiwan: Please recycle batteries.



For the European Union:



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Note: This mark applies only to countries within the European Union (EU).

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

Les batteries ou emballages pour batteries sont étiquetés conformément aux directives européennes 2006/66/EC, norme relative aux batteries et accumulateurs en usage et aux batteries et accumulateurs usés. Les directives déterminent la marche à suivre en vigueur dans l'Union Européenne pour le retour et le recyclage des batteries et accumulateurs usés. Cette étiquette est appliquée sur diverses batteries pour indiquer que la batterie ne doit pas être mise au rebut mais plutôt récupérée en fin de cycle de vie selon cette norme.

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The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33. Best Management Practices for Perchlorate Materials. This product, part, or both may include a lithium manganese dioxide battery which contains a perchlorate substance.

About this publication

The 9119-FHA is a one-to-eight node symmetric multiprocessor system, packaged in a 20 EIA unit tall central electronic complex (CEC) cage that fits in a 50-inch deep by 24-inch rack. The main CEC consists of eight 8-way books, each book containing four multichip modules, 32 memory DIMMs, and slots for four GX I/O Hub adapters and two FSP adapters.

For information about the accessibility features of this product, for users who have a physical disability, see “Accessibility features,” on page 117.

How to send your comments

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Chapter 1. Starting a Service Call

This is starting point for service actions. You should begin all service actions with this procedure.

From this point, you will be guided to the appropriate information to help you perform the necessary steps to repair the server.

Note: In this topic, **control panel** and **operator panel** are synonymous.

Before beginning, perform as many of the following tasks as possible:

- Record information to help you return the server to the same state that the customer typically uses, such as:
 - The IPL type that the customer typically uses for the server.
 - The **IPL mode** that is used by the customer on this server.
 - The way in which the server is configured or partitioned.
-

1.

Has problem analysis been performed using the procedures in *Problem Analysis, SA76-0111*?

Yes	No
↓	Perform problem analysis using the procedures in <i>Problem Analysis, SA76-0111</i> .

2.

Is the failing server managed by a Hardware Management Console?

No	Yes
↓	Continue with step 6 on page 2.

3.

Do you have a Field Replaceable Unit (FRU), location code, and an action plan to replace a failing FRU?

No	Yes
↓	Go to Chapter 3, "Using location codes," on page 33.

4.

Do you have an action plan to perform an Isolation Procedure?

No	Yes
↓	Go to Chapter 2, "Isolation procedures," on page 5.

5.

Choose an action from the following Symptom List:

- You have a reference code but no action plan - go to *Problem Analysis*, SA76-0111.
- There is a hardware problem that does not generate a reference code - use the Table of Contents to find an appropriate isolation procedure or contact your next level of support.
- To check your server's firmware level or to update it - see the system's operation guide.
- You have an Engineering Change (EC) or a hardware upgrade to apply - Use the instructions provided with the change or upgrade.
- You suspect a software problem - contact software support
- To perform diagnostics or another service function - use the Table of Contents to locate the Common Service Procedure.

This ends the procedure.

6.

Is the HMC connected and functional?

Yes	No
↓	Bring up the HMC and attach it to the server. If you experience a problem with the HMC, refer to the <i>Service Guide for the Hardware Management Console Models 7042-CR4, 7042-C06 and 7042-C07</i> , SA76-0120. When the HMC is connected and functional, continue with the next step.

7.

Perform the following steps from the HMC that is used to manage the server. During these steps, refer to the service data that was gathered earlier:

1. In the Navigation Area, open **Service Management**.
2. Select **Manage Events**. The Manage Serviceable Events - Select Serviceable Events panel will be displayed.
3. Select the status of **Open**.
4. Select all other selections to **ALL** and click **OK**.
5. Scroll through the list and verify that there is a problem with the status of **Open** to correspond with the customer's reported problem.

Note: If you are unable to locate the reported problem, and there is more than one open problem near the time of the reported failure, use the earliest problem in the list.

Do you find the reported problem, or an open problem near the time of the reported problem?

Yes	No
↓	Go to step 3 on page 1.

8.

Select the serviceable event you want to repair, and select **Repair** from the **Selected** menu.

Note: If the **Repair** procedures are not available, go to step 3 on page 1

Follow the instructions displayed on the HMC.

After you complete the repair procedure, the system automatically closes the serviceable event. **This ends the procedure.**

Chapter 2. Isolation procedures

Isolation procedures are used together with diagnostic programs that are part of server firmware.

If a server is connected to an Hardware Management Console (HMC), these procedures are available on the HMC. Use the HMC procedures to continue isolating the problem. If the server does not have an HMC and you are directed to perform an isolation procedure, the procedures documented here are needed to continue isolating a problem.

Service processor isolation procedures

Use service processor isolation procedures if there is no HMC attached to the server. If the server is connected to an HMC, use the procedures that are available on the HMC to continue FRU isolation.

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:

- 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.
- 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.

(D005)

FSPSP01

A part vital to system function has been deconfigured.

Review the system error logs for errors that callout parts relevant to each reason code. If replacing those parts does not resolve the error, follow the procedure below.

Perform the following steps:

1. Is the SRC B1xxB10C or B1xxB10D (xx means don't care what Subsystem ID)?

No: Go to step 5 on page 7.

Yes: The system has detected a deconfigured memory controller that is required for the system to function, or it has detected that there is not enough memory or that the memory is plugged incorrectly. Continue with the next step.

2. Perform the following steps:
 - a. Reseat all of the memory DIMMs in the each processor enclosure (primary and all secondary units) but do not replace any memory DIMMs at this time.
 - b. Perform a slow boot.
 Does the problem persist?
 - Yes:** Continue with the next step.
 - No:** Verify the repair. **This ends the procedure.**
3. Perform the following for each of the memory DIMM:
 - a. Replace the memory DIMM.
 - b. Perform a slow boot.
 - c. Does the problem persist?
 - Yes:** Repeat this step and replace the next memory DIMM. If you have replaced all of the memory DIMM, then continue with the next step.
 - No:** Verify the repair. **This ends the procedure.**
4. Perform the following for each of the processor books until the problem is resolved:
 - a. Replace the processor book.
 - b. Perform a slow boot between each replacement.
 - c. Verify the repair. **This ends the procedure.**
5. Is the SRC B1xxB107 or B1xxB108?
 - **No:** Continue with the next step.
 - **Yes:** The system has detected a problem with a CEC clock card. Perform the following for each of the CEC clock cards until the problem is resolved:
 - a. Replace the CEC clock card.
 - b. Perform a slow boot.
 - c. Verify the repair. **This ends the procedure.**
6. Is the SRC B1xxB106?
 - **No:** Continue with the next step.
 - **Yes:** The system has detected that all of the planars are deconfigured. Perform the following steps:
 - a. Review the system error logs for errors that called out planars. This will indicate which planars have problems and need to be replaced.
 - b. Replace the appropriate processor book or processor books.
 - c. Perform a slow boot.
 - d. Verify the repair. **This ends the procedure.**
7. Is the SRC B1xxB110 or B1xxB111?
 - **No:** Contact your next level of support. **This ends the procedure.**
 - **Yes:** The system has detected that all of the I/O bridges are deconfigured. Perform the following:
 - a. Review the system error logs for errors that called out I/O bridges. This will indicate which I/O bridges have problems and need to be replaced.
 - b. Replace the appropriate processor book or processor books.
 - c. Perform a slow boot.
 - d. Verify the repair. **This ends the procedure.**

FSPSP02

This procedure is for boot failures that occur very early in the boot process.

Save any error log and dump data and contact your next level of support for assistance. **This ends the procedure.**

FSPSP03

A system operator or user error has occurred.

Refer to the documentation for the function you were attempting to perform. **This ends the procedure.**

FSPSP04

A problem has been detected in the service processor firmware.

Refer to *Operations Guide for ASMI and for Nonpartitioned Systems* (SA76-0094) or *Operations Guide for the Hardware Management Console and Managed Systems* (SA76-0085) and verify that the system's firmware is at the latest level. Update the system's firmware if necessary.

FSPSP05

The service processor has detected a problem in the platform firmware.

Refer to *Operations Guide for the Hardware Management Console and its Managed Systems*, SA76-0085 and verify that the system's firmware is at the latest level. Update the system's firmware if necessary.

This ends the procedure.

FSPSP06

The service processor reported a suspected intermittent problem.

Contact your next level of support. **This ends the procedure.**

FSPSP07

The time of day has been reset to the default value.

1. To set the time of day, refer to the systems operations guide.
2. If the problem persists, replace the time-of-day battery. To determine which battery to replace, use the last byte in word 3 of the primary SRC.
 - If the last byte is a 10, then replace the CEC FSP card 0, TOD battery.
 - If the last byte is a 20, then replace the CEC FSP Card 1, TOD battery.
3. After replacing the battery, perform a slow boot. **This ends the procedure.**

FSPSP09

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

1. Using the FRU called out after this procedure, replace **ALL** the memory DIMMs that reside on the same memory board/card.
2. Perform a slow boot after replacing all the memory DIMMs. **This ends the procedure.**

FSPSP10

The part indicated in the FRU list that follows this procedure is invalid or missing for this system's configuration.

Perform the following to correct the problem:

1. Does word 8 (the 8 leftmost characters in the 2nd line of function 13) of the reference code end with 02 or 04?
 - No:** Go to step 3 on page 9.
 - Yes:** Continue with the next step.

2. The FRU that is called out after this procedure is either missing or invalid. Is that FRU installed and connected or plugged in properly?

Yes: The installed FRU is invalid. Remove that FRU. Then contact your next level of support to determine the correct FRU. **This ends the procedure.**

No: The FRU is missing. If the FRU is present but not connected, reconnect it and perform a slow boot. Otherwise, contact your next level of support to determine the missing FRU. **This ends the procedure.**

3. Does word 8 end with 01 or 05?

No: Perform problem analysis with this code. **This ends the procedure.**

Yes: The FRU that is listed after this procedure has the same serial number as another FRU in the system. Remove all but one of the FRUs that are listed after this procedure and then perform a slow boot. **This ends the procedure.**

FSPSP11

The service processor has detected an error on the RIO/HSL/12X port in the system unit.

1. Refer to *Operations Guide for the Hardware Management Console and Managed Systems*, (SA76-0085) and verify that the system's firmware is at the latest level. Update the system's firmware if necessary.
2. If the problem persists, replace the processor book. Perform a slow boot. **This ends the procedure.**

FSPSP12

The DIMM FRU that was previously replaced did not correct the memory error.

Perform the following:

1. Power off the system.
2. Replace the processor book with the failure.
3. Perform a slow boot.

This ends the procedure.

FSPSP14

The service processor cannot communicate with the system firmware. The server firmware will continue to run the system and partitions while it attempts to recover communications. Server firmware recovery actions will continue for approximately 30 to 40 minutes.

Perform the following:

1. Record the time the log was created or when the SRC was first noticed. Continue with the next step.
2. Are progress codes being displayed on the panel?
 - **Yes:** Server firmware was able to reset the service processor. **This ends the procedure.**
 - **No:** Continue with the next step.
3. Has an A7006995 SRC been displayed on the panel?
 - **Yes:** Partitions are being powered off and a server dump will be attempted. Follow the A7006995 SRC description if the partitions do not terminate as requested. **This ends the procedure.**
 - **No:** Continue with the next step.
4. Has the A1xx SRC remained on the panel for more than 40 minutes?
 - **Yes:** Server firmware could not begin termination of the partitions. Contact your next level of support to assist in attempting to terminate any remaining partitions and forcing a server dump. Collect the dump for support, power off and power on the system. **This ends the procedure.**
 - **No:** Contact your next level of support. **This ends the procedure.**

FSPSP16

Save any error log and dump data and contact your next level of support for assistance.

This ends the procedure.

FSPSP17

A system uncorrectable error has occurred.

1. Look for other serviceable events and use the call outs listed with them to correct the problem.
2. If you need to, you can run the system in a degraded mode until you can perform the service actions. To run the system in a degraded mode, do the following:
 - a. Power off the system.
 - b. Power on the system to allow the memory diagnostics to clean up the memory. Guard out any defective parts.

This ends the procedure.

FSPSP18

A problem has been detected in the platform LIC.

Refer to the *Operations Guide for the Hardware Management Console and Managed Systems*, (SA76-0085), and verify that the server firmware is at the latest level. Update the server firmware if necessary.

FSPSP19

If the system hangs after the SRC code that sent you to this procedure appears in the control panel, perform these steps to reset the service processor.

The System Processor's module Interposers have a limit on the number of times modules can be plugged into them. This procedure usually is due to a maintenance action dealing with an MCM and indicates that the plug count has been exceeded or is incorrect.

1. Go to the ASMI menus.
2. Select System Configuration.
3. Select the Interposer Plug Count.
4. Find the target location code for the corresponding Interposer.
5. Increment the Interposer count by one.
6. Does the Plug Count exceed 10?

Yes:

- a. Power off the system.
- b. Replace the System Processor for the Interposer that has exceeded 10.
- c. Reset the Plug Count to one (1) via ASMI menus.
- d. Perform a slow boot and work any new serviceable events as new problems.

No:

- a. Perform a slow boot and work any new serviceable events as new problems.

This ends the procedure.

FSPSP20

A failing item has been detected by a hardware procedure.

Perform a slow boot to run full hardware diagnostics.

If a new SRC occurs, repair the system using that reference code.

If an incomplete occurs, access the ASMI menus to power off, check for deconfigured components and perform a slow boot.

This ends the procedure.

FSPSP22

The system has detected that a processor chip is missing from the system configuration because JTAG lines are not working.

1. Power off the system.
2. Replace the CEC FSP cards, one at a time.
3. Perform a slow boot.
4. Does the problem persist?
 - Yes:** Continue with the next step.
 - No:** **This ends the procedure.**
5. Perform the following for each processor book until the problem is resolved:
 - a. Power off the system.
 - b. Replace each MCM, one at a time.
 - c. Perform a slow boot.

This ends the procedure.

FSPSP23

The system needs to perform a service processor dump.

1. Perform a service processor dump.
2. Once the dump is complete, attempt to re-IPL the system.
3. Save the service processor dump to storage.
4. Contact your next level of support. **This ends the procedure.**

FSPSP24

The system is running degraded. Array bit steering may be able to correct this problem without replacing hardware.

1. Power off the system.
2. Perform a slow boot. **This ends the procedure.**
3. If the problem persists, replace the FRU that is called out after this procedure. **This ends the procedure.**

FSPSP27

An attention line has been detected as having a problem.

If the FRU replaced before this procedure did not correct the problem, perform the following:

1. Was the FRU called out before this procedure a Memory DIMM (Un-Pm-Cx, where m = 2 - 9 and x = 1 - 36), a Processor (Un-Pm-Cx, where m = 2 - 9 and x = 25 - 28), or GX Adapter Card (Un-Pm-Cx, where m = 2 - 9 and x = 37 - 40)?

No: **This ends the procedure.**

Yes: A Memory DIMM or Processor or GX Adapter Card attention line has an error. Continue to the next step.

2. Replace both Node FSP Cards (Un-Pm-C41 and Un-Pm-C42, where m = 2 - 9) from the same Node as the Memory DIMM, Processor, or GX Adapter Card.
3. Perform a slow boot.
4. Does the problem persist?
 - No: This ends the procedure.**
 - Yes:** Continue to the next step.
5. Replace the Processor Book (Un-Pm, where m = 2 - 9) the Memory DIMM, Processor, or GX Adapter Card plugged into.
6. Perform a slow boot. **This ends the procedure.**

FSPSP28

The resource ID (RID) of the FRU could not be found in the Vital Product Data (VPD) table.

1. Find another callout that reads "FSPxxxx" where xxxx is a 4 digit hex number that represents the RID. Record the RID and the Model of the system.
2. Contact your next level of support to find out which FRU the RID represents.
3. Replace the FRU that the RID represents.
4. Perform a slow boot to ensure full hardware diagnostics. **This ends the procedure.**

FSPSP30

A problem has been encountered accessing the VPD card or the data found on the VPD card has been corrupted.

This error occurred before VPD collection was completed. No location codes have been created.

1. Power off the system.
2. Clear any deconfiguration errors for the VPD card.
3. Replace both of the CEC service processor cards.
4. Perform a slow boot. Does the error reoccur?
 - Yes:** Continue with the next step.
 - No: This ends the procedure.**
5. Replace the VPD card (Un-P1-C1). **This ends the procedure.**
6. Perform a slow boot. Does the error reoccur?
 - Yes:** Continue with the next step.
 - No: This ends the procedure.**
7. Replace the CEC midplane (Un-P1). **This ends the procedure.**

FSPSP31

The service processor has detected that one or more of the required fields in the system VPD has not been initialized.

1. Log into ASMI with authorized service provider authority.
2. Set the system VPD values.

Note: The service processor will automatically reset when leaving the ASMI after updating the system VPD.

3. Power on the system. **This ends the procedure.**

FSPSP32

A problem with the enclosure has been found.

The problem is the result of one of the following:

- the enclosure VPD cannot be found
- the enclosure serial number is not programmed
- the enclosure feature code is not programmed

Perform the following:

1. Record the reason code (the last 4 characters of word 11) from the SRC by looking at the operator panel or accessing the error log with the ASMI.
2. Is the reason code A46F?
No: Go to step 6.
Yes: Continue with the next step.
3. Check for and apply any server firmware updates. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
4. Perform the following:
 - a. Replace both CEC service processor cards.
 - b. Perform a slow boot.Does the problem persist?
No:This ends the procedure.
Yes: Continue with the next step.
5. Perform the following:
 - a. Replace the CEC Midplane (Un-P1).
 - b. Perform a slow boot.Does the problem persist?
No:This ends the procedure.
Yes: Contact your next level of support. **This ends the procedure.**
6. Is the reason code A460?
No: Go to step 8.
Yes: Continue with the next step.
7. Perform the following:
 - a. Set the enclosure serial number using the ASMI.
 - b. The service processor will automatically reset when leaving the ASMI after updating the serial number.
 - c. Perform a slow boot.Does the problem persist?
No: This ends the procedure.
Yes: Contact your next level of support. **This ends the procedure.**
8. Is the reason code A45F?
No: Contact your next level of support. **This ends the procedure.**
Yes: Continue with the next step.
9. Perform the following:
 - a. Set the enclosure feature code using the ASMI.
 - b. The service processor will automatically reset when leaving the ASMI after updating the serial number.

c. Perform a slow boot.

Does the problem persist?

No: This ends the procedure.

Yes: Contact your next level of support. **This ends the procedure.**

FSPSP33

A problem has been detected in the connection with the HMC.

1. Ensure that the cable connectors to the network from the HMC, managed system, managed system partitions, and other HMCs are securely connected. If the connections are not secure, plug the cables back into the proper locations and make sure that the connections are good.
2. Check to see if the HMC is working correctly or if the HMC was disconnected incorrectly from the managed system, managed system partitions, and other HMCs. If either has happened, reboot the HMC.
3. Verify that the network connection between the HMC, managed system, managed system partitions, and other HMCs is working properly.
4. If applicable, service the next FRU.
5. If the problem continues to persist, contact your next level of support. **This ends the procedure.**

FSPSP34

The memory cards are plugged in an invalid configuration and cannot be used by the system.

1. Is the SRC B1xx C02A?

Yes: A memory module is missing from the system. The additional parts in the FRU callout list will include all memory modules in the group with the missing card. To correct the error, visually check the system to determine which of these missing is missing, and add the module. **This ends the procedure.**

No: Continue with the next step.

2. Is the SRC B1xx C029?

Yes: A memory module is a different type than the other memory modules in the same group. The additional parts in the FRU callout list will include all memory modules in the group that contain the error. To correct the error, exchange the memory modules of the incorrect type with those of the desired type. **This ends the procedure.**

No: Continue with the next step.

3. Is the SRC B1xx C02B?

Yes: A group of memory modules are missing and are required so that other memory modules on the board can be configured. The additional parts in the FRU callout list will include all missing memory modules in the group. To correct the error, add or remove these modules to the desired locations. **This ends the procedure.**

No: Continue with the next step.

4. Is the SRC B1xx C036?

Yes: A memory module isn't supported by this system. The additional parts in the FRU callout list will include all memory modules in the group that contains the unsupported modules. To correct the error, remove these modules from the system or replace them with the correct type. **This ends the procedure.**

No: Perform problem analysis using the SRC to correct the problem. **This ends the procedure.**

FSPSP35

The system has detected a problem with a memory controller.

Perform the following to enable redundant utilization:

1. Power off the system.
2. Perform a slow boot. **This ends the procedure.**

FSPSP38

The system has detected an error within the JTAG path. If the FRU replaced before this procedure did not correct the problem, perform the following:

1. Was the FRU called out before this procedure a GX adapter card (Un-Pm-Cx, where m = 2 - 9 and x = 37 - 40)?

No: This ends the procedure.

Yes: Continue to the next step.

2. Replace both node FSP cards (Un-Pm-C41 and Un-Pm-C42, where m = 2 - 9) from the same Node as the GX adapter card.
3. Perform a slow boot.
4. Does the problem persist?

No: This ends the procedure.

Yes: Continue to the next step.

5. Replace the processor book (Un-Pm, where m = 2 - 9) the GX adapter card plugged into.
6. Perform a slow boot. **This ends the procedure.**

FSPSP45

The system has detected an error with FSI path.

1. Was the FRU called out before this procedure a Memory DIMM(Un-Pm-Cx, where m = 2 - 9 and x = 1 - 36), a Processor (Un-Pm-Cx, where m = 2 - 9 and x = 25 - 28), or GX Adapter Card (Un-Pm-Cx, where m = 2 - 9 and x = 37 - 40)?

No: This ends the procedure..

Yes: Continue to the next step.

2. Replace both Node FSP Cards (Un-Pm-C41 and Un-Pm-C42, where m = 2 - 9) from the same Node as the Memory DIMM, Processor, or GX Adapter Card.
3. Perform a slow boot.
4. Does the problem persist?

No: This ends the procedure.

Yes: Continue to the next step.

5. Replace the Processor Book (Un-Pm, where m = 2 - 9) the Memory DIMM, Processor, or GX Adapter Card plugged into.
6. Perform a slow boot. **This ends the procedure.**

FSPSP46

Some corrupt areas of flash or RAM have been detected on the service processor.

Perform the following:

1. Replace the failing CEC service processor card..
2. Perform a slow boot. **This ends the procedure.**

FSPSP48

A diagnostic function detects an external processor interface problem. If replacing the FRUs previously listed in the FRU list do not fix the problem, perform the following:

1. Power off the system.
2. Replace the processor book (Un-Pm, where m = 2 - 9) of each failing FRU.
3. Perform a slow boot.
4. Does the problem still exist?

Yes: Continue to the next step.

No: **This ends the procedure.**

5. Replace the CEC midplane (Un-P1).
6. Perform a slow boot. **This ends the procedure.**

FSPSP49

A diagnostic function detects an internal processor interface problem. If replacing the FRUs previously listed in the FRU list do not fix the problem, perform the following:

1. Power off the system.
2. Replace the processor book (Un-Pm, where m = 2-9) for the failing FRU.
3. Perform a slow boot. **This ends the procedure.**

FSPSP50

A diagnostic function detects a connection problem between a processor chip and a GX chip. If replacing the FRUs previously listed in the FRU list do not fix the problem, perform the following:

1. Power off the system.
2. Replace the processor book (Un-Pm, where m = 2-9) for the failing FRU.
3. Perform a slow boot. **This ends the procedure.**

FSPSP54

A processor over-temperature has been detected. Check for any environmental issues before replacing any parts.

1. Is the ambient room temperature in the normal operating range (less than 35 degrees C/95 degrees F)?

No: Notify the customer. The customer must bring the room temperature down so that it is within the normal range. Do not replace any parts. **This ends the procedure.**

Yes: Continue to next step.

2. Are the front and rear of the CEC drawer, and the front and rear rack doors, free of obstructions that would impede the airflow through the drawer?

No: Notify the customer. The system must be free of obstructions for proper airflow. Clean the air inlets and exits in the drawer as required. Do not replace any parts. **This ends the procedure.**

Yes: Continue to next step.

3. Are all of the fans in the drawer, especially those at the back of the power supply, functioning normally?

No: Replace any fans that are not turning or are turning slowly. **This ends the procedure.**

Yes: There are no environmental issues with the cooling of the processors. **This ends the procedure.**

FSPSP55

An error has been detected on a bus between two FRUs.

The endpoint FRUs have been called out, however, the source of the error could be the bus path between the FRUs.

1. Is word 6 of the reference code 00000005 or 00000002?

No: Go to step 2.

Yes: Perform the following:

- a. The Processor AB or PSI card bus has an error. Replace the FRUs called out after this procedure.
- b. Did replacing the FRUs correct the problem?

Yes: This ends the procedure.

No: Perform the following:

- c. Replace the system backplane (Un-P1).
- d. Perform a slow boot. **This ends the procedure.**

2. Is word 6 of the reference code 00000006?

No: Go to step 3.

Yes: Perform the following:

- a. The DIMM - DIMM bus has an error. Replace the FRUs called out after this procedure.
- b. Did replacing the FRUs correct the problem?

Yes: This ends the procedure.

No: Perform the following:

- c. Replace the Processor Book (Un-P2 thru P9) that the FRUs called out were replaced on.
- d. Perform a slow boot. **This ends the procedure.**

3. For any other value in word 6 of the reference code, the bus error is corrected by the FRUs called out after this procedure. Replace the FRUs called out after this procedure. **This ends the procedure.**

FSPSP57

The host appears on only one Bulk Power network hub.

Perform the following:

1. Using the "Connection tables" on page 31, verify the cables for the missing host are connected properly. The missing host is identified using words 6 and 7 of the SRC.

- Word 6 indicates which Bulk Power Hub the host is missing from.

If word 6 is 0x0000000A, then the host is missing from Bulk Power Hub A (Un-P1-C4).

If word 6 is 0x0000000B, then the host is missing from Bulk Power Hub B (Un-P2-C4).

- Word 7 indicates the missing host. Use the following table to identify the missing host based upon the value of word 7.

Word 7 value	Missing host
0x00000095	System controller A
0x00000094	System controller B
0x00000093	Bulk Power Controller B
0x00000092	Bulk Power Controller A
0x000000xx (xx = 2 through 9)	Node Controller Um-Px (x = 2 through 9)

2. Are all cables connected correctly?

Yes: Continue to step 4 on page 18.

No: Correct the cable connections.

3. Does the problem persist?
Yes: Continue to the next step.
No: **This ends the procedure.**
4. Replace the cable used to connect the missing host to the Bulk Power Hub.
5. Does the problem persist?
Yes: Continue to the next step.
No: **This ends the procedure.**
6. Replace the missing host identified in word 7 of the SRC.
7. Does the problem persist?
Yes: Continue to the next step.
No: **This ends the procedure.**
8. Replace the Bulk Power Hub (Un-P1-C4 or Un-P2-C4) identified in word 6 of the SRC. **This ends the procedure.**

FSPSP58

A network cable is not plugged in correctly.

The FRU callout immediately following this procedure shows the current Bulk Power Hub Port that has the wrong cable plugged into it.

The FRU callout after that shows the Bulk Power Hub Port that the cable should be plugged into.

Move the cable to the correct port. **This ends the procedure.**

FSPSP59

The network data is not available or missing.

1. Is the power on for the bulk power controllers (Un-P1-C1 and Un-P2-C1)?
No: Apply power to the bulk power controllers. Continue to the next step.
Yes: Replace the bulk power controller called out after this procedure. **This ends the procedure.**
2. Does the problem persist?
No: **This ends the procedure.**
Yes: Replace the bulk power hub called out after this procedure. **This ends the procedure.**

FSPSP60

A MAC address has been duplicated in the system.

1. Refer to *Operations Guide for the Hardware Management Console and Managed Systems*, (SA76-0085) and verify that the system's firmware is at the latest level. Update the system's firmware if necessary.

Note: Do not update the BPC firmware.

2. Does the problem persist?
No: **This ends the procedure.**
Yes: Replace the hardware connected to the called out bulk power hub ports that follow this procedure. **This ends the procedure.**

FSPSP61

An invalid network connection to the Bulk Power Hub has been detected causing a looping ping condition.

1. The callout following this procedure indicates which bulk power hub port to correct.
2. Use the “Connection tables” on page 31 to correct the cabling.

FSPSP62

The Service Processor has detected a missing node due to a mismatch between the nodes with power and what nodes the Service Processor can communicate with.

1. Using the “Connection tables” on page 31, verify the cables for the missing node. Word 6 of the SRC identifies the missing node as follows:

Table 1.

Word 6 value	Missing node
0x0000000x (x = 2 through 9)	Node Controllers Un-Px (x = 2 through 9)

2. Are the cables set correctly?
Yes: Continue to step 4.
No: Correct the cable connections. Perform a slow boot.
3. Does the problem persist?
Yes: Continue to the next step.
No: **This ends the procedure.**
4. Replace the cables used to connect the missing node to the bulk power hubs. Perform a slow boot.
5. Does the problem persist?
Yes: Continue to the next step.
No: **This ends the procedure.**
6. Replace the Node Controllers (Un-Px-C41 or Un-Px-C42, where x = word 6 value) on the missing node. Perform a slow boot. **This ends the procedure.**

FSPSP63

The system has experienced a power error. Please review previous error logs for power related issues.

Please review previous error logs for power related issues. **This ends the procedure.**

FSPSP64

All the processor support interface (PSI) links of the system are either nonfunctional or deconfigured, so the system cannot IPL appropriately.

Please look for previous error logs that deconfigure hardware. **This ends the procedure.**

FSPSP65

An incorrectly wired or setup network has both Service Processor ethernet interfaces on the same IP subnet.

Please refer to the HMC installation and configuration guide to correct this problem. **This ends the procedure.**

FSPSPC1

If the system hangs after the SRC code that sent you to this procedure appears in the control panel, perform these steps to reset the service processor.

Attention: The system firmware level should be periodically checked on all servers and if it is appropriate, the firmware should be updated to the latest level. If you were directed here because the server displayed B1817201, C1001014, or C1001020 or a combination of these codes, the latest level of firmware can help avoid a recurrence of this problem.

Even if the customer cannot update the firmware on this system at this time, all of their systems should be updated to the latest firmware level as soon as possible to help prevent this problem from occurring on other systems.

1. Reset the service processor:
 - On model FHA, use the Advanced System Management Interface (ASMI) menus, if available, or the Hardware Management Console (HMC) first to remove then to reapply power to the processor node.
2. Using the setting in the ASMI menu, reboot the system in slow mode from the permanent side.
3. If the hang repeats, check with service support to see if a firmware update is available that fixes the problem. See Getting fixes in the Customer service and support topic for details.
4. Choose from the following options:
 - If no firmware update is available, continue with the next step.
 - If a firmware update is available, apply it using the Service Focal Point in the HMC.
Did the update resolve the problem so that the system now boots?
 - **No:** You are here because there is no HMC attached to the system, the flash update failed, or the updated firmware did not fix the hang. Continue with the next step.
 - **Yes: This ends the procedure.**
5. Choose from the following options:
 - If you are a customer, and your system has only one system controller, contact your hardware service provider. **This ends the procedure.**
 - If you are a customer, and your system has a secondary system controller, use the HMC to initiate a service processor failover and continue to bring up the system. Contact your service provider to schedule deferred maintenance on the service processor that is hung. **This ends the procedure.**
 - If you are a hardware service provider, continue with the next step.
6. Replace the system controller symbolic FRU (SYSCONTR).
7. If replacing the system controller does not fix the problem, contact your next level of support. **This ends the procedure.**

FSPSPD1

If the system hangs after the SRC that sent you to this procedure appears in the control panel, perform these steps to reset the service processor.

Attention: The system firmware level should be periodically checked on all servers and if it is appropriate, the firmware should be updated to the latest level. If you were directed here because the server displayed B1817201, C1001014, or C1001020 or a combination of these codes, the latest level of firmware can help avoid a recurrence of this problem.

Even if the customer cannot update the firmware on this system at this time, all of their systems should be updated to the latest firmware level as soon as possible to help prevent this problem from occurring on other systems.

1. Reset the service processor:

On model FHA, use the Advanced System Management Interface (ASMI) menus, if available, or the Hardware Management Console (HMC) first to remove then to reapply power to the processor node.

2. Using the setting in the ASMI menu, reboot the system in slow mode from the permanent side.
3. If the hang repeats, check with service support to see if a firmware update is available that fixes the problem.
4. Choose from the following options:
 - If no firmware update is available, continue with the next step.
 - If a firmware update is available, apply it using the Service Focal Point in the HMC.
Did the update resolve the problem so that the system now boots?
 - **No:** You are here because there is no HMC attached to the system, the flash update failed, or the updated firmware did not fix the hang. Continue with the next step.
 - **Yes: This ends the procedure.**
5. Choose from the following options:
 - If you are a customer, and your system has only one system controller, contact your hardware service provider. **This ends the procedure.**
 - If you are a customer, and your system has a secondary system controller, use the HMC to initiate a service processor failover and continue to bring up the system. Contact your service provider to schedule deferred maintenance on the service processor that is hung. **This ends the procedure.**
 - If you are a hardware service provider, continue with the next step
6. Replace the system controller (symbolic FRU SYSCONTR).
7. If replacing the system controller does not fix the problem, contact your next level of support. **This ends the procedure.**

LICIP15

Use this procedure to help you recover from an initial program load (IPL) failure.

1. Check the LPAR configuration to ensure that the load source and alternate load source devices are valid. Is the LPAR configuration correct?
 - Yes:** Continue with the next step.
 - No:** Correct the LPAR configuration problem. **This ends the procedure.**
2. Did the failure occur when you were performing a type-D IPL?
 - **No:** Go to step 6 on page 22.
 - **Yes:** Perform the following:
 - a. Ensure that the device is ready and has valid install media.
 - b. Ensure that the device has the correct SCSI address and that any cables are properly connected and terminated.If a correction is made during the above checks, retry the IPL. If none of the above items resolve the problem, continue with the next step.
3. Are the load source and alternate load source devices controlled by the same I/O adapter, and does the load source disk unit have SLIC loaded on it?
 - Yes:** Continue with the next step.
 - No:** Go to step 5 on page 22.
4. Perform a type-B IPL in manual mode. Does the same SRC occur?
 - **No:** Continue with the next step.
 - **Yes:** Replace the following items, one at a time, and retry the IPL until the problem is resolved:
 - a. The I/O adapter controlling load source and alternate load source devices.

Note: The I/O adapter may be embedded on the system unit backplane.

- b. The common cable, if present, attached between both the load source and alternate load source and the controlling I/O adapter.
 - c. If none of the items above resolve the problem, contact your next level of support. **This ends the procedure.**
5. Replace the following items, one at a time, and retry the type-D IPL until the problem is resolved:
 - a. Media in the alternate load source device
 - b. Device cables (if present)
 - c. Media device
 - d. Media backplane
 - e. I/O adapter controlling the alternate load source device

Note: The I/O adapter may be embedded on the system unit backplane

- f. If the problem persists after replacing each of these parts, contact your next level of support. **This ends the procedure.**
6. Is the device in a valid location?

Yes: Continue with the next step.

No: Correct the device location problem and retry the IPL. If the problem persists, continue with the next step.
7. Perform a type-D IPL in manual mode to DST. Is the type-D IPL successful?
 - **No:** Continue with the next step.
 - **Yes:** Look for other SRCs and use them to resolve the problem. If there are no SRCs, or the SRCs do not resolve the problem, replace the following items, one at a time, until the problem is resolved:
 - a. Load source disk drive
 - b. Cables (if present)
 - c. Disk drive backplane
 - d. I/O adapter controlling the load source device

Note: The I/O adapter may be embedded on the system unit backplane

- e. Backplane that the I/O adapter is plugged into
 - f. If the problem persists after replacing each of these parts, contact your next level of support. **This ends the procedure.**
8. The type-D IPL in manual mode to DST was not successful. Is the I/O adapter embedded on the system unit backplane?

No: Continue with the next step.

Yes: Replace the system unit backplane and retry the IPL. If the IPL still fails, contact your next level of support. **This ends the procedure.**
9. Are the load source and alternate load source controlled by the same I/O adapter?

No: Go to step 12 on page 23.

Yes: Continue with the next step.
10. Replace the I/O adapter and perform a type-A or type-B IPL. Does the IPL complete successfully?

Yes: **This ends the procedure.**

No: Continue with the next step.
11. Perform a type-D IPL in manual mode to DST. Is the type-D IPL successful?
 - **No:** Continue with the next step.
 - **Yes:** Look for other SRCs and use them to resolve the problem. If there are no SRCs, or the SRCs do not resolve the problem, replace the following items, one at a time, until the problem is resolved:

- a. Load source disk drive
- b. Cables (if present)
- c. Disk drive backplane
- d. I/O adapter controlling the load source device

Note: The I/O adapter may be embedded on the system unit backplane

- e. Backplane that the I/O adapter and I/O processor are plugged into
- f. If the problem persists after replacing each of these parts, contact your next level of support.
This ends the procedure.

12. Replace the backplane that the I/O adapter is plugged into and retry the IPL. If the IPL still fails, contact your next level of support. **This ends the procedure.**

INTIP03

Use this procedure to isolate problems with external noise on AC voltage lines.

Electrical noise on incoming ac voltage lines can cause various system failures. The most common source of electrical noise is lightning.

1. Ask the customer if an electrical storm was occurring at the time of the failure to determine if lightning could have caused the failure.

Could lightning have caused the failure?

No: Go to step 3.

Yes: Continue with the next step.

2. Determine if lightning protection devices are installed on the incoming ac voltage lines where they enter the building. There must be a dedicated ground wire from the lightning protection devices to earth ground.

Are lightning protection devices installed?

Yes: Continue with the next step.

No: Lightning may have caused the intermittent problem. Recommend that the customer install lightning protection devices to prevent this problem from recurring. **This ends the procedure.**

3. Have an installation planning representative perform the following:

- a. Connect a recording ac voltage monitor to the incoming ac voltage lines of the units that contain the failing devices with reference to ground.
- b. Set the voltage monitor to start recording at a voltage slightly higher than the normal incoming ac voltage.

Does the system fail again with the same symptoms?

No: This ends the procedure.

Yes: Continue with the next step.

4. Look at the recording and see if the voltage monitor recorded any noise when the failure occurred. Did the monitor record any noise when the failure occurred?

Yes: Review with the customer what was happening external to the system when the failure occurred. This may help you to determine the source of the noise. Discuss with the customer what to do to remove the noise or to prevent it from affecting the server. **This ends the procedure.**

No: Perform the next procedure in the FRU list. **This ends the procedure.**

INTIP05

Use this procedure to isolate problems with external noise on twinaxial cables.

Electrical noise on twinaxial cables that are not installed correctly may affect the twinaxial workstation I/O processor card.

Examples of this include open shields on twinaxial cables, and station protectors that are not being installed where necessary.

Check for the following on the system:

1. Check for the following on the system:
 - There must be no more than 11 connector breaks in a twinaxial cable run.
 - Station protectors must be installed (in pairs) where a cable enters or leaves a building.
 - There can only be two station protectors for each twinaxial run.
 - There is a maximum of seven devices (with addresses 0-6) for each cable run.
 - There is a maximum cable length of 1524 meters (5000 feet) for each port.
 - All cable runs must be ended (terminated).
 - Disconnect all twinaxial cables that are not used.
 - Remove any cause of electrical noise in the twinaxial cables.
 - All workstations must be grounded.
2. **This ends the procedure.**

INTIP07

Use this procedure to lessen the effects of electrical noise (electromagnetic interference, or EMI) on the system.

1. Ensure that air flow cards are installed in all adapter card slots that are not used.
2. Keep all cables away from sources of electrical interference, such as ac voltage lines, fluorescent lights, arc welding equipment, and radio frequency (RF) induction heaters. These sources of electrical noise can cause the system to become powered off.
3. If you have an expansion unit, ensure that the cables that attach the system unit to the expansion unit are seated correctly.

Note: If the failures occur when people are close to the system or machines that are attached to the system, the problem may be electrostatic discharge (ESD).

4. Have an **installation planning representative** use a radio frequency (RF) field intensity meter to determine if there is an unusual amount of RF noise near the server. You also can use it to help determine the source of the noise. **This ends the procedure.**

INTIP08

Use this procedure to ensure that the system is electrically grounded correctly.

Have an **installation planning representative** or an electrician (when necessary), perform the following steps.

1. Power off the server and the power network branch circuits.
2. Ensure the safety of personnel by making sure that all electrical wiring in the United States meets National Electrical Code requirements.
3. Check *all* system receptacles to ensure that each one is wired correctly. This includes receptacles for the server and all equipment that attaches to the server, including workstations. Do this to determine if a wire with primary voltage on it is swapped with the ground wire, causing an electrical shock hazard.
4. For each unit, check continuity from a conductive area on the frame to the ground pin on the plug. Do this at the end of the mainline ac power cable. The resistance must be 0.1 ohm or less.
5. Ground continuity must be present from each unit receptacle to an effective ground. Therefore, check the following:
 - The ac voltage receptacle for each unit must have a ground wire connected from the ground terminal on the receptacle to the ground bar in the power panel.

- The ground bars in all branch circuit panels must be connected with an insulated ground wire to a **ground point**, which is defined as follows:
 - The nearest available metal cold water pipe, only if the pipe is effectively grounded to the earth (see *National Electric Code* Section 250-81, in the United States).
 - The nearest available steel beams in the building structure, only if the beam is effectively grounded to the earth.
 - Steel bars in the base of the building or a metal ground ring that is around the building under the surface of the earth.
 - A ground rod in the earth (see *National Electric Code* Section 250-83, in the United States).

Note: For installations in the United States only, by National Electrical Code standard, if more than one of the preceding grounding methods are used, they must be connected together electrically. See *National Electric Code* Section 250, for more information on grounding.

- The grounds of all separately derived sources (uninterruptible power supply, service entrance transformer, system power module, motor generator) must be connected to a **ground point** as defined above.
- The service entrance ground bar must connect to a **ground point** as defined above.
- All ground connections **must be tight**.
- Check continuity of the ground path for each unit that is using an ECOS tester, Model 1023-100. Check continuity at each unit receptacle, and measure to the **ground point** as defined above. The total resistance of each ground path must be 1.0 ohm or less. If you cannot meet this requirement, check for faults in the ground path.
- Conduit is sometimes used to meet wiring code requirements. If conduit is used, the branch circuits must still have a green (or green and yellow) wire for grounding as stated above.

Note: The ground bar and the neutral bar must never be connected together in branch circuit power panels.

The ground bar and the neutral bar in the power panels that make up the electrical power network for the server must be connected together. This applies to the first electrically isolating unit that is found in the path of electrical wiring from the server to the service entrance power panel. This isolating unit is sometimes referred to as a **separately derived source**. It can be an uninterruptible power supply, the system power module for the system, or the service entrance transformer. If the building has none of the above isolating units, the ground bar and the neutral bar must be connected together in the service entrance power panel.

6. Look inside all power panels to ensure the following:
 - There is a separate ground wire for each unit.
 - The green (or green and yellow) ground wires are connected only to the ground bar.
 - The ground bar inside each power panel is connected to the frame of the panel.
 - The neutral wires are connected only to the neutral bar.
 - The ground bar and the neutral bar are not connected together, except as stated in step 5 on page 24.
7. For systems with more than one unit, ensure that the ground wire for each unit is not connected from one receptacle to the next in a string. Each unit must have its own ground wire, which goes to the power source.
8. Ensure that the grounding wires are insulated with green (or green and yellow) wire at least equal in size to the phase wires. The grounding wires also should be as short as possible.
9. If extension-mainline power cables or multiple-outlet power strips are used, make sure that they must have a three-wire cable. One of the wires must be a ground conductor. The ground connector on the plug must not be removed. This applies to any extension mainline power cables or multiple-outlet power strips that are used on the server. It also applies for attaching devices such as personal computers, workstations, and modems.

Note: Check all extension-mainline power cables and multiple-outlet power strips with an ECOS tester and with power that is applied. Ensure that no wires are crossed (for example, a ground wire crossed with a wire that has voltage on it).

This ends the procedure.

INTIP09

Use this procedure to check the AC electrical power for the system.

Have an **installation planning representative** or an electrician (when necessary), perform the following steps.

1. Power off the server and the power network branch circuits.
2. To ensure the safety of personnel, all electrical wiring in the United States must meet National Electrical Code requirements.
3. Check **ALL** system receptacles to ensure that each is wired correctly. This includes receptacles for the server and all equipment that attaches to the server, including workstations. Do this to determine if a wire with primary voltage on it has been swapped with the ground wire, causing an electrical shock hazard.
4. When three-phase voltage is used to provide power to the server, correct balancing of the load on each phase is important. The units should be connected so that all three phases are used equally.
5. The power distribution neutral must return to the "separately derived source" (uninterruptible power supply, service entrance transformer, system power module, motor generator) through an insulated wire that is the same size as the phase wire or larger.
6. The server and its attached equipment should be the only units that are connected to the power distribution network that the server gets its power.
7. The equipment that is attached to the server, such as workstations and printers, must be attached to the power distribution network for the server when possible.
8. Check all circuit breakers in the network that supply ac power to the server as follows:
 - Ensure that the circuit breakers are installed tightly in the power panel and are not loose.
 - Feel the front surface of each circuit breaker to detect if it is warm. A warm circuit breaker may be caused by:
 - The circuit breaker that is not installed tightly in the power panel.
 - The contacts on the circuit breaker that is not making a good electrical connection with the contacts in the power panel.
 - A defective circuit breaker.
 - A circuit breaker of a smaller current rating than the current load which is going through it.
 - Devices on the branch circuit which are using more current than their rating.
9. Equipment that uses a large amount of current, such as: Air conditioners, copiers, and FAX machines, should not receive power from the same branch circuits as the system or its workstations. Also, the wiring that provides ac voltage for this equipment should not be placed in the same conduit as the ac voltage wiring for the server. The reason for this is that this equipment generates ac noise pulses. These pulses can get into the ac voltage for the server and cause intermittent problems.
10. Measure the ac voltage to each unit to ensure that it is in the normal range.

Is the voltage outside the normal range?

No: Continue with the next step.

Yes: Contact the customer to have the voltage source returned to within the normal voltage range.
11. *The remainder of this procedure is only for a server that is attached to a separately derived source.*

Some examples of separately derived sources are an uninterruptible power supply, a motor generator, a service entrance transformer, and a system power module.

The ac voltage system must meet all the requirements that are stated in this procedure and also all of the following:

Notes:

- a. The following applies to an uninterruptible power supply, but it can be used for any separately derived source.
- b. System upgrades **must not** exceed the power requirements of your derived source.

The uninterruptible power supply must be able to supply the peak repetitive current that is used by the system and the devices that attach to it. The uninterruptible power supply can be used over its maximum capacity if it has a low peak repetitive current specification, and the uninterruptible power supply is already fully loaded. Therefore, a de-rating factor for the uninterruptible power supply must be calculated to allow for the peak-repetitive current of the complete system. To help you determine the de-rating factor for an uninterruptible power supply, use the following:

Note: The peak-repetitive current is different from the "surge" current that occurs when the server is powered on.

The de-rating factor equals the crest factor multiplied by the RMS load current divided by the peak load current where the:

- Crest factor is the peak-repetitive current rating of the uninterruptible power supply that is divided by the RMS current rating of the uninterruptible power supply. If you do not know the crest factor of the uninterruptible power supply, assume that it is 1.414.
- RMS load current is the steady state RMS current of the server as determined by the power profile.
- Peak load current is the steady state peak current of the server as determined by the power profile.

For example, if the de-rating factor of the uninterruptible power supply is calculated to be 0.707, then the uninterruptible power supply must not be used more than 70.7% of its kVA-rated capacity. If the kVA rating of the uninterruptible power supply is 50 kVA, then the maximum allowable load on it is 35.35 kVA (50 kVA multiplied by 0.707).

When a three-phase separately derived source is used, correct balancing of the load as specified in step 4 on page 26 is *critical*. If the load on any one phase of an uninterruptible power supply is more than the load on the other phases, the voltage on all phases may be reduced.

12. If the system is attached to an uninterruptible power supply or motor generator, then check for the following:
 - The system and the attached equipment should be the only items that are attached to the uninterruptible power supply or motor generator. Equipment such as air conditioners, copiers, and FAX machines should not be attached to the same uninterruptible power supply, or motor generator that the system is attached.
 - The system unit console and the Electronic Customer Support modem must get ac voltage from the same uninterruptible power supply or motor generator to which the system is attached. **This ends the procedure.**

INTIP14

Use this procedure to isolate problems with station protectors.

Station protectors must be installed on all twinaxial cables that leave the building in which the server is located. This applies even if the cables go underground, through a tunnel, through a covered outside hallway, or through a skyway. Station protectors help prevent electrical noise on these cables from affecting the server.

1. Look at the logs to determine what workstations are associated with the failure.
2. Determine if station protectors are installed on the twinaxial cables to the failing workstations.

Are station protectors installed on the twinaxial cables to the failing workstations?

Yes: Perform the next procedure listed in the FRU list. **This ends the procedure.**

No: You may need to install station protectors on the twinaxial cables to the failing workstations. **This ends the procedure.**

INTIP16

Use this procedure when you need to copy a main storage dump to give to your next level of support.

For some problems, performing a dump of main storage helps to analyze the problem. The data on the dump is analyzed by support personnel to determine the cause of the problem and how to correct it.

1. Copy the main storage dump to tape.
2. Ask your next level of support to determine for assistance. **This ends the procedure.**

INTIP18

Use this procedure to determine if one or more PTFs are available to correct this specific problem.

1. Ensure that all PTFs that relate to the problem have been installed.

Note: Ensure that the latest platform LIC fix has been installed before you exchange a service processor.

2. Contact your next level of support for more information. **This ends the procedure.**

INTIP20

Use this procedure to analyze system performance problems.

1. Look in the HMC to determine if any hardware errors occurred at the same time that the performance problem occurred. Did any hardware problems occur at the same time that the performance problem occurred?

Yes: Perform problem analysis and correct the hardware errors. **This ends the procedure.**

No: The performance problems are not related to hardware. Continue with the next step.

2. Perform the following steps:
 - a. Ask the customer if they have asked software support for any software PTFs that relate to this problem.
 - b. Recommend that the customer install a cumulative PTF package if they have not done so in the past three months.
 - c. Inform the customer that performance could possibly be improved by having Software Support analyze the conditions.
 - d. Inform the customer that your service provider has performance tools. Contact Software Support for more information. **This ends the procedure.**

INTIP24

Use this procedure to collect data when the service processor reports a suspected intermittent problem.

It is important that you collect data for this problem so that the problem can be corrected. Use this procedure to collect the data.

There are several ways the system can display the SRC. Follow the instructions for the correct display method, defined as follows:

- If this SRC is displayed in the Product Activity Log or ASM log, then record all of the SRC data words, save all of the error log data, and contact your next level of support to submit an APAR.
- If the SRC is displayed at the control panel, and the control panel user interface buttons respond normally, then record all of the SRC words.

Do not perform an IPL until you perform a storage dump of the service processor. To get a storage dump of the service processor, perform the following:

1. Record the complete system reference code (SRC) (functions 11 through 20).
2. Perform a service processor dump.
3. Is a display shown on the console?
 - **Yes:** Continue with the next step.
 - **No:** The problem is not intermittent. Choose from the following options:
 - If you were sent here from another procedure, return there and follow the procedure for a problem that is not intermittent.
 - If the problem continues, replace the service processor hardware. **This ends the procedure.**
4. The problem is intermittent. Copy the IOP dump to tape.
5. Complete the IPL.
6. Determine if there are available program temporary fixes (PTFs) for this problem.
7. If a PTF is found, apply the PTF. Then, return here and answer the following question.
Did you find and apply a PTF for this problem?
 - **Yes: This ends the procedure.**
 - **No:** Record the following information, and contact your next level of support.
 - The complete SRC you recorded in this procedure
 - The service processor dump to tape you obtained in step 4.
 - All known system symptoms:
 - How often the intermittent problem occurs
 - System environment (IPL, certain applications)
 - If necessary, other SRCs that you suspect relate to the problem
 - Information needed to write an LICTR. **This ends the procedure.**

MABIP02

Use this procedure to resolve a problem with a multi-adapter bridge.

Click Next to continue with PCI bus isolation using the HMC.

MABIP03

Use this procedure to isolate a failing PCI adapter under a multi-adapter bridge.

Click Next to continue with PCI bus isolation using the HMC.

RIOIP11

Use this procedure to recover from a B7xx 6982 RIO/HSL/12X failure.

1. Record the RIO/HSL/12X loop number in the first four characters of word 7 of this SRC and perform "RIOIP10" on page 30.
2. Did the RIO/HSL/12X loop recover?
 - No:** Continue with the next step
 - Yes:** Close the problem. **This ends the procedure.**
3. Work with the customer to determine if a processor enclosure or I/O enclosure on the RIO/HSL/12X loop has powered down normally.
4. Was a processor enclosure or I/O enclosure on the loop powered down normally?
 - No:** Go to 6 on page 30.

Yes: The loop remains in a failed state until all processor enclosures and I/O enclosures on the loop are powered on and functioning. Work with the customer to determine if all the powered down enclosures on the loop can be powered on. After all enclosures on the loop are powered on, continue with the next step.

5. Did the RIO/HSL/12X loop recover?

No: Continue with the next step.

Yes: Close the problem. **This ends the procedure.**

6. Search for a serviceable event with a 1xxx xxxx SRC logged at approximately the same time and with one or more FRUs in the same unit as those in the FRU list for the SRC you are currently working.

7. Did you find a serviceable event with a 1xxx xxxx SRC?

No: Go to 9

Yes: Work that problem. After you have repaired that error, the RIO/HSL/12X loop may be recovered. After you complete working that problem, return to this procedure and check to determine if correcting that problem also corrected the RIO/HSL/12X error. To determine if the RIO/HSL/12X loop has recovered, record the RIO/HSL/12X loop number in the first four characters of word 7 of this SRC and perform "RIOIP10."

8. Did the RIO/HSL/12X loop recover?

No: Continue with the next step.

Yes: Close the problem. **This ends the procedure.**

9. In the serviceable event view, search for a B700 6981 error logged at approximately the same time and on the same RIO/HSL/12X loop (the first four characters of word 7 are the same).

10. Did you find a serviceable event with a B700 6981 SRC at approximately the same time and on the same RIO/HSL/12X loop?

No: Go to 12.

Yes: Work that problem. After you have repaired that error, the RIO/HSL/12X loop may be recovered. After you complete working that problem, return to this procedure and check to determine if correcting that problem also corrected the RIO/HSL/12X error. To determine if the RIO/HSL/12X loop has recovered, record the RIO/HSL/12X loop number in the first four characters of word 7 of this SRC and perform "RIOIP10."

11. Did the RIO/HSL/12X loop recover?

No: Continue with the next step.

Yes: Close the problem. **This ends the procedure.**

12. Using the FRU list that you are working with for this SRC, exchange one FRU at a time. After you exchange each FRU, determine if the loop has recovered. To determine if the RIO/HSL/12X loop has recovered, record the RIO/HSL/12X loop number in the first four characters of word 7 of this SRC and perform "RIOIP10." After the loop recovers or after you have exchanged all the FRUs, continue with the next step.

13. Did the RIO/HSL/12X loop recover?

No: Contact your next level of support. **This ends the procedure.**

Yes: Close the problem. **This ends the procedure.**

RIOIP10

Use this procedure to determine if the RIO/HSL/12X loop is complete (with both primary and redundant paths functioning for each unit on the loop).

The RIO/HSL/12X loop number found in the first 4 characters of word 7 of the SRC that sent you here is in hexadecimal. Convert this number to decimal. If your loop number is greater than or equal to 0781 in hexadecimal format or 1921 in decimal format, then go to RIO/HSL/12X Topology screen, otherwise, go to View RIO Topology screen. Locate the decimal loop number's information on the HMC. Are all links in this loop operational?

Yes: The RIO/HSL/12X loop recovered. Return to the procedure that sent you here. **This ends the procedure.**

No: The RIO/HSL/12X loop did not recover. Return to the procedure that sent you here. **This ends the procedure.**

Connection tables

These are the connection tables for bulk power.

Table 2. Node controller to bulk power hub connection table

CEC Node Location	FRU Location	FRU Connector Location	Bulk Power Hub (BPH) Side A Connector Location	Bulk Power Hub (BPH) Side B Connector Location
P2	Um-P2-C41	Um-P2-C41-J01	Un-P1-C4-J18	
		Um-P2-C41-J02		Un-P1-C4-J18
	Um-P2-C42	Um-P2-C42-J01	Un-P1-C4-J17	
		Um-P2-C42-J02		Un-P2-C4-J17
P3	Um-P3-C41	Um-P3-C41-J01	Un-P1-C4-J12	
		Um-P3-C41-J02		Un-P1-C4-J12
	Um-P3-C42	Um-P3-C42-J01	Un-P1-C4-J11	
		Um-P3-C42-J02		Un-P2-C4-J11
P4	Um-P4-C41	Um-P4-C41-J01	Un-P1-C4-J10	
		Um-P4-C41-J02		Un-P1-C4-J10
	Um-P4-C42	Um-P4-C42-J01	Un-P1-C4-J09	
		Um-P4-C42-J02		Un-P2-C4-J09
P5	Um-P5-C41	Um-P5-C41-J01	Un-P1-C4-J22	
		Um-P5-C41-J02		Un-P1-C4-J22
	Um-P5-C42	Um-P5-C42-J01	Un-P1-C4-J21	
		Um-P5-C42-J02		Un-P2-C4-J21
P6	Um-P6-C41	Um-P6-C41-J01	Un-P1-C4-J20	
		Um-P6-C41-J02		Un-P1-C4-J20
	Um-P6-C42	Um-P6-C42-J01	Un-P1-C4-J19	
		Um-P6-C42-J02		Un-P2-C4-J19
P7	Um-P7-C41	Um-P7-C41-J01	Un-P1-C4-J16	
		Um-P7-C41-J02		Un-P1-C4-J16
	Um-P7-C42	Um-P7-C42-J01	Un-P1-C4-J15	
		Um-P7-C42-J02		Un-P2-C4-J15
P8	Um-P8-C41	Um-P8-C41-J01	Un-P1-C4-J14	
		Um-P8-C41-J02		Un-P1-C4-J14
	Um-P8-C42	Um-P8-C42-J01	Un-P1-C4-J13	
		Um-P8-C42-J02		Un-P2-C4-J13
P9	Um-P9-C41	Um-P9-C41-J01	Un-P1-C4-J24	
		Um-P9-C41-J02		Un-P1-C4-J24
	Um-P9-C42	Um-P9-C42-J01	Un-P1-C4-J23	
		Um-P9-C42-J02		Un-P2-C4-J23

Table 3. System controller to bulk power hub connection table

System controller (SC)	FRU Location	FRU Connector Location	Bulk Power Hub (BPH) Side A Connector Location	Bulk Power Hub (BPH) Side B Connector Location
SC-A	Um-P1-C2	Um-P1-C2-J04	Un-P1-C4-J05	
		Um-P1-C2-J03		Un-P2-C4-J05
SC-B	Um-P1-C5	Um-P1-C5-J04	Un-P1-C4-J06	
		Um-P1-C5-J03		Un-P2-C4-J06

Table 4. Bulk power controller to bulk power hub connection table

Bulk Power Controller (BPC)	FRU Location	FRU Connector Location	Bulk Power Hub (BPH) Side A Connector Location	Bulk Power Hub (BPH) Side B Connector Location
BPC-A	Un-P1-C1	Un-P1-C2-J02	Un-P1-C4-J07	
		Un-P1-C2-J03		Un-P2-C4-J07
BPC-B	Un-P2-C1	Un-P1-C5-J02	Un-P1-C4-J08	
		Un-P1-C5-J03		Un-P2-C4-J08

Table 5. Hardware management console (HMC) bulk power hub connection table

HMC	Bulk Power Hub (BPH) Side A Connector Location	Bulk Power Hub (BPH) Side B Connector Location
HMC-A	Un-P1-C4-J01	
HMC-B		Un-P2-C4-J01

Chapter 3. Using location codes

The information provided in this topic defines specific sections of a location code string. Use this topic when you need help in interpreting a location code.

For additional information about reading your location code, use the following table to link to a specific topic.

Location code topics that might be of interest	Description
"Location code overview"	Contains background information on the use of location codes.
"Physical location codes" on page 34	Provides a definition for physical location code.
"Logical location codes" on page 34	Provides a definition for a logical location code.
"Location code format" on page 34	Provides descriptive information of the <i>Un</i> value in the location code string. For example U5886.001.
"Location code labels" on page 35	Provides a table that identifies and defines the location code labels. The location code labels begin with an alphabetic character and follow the system serial number. For example, U7879.001.10ABCDE-P3-C31-T2-L23. (The system serial number is the "10ABCDE" in the previous example.) The P3, C31, T2, and L23 all contain an alphabetic character that is identified in the Location code labels table.
"Worldwide unique identifier" on page 35	Provides a definition for the worldwide unique identifier. This group of digits follows the resource code labels and always begins with the letter <i>W</i> .

Location code overview

Servers (system unit and expansion units) use physical location codes to provide mapping of replaceable units. Location codes are produced by the server's firmware, which structures them so that they can be used to identify specific parts in a system. The location code format is the same for all servers.

If you are working with a specific location code, the feature immediately follows the first character (U5886). Refer to the Unit type and locations table.

If the location code ends with **-Txx-Lxx**, the server's firmware could not identify the physical location. When a physical location cannot be identified, a logical location code is provided. Where logical location codes occur in enclosures, the locations article for the enclosure has the known conversions listed. For logical location codes with no conversion, contact your next level of support.

If the location code begins with **UTMPx**, the expansion I/O unit's machine type, model and serial number have not been set yet and this is a temporary unit identifier. To identify the unit, examine the display panels on all of the expansion I/O units connected to the server until you find one with the same characters in the first 5 digits of the top line in the unit's display. Record the unit's real machine type and model from the unit label. Match the unit's machine type and model in the Unit type and locations table, and follow the link to determine the service information.

Note: Locations for units that are not in the preceding list are either not supported or there is a problem in the firmware. Contact your next level of support.

Physical location codes

Physical location codes provide a mapping of logical functions and components, such as backplanes, removable modules, connectors, ports, cables, and devices, to their specific locations within the physical structure of the server.

Logical location codes

If the physical location cannot be mapped to a physical location code, the server's firmware will generate a logical location code. A logical location code is a sequence of location labels that identify the path that the system uses to communicate with a given resource.

Note: A resource has as many logical location codes as it has logical connections to the system. For example, an external tape device connected to two I/O adapters will have two logical location codes.

An example of a logical location code is:

U7879.001.10ABCDE-P3-C31-T2-L23

The first part of the location code (through the T2 label) represents the physical location code for the resource that communicates with the target resource. The remainder of the logical location code (L23) represents exactly which resource is indicated.

Location code format

The location code is an alphanumeric string of variable length, consisting of a series of location identifiers, separated by a dash. An example of a physical location for a fan is U_n-A1 .

The first position, represented by U_n (where n is equal to any string contained between the U and the hyphen) in the preceding example, is displayed in one of the following forms:

Note: In location codes, the U is a constant digit, however, the numbered positions following the U are variables and are dependent on your server. Each column defines the numbers following the U in the beginning of the location code.

Table 6. Differentiates between the machine type model and feature code location codes

Feature codes and sequence numbers in its location code
$Uffff.ccc.ssssss-A1$
The leftmost code is always U
$ffff$ represents the feature code of the enclosure (drawer or node)
ccc represents the sequence number of the enclosure
$ssssss$ represents the serial number of the enclosure

The location code is hierarchical; that is, each location identifier in the string represents a physical part. The order (from left to right), in which each identifier is shown, allows you to determine which parts contain other parts in the string.

The - (dash) separator character represents a relationship between two components in the unit. In the example of the fan, whose location code is U_n-A1 , the - (dash) shows that the fan (A1) is contained in the base unit (or U_n). Modules, adapters, cables, and devices are all parts that are plugged into another part. Their location codes will always show that they are plugged into another part as components of the server. Another example, $U_n-P1-C9$ is a memory DIMM, with (C9) plugged into a backplane (P1), which is inside the unit (U_n).

For more information about the various location code label prefixes, refer to Location code labels.

Note: For devices, certain error conditions might cause an i5/OS® device to display the device location in an AIX® format.

Table 7. Unit type and locations

Unit type (Utttt.mmm)	Link to location information
U9119.FHA	Locations

Location code labels

The following table identifies the location code label prefixes.

Note: These labels apply to system units only.

Table 8. Location code label prefixes for system units

Prefix	Description	Example
A	Air-moving device	Fan, blower
C	Card connector	IOP, IOA, DIMM, processor card
D	Device	Diskette, control panel
E	Electrical	Battery, power supply, ac charger
L	Logical path SAS target	IDE address, Fibre Channel LUN
N	Horizontal placement for an empty rack location	
P	Planar	System backplane
T	Port	
U	Unit	
V	Virtual planar	
W	Worldwide unique ID	
X	EIA value for an empty rack location	
Y	Firmware FRU	

Worldwide unique identifier

A worldwide unique identifier location label consists of the prefix "W" followed by a maximum of 16 uppercase hexadecimal digits with no leading zeros. A location code may or may not consist of a worldwide unique identifier. When present, the worldwide unique identifier location label follows the location label of the resource that interfaces with the resource having the worldwide unique identifier, usually a port.

Locations

Use this information to help you map a location code to a position on the unit.

Note: The known logical location codes for this unit are listed next to the corresponding physical location in the following information. If you are working with a logical location code for this unit and it is not listed in the following information, contact your next level of support.

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

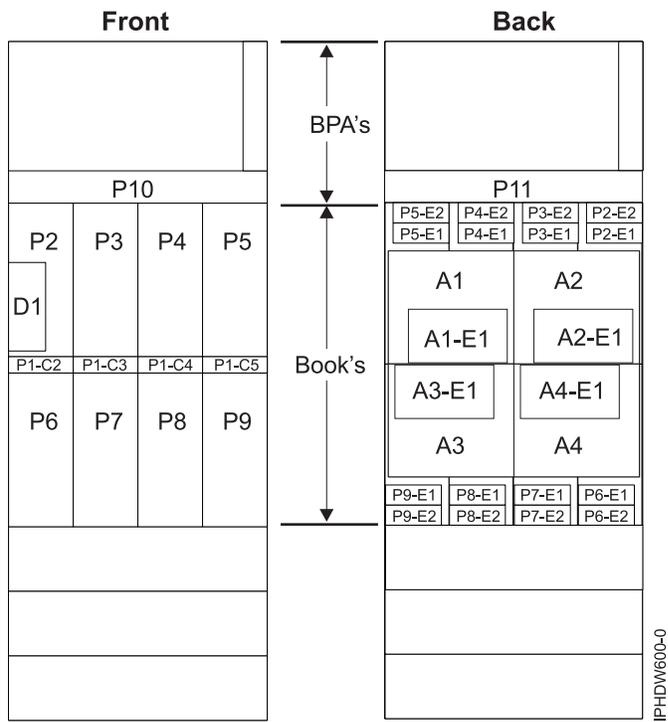


Figure 1. Front and rear views.

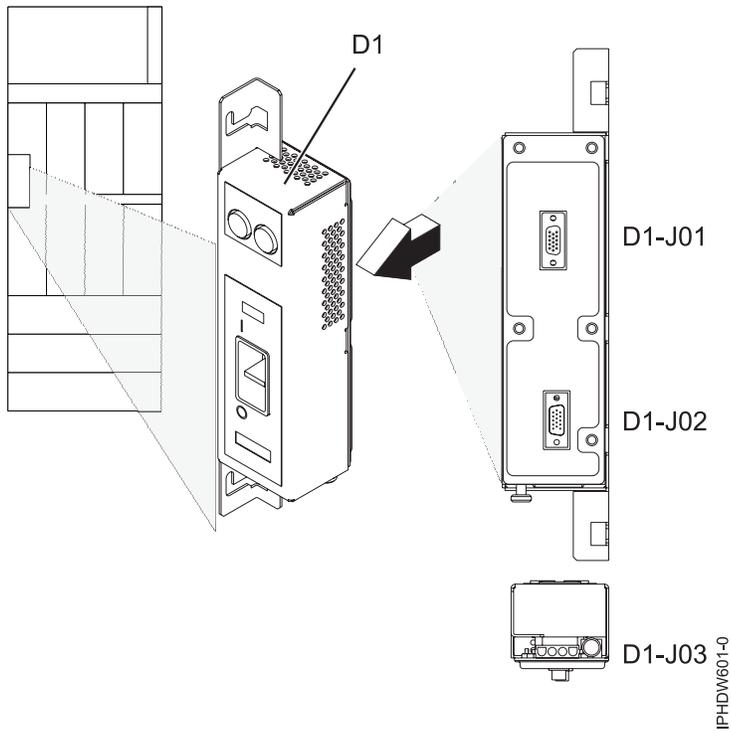


Figure 2. Emergency power off (EPO).

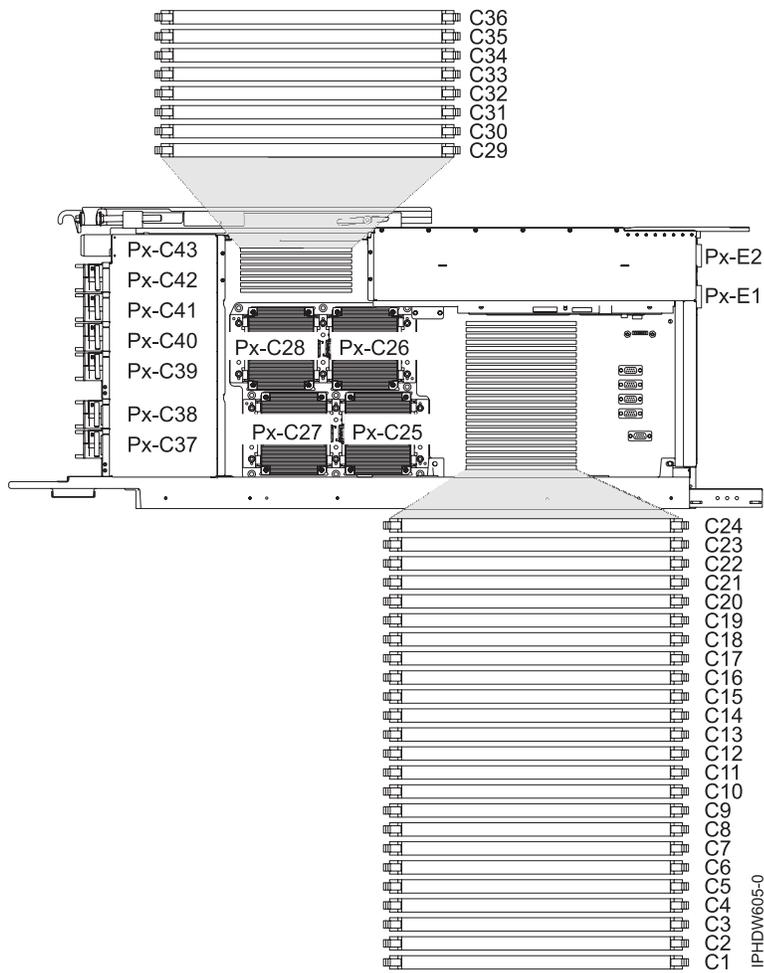


Figure 6. Node locations.

The following table provides location codes for parts that make up the server.

Table 9. Bulk power assembly (BPA) FRU locations and failing components

Failing item name	Identify LED	Physical location code
System unit bulk power assembly (BPA)		Un
Bulk power distribution (BPD)		
Bulk power regulator (BPR) 2A	No	Un-P1-E1
Bulk power regulator (BPR) 1A	No	Un-P1-E4
Bulk power controller (BPC) A	No	Un-P1-C1
Bulk power distribution (BPD) 1A	No	Un-P1-C2
Bulk power distribution (BPD) 2A	No	Un-P1-C3
Bulk power hub (BPH) A	No	Un-P1-C4
Bulk power fan (BPF) A	No	Un-A1
Bulk power assembly (BPA) B. Rear of frame, B side power boundary		Un-P2
Bulk power regulator (BPR) 4B, top	No	Un-P2-E1
Bulk power regulator (BPR) 3B	No	Un-P2-E2
Bulk power regulator (BPR) 2B	No	Un-P2-E3

Table 9. Bulk power assembly (BPA) FRU locations and failing components (continued)

Failing item name	Identify LED	Physical location code
Bulk power regulator (BPR) 1B	No	Un-P2-E4
Bulk power controller (BPC) B	No	Un-P2-C1
Bulk power distribution (BPD) 1B	No	Un-P2-C2
Bulk power distribution (BPD) 2B	No	Un-P2-C3
Bulk power hub (BPH) B	No	Un-P2-C4
Bulk power fan (BPF) B	No	Un-A2
UEPO panel		Un-D1
Bulk power assembly (BPA)		
BPR 4		Un-Px-E1
Connector J01		Un-Px-E1-J01
BPR 3		Un-Px-E2
Connector J01		Un-Px-E2-J01
BPR 2		Un-Px-E3
Connector J01, IBF		Un-Px-E3-J01
BPR 1		Un-Px-E4
Connector J01, IBF		Un-Px-E4-J01
Bulk power controller (BPC)		Un-Px-C1
Connector J01, BPC cross communication	No	Un-Px-C1-J01
Connector J02, ethernet to BPH	No	Un-Px-C1-J02
Connector J03, ethernet to BPH	No	Un-Px-C1-J03
Connector J04, UEPO panel	No	Un-Px-C1-J04
Connector J06, BPF	No	Un-Px-C1-J06
Connector J07, BPC cross power	No	Un-Px-C1-J07
Connector J10, MDA 1 & 3, Y cable powers 2 MDAs	No	Un-Px-C1-J10
Connector J11, MDA 2 & 4, Y cable powers 2 MDAs	No	Un-Px-C1-J11
Bulk power distribution (BPD) connectors		
BPD1	No	Un-Px-C2
Connector J01, I/O drawer 1, DCA 2	No	Un-Px-C2-J01
Connector J02, I/O drawer 1, DCA 1	No	Un-Px-C2-J02
Connector J03, I/O drawer 2, DCA 2	No	Un-Px-C2-J03
Connector J04, I/O drawer 2, DCA 1	No	Un-Px-C2-J04
Connector J05, I/O drawer 3, DCA 2	No	Un-Px-C2-J05
Connector J06, I/O drawer 3, DCA 1	No	Un-Px-C2-J06
Connector J07, node P5	No	Un-Px-C2-J07
Connector J08, node P9	No	Un-Px-C2-J08
Connector J09, node P2	No	Un-Px-C2-J09
Connector J10, node P6	No	Un-Px-C2-J10
BPD2	No	Un-Px-C3

Table 9. Bulk power assembly (BPA) FRU locations and failing components (continued)

Failing item name	Identify LED	Physical location code
Connector J01, I/O drawer 4, DCA 2	No	Un-Px-C3-J01
Connector J02, I/O drawer 4, DCA 1	No	Un-Px-C3-J02
Connector J03, I/O drawer 5, DCA 2	No	Un-Px-C3-J03
Connector J04, I/O drawer 5, DCA 1	No	Un-Px-C3-J04
Connector J05, I/O drawer 6, DCA 2	No	Un-Px-C3-J05
Connector J06, I/O drawer 6, DCA 1	No	Un-Px-C3-J06
Connector J07, node P4 or I/O drawer 7	No	Un-Px-C3-J07
Connector J08, node P3 or I/O drawer 8	No	Un-Px-C3-J08
Connector J09, node P8 or I/O drawer 9	No	Un-Px-C3-J09
Connector J10, node P7 or I/O drawer 10	No	Un-Px-C3-J10
Bulk power hub (BPH)	No	Un-Px-C4
Connector J01-J24	No	Un-Px-C4-Jxx
UEPO panel		Un-Px-D1
Connector J01, to BPC-A		Un-Px-D1-J01
Connector J02, to BPC-B		Un-Px-D1-J02
Central electronics complex (CEC)		
Midplane		Un-P1
Anchor card	Yes	Un-P1-C1
FSP card 0	Yes	Un-P1-C2
Clock card 0	Yes	Un-P1-C3
Clock card 1	Yes	Un-P1-C4
FSP card 1	Yes	Un-P1-C5
Processor book 0, plugs into midplane	Yes	Un-P2
Processor book 1	Yes	Un-P6
Processor book 2	Yes	Un-P3
Processor book 3	Yes	Un-P7
Processor book 4	Yes	Un-P4
Processor book 5	Yes	Un-P8
Processor book 6	Yes	Un-P5
Processor book 7	Yes	Un-P9
Air moving device AMD 1	Yes	Un-A1
Motor drive assembly (MDA) MDA 1	Yes	Un-A1-E1
Air moving device AMD 2	Yes	Un-A2
MDA 2	Yes	Un-A2-E1
Air moving device AMD 3	Yes	Un-A3
MDA 3	Yes	Un-A3-E1
Air moving device AMD 4	Yes	Un-A4
MADA 4	Yes	Un-A4-E1
Processor book Where <i>m</i> varies from 2-9		
DCA 1	Yes	Un-Pm-E2

Table 9. Bulk power assembly (BPA) FRU locations and failing components (continued)

Failing item name	Identify LED	Physical location code
DCA 2	Yes	Un-Pm-E1
I/O hub cards Where <i>m</i> varies from 2–9		
Slot T	Yes	Un-Pm-C40
Slot S	Yes	Un-Pm-C39
Slot U	Yes	Un-Pm-C38
Slot V	Yes	Un-Pm-C37
I/O hub card connectors Where <i>m</i> varies from 2–9		
Slot T	Yes	Un-Pm-C40-T01 and Un-Pm-C40-T02
Slot S	Yes	Un-Pm-C39-T01 and Un-Pm-C39-T02
Slot U	Yes	Un-Pm-C38-T01 and Un-Pm-C38-T02
Slot V	Yes	Un-Pm-C37-T01 and Un-Pm-C37-T02
Book FSP card 1		Un-Pm-C42
Book FSP card 0		Un-Pm-C41
FSP card connector J01		Un-Pm-Cx-T01
FSP card connector J02		Un-Pm-Cx-T02
Memory Where <i>m</i> varies from 2–9		
DIMM S1	Yes	Un-Pm-C36
DIMM S2	Yes	Un-Pm-C35
DIMM S3	Yes	Un-Pm-C34
DIMM S4	Yes	Un-Pm-C33
DIMM S5	Yes	Un-Pm-C32
DIMM S6	Yes	Un-Pm-C31
DIMM S7	Yes	Un-Pm-C30
DIMM S8	Yes	Un-Pm-C29
DIMM T1	Yes	Un-Pm-C24
DIMM T2	Yes	Un-Pm-C23
DIMM T3	Yes	Un-Pm-C22
DIMM T4	Yes	Un-Pm-C21
DIMM T5	Yes	Un-Pm-C20
DIMM T6	Yes	Un-Pm-C19
DIMM T7	Yes	Un-Pm-C18
DIMM T8	Yes	Un-Pm-C17
DIMM V1	Yes	Un-Pm-C16
DIMM V2	Yes	Un-Pm-C15
DIMM V3	Yes	Un-Pm-C14
DIMM V4	Yes	Un-Pm-C13
DIMM V5	Yes	Un-Pm-C12
DIMM V6	Yes	Un-Pm-C11
DIMM V7	Yes	Un-Pm-C10
DIMM V8	Yes	Un-Pm-C9

Table 9. Bulk power assembly (BPA) FRU locations and failing components (continued)

Failing item name	Identify LED	Physical location code
DIMM U1	Yes	Un-Pm-C8
DIMM U2	Yes	Un-Pm-C7
DIMM U3	Yes	Un-Pm-C6
DIMM U4	Yes	Un-Pm-C5
DIMM U5	Yes	Un-Pm-C4
DIMM U6	Yes	Un-Pm-C3
DIMM U7	Yes	Un-Pm-C2
DIMM U8	Yes	Un-Pm-C1
MCM-S		Un-Pm-C28
MCM-T		Un-Pm-C26
MCM-U		Un-Pm-C25
MCM-V		Un-Pm-C27
Front light strip	Yes	Un-P10
Back light strip	Yes	Un-P11
Central electronics complex (CEC) cage connectors Where <i>m</i> varies from 2–5		
Connector J1, front light strip	No	Un-P1-Cm-T1
Connector J2, back light strip	No	Un-P1-Cm-T2
Connector J3, ethernet connects to BHP A	Yes	Un-P1-Cm-T3
Connector J4 ethernet connects to BHP B	Yes	Un-P1-Cm-T4
Connector J5, SPCN connector	No	Un-P1-Cm-T5
Book connectors		
UPIC power connector J01	No	Un-Px-J01
UPIC power connector J02	No	Un-Px-J02
Motor drive assembly (MDA) MDA 1	Yes	Un-A2-E1
MDA 2	Yes	Un-A4-E1
MDA 3	Yes	Un-A3-E1
MDA 4	Yes	Un-A1-E1
Expansion unit feature 5797 and 5798 for EIA 9–12		
DCA 1, drawer power boundary		Un-E1
DCA2, drawer power boundary		Un-E2
I/O planar book, plugs into I/O backplane		Un-P1
I/O planar book, plugs into I/O backplane		Un-P2
Integrated battery feature (IBF) IBF-F1		Un-E3
IBF-F2, EIA 9–10		Un-E4
IBF-R1, EIA 11–12 rear		Un-E5
IBF-R2, EIA 9–10 rear		Un-E6
Expansion unit feature 5797 and 5798 for EIA 5–8		
DCA 1, drawer power boundary		Un-E1
CCA 2, drawer power boundary		Un-E2
I/O planar book, plugs into I/O backplane		Un-P1

Table 9. Bulk power assembly (BPA) FRU locations and failing components (continued)

Failing item name	Identify LED	Physical location code
I/O planar book, plugs into I/O backplane		Un-P2
Expansion unit feature 5798 for EIA 1–4		
DCA 1, drawer power boundary		Un-E1
DCA 2, drawer power boundary		Un-E2
I/O planar book, plugs into I/O backplane		Un-P1
I/O planar book, plugs into I/O backplane		Un-P2

Chapter 4. Removing and replacing parts

Use the Service Focal Point application on the Hardware Management Console (HMC) to find information on how to remove and replace parts.

Do the following to access the Service Focal Point application:

1. Log into the HMC as the service representative.
2. In the Navigation area, select the **Service Applications** icon.
3. Select the **Service Focal Point** icon.
4. Select **Exchange Parts**. The Exchange Parts window opens. Follow the instructions on the Exchange Parts window until you reach the removal and replacement procedures for the selected part.

Chapter 5. Verifying a repair

Use this information to verify hardware operation after making repairs to the system.

Choose from the following:

- To verify the repair of a system that is currently powered off, go to step 1.
- To verify the repair of a system that is currently powered on with no operating system loaded, go to step 3.
- To verify the repair of a system that is currently powered on and an operating system is loaded, go to step 5 on page 48.

1. Power on the server and all attached I/O enclosures.

Did all the enclosures power on?

No	Yes
↓	Go to Step 3.

2. Choose from the following:

- If the original problem was that an enclosure would not power on and you have another FRU to replace, locate and replace the next FRU.
 - If the next FRU in the FRU list is an isolation procedure, perform the isolation procedure.
 - If the original problem was that an enclosure would not power on and you have an isolation procedure to perform, perform the isolation procedure.
 - If the original problem was that an enclosure would not power on and there are no more FRUs or isolation procedures in the FRU list, contact your next level of support.
 - If you have a new problem, perform problem analysis and repair the new problem.
-

3. Load the operating system.

Did the operating system load successfully?

No	Yes
↓	Go to Step 5 on page 48.

4. Choose from the following:

- If the original problem was a failing disk drive that contained the operating system software, go to step 5 on page 48.
 - If the original problem was that the operating system would not load and you have another FRU to replace, go to your FRU locations section to locate the next FRU.
 - If the next FRU in the FRU list is an isolation procedure, perform the isolation procedure.
 - If the original problem was that the operating system would not load and you have an isolation procedure to perform, perform the isolation procedure.
 - If the original problem was that the operating system would not load and there are no more FRUs or isolation procedures in the FRU list, contact your next level of support.
 - If you have a new problem, perform problem analysis and repair the new problem.
-

5. Choose from the following:

- “Verify an installed feature or replaced part on an AIX system or logical partition”
 - “Verify the installed part on a Linux system or logical partition (run AIX diagnostics)” on page 51
 - “Verifying a repair using an i5/OS system or logical partition” on page 51
-

Verify an installed feature or replaced part on an AIX system or logical partition

If you installed feature or replaced a part you might want to use the tools in AIX to verify that the feature or part is recognized by the system or logical partition. Use the procedure in this section to accomplish this task.

To verify the operation of a newly installed feature or replacement part, select the appropriate procedure:

- Verify the installed feature using AIX
- Verifying the replaced part using AIX

Verify the installed feature using AIX:

1. Log in as root user.
2. At the command line, type `diag` and press Enter.
3. Select **Advanced Diagnostics Routines**. Press Enter.
4. From the **Diagnostic Mode Selection** menu, select **System Verification**. Press Enter.
5. When the **Advanced Diagnostic Selection** menu appears, do one of the following:
 - To test a single resource, select the resource that you just installed from the list of resources and press Enter.
 - To test all the resources available to the operating system, select **All Resources** and press Enter.
6. Select **Commit**, and wait until the diagnostic programs run to completion, responding to any prompts that appear.
7. Did the diagnostics run to completion and display the message No trouble was found?
 - **No:** If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. Review the installation procedures to ensure that the new feature is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system is running in LPAR mode, note the logical partition in which you installed the feature. Contact your service provider for assistance.
 - **Yes:** The new device is installed correctly. Exit the diagnostic programs and return the system to normal operations.

Verify the replacement part using AIX

To verify the operation of a newly installed feature or replacement part, follow these steps:

1. Did you replace the part using either AIX or the online diagnostics service aid’s concurrent (hot-swap) service operation?
 - No:** Go to step 2.
 - Yes:** Go to step 5 on page 49.
2. Is the system powered off?
 - Yes:** If the system supports slow boot, set the system to perform a slow boot. For information, see “Using the HMC to perform a slow boot” on page 103.

- No:** Go to step 4.
3. Start the system and wait until the AIX operating system login prompt displays or until apparent system activity on the operator panel or display has stopped.
Did the AIX login prompt display?
 - **Yes:** Go to step 4
 - **No:** If an SRN or other reference code is displayed, suspect a loose adapter or cable connection. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see.
If the system is partitioned, note the logical partition in which you replaced the part. Contact your service provider for assistance.
 4. At the command prompt, type `diag -a` and press Enter to check for missing resources. If you see a command prompt, go to step 5.
If the **Diagnostic selection** menu is shown with **M** appearing next to any resource, follow these steps:
 - a. Select the resource and press Enter.
 - b. Select **Commit**.
 - c. Follow any instructions that are shown.
 - d. If a *Do you want to review the previously displayed error?* message is shown, select **Yes** and press Enter.
 - e. If an SRN is shown, suspect a loose card or connection. If no obvious problem is shown, record the SRN and contact your service provider for assistance.
 - f. If no SRN is shown, go to 5.
 5. Test the part by doing the following:
 - a. At the command line, type `diag` and press Enter.
 - b. From the **Function Selection** menu, select **Advanced Diagnostics Routines**. Press Enter.
 - c. From the **Diagnostic Mode Selection** menu, select **System Verification**. Press Enter.
 - d. Select **All Resources**, or select the diagnostics for the individual part to test only the part you replaced, and any devices that are attached to the part you replaced. Press Enter.
Did the **Resource Repair Action** menu appear?
 - No:** Go to step 6.
 - Yes:** Go to step 7.
 6. Did the *Testing Complete, No trouble was found* message appear?
 - **No:** There is still a problem. Contact your service provider. **This ends the procedure.**
 - **Yes:** Select **Log Repair Action**, if not previously logged, from the **Task Selection** menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the Resource List, select `sysplanar0`. Press Enter.

Tip: This action changes the indicator light for the part from the fault state to the normal state. Go to step 9 on page 50
 7. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the *Resource Repair Action* menu appears. After replacing a part, you must select the resource for that part from the *Resource Repair Action* menu. This updates the AIX error log to indicate that a system-detectable part has been replaced.

Note: On systems with a indicator light for the failing part, this changes the indicator light to the normal state.
Follow these steps:

- a. Select the resource that has been replaced from the *Resource Repair Action* menu. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**. Press Enter.
 - b. Select **Commit** after you make your selections. Did another *Resource Repair Action* display appear?
 - No:** If the *No Trouble Found* display appears, go to step 9
 - Yes:** Go to step 8.
8. The parent or child of the resource you just replaced may also require that you run the Resource Repair Action option on it. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the *Resource Repair Action* menu appears. After replacing that part, you must select the resource for that part from the *Resource Repair Action* menu. This updates the AIX error log to indicate that a system-detectable part has been replaced.
- Note:** This changes the indicator light for the part from the fault state to the normal state. Follow these steps:
- a. From the *Resource Repair Action* menu, select the parent or child of the resource that has been replaced. If the repair action was to reseat a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**. Press Enter.
 - b. Select **Commit** after you make your selections.
 - c. If the *No Trouble Found* display appears, go to step 9.
9. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the value they had prior to servicing the system.
10. Did you do any hot-plug procedures before doing this procedure?
 - No:** Go to step 11.
 - Yes:** Go to step 12.
11. Start the operating system, with the system or logical partition in normal mode. Were you able to start the operating system?
 - No:** Contact your service provider. **This ends the procedure.**
 - Yes:** Go to step 12.
12. Are the indicator lights still on?
 - **No. This ends the procedure.**
 - **Yes.** Turn off the lights. See one of the following for instructions:
 - “Changing service indicators”

Changing service indicators

Turn off system attention indicator, enable enclosure indicators, change indicators by location code, and perform an LED test on the control panel.

The service indicators alert you that the system requires attention or service. It also provides a method for identifying a field-replaceable unit (FRU) or a specific enclosure within the system.

A hierarchical relationship exists between FRU indicators and enclosure indicators. If any FRU indicator is in an *identify* state, then the corresponding enclosure indicator will change to an *identify* state automatically. You cannot turn off the enclosure indicator until all FRU indicators within that enclosure are in an *off* state.

Verify the installed part on a Linux system or logical partition (run AIX diagnostics)

If you have installed a new part, use the instructions in this section to learn how to verify that the system recognizes the part.

To verify the newly installed or replaced part, continue with “Verify an installed part using stand-alone diagnostics.”

Verifying a repair using an i5/OS system or logical partition

If you have installed a new feature or part, verify that the system recognizes the feature or part by using the i5/OS system service tools. Use the procedure in this section to accomplish this task.

1. Deactivate the failing item indicator light and close the service action log entry.
2. Be sure you are signed on **with at least service level authority**.
3. On the command line of the i5/OS session, type `strsst` and press Enter.

Note: If you cannot get to the System Service Tools display, use function 21 from the control panel. Alternatively, if the system is managed by Hardware Management Console (HMC), use the Service Focal Point Utilities to get to the Dedicated Service Tools (DST) display.

4. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.

Note: The service tools password is case-sensitive.

5. Select **Start a service tool** from the System Service Tools (SST) display. Press Enter.
6. Select **Hardware service manager** from the Start a Service Tool display. Press Enter.
7. Select **Logical hardware resources (buses, IOPs, controllers)** from the Hardware Service Manager display. This option allows you to display and work with logical resources. Logical hardware resources are the functional resources of the system used by the operating system.
8. Press Enter.

When you select one of the options from the Logical Hardware Resources display, you can do the following:

- Display logical hardware resource status
- Display or change logical hardware resource information
- Display associated packaging hardware resources

For more information on collecting information and performing specific functions using the options and function keys from the Logical Hardware Resources display or for details on the symbols that appear next to the Resource Description field, see the online Help information.

Verify an installed part using stand-alone diagnostics

If you have installed or replaced a part, verify that the system recognizes the new part. Use the procedure in this section to accomplish this task.

You can use stand-alone diagnostics to verify an installed part in a Linux[®] system, expansion unit, or logical partition. You access these diagnostics from a CD-ROM or from the Network Installation Management (NIM) server. This procedure describes how to use the diagnostics from a CD-ROM. For information on running diagnostics from the Network Installation Management (NIM) server, see “Running the eServer stand-alone diagnostics from a Network Installation Management server” on page 114.

Prerequisites

- If this server is directly attached to another server or attached to a network, be sure communication with the other servers is stopped.
- eServer™ stand-alone diagnostics require use of all of the logical partition resources. No other activity can be running on the logical partition.
- eServer stand-alone diagnostics require access to the system console.

To use stand-alone diagnostics, follow these steps:

1. Stop all jobs and applications and then stop the operating system on the system or logical partition.
2. Remove all tapes, diskettes, and CD-ROM.
3. Turn off the system unit power. The next step boots the server or logical partition from the eServer stand-alone diagnostics CD-ROM. If the optical drive is not available as the boot device on the server or logical partition on which you are working, follow these steps:
 - a. Access the ASMI. See “Accessing the ASMI” on page 92 for information on using the ASMI.
 - b. On the ASMI main menu, click on **Power/Restart Control**.
 - c. Click on Power On/Off System.
 - d. Select the **Service mode boot from default boot list** option in the AIX/Linux logical partition mode boot drop-down menu.
 - e. Click on **Save settings and power on**. As soon as the optical drive has power, insert the eServer standalone diagnostic CD-ROM.
 - f. Go to step 5.
4. Turn on the system unit power and immediately insert the diagnostics CD-ROM into the optical drive.
5. After the **keyboard** POST indicator displays on the system console and before the last POST indicator (**speaker**) displays, press the numeric 5 key on the system console to indicate that a service mode boot should be initiated using the default service mode boot list.
6. Enter any requested password.
7. At the *Diagnostic Operating Instructions* display, press Enter.

Note: If an SRN or other reference code is displayed, suspect a loose adapter or cable connection.

Note: If you received an SRN or any other reference code when you attempted to start the system, contact your service provider for assistance.

8. If the terminal type is requested, you must use the **Initialize Terminal** option on the *Function Selection* menu to initialize the operating system before you can continue.
9. From the Function Selection menu, select **Advanced Diagnostics Routines**. Press Enter.
10. From the Diagnostic Mode Selection menu, select **System Verification**. Press Enter.
11. When the Advanced Diagnostic Selection menu appears, select **All Resources**, or test only the part you replaced, and any devices that are attached to the part you replaced, by selecting the diagnostics for the individual part. Press Enter.
12. Did the *Testing Complete, No trouble was found* message appear?
 - **No:** There is still a problem. Contact your service provider.
 - **Yes:** Go to step 13.
13. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the value they had prior to servicing the system.
14. If the indicator lights are still on, follow these steps:
 - a. Select **Identify and Attention Indicators** from the *Task Selection* menu to turn off the system attention and indicator lights. Press Enter.
 - b. Select **Set System Attention Indicator to NORMAL** and press Enter.

- c. Select **Set All Identify Indicators to NORMAL** and press Enter.
- d. Choose **Commit**.

Note: This changes the system attention and identify indicators from the *Fault* state to the *Normal* state.

- e. Exit to the command line.

Chapter 6. Part information

This topic contains indexed drawings and tables that cross-reference the enclosure's FRUs (field replaceable units) to part numbers and a part description.

Note: For external cable FRU part number and description, see the *Site and Hardware Planning Guide*, order number SA76-0091.

Table 10. Cables

CCIN	Part number	Description
	95P4084	SAS cable
	44V4041	1 meter SAS cable
	44V4147	1 meter SAS cable
	44V4817	2 meter SAS cable
	44V4148	3 meter SAS cable
	44V4154	3 meter SAS cable
	44V4158	3 meter SAS cable
	44V4163	3 meter SAS cable
	44V4149	6 meter SAS cable
	44V4155	6 meter SAS cable
	44V4159	6 meter SAS cable
	44V4164	6 meter SAS cable
	44V4156	15 meter SAS cable
	44V4160	15 meter SAS cable
	52G4233	SCSI cable
	41Y0596	1 meter SCSI cable
	41Y0597	3 meter SCSI cable
	41Y0598	5 meter SCSI cable
	41Y0599	10 meter SCSI cable
	41Y0600	20 meter SCSI cable
	22R5217	2 meter SPCN cable
	22R5239	3 meter SPCN cable
036A	39J5820	3 meter SPCN cable
	22R5219	6 meter SPCN cable
	22R5221	15 meter SPCN cable
	22R5222	30 meter SPCN cable
	39J2561	10 meter HSL2 cable
	42V2129	.6 meter 12X IB cable
	42V2131	2.5 meter 12X IB cable
	42R6160	8 meter 12X IB cable
	32N1311	2 meter external cable
	31P6132	8 meter cable

Table 10. Cables (continued)

CCIN	Part number	Description
	41V0810	BPCA TO BPCB cable
	15R6779	Bulk power distribution cable
	15R6780	Bulk power distribution cable
	41V2172	Bulk power regulator cable
	41V0570	IBF cable
	39J5836	UPS adapter cable
	95P4049	DVD cable
	11P4606	Cable clamp
	0524519	Cable tie
	15R8270	Cable tool

Table 11. Keyboards

CCIN	Part number	Description
	10N6984	Keyboard, Arabic
	32N1233	Keyboard, Arabic
	32N1212	Keyboard, Brazilian
	10N6963	Keyboard, Brazilian/Portuguese
	10N6972	Keyboard, Bulgarian
	32N1221	Keyboard, Bulgarian
	32N1217	Keyboard, CANFRC
	32N1215	Keyboard, Chinese
	10N6966	Keyboard, Chinese/US
	10N6981	Keyboard, Czechoslovakian
	32N1230	Keyboard, Czechoslovakian
	10N6971	Keyboard, Danish
	32N1220	Keyboard, Danish
	32N1206	Keyboard, French
	10N6957	Keyboard, French
	10N6967	Keyboard, French Canadian
	10N6968	Keyboard, French Canadian
	32N1216	Keyboard, French Canadian
	10N6973	Keyboard, French/German
	10N6959	Keyboard, German
	32N1208	Keyboard, German
	10N6977	Keyboard, Greek
	32N1226	Keyboard, Greek
	10N6978	Keyboard, Hebrew
	32N1227	Keyboard, Hebrew
	10N6964	Keyboard, Hungarian
	32N1213	Keyboard, Hungarian

Table 11. Keyboards (continued)

CCIN	Part number	Description
	10N6958	Keyboard, Italian
	32N1207	Keyboard, Italian
	32N1211	Keyboard, Japanese
	10N6962	Keyboard, Japanese
	32N1214	Keyboard, Korean
	10N6965	Keyboard, Korean
	10N6983	Keyboard, LA Spanish
	32N1232	Keyboard, LA Spanish
	10N6974	Keyboard, Norwegian
	32N1223	Keyboard, Norwegian
	10N6979	Keyboard, Polish
	32N1228	Keyboard, Polish
	10N6975	Keyboard, Portuguese
	10N6976	Keyboard, Portuguese
	32N1224	Keyboard, Portuguese
	32N1225	Keyboard, Portuguese
	10N6986	Keyboard, Russian
	32N1235	Keyboard, Russian
	10N6980	Keyboard, Slovakia
	32N1229	Keyboard, Slovakia
	32N1236	Keyboard, Slovakia
	10N6961	Keyboard, Spanish
	32N1210	Keyboard, Spanish
	10N6970	Keyboard, Sweden/Finland
	32N1219	Keyboard, Sweden/Finland
	32N1234	Keyboard, Thailand
	10N6985	Keyboard, Thailand
	10N6982	Keyboard, Turkey
	32N1231	Keyboard, Turkey
	10N6960	Keyboard, United Kingdom
	32N1209	Keyboard, United Kingdom
	10N6956	Keyboard, United Kingdom
	10N6988	Keyboard, US EMEA
	32N1205	Keyboard, US
	10N6987	Keyboard, Yugoslavian/Latin

Table 12. Miscellaneous parts

CCIN	Part number	Description
	External cables and cords	Refer to <i>Site Preparation and Physical Planning Guide</i> , SA76-0091

Table 12. Miscellaneous parts (continued)

CCIN	Part number	Description
	Cable configuration	Refer to <i>Enclosures and Expansion Units</i> , SA76-0151
	PCI adapters	See <i>Managing PCI Adapters</i> , SA76-0092.
	Removable media	See <i>Managing Devices</i> , SA76-0107.
316C	41V2097	0-16 GB CUoD DIMM
316B	41V2095	0-8 GB CUoD DIMM, DDR2
319C	15R7436	1 GB DIMM, DDR2, 667 MHz
	03N5265	146 GB DASD, 10 K
	03N6330	146 GB DASD, 10 K
	03N5285	146 GB DASD, 15 K
	10N7232	146 GB SAS DASD, 15 K
	10N7204	146 GB SAS DASD, 15 K, 3.5 inch
31B4	45D1426	16 GB DIMM, DDR2, 400 MHz
	15R7322	19 inch acoustic cover kit
319E	15R7439	2 GB DIMM, DDR2
	39R6550	2U rail kit
	10N7211	300 GB DASD, 15K
	10N8578	300 GB DASD, 15K
	03N5270	300 GB DASD, DASD, 10 K
	03N6335	300 GB DASD, DASD, 10 K
	10N7208	300 GB DASD, SAS, 15 K, 3.5 inch
	10N7234	300 GB SAS DASD, 15 K
319D	15R7445	4 GB DIMM, DDR2, 533 MHz
	23R5638	4 MM cleaning cartridge
	44P2809	42U frame
	15R7659	61R UEPO switch
	03N5260	73 GB DASD, 10 K
	10N7200	73 GB SAS DASD, 15 K
	10N7230	73 GB SAS DASD, 15 K
319F	15R9379	8 GB DIMM, DDR2, 400 MHz
	87H3621	8 MB DIMM
	45D0417	8 MM socket
	23R5635	80 GB cartridge
	95P4436	800 GB cartridge
	41U0389	Acoustic cover
	41U0388	Acoustic door
	41V0606	Adapter bracket
	10N8625	Adapter bracket
	31L8613	Air baffle

Table 12. Miscellaneous parts (continued)

CCIN	Part number	Description
	12R9301	Air feeder
	12R8263	Applicator
	42R4037	Assembly filler
	44P2462	Baffle
	95P4075	Base unit
	39J5555	Battery
	41U0012	Battery
	11P3745	Battery retainer bracket, inner
	11P3746	Battery retainer bracket, outer
	23R5633	Bezel
	39R6583	Bezel left
	39R6584	Bezel right
	03N6669	Black mouse
	07H6826	Blank tailgate plate
	07H6827	Blank tailgate plate
	10N8994	Blind swap adapter bracket kit
	80P6749	Blind swap cassette filler
	41V1610	Blower assembly
	2665525	Bolt
	60H3740	Book planar with VPD
	60H3842	Book planar with VPD
	60H3852	Book with VPD
	15R6976	Bottom filler kit
	45D1756	Bridge assembly
	04N6923	Brush pad
	41V0355	Bulk power controller
	41V2374	Bulk power fan
	31L8609	Bulk power regulator
	15R7647	Bulk power regulator baffle
	41V0453	Chassis
	41V1887	Clamp kit
	35L0844	Clean cart
	46G6844	Cleaning kit
	41V1820	Complete frame tie down kit
	42C2140	Cooling unit power supply
	44P2633	Core kit for HMC
	44P2450	Corner Bracket
	45D0721	Cover
	41U0387	Cover kit
	41V1676	Cover kit

Table 12. Miscellaneous parts (continued)

CCIN	Part number	Description
	41V1678	Cover kit
	41V1680	Cover kit
	41U0386	cover kit, non acoustic
	45D1990	Cross member assembly
	41V0608	DASD cage
	11P3662	DASD filler (features 5797 and 5798)
	22R2809	DASD filler
	42R7992	DASD filler
	21P8267	DDR2 DIMM filler
	42R4695	DIMM filler
	42R4696	DIMM filler
	45D1831	DIMM tool
	31P7513	Display stand
	11P3990	Door key
	97P6859	Door trim kit
	12K0564	Dummy plate
	42R7291	DVD FILLER
	41V0922	EMC FILLER
	46G0334	EMC SPRING
	53P0522	Empty tray
	44V3937	ESM assembly
	95P4066	Fan assembly
	41V2453	Fan cover
	44P0550	Fan cover
	16R1152	Foam bracket
	11P4104	Foam PAD
	11P4105	Foam PAD
	11P3827	Foam PLATE
	12K0566	Frame rail racket
	12K0032	Front bezel
	45D2202	Front cover
	45D2204	Front cover
	44P4573	Front cover (features 5797 and 5798)
	45D1165	Front cover
	41V0593	Front door
	41V2355	Front latch
	60H3873	FSP controller
	45D1708	Gear box
	42R5435	GX filler bracket
	12R8531	Heat sink

Table 12. Miscellaneous parts (continued)

CCIN	Part number	Description
	12R8532	Heat sink
	99F1718	Heat sink
	11P3535	Hinge
	11P4106	Hinge
	41V0080	Hinge assembly
	09N9686	Hinge bracket
	45D1398	IB planar for feature 5798
	45D1402	IB planar for feature 5797
	45D0579	DCA (features 5797 and 5798)
	46G5947	Ladder
	12R9892	Latch
	41V1065	Latch bracket
	41V1067	Latch bracket
	44P2459	Latch bracket
	44P0515	Left bracket
	39J4471	Left rail
	2108930	Lint free cloth
	12R8201	Lubricant
	11P4747	Magnifier lens
	53P0322	Media tray
	41V0808	Memory baffle filler
	42R7898	Midplane
	60H3492	Midplane
	40K5342	Monitor T117 enhanced stand
	44P4826	Mounting bracket
	44V3429	Mounting slide tape
	15R9300	Node bar assembly
	15R7507	Node filler
	41V0809	Node kit
	60H2319	Planar
	44P1277	Plate cage filler
	39J0854	Processor filler
	42R8498	Rack mounting fasteners kit
	44V4203	RAID controller
	45D1859	Rail bottom left
	45D1860	Rail bottom right
	45D1861	Rail top left
	45D1862	Rail top right
	45D1121	Rear cover
	12R9501	Retainer bracket

Table 12. Miscellaneous parts (continued)

CCIN	Part number	Description
	41V1799	Retainer bracket
	41V1800	Retainer bracket
	44P0514	Right bracket
	44P0513	Right external bracket
	39J4472	Right rail
	60G7623	Rivet
	5442867	Safety cap
	44V4404	SAS controller
	44V4413	SAS controller
	39J3889	SCSI differential terminator
	12R9042	SCSI repeater card
	11P2923	Shipping bar
	80P3422	Short BSM kit
	16R1508	Side cover
	42V2120	Side cover
	45D0629	Side cover left
	45D0628	Side cover right
	44H8167	SIMM filler
	16R0091	Snap together cassette
	31L7174	Soft tie puck
	93G1147	Step stool
	15R8837	Strike cover
	07H5247	Support rail bracket
	60H3779	System VPD
2D04	60H2798	System VPD
	40K5341	T115 stand base
	45D1715	Table assembly
	44P4026	Tailgate bracket
	11P1262	Tailgate bracket assembly
	35L0967	Test cart
	18P8166	Test DISK
	53P2519	Test DVD
	45E1129	Test tape
	41V1913	Tie down
	41V1914	Tie down
	16R1505	Torque tool
	97P2376	Tray assembly
	95P4036	Tray assembly
	07H6655	Velcro tape
	51H9502	Velcro tie

Table 12. Miscellaneous parts (continued)

CCIN	Part number	Description
	45D1677	Weight distribution plate kit
	12R8219	Weight distribution plate kit
	08J5557	Wheel chock
	03N6070	Wrap plug
	12R9314	Wrap plug
	12R9315	Wrap plug
	42R4761	Wrap plug
	42R5143	Wrap plug
	87H3311	Wrap plug
	87H3439	Wrap plug
	87H3442	Wrap plug

Chapter 7. Closing a service call

Perform these procedures to close problem numbers, clear hardware messages, and prepare the server to return to the customer.

Follow this checklist before performing the procedures:

- Return the server to the state that the customer typically uses, such as IPL type, IPL mode, and the way the system is configured or partitioned.
Attention: Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.
- While you were performing the problem analysis on the original serviceable event, other serviceable-event numbers might have been opened. Close all serviceable events that were opened as a result of your service activity.
- Ensure that server verification has been performed and there are no problems that require additional service actions.
- If the repair was done using the HMC online repair procedures, ensure that the original serviceable event is now closed.
 1. For future reference, record the SRC or symptom and the location code of the FRU you replaced.
 2. On the HMC, open Manage Serviceable Events and examine the service action event log for any open service action events.
 3. Are there any service action events that are open?
 - **Yes:** Go to the next step.
 - **No:** This completes the repair
 4. Record the list of open service action events.
 5. From the list of serviceable events recorded in step 4, perform step 6 through step 32 on page 67 for each open service action event.
 6. Determine the error class of the serviceable event. Record for future use.
 7. Examine the details of the open service action event. Is the error code associated with this service action event the same as recorded in Step 1?
 - **No:** Go to the next step.
 - **Yes:** Go to step 11 on page 66.
 8. Examine the FRU list of the service action event. Are there any FRUs listed for the service action event?
 - **No:** Go to the next step.
 - **Yes:** Go to step 11 on page 66.
 9. Is the FRU list identical (same FRUs, same number of FRUs, and same order of FRUs) to the FRU list of the error code recorded in step 1?
 - **No:** Go to the next step.
 - **Yes:** Go to step 11 on page 66.
 10. The FRU list is different. Is the FRU you replaced and recorded in step 1 in the list of FRUs for this service action event?
 - **Yes:** Go to the next step.
 - **No:** Go to step 32 on page 67.

Note: There are service action events that will remain open when you leave this MAP. Further service actions may be required to complete the repair.

11. Examine the details of this service action event, and record the partitions involved in this service action event for use in a later step.
12. Is the error code associated with this service action event of the form A11-xxx or A01-xxx?
 - **Yes:** Go to the next step.
 - **No:** Go to step 17.
13. Have you begun a list of "Axx" partitions from prior service action events that you processed in this MAP?
 - **No:** Go to the next step.
 - **Yes:** Go to step 15.
14. Begin a new list of "Axx" partitions by copying the list of partitions obtained in step 11. Go to step 16.
15. Add the partition list obtained in step 11 to the existing list of "Axx" partitions obtained from processing previous service action events in this MAP.
16. Remove all entries in the list of all partitions you recorded in step 11. If you are referred to the list of partitions obtained in step 11 in future steps, the list is empty. Go to step 17.
17. Select and highlight the service action event from the Error Associated With This Serviceable Event window.
18. Click **Close Event**.
19. Add comments for the serviceable event. Include any unique additional information. Click **OK**. The following steps will add or update FRU information.
20. Did you replace, add, or modify a FRU of the open service action event?
 - **Yes:** Go to the next step.
 - **No:** Go to step 22.
21. From the FRU list, select a FRU that you need to update. Double-click on the FRU, and update the FRU information. Go to step 23.
22. Select the **No FRU Replaced for this Serviceable Event** option.
23. Click **OK** to close the service action event.
24. Is the list of all partitions you recorded in step 11 empty?
 - **No:** Go to the next step.
 - **Yes:** Go to step 32 on page 67.
25. Does the list of all partitions you recorded in step 11 contain more than one entry?
 - **Yes:** Go to the next step.
 - **No:** Go to step 32 on page 67.
26. Is the AIX error class recorded in step 25?
 - **Yes:** Go to the next step.
 - **No:** Go to step 32 on page 67.
27. Perform the following steps for each entry in the list of all partitions you recorded in step 11, except the partition you were using to debug the original problem.
28. From the HMC virtual terminal window of a partition in the list of all partitions, type **diag** at the AIX command prompt.
29. When the diagnostic operating instructions are displayed, do the following:
 - Note:** If the terminal type is not defined, you are prompted to define it before you can proceed.
 - a. Press Enter.
 - b. Select the **Task Selection** option.
 - c. Select the **Log Repair** option.

- d. Select the resource associated with the repair action. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your repair action is not displayed on the Resource List, select **sysplanar0**.
 - e. Click **Commit** after you have made your selection.
30. Exit from diagnostics in this partition, and return to the AIX prompt.
 31. Have all the partitions in the list of all partitions you recorded in step 11 on page 66 been processed?
 - **Yes:** Go to the next step.
 - **No:** Go to step 27 on page 66 to process the next partition in the list you recorded in step 11 on page 66.
 32. Have all the serviceable events recorded in step 4 on page 65 been processed?
 - **Yes:** Go to the next step.
 - **No:** Go to step 5 on page 65 and process the next service action event in the list of serviceable events recorded in step 4 on page 65.
 33. While processing all service action events, were you directed to step 14 on page 66?
 - **Yes:** Go to the next step.
 - **No:** This completes the repair.

Note: If during the processing of the list of open service action events, some service action events remained open, further service actions might be required to complete the repair.

34. Perform the following steps for each entry in the list of "Axx" partitions you began recording in step 14 on page 66, except the partition you were using to debug the original problem.
35. From the HMC virtual terminal window of a partition in the list of "Axx" partitions, type **diag** at the AIX command prompt.
36. When the diagnostic operating instructions are displayed, do the following:
 - a. Press Enter.
 - b. Select the **Task Selection** option.

Note: If the terminal type is not defined, you are prompted to define it before you can proceed.

- c. Select the **Log Repair** option.
 - d. Select the resource associated with the repair action. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your repair action is not displayed on the Resource List, select **sysplanar0**.
 - e. Click **Commit** after you have made your selection.
37. Exit from diagnostics in this partition and return to the AIX prompt.
 38. Have all the partitions in the list of "Axx" partitions you began recording in step 14 on page 66 been processed?
 - **Yes:** Go to the next step.
 - **No:** Go to step 34 to process the next partition in the list you recorded in step 14 on page 66.
 39. If the system attention LED is still on, turn off the LED as described in **Activating and deactivating LEDs**. This completes the repair. Return the system to the customer.

Note: If during the processing of the list of open service action events, some service action events remained open, further service actions might be required to complete the repair.

Closing a service call using Integrated Virtualization Manager

Perform these procedures to close problem numbers, clear hardware messages, and prepare the server to return to the customer.

Follow this checklist before performing the procedures:

- Return the server to the state that the customer normally uses such as IPL type, IPL mode, and the way the system is configured or partitioned.

Attention: Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.

- While you were performing the problem analysis on the original serviceable event, other serviceable-event numbers might have been opened. Close all serviceable events that were opened as a result of your service activity.
- Ensure that server verification has been performed and there are no problems that require additional service actions.
- If the repair was done using the IVM online repair procedures, ensure that the original serviceable event is now closed.

1.

For future reference, record the SRC or symptom and the location code of the FRU you replaced.

2.

On the IVM, open Manage Serviceable Events and look at existing serviceable events.

3.

Are there any service action events that are open?

Yes

↓

No

If the system attention LED is still on, turn off the LED as described in “Activating and deactivating LEDs” on page 78. Return the system to the customer. **This completes the repair.**

4.

Record the list of open service action events.

5.

From the list of serviceable events recorded in step 4, perform step 6 through step 30 on page 71 for each open service action event.

6.

Determine the error class of the serviceable event. Record for future use.

7.

Examine the details of the open service action event.

Is the error code associated with this service action event the same as recorded in Step 1?

No

↓

Yes

Go to step 11 on page 69.

8.

Examine the FRU list of the service action event. Are there any FRUs listed for the service action event?

Yes	No
↓	Go to step 11.

9.

Is the FRU list identical (same FRUs, same number of FRUs, and same order of FRUs) to the FRU list of the error code recorded in step 1 on page 68?

No	Yes
↓	Go to step 11.

10.

The FRU list is different.

Is the FRU you replaced and recorded in step 1 on page 68 in the list of FRUs for this service action event?

Yes	No
↓	Go to step 30 on page 71. Note: There are service action events that will remain open when you leave this MAP. Further service actions may be required to complete the repair.

11.

Examine the details of this service action event, and record the partitions involved in this service action event for use in a later step.

12.

Is the error code associated with this service action event of the form A11-xxx or A01-xxx?

Yes	No
↓	Go to step 17 on page 70.

13.

Have you begun a list of "Axx" partitions from prior service action events that you processed in this MAP?

No	Yes
↓	Go to step 15 on page 70.

14.

Begin a new list of "Axx" partitions by copying the list of partitions obtained in step 11 on page 69. Go to step 16.

15.

Add the partition list obtained in step 11 on page 69 to the existing list of "Axx" partitions obtained from processing previous service action events in this MAP.

16.

Remove all entries in the list of all partitions you recorded in step 11 on page 69. If you are referred to the list of partitions obtained in step 11 on page 69 in future steps, the list is empty. Go to step 17.

17.

Select and highlight the service action event from the Manage Serviceable Events window.

18.

Click **Close Event**.

19.

Add comments for the serviceable event. Include any unique additional information. Click **OK**.

The following steps will add or update FRU information.

20.

Did you replace, add, or modify a FRU of the open service action event?

Yes

↓

No

Go to step 22.

21.

Click **OK** to close the service action event.

22.

Is the list of all partitions you recorded in step 11 on page 69 empty?

No

↓

Yes

Go to step 30 on page 71.

23.

Does the list of all partitions you recorded in step 11 on page 69 contain more than one entry?

Yes **No**
↓ Go to step 30.

24.

Is the error class recorded in step 23 on page 70 AIX?

Yes **No**
↓ Go to step 30.

25.

Perform the following steps for each entry in the list of all partitions you recorded in step 11 on page 69, except the partition you were using to debug the original problem.

26.

From the IVM virtual terminal window of a partition in the list of all partitions, type *diag* at the AIX command prompt.

27.

When the diagnostic operating instructions are displayed, do the following:

1. Press Enter.
 2. Select the **Task Selection** option.
 3. Select the **Log Repair** option.
 4. Select the resource associated with the repair action. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your repair action is not displayed on the Resource List, select **sysplanar0**.
 5. Click **Commit** after you have made your selection.
-

Note: If the terminal type is not defined, you are prompted to define it before you can proceed.

28.

Exit from diagnostics in this partition and return to the AIX prompt.

29.

Have all the partitions in the list of all partitions you recorded in step 11 on page 69 been processed?

Yes **No**
↓ Go to step 25 to process the next partition in the list you recorded in step 11 on page 69.

30.

Have all the serviceable events recorded in step 4 on page 68 been processed?

Yes	No
↓	Go to step 5 on page 68 and process the next service action event in the list of serviceable events recorded in step 4 on page 68.

31.

While processing all service action events, were you directed to step 14 on page 70?

Yes	No
↓	If the system attention LED is still on, turn off the LED as described in "Activating and deactivating LEDs" on page 78. Return the system to the customer. This completes the repair. Note: If during the processing of the list of open service action events, some service action events remained open, further service actions may be required to complete the repair.

32.

Perform the following steps for each entry in the list of "Axx" partitions you began recording in step 14 on page 70, except the partition you were using to debug the original problem.

33.

From the IVM virtual terminal window of a partition in the list of "Axx" partitions, type *diag* at the AIX command prompt.

34.

When the diagnostic operating instructions are displayed, do the following:

1. Press Enter.
 2. Select the **Task Selection** option.
Note: If the terminal type is not defined, you are prompted to define it before you can proceed.
 3. Select the **Log Repair** option.
 4. Select the resource associated with the repair action. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your repair action is not displayed on the Resource List, select **sysplanar0**.
 5. Click **Commit** after you have made your selection.
-

35.

Exit from diagnostics in this partition and return to the AIX prompt.

36.

Have all the partitions in the list of "Axx" partitions you began recording in step 14 on page 70 been processed?

Yes	No
↓	Go to step 32 on page 72 to process the next partition in the list you recorded in step 14 on page 70.

37.

If the system attention LED is still on, turn off the LED as described in **Activating and deactivating LEDs**. This completes the repair. Return the system to the customer.

Note: If during the processing of the list of open service action events, some service action events remained open, further service actions may be required to complete the repair.

Closing a service call using AIX or Linux

If the server is not connected to an HMC and not using IVM, perform these procedures to close problem numbers, clear hardware messages, and prepare the server to return to the customer.

Follow this checklist before performing the procedures:

- Return the server to the state that the customer normally uses such as IPL type, IPL mode, and the way the system is configured or partitioned.
Attention: Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.
- While you were performing the problem analysis on the original serviceable event, other serviceable-event numbers might have been opened. Close all serviceable events that were opened as a result of your service activity.
- Ensure that server verification has been performed and there are no problems that require additional service actions.
- If the repair was done using the IVM online repair procedures, ensure that the original serviceable event is now closed.

1.

Did you use an AIX diagnostics service aid hot-swap operation to change the FRU?

No	Yes
↓	Go to step 4 on page 74

2.

Note: If the system planar or battery has been replaced and you are loading diagnostics from a server over a network, it may be necessary for the customer to set the network boot information for this system before diagnostics can be loaded. The system time and date information should also be set when the repair is completed.

Do you have any FRUs (for example cards, adapters, cables, or devices) that were removed during problem analysis that you want to put back into the system?

No	Yes
↓	Reinstall all of the FRUs that were removed during problem analysis. Go to step 3 on page 74

3.

Is the system or logical partition that you are performing a repair action on running the AIX operating system?

Yes	No
↓	Go to step 5

4.

Does the system or logical partition you are performing a repair action on have AIX installed?

Note: Answer "NO" to this question if you have just replaced a hard disk in the root volume group.

No	Yes
↓	Go to step 7 on page 75

5.

Run standalone diagnostics from either a CD ROM or from a NIM server.

Note: For instruction on running standalone diagnostics from a CD and not using an HMC, go to "Running the eServer stand-alone diagnostics from CD on a server without an HMC attached" on page 112.

For instruction on running standalone diagnostics from a NIM server, go to "Running the eServer stand-alone diagnostics from a Network Installation Management server" on page 114.

Did you encounter any problems?

No	Yes
↓	Go to Problem Analysis <i>Problem AnalysisSA76-0111</i>

6.

The system hardware is functioning correctly. Return the server to the state that the customer normally uses such as IPL type, IPL mode, and the way the system is configured or partitioned.

Attention: Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.

7.

1. If the system supports slow boot (See “Performing a slow boot” on page 103), do a slow boot on the system. If the system does not support slow boot, do a normal boot.
2. Power on the system.
3. Wait until the AIX operating system login prompt displays or until system activity on the operator panel or display apparently has stopped.

Did the AIX Login Prompt display?

Yes	No
↓	Go to <i>Problem Analysis</i> SA76-0111.

8.

If the **Resource Repair Action** menu is already displayed, go to 12 on page 76; otherwise, do the following:

1. Log into the operating system either with root authority (if needed, ask the customer to enter the password) or use the CE login.
 2. Enter the `diag -a` command and check for missing resources. Follow any instructions that display. If an SRN displays, suspect a loose card or connection. If no instructions display, no resources were detected as missing. Continue on to 9.
-

9.

1. Enter `diag` at the command prompt.
2. Press Enter.
3. Select the **Diagnostics Routines** option.
4. When the DIAGNOSTIC MODE SELECTION menu displays, select **Problem determination**.
5. When the ADVANCED DIAGNOSTIC SELECTION menu displays, select the **All Resources** option or test the FRUs you exchanged, and any devices that are attached to the FRU(s) you exchanged, by selecting the diagnostics for the individual FRU.

Did the RESOURCE REPAIR ACTION menu (801015) display?

No	Yes
↓	Go to step 13 on page 76.

10.

Did the TESTING COMPLETE, no trouble was found menu (801010) display?

Yes	No
↓	There is still a problem. Go to <i>Problem Analysis</i> SA76-0111

11.

Use the Log Repair Action option, if not previously logged, in the TASK SELECTION menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with that repair action.

If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.

Note: If the system attention indicator is on, this will set it back to the normal state. Go to step 14 on page 77.

12.

When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the RESOURCE REPAIR ACTION menu displays.

After replacing a FRU, you must select the resource for that FRU from the RESOURCE REPAIR ACTION menu. This updates the AIX error log to indicate that a system-detectable FRU has been replaced.

Note: If the system attention indicator is on, this action will set it back to the normal state.

Do the following:

1. Select the resource that has been replaced from the RESOURCE REPAIR ACTION menu. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.
2. Press **Commit** after you make your selections.

Did another Resource Repair Action (801015) display?

Yes	No
↓	If the No Trouble Found menu displays, go to step 14 on page 77

13.

The parent or child of the resource you just replaced may also require that you run the RESOURCE REPAIR ACTION service aid on it.

When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the RESOURCE REPAIR ACTION menu displays.

After replacing that FRU, you must select the resource for that FRU from the RESOURCE REPAIR ACTION menu. This updates the AIX error log to indicate that a system-detectable FRU has been replaced.

Note: If the system attention indicator is on, this action will set it back to the normal state.

Do the following:

1. From the RESOURCE REPAIR ACTION menu, select the parent or child of the resource that has been replaced. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.
 2. Press COMMIT after you make your selections.
 3. If the No Trouble Found menu displays, go to step14
-

14.

If you changed the service processor or network settings, as instructed in previous MAPs, restore the settings to the value they had prior to servicing the system. If you ran standalone diagnostics from CD-ROM, remove the standalone diagnostics CD-ROM from the system.

Did you perform service on a RAID subsystem involving changing of the PCI RAID adapter cache card or changing the configuration?

Note: This does not refer to the PCI-X RAID adapter or cache.

Yes	No
↓	Go to step 16 on page 78.

15.

Use the **Recover Options** selection to resolve the RAID configuration. To do this, do the following:

1. On the PCI SCSI Disk Array Manager screen, select **Recovery options**.
 2. If a previous configuration exists on the replacement adapter, this must be cleared. Select **Clear PCI SCSI Adapter Configuration**. Press F3.
 3. On the Recovery Options screen, select **Resolve PCI SCSI RAID Adapter Configuration**.
 4. On the Resolve PCI SCSI RAID Adapter Configuration screen, select **Accept Configuration on Drives**.
 5. On the PCI SCSI RAID Adapter selections menu, select the adapter that you changed.
 6. On the next screen, press Enter.
 7. When you get the Are You Sure selection menu, press Enter to continue.
 8. You should get an OK status message when the recover is complete. If you get a Failed status message, verify that you selected the correct adapter, then repeat this procedure. When recover is complete, exit the operating system.
 9. Go to 16 on page 78
-

16.

The system hardware is functioning correctly. Return the server to the state that the customer normally uses such as IPL type, IPL mode, and the way the system is configured or partitioned.

Attention: Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.

Activating and deactivating LEDs

Use this procedure to activate or deactivate LEDs.

Choose from the following:

- “Deactivate a system attention LED or partition LED using the HMC”
- “Activate or deactivate identify LED using the HMC”
- “Deactivate a system attention LED or partition LED using the ASMI” on page 79
- “Activate or deactivate identify LED using the ASMI” on page 79

Deactivate a system attention LED or partition LED using the HMC

You can deactivate a system attention LED or a logical partition LED. For example, you might determine that a problem is not a high priority and decide to repair the problem at a later time. However, you want to be alerted if another problem occurs, so you must deactivate the system attention LED so that it can be activated again if another problem occurs.

1. In the navigation area, open **Systems management**.
2. Select the server you are working on by checking the box next to its name.
3. Open **Operations**.
4. Open **LED Status**.
5. Select **View System Attention**. The system attention LED window opens. The selected system and its LED state are displayed in the upper part of the window. The logical partition and its LED state are displayed in the lower part of the window. From the system attention LED window, you can deactivate both the system attention LED and the logical partition LED.
6. Select **Deactivate System Attention LED** from the **Action** menu. A confirmation window is displayed that provides the following information:
 - A verification that the system attention LED was deactivated.
 - An indication that there still might be open problems within the system.
 - An indication that you cannot activate the system attention LED.
7. Select one of the logical partitions in the lower table, and select **Deactivate partition LED** from the **Partition Operations** menu. A confirmation window is displayed that provides the following information:
 - A verification that the logical partition LED was deactivated.
 - An indication that there still might be open problems within the logical partition.
 - An indication that you cannot activate the logical partition LED.

Activate or deactivate identify LED using the HMC

The system provides several LEDs that help identify various components, such as enclosures or field replaceable units (FRUs), in the system. For this reason, they are called *Identify LEDs*.

You can activate or deactivate the following types of identify LEDs:

- **Identify LED for an enclosure** If you want to add an adapter to a specific drawer (enclosure), you need to know the machine type, model, and serial number (MTMS) of the drawer. To determine whether you have the correct MTMS for the drawer that needs the new adapter, you can activate the LED for a drawer and verify that the MTMS corresponds to the drawer that requires the new adapter.
- **Identify LED for a FRU associated with a specified enclosure** If you want to hook up a cable to a specific I/O adapter, you can activate the LED for the adapter which is a field replaceable unit (FRU), and then physically check to see where you should hook up the cable. This is especially useful when you have several adapters with open ports.

To activate or deactivate an identify LED for an enclosure or FRU, follow these steps:

1. In the navigation area, open **Systems management**.
2. Select the server you are working on by checking the box next to its name.
3. Open **Operations**.
4. Open **LED Status**.
5. Select **Identify LED**. The Identify LED, Select Enclosure window opens.
6. To activate or deactivate an identify LED for an enclosure, select an enclosure from the table, and click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.
7. To activate or deactivate an identify LED for a FRU, select an enclosure from the table, select **Selected** → **List FRUs**.
8. Select one or more FRUs from the table, and click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.

Deactivate a system attention LED or partition LED using the ASMI

The system attention indicator provides a visual signal that the system as a whole requires attention or service. Each system has a single system attention indicator. When an event occurs that either needs your intervention or that of service and support, the system attention indicator lights continuously. The system attention indicator is turned on when an entry is made in the service processor error log. The error entry is transmitted to the system level and operating system error logs.

To perform this operation, your authority level must be one of the following:

- Administrator
- Authorized service provider

To turn off the system attention indicator, do the following:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **System Configuration** and **Service Indicators**.
3. Select **System Attention Indicator**.
4. In the right pane, click **Turn off system attention indicator**. If the attempt is unsuccessful, an error message is displayed.

Activate or deactivate identify LED using the ASMI

You can specify the location code of any indicator to view or modify its current state. If you provide the wrong location code, the advanced system manager attempts to go to the next higher level of the location code.

The next level is the base-level location code for that field replaceable unit (FRU). For example, a user types the location code for the FRU located on the second I/O slot of the third enclosure in the system. If the location code for the second I/O slot is incorrect (the FRU does not exist at this location), an attempt to set the indicator for the third enclosure is initiated. This process continues until a FRU is located or no other level is available.

To perform this operation, your authority level must be one of the following:

- Administrator
- Authorized service provider

To change the current state of an indicator, do the following:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **System Configuration** and **Service Indicators**.
3. Select **Indicators by Location code**.
4. In the right pane, enter the location code of the FRU and click **Continue**.
5. Select the preferred state from the list.
6. Click **Save settings**.

Chapter 8. Common Service Procedures

This chapter contains procedures that may be common to various isolation and repair procedures.

Powering on and powering off

Provides information for powering on and powering off the system.

Attention: If possible, shut down all applications and partitions before powering off the system. Using either the power-on button on the control panel or entering commands at the Hardware Management Console (HMC) to stop the system can cause unpredictable results in the data files. Also, the next time you start the system, it might take longer if all applications are not ended before stopping the system.

Power on a system using an HMC

To power on a managed system, complete the following steps:

1. In the Navigation area, expand the **Systems Management** icon.
2. Expand the **Servers** icon.
3. Choose the check box next to the name of the desired server. The tasks available for that server will be enabled.
4. From the **Tasks** drop down menu, choose **Operations -> Power on**. Follow any additional on-screen instructions.

Power off a system using an HMC

Attention: If possible, shut down the running logical partitions on the managed system before powering off the managed system. Powering off the managed system without shutting down the logical partitions first causes the logical partitions to shut down abnormally and can cause data loss.

1. In the Navigation area, expand the Systems Management icon.
2. Expand the Servers icon.
3. Choose the check box next to the name of the desired server. A selection of tasks available for that server will be displayed.
4. From the Tasks drop down menu, choose Operations -> Power off. Follow any additional on-screen instructions.

Determining if the system has logical partitions

This procedure will help you determine if the system has logical partitions.

1. Is the system managed by an HMC?
 - Yes:** Continue with the next step.
 - No:** The system does not have logical partitions. You must have an HMC to have logical partitions. Return to the procedure that sent you here. **This ends the procedure.**
2. Determine if the system has multiple logical partitions by performing the following from the HMC:
 - a. Expand the **Systems Management** folder in the Navigation area.
 - b. Expand the **Servers** folder.
 - c. Click the name of the managed system you are working with. The partitions will be displayed. Is there more than one logical partition listed?

No: The system does not have multiple logical partitions. Return to the procedure that sent you here. **This ends the procedure.**

Yes: The system has multiple logical partitions. Return to the procedure that sent you here. **This ends the procedure.**

Determining which Processor is the Secondary Service Processor

Use this procedure to determine which service processor on your system is the secondary service processor.

1. Locate the HMC1 and HMC2 port pairs for service processor zero and for service processor one. (See Chapter 3, "Using location codes," on page 33 for your specific model.)

2. Is only one service processor with cables attached to its HMC ports?

No: Continue to the next step.

Yes: The secondary service processor is the service processor with no cables attached to the HMC ports. **This ends the procedure.**

3. Use the HMC to access Advanced System Management Interface (ASMI) to determine which service processor is the secondary service processor. First, verify ASMI connectivity by logging onto ASMI. Then pull all HMC cables from HMC ports for service processor zero (leaving service processor one HMC cables attached).

Log onto ASMI again. Were you successfully able to log onto ASMI?

No: The service processor with HMC cables still attached is the secondary service processor. Reattach the HMC cable(s) to service processor zero. **This ends the procedure.**

Yes: The cables just removed identify the secondary service processor. Reattach the HMC cables to the secondary service processor. **This ends the procedure.**

The System Reference Code (SRC) Format Description

The format of the SRC that you see depends on the system or server.

System Reference Code (SRC) Information

Helps you understand how SRCs work.

Use this information to understand how SRCs work.

The system reference code (SRC) is a sequence of data words (codes) that:

- Identifies a system status
- Describes a detected hardware, Licensed Internal Code (LIC), or software failure
- Describes the unit that is reporting the failure and its location

SRCs can display on the control panel, appear in a system console message, or appear in the product activity log.

The system uses the following procedure to gather information about errors:

1. The system gathers information about an error as the system detects the error.
2. The Product Activity Log (PAL[®]) records and stores the error information.
3. An SRC encodes information used to evaluate or identify a system-detected hardware or software error, failure, or status. The failure information may include the failing condition or part (or unit) that can be exchanged or replaced and its location.
4. The SRC links to the problem determination procedure when the element detecting the failure cannot isolate the failing condition.
5. The SRC link completes the isolation process.

In summary, the SRC provides the first-failure-data-capture information. The customer or support representative uses SRCs during problem determination, repair actions, and verification. The SRC provides a link to the problem determination procedures (hardcopy or softcopy). Use the SRC and the problem determination procedures to isolate the problem.

System reference code (SRC) address formats

Use this procedure to determine the IOP, IOA, or device address from either a control panel or a console display.

Use this procedure to determine the IOP, IOA, or device address from either a control panel or a console display.

1. Was the SRC and addressing information obtained either from a control panel display, the Main Storage Dump Manager display, or the HMC Partition Properties Reference Code words display?
 - **No:** Continue with the next step.
 - **No:** Contact your next level of support. **This ends the procedure.**
 - **Yes:** Addressing information is in the Bus-Bus-Bus-Bus/Card-card/board-board (BBBBCcbb) format as follows:
 - If characters 7 and 8 of the top 16-character line of function 12 (word two) are 60:
 - The direct select address is characters 1-8 of the bottom 16-character line of function 12 (word four) in the format "BBBBCcbb".
 - The device address is characters 9-16 of the bottom 16-character line of function 12 (word five) in the format "abcd efgh".
 - If characters 7 and 8 of the top 16-character line of function 12 (word two) are 13, 17, 27, or 29:
 - The direct select address is characters 9-16 of the top 16-character line of function 12 (word three) in the format "BBBBCcbb".
 - The device address is characters 1-8 of the bottom 16-character line of function 12 (word four) in the format "abcd efgh".
 - If characters 7 and 8 of the top 16-character line of function 12 (word two) are 62:
 - The direct select address may be characters 9-16 of the top 16-character line of function 13 (word seven) in the format "BBBBCcbb".
 - The device address may be characters 1-8 of the top 16-character line of function 13 (word six) in the format "abcd efgh".

Go to step 9 on page 85.

2. Are you using the HMC?
 - No:** Continue with the next step.
 - Yes:** Open the server with the problem, then go to the i5/OS partition with the problem and use the Service Action Log (SAL) to find the entry related to this problem (see iphdwusingsal.dita), and then go to step 7 on page 85.
3. Are you using the Service Action Log (SAL)?
 - No:** Continue with the next step.
 - Yes:** Go to step 7 on page 85.
4. Are you using i5/OS communication-diagnostic panels that are displayed by the commands VFYCMN, WRKPRB, or ANZPRB?
 - Yes:** Go to step 11 on page 86.
 - No:** Continue with the next step.
5. Addressing information is in the Bus/Board/Card format.

Note: This format shows the system bus number in decimal form.

If no address information is available in the console error message, check the Product Activity Log (PAL) entry that is associated with the console error message. Below is an example of a PAL display for a storage device. Other devices (for example, workstations or communications) have similar displays. For more information about the PAL, see iphdwusingpal.dita in the “Service functions” on page 96.

Figure 7. Product Activity Log display example

```

+-----+
| Display Address Information for Resource |
+-----+
| Name           Type       Model      Serial      Resource |
| STORAGE       6718      050       83-00834    DD001     |
+-----+
| Physical Location: |
| U7879.001.10ABCDE-P3-D3 |
+-----+
| Logical Address:   |
| PCI Bus:          |
| System Bus . . . . . : 3   Storage: |
| System Board . . . . . : 0   I/O Adapter . . . . . : 2 |
| System Card . . . . . : 32  I/O Bus . . . . . : 1 |
|                               Controller. . . . . : 4 |
|                               Device . . . . . : 0 |
+-----+

```

In the above example, the contents of "Storage" are defined as follows.

Table 13. Storage definitions

Reference	Description
I/O Bus	This is the SCSI bus to which the device is connected.
I/O Adapter	This is the adapter that the I/O bus connects to on the I/O processor.
Controller	This is the logical controller for the addressed device.
Device	This is the <i>logical</i> device that is attached to the <i>logical</i> device controller.

- Use the figure below to understand how addresses in the Bus/Board/Card format relate to the Bus-Bus-Bus-Bus/Card-Card/Board-Board format. You can also use it to understand how addresses in the Bus/Board/Card format relate to the direct select addresses used in Chapter 3, “Using location codes,” on page 33.

Continue with the next step for IOA and device address information.

- Unit (Device) Address Definitions are explained in an "abcd efgh" format. For example, if the unit address is 0001 00FF, the address relates to the "abcd efgh" format as follows:

```

0 0 0 1   0 0 F F
(a b c d   e f g h)

```

Figure 9. Example of Unit (Device) Address definitions

The characters "abcd efgh" can have different meanings, depending on the subsystem that reports the problem. However, they define the information that is contained in the unit (device) address as follows.

Table 14. Character definitions

Disk, tape, or optical	
a	I/O adapter
b	I/O bus
cd	Controller
ef	Device
gh	FF
Communications	
a	I/O bus
b	Adapter
c	0
d	Port
e	0
f	Channel
GH	FF
Workstation	
a	I/O Bus
b	Adapter
cd	Port
e	0
f	Device
g	0
h	Session

Note: If the failing item or procedure that sent you here indicates that the I/O adapter is the failing item, but you only have a device address, convert the device address into an I/O adapter address by making the last 7 digits FFFFFFFF so that the address becomes xFFFFFFF, where x is the I/O adapter number.

Note: If the unit (device) address appears as FFFF FFFF, the address cannot be determined.
This ends the procedure.

- i5/OS communication-diagnostic panels that are displayed by the commands VFYCMN, WRKPRB, and ANZPRB use the following address format:

```
x1 x2 x3x4
```

Table 15. Decimal address values

Value	Description
x1 = System bus	The one, two, or three digit decimal representation of the hexadecimal Bus value of the Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address at the top of Figure 8 on page 85.
x2 = System board	The one or two digit decimal representation of the hexadecimal Board value of the Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address at the top of Figure 8 on page 85.
x3 = System card	The one or two digit decimal representation of the hexadecimal Card value of the Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address at the top of Figure 8 on page 85.
x4 = Adapter location	The one or two digit decimal representation of the hexadecimal b Adapter value of the Communications unit address value in step 9 on page 85 (See step 10 on page 86).

12. Return to the procedure that sent you here. **This ends the procedure.**

Note: See “Hardware SRC formats” for more formatting information.

Hardware SRC formats

SRC format examples.

Notes:

1. Other formats exist; if necessary contact your next level of support.
2. For more information on formats 60–63, see “LIC-Detected Problem Reference Code Formats” on page 89.

Table 16. SRC format examples

SRC Word Number	Panel function, digits x to y (from left to right)	IOP SRC format 13	IOP SRC format 17	Device SRC format 27	IOP detected a failure format 29	LIC SRC Format 60	LIC SRC format 61	LIC SRC format 62	LIC SRC format 63
1	11, 1-8	TTTT RRRR	TTTT RRRR	tttt rrrr	B0XX RRRR	A6xx RRRR	B6xx RRRR	B6xx RRrr or B7xx Rrrr	A600 RRRR
2	12, 1-8	MIGV EP13	MIGV EP17	MIGV EP27	MIGV EP29	MIGV EP60	MIGV EP61	MIGV EP62	MIGV EP63
3	12, 9-16	BBBB Ccbb	BBBB Ccbb	BBBB Ccbb	BBBB Ccbb	PPPP 0000	cccc cccc	cccc cccc	AAAA BBBB
4	12, 17-24	aaaa aaaa	aaaa aaaa	aaaa aaaa	SAPP UUFF	BBBB Ccbb	pppp pppp	pppp pppp	CCCC DDDD
5	12, 25-32	TTTT LMMM	TTTT LMMM	tttt lmmm	TTTT FMMV	aaaa aaaa	qqqq qqqq	qqqq qqqq	EEEE FFFF
6	13, 1-8	uuuu uuuu	tttt lmmm	TTTT LMMM	tttt lmmm	tttt mmmm	qqqq qqqq	qqqq qqqq	GGGG HHHH
7	13, 9-16	uuuu uuuu	ZZZZ rrrr	ZZZZ RRRR	zzzz rrrr	ssss ssss	0000 0000	BBBB Ccbb	JJJJ KKKK
8	13, 17-24	uuuu uuuu	ssss ssss	ssss ssss	Osss ssss	NNNN 0000	0000 0000	TTTT MMMM	TTTT 0MMM

Table 16. SRC format examples (continued)

SRC Word Number	Panel function, digits x to y (from left to right)	IOP SRC format 13	IOP SRC format 17	Device SRC format 27	IOP detected a failure format 29	LIC SRC Format 60	LIC SRC format 61	LIC SRC format 62	LIC SRC format 63
9	13, 25-32	uuuu uuuu	uuuu uuuu	uuuu uuuu	uuuu uuuu	0000 0000	0000 0000	0000 0000	SSSS SSSS

Table 17. SRC format examples (continued)

SRC format	Description
AAAA	Type of I/O Bus (see “Logical address format” on page 90 — field ‘A’).
aaaa	Unit address.
BBBB	System Bus Number (see “Logical address format” on page 90 — field ‘B’).
BBBBcbb	Bus, bus, bus, bus, card, card, and board, board address (Direct Select Address or DSA). <ul style="list-style-type: none"> For PCI system buses 0001-0003 and 0018-FFFF the Cc field is a one digit multi-adapter bridge number and a one digit multi-adapter bridge function number. For SPD system buses 0004-0017 the Cc field is a two digit card number.
CCCC	System Board Number (see “Logical address format” on page 90 — field ‘C’).
cccc cccc	Component reference code. Format 62 varies by component.
DDDD	System Card Number (see “Logical address format” on page 90 — field ‘D’).
EEEE	(see “Logical address format” on page 90 — Unit Address type — field ‘E’).
FFFF	(see “Logical address format” on page 90 — Unit Address type — field ‘F’).
GGGG	(see “Logical address format” on page 90 — Unit Address type — field ‘G’).
HHHH	(see “Logical address format” on page 90 — Unit Address type — field ‘H’).
JJJJ	(see “Logical address format” on page 90 — Unit Address type — field ‘J’).
KKKK	(see “Logical address format” on page 90 — Unit Address type — field ‘K’).
LMMM	Level indicator plus 3” digit model number (for example, 0001).
lmmm	Level indicator plus 3” digit model number of failing device.
0MMM	Model number of failing device (i.e. MMM=’001’).
MIGV EP	General system status.
NNNN	Number of disk device facilities that are missing.
PPPP	Cause code.
pppp pppp	Programming reference code.
qqqq qqqq	Programming reference code qualifier.
RRRR	Unit reference code (URC).
rrrr	Outboard failing unit reference code (URC).
SAPP UUFF	Unit address.
SSSSSSSS	System Reference Code — this SRC is used to determine why the primary console failed to respond.
ssss	Serial number of failing unit.
TTTT	Type number or card identification number (hex).

Table 17. SRC format examples (continued) (continued)

SRC format	Description
tttt	Outboard failing unit type number (i.e. 6607).
uuuu	Unit-specific data.
ww	SRC type.
ZZZZ	Reserved.

LIC-Detected Problem Reference Code Formats

Reference code formats.

Formats 60–63 in Table 16 on page 87 represent the formats for Licensed Internal Code (LIC) SRCs.

- Format 60 is used for LIC Attention SRCs.
- Format 61 is used when LIC detects a LIC programming problem.
- Format 62 is used when LIC detects an IOP Bus or IOP programming problem.

RRRR LIC unit reference code (URC).

cccc LIC Component Reference Code (CRC). Identifies the LIC component and subcomponent that generated the SRC.

pppp LIC Program Reference Code (PRC). Identifies the LIC class or component that generated the SRC and the specific error detected.

qqqq LIC Program Reference Code Qualifier. SRC words found at functions 15-3 through 19-3 or 15-3 and 16-3, depending on the format, provide additional error isolation information that is specific to the Program Reference Code. One or more of these words may be '0000 0000'. *Format 61* has up to 5 words of PRC Qualifier, in words 5-9. The PRC determines the *number* of PRC qualifier words. The *content* of words 5-9 is dependent on the value in word 4. *Format 62* has the PRC qualifier ONLY in words 5-6; there is physical address and type information in words 7-9.

BBBB Ccbb

Bus/Card/Board identifiers of failing component (direct select address)

@@@@ Unit address

ssss Serial number of failing unit

TTTT Type number or card identification number of failing component (hex 2xxx through 9FFF). May be 0000, if system data is not available at the time the SRC is signaled.

ZZZZ Reserved

mmmm

Model number of failing component (hex 2xxx through 9FFF). May be 0000, if system data is not available at the time the SRC is signaled.

CCCC Cause code

NNNN

Number of disk device facilities missing

MIGV EP

General system status (see "System Reference Code (SRC) Information" on page 82 for more information.)

x Any hexadecimal number

Notes:

1. For information about Function 11 and 12, refer to “System Reference Code (SRC) Information” on page 82.
2. Format 60 may contain data in a format other than that shown. Format 60 is an old VLIC format, which some new LIC components use. It does not have the component reference code and program reference code that format 61 and 62 have (61 and 62 were specifically defined for the new LIC). Format 60 is mostly component-specific with no key information to indicate format (the developer has to interpret it).

Logical address format

Use the logical address to identify the resource entry.

Use the logical address to identify the resource entry. To sort by logical address, select the *Analyze log* option on the Product Activity Log display. Then select the F9 key (Sort by...) and sort by logical address. For more information on the address, use the address information function.

The logical address format, A/B/C/D-E/F/G/H/J/K, has the following definitions:

- A** Type of I/O bus (transport)
- B** System bus number
- C** System board number (for busses that connect card enclosures)
- D** System card (bus unit) number
- Separates the bus address from the unit address
- E** Unit address type

FGHJK

Unit address data

The values of F, G, H, J, and K vary, depending on the unit address type (E). Use the following information to determine the Unit address data (FGHJK) representation.

Table 18. Unit address (E) definitions

Unit Address Value	Unit Address Definition	Unit Address Data				
		F	G	H	J	K
0	Reserved	-	-	-	-	-
1	Communications	I/O bus	Adapter	Port	Channel	-
2	Storage	I/O adapter	I/O bus	Controller	Device	-
3	Workstation	I/O bus	Adapter	Port	Device	Session
4	Auxiliary Processor	I/O bus	Auxiliary Processor	Adapter	Port	-
5	Library	I/O adapter	I/O bus	Library	Controller	Device
6	Cryptography	I/O bus	Adapter	Device	-	-

The *Logical address* field contains the bus address and the unit address. The bus address describes the hardware bus, board, and card information. The unit address describes the subsystem and identifying data (see Table 18).

Note: To locate a device or card that is within the system unit, use the physical address information.

Displaying error and event logs

Display a list of all of the error and event logs in the service processor.

You can view error and event logs that are generated by various service processor firmware components. The content of these logs can be useful in solving hardware or server firmware problems.

To perform this operation, your authority level must be one of the following:

- General
- Administrator
- Authorized service provider

Informational and error logs can be viewed by all authority levels. Hidden error logs can be viewed by authorized service providers.

The following table shows error log types that might be displayed, the conditions that make an error log specific to that error log type, and the user authority level that will allow you to view specific types of error logs:

Error log type	Conditions		User availability
	Severity	Action	
Informational logs	Informational	Report to operating system (OS) but not hidden	Available to all users
Error logs	Not informational	Report to OS but not hidden	Available to all users
Hidden logs	Not informational and informational	Report to OS, hidden, or both	Available only to the authorized service provider and users with higher authority.

To view error and event logs in summary or full detailed format, do the following:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **System Service Aids** and click **Error/Event Logs**. If log entries exist, a list of error and event log entries is displayed in a summary view.
3. To view the full detail format of any of the logs listed, select the log's corresponding check box and click **Show details**. When multiple logs are selected, any action applies to each selected log. The full detail information might span several pages. The contents and layout of the full detail output is defined by the event or error logging component.
4. Click **Mark as reported** to mark platform error entries whose underlying causes have been resolved. By doing so, these entries are not reported to the operating system again when the system reboots. After they are marked, these errors can be overwritten by other errors logged in the service processor history log.

Note: The **Mark as reported** button is available only when your authority level is an authorized service provider.

Managing the Advanced System Management Interface (ASMI)

Understand how to manage the Advanced System Management Interface (ASMI).

The Advanced System Management Interface (ASMI) is the interface to the service processor that is required to perform general and administrator-level service tasks, such as reading service processor error logs, reading vital product data, setting up the service processor, and controlling the system power. The ASMI may also be referred to as the service processor menus.

Use the following information to help you manage the ASMI:

- “Accessing the ASMI using a Web browser”
- “Accessing the ASMI using an ASCII terminal” on page 93
- “Accessing the ASMI using the HMC” on page 94

Accessing the ASMI

You can access the ASMI through a Web browser or an ASCII console.

Accessing the ASMI using a Web browser

Connect a PC or mobile computer to the server to access the ASMI. The Web interface to the ASMI is available during all phases of system operation including the initial program load (IPL) and run time.

The Web interface to the Advanced System Management Interface (ASMI) is accessible through Microsoft Internet Explorer 6.0, Netscape 7.1, or Opera 7.23 running on a PC or mobile computer connected to the service processor. The Web interface is available during all phases of system operation including the initial program load (IPL) and run time. However, some of the menu options in the Web interface are unavailable during IPL or run time to prevent usage or ownership conflicts if the system resources are in use during that phase.

Note: To perform general and administrator-level service tasks, such as reading service processor error logs, reading vital product data, setting up the service processor, and controlling the system power, you must set up the ASMI.

The following instructions apply to systems that are not connected to an HMC. If you are managing the server using an HMC, “Accessing the ASMI using the HMC” on page 94.

To set up the Web browser for direct or remote access to the ASMI, complete the following tasks:

1. Connect the power cord from the server to a power source, and wait for the control panel to display 01.
2. Select a PC or mobile computer that has Microsoft® Internet Explorer 6.0, Netscape 7.1, or Opera 7.23 to connect to your server.

If you do not plan to connect your server to your network, this PC or mobile computer will be your ASMI console.

If you plan to connect your server to your network, this PC or mobile computer will be temporarily connected directly to the server for setup purposes only. After setup, you can use any PC or mobile computer on your network that is running Microsoft Internet Explorer 6.0, Netscape 7.1, or Opera 7.23 as your ASMI console.

3. Connect an Ethernet cable from the PC or mobile computer to the Ethernet port labeled HMC1 on the back of the managed system. If HMC1 is occupied, connect an Ethernet cable from the PC or mobile computer to the Ethernet port labeled HMC2 on the back of the managed system.
4. Configure the Ethernet interface on the PC or mobile computer to an IP address and subnet mask within the same subnet as the server so that your PC or mobile computer can communicate with the server. Use the following table to help you determine these values:

Table 19. PC or mobile computer network configuration information

Server connector	Subnet mask	IP address
HMC1	255.255.255.0	169.254.2.147

Table 19. PC or mobile computer network configuration information (continued)

Server connector	Subnet mask	IP address
HMC2	255.255.255.0	169.254.3.147

For example, if you connected your PC or mobile computer to HMC1, the IP address for your PC or mobile computer could be 169.254.2.1 and the subnet mask would be 255.255.255.0. Set the gateway IP address to the same IP address as the PC or mobile computer.

5. Use Table 19 on page 92 to determine the IP address of the Ethernet port that your PC or mobile computer is connected to, and type the IP address in the Address field of your PC's or mobile computer's Web browser. For example, if you connected your PC or mobile computer to HMC1, type `https://169.254.2.147` in your PC's or mobile computer's Web browser.
6. When the login display appears, enter one of the following default user IDs and passwords:

Table 20. Default user IDs and passwords for the Web interface

User ID	Password
general	general
admin	admin

7. Change the default password when prompted.
8. If you plan to connect your PC or mobile computer to your network, complete the following steps:
 - a. From the navigation area, expand **Network Services**.
 - b. Click **Network Configuration**.
 - c. If your PC or mobile computer is connected to HMC1, fill in the section labeled Network interface eth0.
If your PC or mobile computer is connected to HMC2, fill in the section labeled Network interface eth1.
Ensure that the following fields are filled in correctly.

Table 21. Fields and values for network configuration

Field	Value
Configure this interface?	Selected
Type of IP address	Static
IP address	This is the same address that you used in step 5.
Subnet mask	255.255.255.0

- d. Click **Save Settings**.
- e. Disconnect your PC or mobile computer from the server.
- f. Connect the server to your company network.
- g. Go to any PC or mobile computer on your company network that is running Microsoft Internet Explorer 6.0, Netscape 7.1, or Opera 7.23, and type the following in the Address field of your browser:
`https://host name.domain name`

where *host name* and *domain name* are the host name and domain name you entered when completing step 8c.
- h. Log in to the ASMI.
9. Set the time of day on the server.

Accessing the ASMI using an ASCII terminal

Connect the ASCII console to the server to access the ASMI.

The ASCII interface to the ASMI provides a subset of the Web interface functions. The ASCII console is available only when the system is in platform standby state. It is not available during the initial program load (IPL) or run time. The ASMI on an ASCII console is not available during some phases of system operation, such as the initial program load (IPL) and run time.

To set up the ASCII console for direct or remote access to the ASMI, complete the following tasks:

1. Complete the following steps to cable an ASCII console or equivalent to the server:

Using a cable equipped with a null modem, connect the ASCII console to system connector S1 1 on the back of the server or to system port FS1 on the control panel using an RJ-45 connector.

Note: Both system port 1 connections are not available simultaneously; when one is connected, the other is deactivated.

2. Connect the power cord from the server to a power source.
3. Wait for the control panel to display 01.
4. Ensure that your ASCII console is set to the following general attributes.

These attributes are the default settings for the diagnostic programs. Be sure your terminal is set to these attributes before proceeding to the next step.

General setup attributes	3151 /11/31/41 settings	3151 /51/61 settings	3161 /64 settings	Description
Line speed	19,200	19,200	19,200	Uses the 19,200 (bits per second) line speed to communicate with the system unit.
Word length (bits)	8	8	8	Selects eight bits as a data word length (byte).
Parity	No	No	No	Does not add a parity bit and is used together with the word length attribute to form the 8-bit data word (byte).
Stop bit	1	1	1	Places a bit after a data word (byte).

5. Press a key on the ASCII console to allow the service processor to confirm the presence of the ASCII console.
6. When the login display appears, enter one of the following default user IDs and passwords:

Table 22. Default user IDs and passwords for the Web interface

User ID	Password
general	general
admin	admin

7. Change the default password when you are prompted.
8. Set the time of day on the server.

Accessing the ASMI using the HMC

Access the ASMI through the HMC interface.

To access the Advanced System Management Interface (ASMI) using the Hardware Management Console (HMC), complete the following steps:

1. Ensure that the HMC is set up and configured.
2. In the navigation area, ensure that the server you are working with is selected.
3. Expand and click **Operations**.
4. In the content area, click **Advanced System Management (ASMI)**.

5. Log on to the ASMI using the administrator userid and password.

Setting the system enclosure type

Set values that uniquely identify the type of enclosures attached to the system.

When setting the system enclosure type, ensure that the enclosure serial number field matches the original value, which can be found on a label affixed to the unit. Updating the enclosure serial field keeps the configuration and error information synchronized, and this information is used by the system when creating the location codes. This task must be done using the ASMI, not with the control panel. However, if you do not have access to the ASMI, the system will still operate without updating this information.

For example, when replacing the I/O backplane, you must re-enter the original enclosure serial number into the enclosure serial number field to overwrite the serial number that is recorded for the new I/O backplane. Failure to enter the correct enclosure serial number will result in logical partition mappings being incorrect.

Note: You cannot boot the system until valid values are entered for all fields in the enclosure-type information.

To perform this operation, your authority level must be one of the following:

- Administrator
- Authorized service provider

To change the system enclosure type, complete the following steps:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **System Configuration** → **Program Vital Product Data**.
3. Select **System Enclosures**. In the right pane, the current system enclosures are displayed.
4. Enter the desired settings for the **Enclosure location**, **Feature Code/Sequence Number**, and **Enclosure serial number** fields using the naming convention described in the ASMI help.

The value of the **Enclosure serial number** field is different than the serial number of the system. Set the **Reserved** field to blank spaces unless directed otherwise by Level 3 technical support.

5. Click **Save settings** to update the system enclosure type information and save it to the VPD.

Setting the system identifiers

Set the system-unique ID, system serial number, machine type, and machine model.

You can set the system-unique ID, serial number, machine type, and machine model. If you do not know the system-unique ID, contact your next level of support.

To perform this operation, your authority level must be one of the following:

- Administrator
- Authorized service provider

Note: You cannot boot the system until valid values are entered for all fields. You can change these entries only once.

To set the system keywords, do the following:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **System Configuration** and **Program Vital Product Data**.
3. Select **System Keywords**.

4. In the right pane, enter the desired values for the system serial number, machine type, and machine model using the naming convention shown in the ASMI help. Set the **Reserved** field to blank spaces unless directed otherwise by service and support.
5. Click **Continue**. The data validation panel is displayed, which includes your entered settings.
6. Click **Save settings** to update the system keywords and save them to the VPD.

Viewing vital product data

View selected or all manufacturer's VPD, such as serial numbers and part numbers.

You can view manufacturer's vital product data (VPD) stored from the system boot prior to the one in progress now.

To perform this operation, your authority level must be one of the following:

- General
- Administrator
- Authorized service provider

To view the VPD, complete the following steps:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **System Information** and select **Vital Product Data**.
3. A list of field replaceable units (FRUs) that exist on the system and their descriptions are displayed. Select a single FRU or multiple FRUs from this list that you would like to view.
4. Click **Display Details** to display the details for selected FRUs, or click **Display all details** to display details for all VPD entries.

Clearing all deconfiguration errors

Clear error records for specific or all resources in the system.

The ASMI allows you to clear error records for all or individual system hardware resources that include the processor, memory, L2 and L3 cache, I/O hubs, service processor card, and clock card.

To clear all deconfiguration errors, your authority level must be an authorized service provider.

Note: Before performing this operation, record error messages or ensure that the error record data is no longer needed; otherwise, you will lose all error data from the hardware resources.

To clear all deconfiguration errors, do the following:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **System Configuration** and **Hardware Deconfiguration**.
3. Select **Clear All Deconfiguration Errors**.
4. In the right pane, select the desired hardware resource from the menu. You can select **All hardware resources** or an individual resource.
5. Click **Clear errors for selected hardware resource**.

Service functions

Service functions provides enough detail for the service provider to gather information about hardware problems while under the direction of the next level of support.

This information provides basic information about some of the service functions that are commonly used by authorized service providers.

Before using this information, you should know how to service this particular hardware model. You must also know how to safely work with electrical components.

Attention: Misuse of service tools or using them with inappropriate security safeguards might result in loss of data, programs, or other objects on the system.

Managing dumps

After you have performed a dump, or one occurs automatically, use this information to manage the dump, including copying, reporting, and deleting it.

Dumps are deleted automatically when a new dump occurs, except for log dumps.

Performing dumps

Learn more about the different types of dumps that can be performed and how to manage them, including copying, reporting, and deleting them.

Dumps can occur automatically after a failure or external reset, or after a manual request. The dump information provides valuable information on system status and should be reported to your next level of support or your hardware service provider.

- **Platform system dump:** A platform system dump is a collection of data from server hardware and firmware, after either a system failure or a manual request.
- **Service processor dump:** A service processor dump is a collection of data from a service processor after either a failure, external reset, or manual request.

In addition, there are other dumps that generate automatically. These include:

- **Platform event log entry dumps** (which are generated by server firmware when a platform event log entry is truncated)
- **Resource dumps**
- **SMP dumps**

Performing a platform system or service processor dump

A platform system dump or service processor dump is performed when your next level of support or your service provider suspects a wait or loop in the server firmware.

Only perform a platform system or service processor dump under the direction of your next level of support or your service provider, after first providing to your next level of support or service provider a dump of the operating system.

Note: Before performing a platform system dump, collect any reference code information from the control panel or the HMC.

Using the HMC to perform a system dump:

If your next level of support or your service provider suspects a wait or loop in the server firmware, they might request that you perform a system dump. You can use the HMC to perform a system dump, which is a collection of data from the server hardware and firmware.

Use this procedure only under the direction of your next level of support or your service provider, after first providing to your next level of support or service provider a dump of the operating system.

Follow these steps to initiate a system dump.

1. Perform a controlled shutdown of all partitions.

Note: A system dump terminates any running partitions.

2. In the navigation area, open **Systems Management**.
3. Select the server and open it.
4. Select **Serviceability**.
5. Select **Manage Dumps**.
6. Select **Action > Initiate System Dump**. The dump is automatically saved to the HMC.
7. For details on how to copy, report, or delete a dump after you have completed a dump, refer to "Managing dumps" on page 97.

Using the control panel to perform a system dump:

If your next level of support or your service provider suspects a wait or loop in the server firmware, they might request that you perform a system dump. If you do not have an HMC, you can use the control panel to perform a system dump, which is a collection of data from the server hardware and firmware.

Use this procedure only under the direction of your next level of support or your service provider, after first providing to your next level of support or service provider a dump of the operating system.

If you do not have an HMC, follow these steps to perform a system dump:

1. Perform a controlled shutdown of the operating system.

Note: A platform system dump terminates any running partitions.

2. On the control panel, select Manual mode.
3. Use the increment or decrement buttons to select function 42 (system dump).
4. Press Enter on the control panel.
5. Is 00000000 or FF displayed on the control panel for more than 30 seconds?
 - **Yes:** The service processor or server firmware is not responding to a request from the control panel. Contact your next level of support or your hardware service provider. **This ends the procedure.**
 - **No:** An attention SRC A1xx3042 is displayed, which indicates that function 42 has been selected.
6. Perform the following steps:
 - a. Reselect function 42 and press Enter on the control panel.
 - b. Switch back to Normal mode and wait for the dump to complete.
 - c. Wait for the system to IPL again.
7. For details on how to copy, report, or delete a dump after you have completed a dump, refer to "Managing dumps" on page 97.

Using the ASMI to perform a system dump:

If your next level of support or your service provider suspects a wait or loop in the server firmware, they might request that you perform a system dump. You can use the ASMI to perform a system dump, which is a collection of data from the server hardware and firmware.

Use this procedure only under the direction of your next level of support or your service provider, after first providing to your next level of support or service provider a dump of the operating system.

To perform a system dump, see Initiating a system dump.

Performing a service processor dump

A service processor dump is a collection of data from a service processor either after a failure, external reset, or manual request.

Only perform a service processor dump under the direction of your next level of support or your service provider, after first providing to your next level of support or service provider a dump of the operating system.

Using the HMC to perform a service processor dump:

A service processor dump is a collection of data from a service processor either after a failure, external reset, or manual request. You can use the HMC to perform a service processor dump.

Use this procedure only under the direction of your next level of support or your service provider, after first providing to your next level of support or service provider a dump of the operating system.

Follow these steps to initiate a service processor dump.

1. In the navigation area, open **Systems Management**.
2. Select the server and open it.
3. Select **Serviceability**.
4. Select **Manage Dumps**.
5. Select **Action > Initiate System Dump**. The dump is automatically saved to the HMC.
6. For details on how to copy, report, or delete a dump after you have completed a dump, refer to "Managing dumps" on page 97.

Using the control panel to perform a service processor dump:

A service processor dump is a collection of data from a service processor after either a failure, external reset, or manual request. If you do not have an HMC, you can use the control panel to perform a service processor dump.

Use this procedure only under the direction of your next level of support or your service provider, after first providing to your next level of support or service provider a dump of the operating system.

If you do not have an HMC, follow these steps to perform a service processor dump:

1. On the control panel, select Manual mode.
2. Use the increment or decrement buttons to select function 43 (service processor dump).
3. Press Enter on the control panel.
4. Is 00000000 or FF displayed on the control panel for more than 30 seconds?
 - **Yes:** The service processor or server firmware is not responding to a request from the control panel. Contact your next level of support or your hardware service provider. **This ends the procedure.**
 - **No:** An attention SRC A1xx 3043 is displayed, which indicates that function 43 has been selected.
5. Perform the following steps:
 - a. Reselect function 43 and press Enter on the control panel.
 - b. Switch back to Normal mode, and wait for the dump to complete.
6. For details on how to copy, report, or delete a dump after you have completed a dump, refer to "Managing dumps" on page 97.

Using the ASMI to perform a service processor dump:

A service processor dump is a collection of data from a service processor after either a failure, external reset, or manual request. You can use the ASMI to perform a service processor dump.

Use this procedure only under the direction of your next level of support or your service provider, after first providing to your next level of support or service provider a dump of the operating system.

To perform a service processor dump, see [Initiating a service processor dump](#).

Copying a dump

Use this procedure to copy a current platform dump or current main storage dump when the Main Storage Dump auto copy option is disabled. Copying the current dump allows another dump of the same type to be created.

Note: If you have an HMC, you must manage your platform dumps with the HMC.

Using an HMC to copy a dump

Learn how to copy a dump using an HMC.

Note: If you have an HMC, you must manage your platform dumps with the HMC. However, you will need to manage i5/OS main storage dumps with the IBM i5/OS service tools.

1. In the navigation area, open **Systems Management**.
2. Select the server and open it.
3. Select **Serviceability**.
4. Select **Manage Dumps**.
5. Select **Selected > Copy Dump**.
6. Select the dump to copy.
7. Verify that HMC containing the dump is the HMC being used to copy the dump.
8. To copy the dump to DVD media, select **Selected > Copy Dump File to DVD Media**.
9. Load the media and follow the instructions on the display.
10. When the copy procedure is successfully completed, remove the media and process it according to the instructions of your next level of support or your hardware service provider.
11. If you encounter a problem with the copy procedure, contact your next level of support or your hardware service provider. **This ends the procedure.**

Using the AIX command line to copy a dump

Learn how to use the AIX command line to copy a dump.

Copy the dump only if you are directed to do so by your next level of support or service provider.

Note: If you have an HMC, you must manage your platform dumps with the HMC. For details, see ["Using an HMC to copy a dump."](#)

Platform dumps are saved in AIX under the following directory:

```
/var/adm/platform
```

Note: If the AIX partition becomes the service partition after it was installed, run the following command to create this directory:

```
platform_dump -f jfs2
```

or

```
platform_dump -f jfs
```

This command will create the `/var/adm/ras/platform` file system. This is done automatically during installation if the AIX partition was marked as the service partition before it was installed.

Using the Linux command line to copy a dump

Learn how to use the Linux command line to copy a dump.

Copy the dump only if you are directed to do so by your next level of support or service provider.

Note: If you have an HMC, you must manage your platform dumps with the HMC. For details, see “Using an HMC to copy a dump” on page 100.

Platform dumps are saved in Linux under the following directory:

```
/var/log/dump/
```

Reporting a dump

Find out how to report a dump using the HMC, i5/OS service tools, AIX command line, or Linux command line.

Using an HMC to report a dump

Learn how to report a dump using an HMC.

1. In the navigation area, open **Systems Management**.
2. Select the server and open it.
3. Select **Serviceability**.
4. Select **Manage Dumps**.
5. Select **Selected > Call Home Dump**.
6. Verify that **HMC containing dump** is the HMC being used to report the dump.
7. Select **Selected → Call Home Dump**. The dump summary display shows the date, time and size of the dump. Report the summary information to your next level of support or your hardware service provider.
8. Has your next level of support or your hardware service provider requested a copy of the dump?
 - **Yes:** Continue to the next step.
 - **No:** Contact your next level of support or your hardware service provider on the problem.
9. To copy a dump to removable media, perform the following steps:
 - a. Select **Copy Dump File to DVD Media**.
 - b. Load the media and follow the instructions on the display.
 - c. When the copy procedure is successfully completed, remove the media and process it according to the instructions of your next level of support or your hardware service provider. If you encounter a problem with the copy procedure, contact your next level of support or your hardware service provider.
10. To copy a dump to another system, perform the following steps:
 - a. Select **Selected → Copy Dump File to Other System**.
 - b. Follow the instructions on the display.
 - c. When the copy procedure is complete, contact your next level of support or your hardware service provider.

Using the AIX command line to report a dump

Learn how to report a dump using the AIX command line.

Report the dump only if you are directed to do so by your next level of support or service provider.

Platform dumps are saved in AIX under the following directory:

```
/var/adm/platform
```

Note: If the AIX partition becomes the service partition after it was installed, run the following command to create this directory:

```
platform_dump -f jfs2
```

or

```
platform_dump -f jfs
```

This command will create the `/var/adm/ras/platform` file system. This is done automatically during installation if the AIX partition was marked as the service partition before it was installed.

Using the Linux command line to report a dump

Learn how to report a dump using the Linux command line.

Platform dumps are saved in AIX under the following directory: `/var/log/dump/`

Report the dump only if you are directed to do so by your next level of support or service provider.

Deleting a dump

Use this procedure to delete a dump when dump copies are no longer needed by your next level of support or your hardware service provider.

Using an HMC to delete a dump

Learn how to use an HMC to delete a dump.

Dumps are stored in the HMC's Manage Serviceable Events tool and are automatically deleted when room is required for new dumps. Use this procedure when you want to manually delete a dump.

1. In the navigation area, open **Systems Management**.
2. Select the server and open it.
3. Select **Serviceability**.
4. Select **Manage Dumps**.
5. Select **Selected > Delete Dump**.
6. Select the dump to delete.
7. Verify that HMC containing the dump is the HMC being used to delete the dump.
8. Select **Selected → Delete Dump**.

Using the AIX command line to delete a dump

Learn how to delete a dump using the AIX command line.

Platform dumps are saved in AIX under the following directory:

```
/var/adm/platform
```

Delete the dump only if directed to do so by your next level of support or service provider.

Note: If the AIX partition becomes the service partition after it was installed, run the following command to create this directory:

```
platform_dump -f jfs2
```

or

```
platform_dump -f jfs
```

to create the `/var/adm/ras/platform` file system.

During an installation, this directory is created automatically if the AIX partition was marked as the service partition before it was installed.

Using the Linux command line to delete a dump

Learn how to delete a dump using the Linux command line.

Platform dumps are saved in AIX under the following directory: `/var/log/dump/`

Delete the dump only if directed to do so by your next level of support or service provider.

Performing a slow boot

Learn how to perform a slow boot using the HMC, control panel, or ASMI menus depending on your configuration.

In some cases, you need to perform a slow-mode boot in order to perform extended diagnostic testing.

Note: A slow-mode boot might yield a new reference code on the control panel, or new errors in the service processor error log. When the server reports a new error code, record it for use in subsequent steps.

Using the HMC to perform a slow boot

Learn how to perform a slow boot using the HMC.

In some cases, you need to perform a slow-mode boot in order to perform extended diagnostic testing.

Note: A slow-mode boot might yield a new reference code on the control panel, or new errors in the service processor error log. When the server reports a new error code, record it for use in subsequent steps.

1. Record any reference codes appearing on the control panel or HMC.
2. Shut down all logical partitions and the server.
3. In the navigation area, open **Systems Management**.
4. Open **Servers**.
5. Select the server you want to perform a slow boot on.
6. In the **Tasks** area, select **Properties**.
7. Click the **Power-On Parameters** tab.
8. Record the current boot setting in the Current column next to the Power-on speed override box.
9. Select **slow** from the list in the Power-on speed override box in the Next column.

Note: These settings will apply to all future boots. After you complete the service action, change the settings back to what you recorded in step 8.

10. Click **OK**.
11. After you are done, return to the step in the procedure that caused you to perform a slow boot. **This ends the procedure.**

Using the control panel to perform a slow boot

Learn how to use the control panel to perform a slow boot.

In some cases, you need to perform a slow-mode boot in order to perform extended diagnostic testing.

Note: A slow-mode boot might yield a new reference code on the control panel, or new errors in the service processor error log. When the server reports a new error code, record it for use in subsequent steps.

1. Record any reference codes appearing on the control panel.
2. Stop the operating system by performing the following steps:
 - a. Log in to the system as a user with the authority to run the shutdown or pwrdownsys (Power Down System) command.
 - b. At the command line, enter one of the following commands:

Note: These commands stop the operating system. The system power turns off, the power-on light begins to slowly blink, and the system goes into a standby state.

 - If your system is running AIX, type shutdown
 - If your system is running IBM i5/OS, type pwrdownsys *immed
 - If your system is running Linux, type shutdown -h now
3. On the control panel, use the increment or decrement buttons to scroll to function 02.
4. Press Enter to start function 02. The current IPL type (with pointer) and speed is displayed.
5. Use the increment or decrement buttons to scroll through the IPL types and speeds.
6. When manual is shown, press Enter to select the IPL type of manual. The current IPL type and speed (with pointer) is displayed.
7. Use the increment or decrement buttons to scroll through the IPL speeds.
8. When S is shown, press Enter to select the IPL speed of slow.
9. To exit function 02, press Enter multiple times until just 02 is displayed.
10. Power on the server by pressing the white power button. Then return to the procedure that caused you to perform a slow boot. **This ends the procedure.**

Using the ASMI menus to perform a slow boot

Learn how to use the ASMI menus to perform a slow boot.

In some cases, you need to perform a slow-mode boot in order to perform extended diagnostic testing.

Note: A slow-mode boot might yield a new reference code on the control panel, or new errors in the service processor error log. When the server reports a new error code, record it for use in subsequent steps.

1. Record any reference codes appearing on the control panel or HMC.
2. Shut down all logical partitions and the server.
3. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
4. Expand **Power/Restart Control** and select **Power On/Off System**.
5. Record the settings so that you can re-enter them after you complete the service actions.
6. On the Power on/off system menu, select the following:
 - Select **Slow** in the Set System Boot Speed field.
 - Select **Running** in the Boot to system server firmware field.
7. Select **Save Settings**.

Note: These settings will apply to all future boots. After you complete the service action, change the settings back to what you recorded in step 5.

8. After you are done, return to the step in the procedure that caused you to perform a slow boot. **This ends the procedure.**

Determining the primary or alternate console

Use this procedure to determine the primary or alternate console.

If the HMC has been configured as the primary console, the system will start the HMC.

If the Operations Console has been configured as the primary console, the system will start the Operations Console. If the Operations Console has not been configured, the primary console is a workstation that is attached to the first input/output processor (IOP) that is capable of supporting workstations.

In addition to the primary console, the system can assign up to two alternative consoles. The first alternative console can only be a twinax workstation that is attached to the same IOP as the primary console. The second alternative console is a workstation that is attached to the next IOP or input/output adapter (IOA) that is capable of supporting workstations.

The IOP that supports the console must be on the first system bus (bus 1).

If a workstation is not correctly attached to the first IOP that is capable of attaching workstations, then the system will not assign a primary console. The system will display a reference code on the operator's panel. In addition, if the IPL (initial program load) mode is set to Manual, the system will stop.

Primary console workstation requirements

Learn about the primary console workstation requirements.

In order to be the primary console, the workstation must be operational and have the correct port and address. If the workstation is a PC, it must also have an active emulation program on the workstation.

The workstation requirements are:

- HMC
- twinax workstation - Port 0 Address 0
- ASCII workstation - Port 0
- PC attached to ASCII IOP or IOA
 - Port 0
 - PC software to emulate a 316x or 3151 terminal
- PC attached to twinax IOP
 - Port 0 Address 0
 - 5250 emulator software active on PC
- PC attached to a LocalTalk IOA (6054)
 - SNAps 5250 Version 1.2 (or above) application
 - Console capable selected on MacIntosh (IOA converts to Port 0 Address 0)
- PC attached to a 2609, 2612, 2699, or 2721 communications IOA
 - Client Access Console cable attached to the 2609 or 2612 P2 port (part number 46G0450 or 46G0479), 2699 (part number 21H3779), or 2721 (part number 44H7504)
 - Operations Console cable attached to the 2609 or 2612 (part number 97H7555), 2699 (part number 97H7556), or 2721 (part number 97H7557) - 5250 emulation or Rumba active on PC

Find the primary console when the system is operational

Learn how to find the primary console when the system is operational.

The following methods are available to find the primary console:

- **Method 1:** Look for a sign-on display with a DSP01 in the upper-right corner.
- **Method 2:** If the device name (DSP01) for the console has been changed, you can verify the device name for the primary console by doing the following:
 1. Enter DSPCTLD QCTL on any command line. The Display Controller Description display is displayed.
 2. Find the Resource name parameter (such as CTL01) and record it.
 3. Enter PRTDEVADR rrrrr on any command line, where rrrrr is the resource name you recorded.

Note: If the printer is active, the data will print.

- **Method 3:**
 1. Enter STRSST on any command line. The System Service Tools display is displayed.
 2. Select option 1 (Start a service tool).
 3. Select option 7 (Hardware service manager).
 4. Select option 2 (Logical hardware resources).
 5. Select option 1 (System bus resources). On the Logical Hardware Resources on System Bus display, the "<" symbol indicates the IOP that the console is attached to.
 6. Use option 9 (Resource associate with IOP and display detail) to find the location of the system bus, board, and card.

Find the primary console when the system power is off

Learn how to find the primary console when the system power is off.

Use one of the following:

- Turn on the system in Manual mode and look for the IPL and Install System display.
- Turn on the system in Normal mode and look for DSP01 on the sign on display.

Note that the name might have been changed. See "Find the primary console when the system is operational" on page 105 to determine the display name.

Resetting the service processor

Use this procedure to reset the service processor.

Note: Use this procedure *only* under the direction of your next level of support or your hardware service provider. During this procedure you will be powering off the system and removing and reapplying AC power.

1. Inform anyone using the server that it will be shut down.
2. Stop all applications that are running on the server.
3. Stop the operating system and server by choosing from the following options:
 - If you have an HMC, shut down all logical partitions and the server. For instructions see "Powering on and powering off" on page 81. Then continue with step 6.
 - If you do *not* have an HMC, continue with the next step.
4. Log in to the system as a user with the authority to run the appropriate shutdown command.
5. At the command line, enter one of the following commands:
 - If your system is running AIX, type `shutdown`
 - If your system is running i5/OS, type `PWRDWN SYS *IMMED`
 - If your system is running Linux, type `shutdown -h now`

These commands stop the operating system. The system power turns off, the power-on light begins to slowly blink, and the system goes into a standby state.

6. Unplug the AC power cord and replug it back in.

7. Start the server. The service processor is reset. **This ends the procedure.**

Resetting the managed system connection from the HMC

Use this procedure to reset the managed system connection from the HMC.

Perform these steps to reset the managed system connection:

1. In the navigation area, open **Systems Management**.
2. Select **Servers**.
3. In the contents area, select the server on which you want to reset the connection.
4. In the **Tasks** area, open **Connections**.
5. Select **Reset or Remove Connection**.
6. Select **Reset Connection**.
7. Click **OK**.

Checking for a duplicate IP address

Use this procedure to check for a duplicate IP address.

Perform these steps to check for a duplicate IP address.

1. On the HMC, right-click the desktop and select **terminal** → **rshterm**.
2. At the terminal, issue this command: `lssyscfg -r sys -F "name,ipaddr"` A list of managed systems' names and their IP address (or host name) will be displayed.
3. Check to see if there are duplicate addresses.

Running the online and eServer stand-alone diagnostics

Use these tools to diagnose hardware problems on your AIX or Linux systems or partitions.

Use these diagnostics only if you are directed to do so by your next level of support or your hardware service provider.

Diagnostics are available for AIX and Linux systems or logical partitions which can help you perform hardware analysis. Additionally, there are various service aids in AIX diagnostics that can help you with service tasks on the system or logical partition. If there is a problem, you will receive a Service Request Number (SRN) that can help you pinpoint the problem and determine a corrective action.

If you have AIX installed and it is running, you can perform online diagnostics. However, if the installed AIX cannot be started, or you have Linux installed, you will need to run the diagnostics from CD or from a NIM server.

Verifying the repair can also be done using the diagnostics CD. To verify a repair in Linux, see *Verify the repair in Linux*. To verify the repair in AIX, see *Verify the repair in AIX*.

Running the online diagnostics

If you have AIX installed and it can be started, use this procedure to perform diagnostic procedures when directed from another procedure or by your next level of support.

When you run online diagnostics, keep the following in mind:

- When AIX is installed, the support for some devices might not be automatically installed. If this happens, that device will not display in the test list when online diagnostics run.

- When running diagnostics in a logically partitioned system, you must run diagnostics in the logical partition containing the resource or resources that you want to test.

Three modes are available for running the online diagnostics:

- **Service mode** provides the most complete check of the system resources, but requires that no other programs are running on the system. When possible, run the diagnostics in service mode.
- **Maintenance mode** allows you to check most of the available resources, with the exception of SCSI adapters, memory, processor, and the disk drive used for paging.
- **Concurrent mode** allows you to run online diagnostics on some of the system resources while the system is running normal activity.

Running the online diagnostics in service mode

Use this procedure to run the online diagnostics in service mode.

Using service mode will check everything except the SCSI adapter and the disk drives used for paging. However, memory and processor are only tested during POST. Running in service mode ensures that the error state of the system that has been captured in NVRAM is available for your use in analyzing the problem.

Running the online diagnostics in service mode with an HMC attached:

Use this procedure to run the online diagnostics in service mode with an HMC attached.

Perform the following steps:

1. Stop all programs including the AIX operating system. For details, see Start or stop the system.
2. From the HMC, right-click **Partition Manager** and select **Open Terminal Window**.
3. From the Service Processor Menu on the VTERM, select option 2 (System Power Control).
4. Select option 6.
5. Verify that the state changes to currently disabled. Disabling fast system boot automatically enables slow boot.
6. Select option 98 to exit the system power control menu.
7. From the HMC, start the managed system in a full system partition by following these steps:
 - a. In the Contents area, select the managed system.
 - b. Right-click, and select **Power On**.
8. Select **Power on Diagnostic Stored Boot list**.
9. Make sure that there is no media in the devices in the media subsystem.
10. Enter any passwords, if requested.
11. When the Diagnostic Operating Instructions screen displays, follow the online instructions to check the desired resources.

Note: If you do not receive the Diagnostic Operating Instructions display, try to run the standalone diagnostics. For details, see “Running the eServer stand-alone diagnostics from CD-ROM” on page 110.

12. When finished, contact your next level of support or your hardware service provider with any information you received during the diagnostics, including service request numbers (SRNs).

Running the online diagnostics in service mode without an HMC attached:

Use this procedure to run the online diagnostics in service mode *without* an HMC attached.

Perform the following steps:

1. Stop all programs including the AIX operating system. For details, see Start or stop the system.

2. Remove all tapes, diskettes, and CDs.
3. Turn off the system unit power.
4. Turn on the system unit power.
5. After the keyboard POST indicator displays on the firmware console, and before the last POST indicator (speaker) displays, press 6 on the keyboard or ASCII terminal to indicate that a service mode boot should be initiated using the customized service mode boot list.
6. Enter any passwords, if requested.
7. When the Diagnostic Operating Instructions screen displays, follow the online instructions to check the desired resources.

Note: If you do not receive the Diagnostic Operating Instructions display, try to run the standalone diagnostics. For details, see “Running the eServer stand-alone diagnostics from CD-ROM” on page 110.

8. When finished, contact your next level of support or your hardware service provider with any information you received during the diagnostics, including service request numbers (SRNs).

Running the online diagnostics in maintenance mode

Use this procedure to run the online diagnostics in maintenance mode.

Maintenance mode requires that all activity on the logical partition running the AIX operating system be stopped so that the online diagnostics have most of the resources available. All of the system resources, except the SCSI adapters, memory, processor, and the disk drive used for paging can be checked.

Perform the following steps to run the online diagnostics in maintenance mode:

1. Stop all programs running on the logical partition except the AIX operating system.
2. Log in to the AIX operating system as root user or use CE login.
3. Type the shutdown -m command to stop all activity on the AIX operating system and put it into maintenance mode.
4. When a message indicates that the system is in maintenance mode, enter the diag command to invoke the diagnostic controller so you can run the diagnostics.

Note: It might be necessary to set TERM type again.

5. Enter any passwords, if requested.
6. When the Diagnostic Operating Instructions screen displays, follow the online instructions to check the desired resources.

Note: If you do not receive the Diagnostic Operating Instructions display, try to run the standalone diagnostics. For details, see “Running the eServer stand-alone diagnostics from CD-ROM” on page 110.

7. When finished, press Ctrl+D to log off from root user or CE login.
8. Contact your next level of support or your hardware service provider with any information you received during the diagnostics, including service request numbers (SRNs). **This ends the procedure.**

Running the online diagnostics in concurrent mode

Use this procedure to run the online diagnostics in concurrent mode.

Use concurrent mode to run online diagnostics on some of the system resources while the system is running normal activity.

Because the system is running in normal operation, the following resources cannot be tested in concurrent mode:

- SCSI adapters connected to paging devices

- Disk drive used for paging
- Some display adapters and graphics related devices

The following levels of testing exist in concurrent mode:

Share-test level

This level tests a resource while the resource is being shared by programs running in the normal operation. This testing is mostly limited to normal commands that test for the presence of a device or adapter.

Sub-test level

This level tests a portion of a resource while the remaining part of the resource is being used in normal operation. For example, you could test one port of a multiport device while the other ports are being used in normal operation.

Full-test level

This level requires the device to not be assigned or used by any other operation. This level of testing on a disk drive might require the use of the vary off command. Use the diagnostics display menus to allow you to vary off the needed resource.

Perform the following steps to run online diagnostics in concurrent mode:

1. Log in to the AIX operating system as root user, or use CE login. If you need help, contact the system administrator.
2. Enter the `diag` command to load the diagnostic controller, and display the online diagnostic menus.
3. If requested, enter a password.
4. When the Diagnostic Operating Instructions screen displays, follow the online instructions to check the desired resources.

Note: If you do not receive the Diagnostic Operating Instructions display, try to run the standalone diagnostics. For details, see “Running the eServer stand-alone diagnostics from CD-ROM.”

5. When testing is complete, press F3 to return to the Diagnostic Operating Instructions display.
6. Press F3 again to return to the AIX operating system prompt.
7. Vary on any resources that you varied off.
8. Press Ctrl+D to log off from root user or CE login.
9. When finished, contact your next level of support or your hardware service provider with any information you received during the diagnostics, including service request numbers (SRNs).

Running the eServer stand-alone diagnostics from CD-ROM

If the system or logical partition where you would like to run diagnostics has AIX installed but it cannot be started, or you have Linux installed, use this procedure to perform diagnostic procedures from CD-ROM when directed from another procedure or by your next level of support.

Diagnostics, which are available for AIX and Linux systems and logical partitions, can help you perform hardware analysis. If a problem is found, you will receive a service request number (SRN) or a service reference code (SRC) that can help pinpoint the problem and determine a corrective action.

Additionally, there are various service aids in the diagnostics that can help you with service tasks on the system or logical partition.

Running the eServer stand-alone diagnostics from CD on a server with an HMC attached

Learn how to run the eServer stand-alone diagnostics on a system with an HMC attached.

If you have logical partitions, note the following considerations:

- When running diagnostics in a logically partitioned system, you must run diagnostics in the logical partition containing the resource or resources that you want to test.
- The device from which you are loading stand-alone diagnostics must be made available to the logical partition on which you want to run diagnostics. This might require moving the device (for example, the CD drive or network adapter connected to the Network Installation Management (NIM) server that has a stand-alone diagnostic image) from the logical partition that currently contains the device to the logical partition on which you want to run diagnostics.

Perform the following steps from the HMC to run stand-alone diagnostics:

Note: If you need help with any of these steps, contact your system operator.

1. Remove all tapes, diskettes, CDs, or DVDs, and insert the diagnostic CD into the CD drive on the managed system (not the CD drive on the HMC).
2. Shut down the operating system from the HMC by performing the following steps:
 - a. In the navigation area, select **Server and partition** → **Server Management**.
 - b. In the contents pane, expand the server that contains the partition you want to test.
 - c. Right-click the partition and select **Open Terminal Window**.
 - d. In the VTerm window, log in as root user and enter any requested passwords.
 - e. Shut down the operating system using one of the following commands:
 - If AIX is running, type the shutdown -F command.
 - If Linux is running, type the shutdown -h now command
 - f. Close the VTerm window.
3. From the HMC, right-click the partition and select **Activate**.
4. Ensure the **Open a terminal window or console session box** is selected and click **OK**.
5. When the keyboard POST indicator (the word *keyboard*) is shown on the firmware console, and before the last POST indicator (the word *speaker*) is shown, press the 5 key on either the attached keyboard or the ASCII keyboard to indicate that a service mode boot should be initiated using the default service mode boot list.
6. Continue with “Selecting testing options.”

Selecting testing options:

1. When the keyboard POST indicator (the word *keyboard*) is shown on the firmware console, and before the last POST indicator (the word *speaker*) is shown, press the 5 key on either the attached keyboard or the ASCII keyboard to indicate that a service mode boot should be initiated using the default service mode boot list.
2. When the Welcome screen is shown, define the following:
 - System console
 - Language to be used
 - Type of terminal

Note: Depending on the terminal emulator selected, the function keys (Fn) might not function. In this case, use the ESC and the number in the screen menus. For example, F3 = ESC key and the #3.

3. When the Diagnostics Operating Instructions are displayed, press Enter.

Note: If you are unable to load the diagnostics to the point where the “Diagnostic Operating Instructions” display is shown, contact your next level of support or your hardware service provider.

4. From the Function Select screen, select one of the following:
 - If you want to run diagnostics in Problem Determination mode, continue with the next step.
 - If you want to run diagnostics in Task Selection (Service Aids) mode, go to step 11 on page 112.

5. Select **Problem determination** and press Enter.
6. Check the list of resources that is displayed. Does the list of resources match what you know to be installed in your system or partition?
 - **Yes:** Continue with the next step.
 - **No:** Record any information you have about the missing resource and check to ensure that the missing resource is installed correctly. If you cannot correct the problem with a missing resource, replace the missing resource (contact your service provider if necessary). To test the available resources, continue with the next step.
7. Select **All Resources**, or the specific resource or resources to be tested, and press the P7 (commit) key.
8. Record any error information you receive during the diagnostics, including service request numbers (SRNs) or SRCs, to report to your service provider.
9. When testing is complete, press the F3 key to return to the Diagnostic Operating Instructions.
10. Choose from the following options:
 - To continue testing, return to step 7.
 - To exit stand-alone diagnostics, select the exit function key from the menu and press Enter. Continue with step 18.
11. Select **Task Selection list** and press Enter.
12. To perform one of these tasks, select the **Task Selection** option from the Function Selection menu. After a task is selected, a resource menu might be presented showing all resources supported by the task.
13. From the Task selection list, select the service aid task you want to perform. For example, Update and manage system Flash.
14. Follow the instructions for the task selected on each menu or panel.
15. Record any information you receive during the diagnostics, including service request numbers (SRNs), to report to your service provider.
16. When testing is complete, press the F3 key to return to the Diagnostic Operating Instructions.
17. Choose from the following options:
 - To continue testing, return to step 13.
 - To exit stand-alone diagnostics, select the exit function key from the menu and press Enter. Continue with the next step.
18. Remove the CD from the drive.
19. When finished, contact your next level of support or your hardware service provider with any information you received during the diagnostics, including service request numbers (SRNs) and any missing resources. **This ends the procedure.**

Running the eServer stand-alone diagnostics from CD on a server without an HMC attached

Learn how to run the eServer stand-alone diagnostics on a system without an HMC attached.

1. Choose from the following options:
 - If the system is powered on, continue with step 2.
 - If the system is powered off, continue with step 3.
2. If the system is powered on, perform these steps:
 - a. Let the system administrator and system users know that the system unit will be shut down.
 - b. Stop all programs including the operating system. For details, see "Powering on and powering off" on page 81.
 - c. Continue with step 4 on page 113.
3. If the system is powered off, perform the following steps:

- a. Start the server so you will be able to insert the diagnostic CD into the CD drive during the next step.
 - b. Continue with step 4.
4. Insert the diagnostic CD in the CD drive.
 5. Re-start the server.
 6. Continue with "Selecting testing options."

Selecting testing options:

1. When the keyboard POST indicator (the word *keyboard*) is shown on the firmware console, and before the last POST indicator (the word *speaker*) is shown, press the 5 key on either the attached keyboard or the ASCII keyboard to indicate that a service mode boot should be initiated using the default service mode boot list.
2. When the Welcome screen is shown, define the following:
 - System console
 - Language to be used
 - Type of terminal

Note: Depending on the terminal emulator selected, the function keys (Fn) might not function. In this case, use the ESC and the number in the screen menus. For example, F3 = ESC key and the #3.
3. When the Diagnostics Operating Instructions are displayed, press Enter.

Note: If you are unable to load the diagnostics to the point where the "Diagnostic Operating Instructions" display is shown, contact your next level of support or your hardware service provider.
4. From the Function Select screen, select one of the following:
 - If you want to run diagnostics in Problem Determination mode, continue with the next step.
 - If you want to run diagnostics in Task Selection (Service Aids) mode, go to step 11.
5. Select **Problem determination** and press Enter.
6. Check the list of resources that is displayed. Does the list of resources match what you know to be installed in your system or partition?
 - **Yes:** Continue with the next step.
 - **No:** Record any information you have about the missing resource and check to ensure that the missing resource is installed correctly. If you cannot correct the problem with a missing resource, replace the missing resource (contact your service provider if necessary). To test the available resources, continue with the next step.
7. Select **All Resources**, or the specific resource or resources to be tested, and press the P7 (commit) key.
8. Record any error information you receive during the diagnostics, including service request numbers (SRNs) or SRCs, to report to your service provider.
9. When testing is complete, press the F3 key to return to the Diagnostic Operating Instructions.
10. Choose from the following options:
 - To continue testing, return to step 7.
 - To exit stand-alone diagnostics, select the exit function key from the menu and press Enter. Continue with step 18 on page 114.
11. Select **Task Selection list** and press Enter.
12. To perform one of these tasks, select the **Task Selection** option from the Function Selection menu. After a task is selected, a resource menu might be presented showing all resources supported by the task.
13. From the Task selection list, select the service aid task you want to perform. For example, Update and manage system Flash.

14. Follow the instructions for the task selected on each menu or panel.
15. Record any information you receive during the diagnostics, including service request numbers (SRNs), to report to your service provider.
16. When testing is complete, press the F3 key to return to the Diagnostic Operating Instructions.
17. Choose from the following options:
 - To continue testing, return to step 13 on page 113.
 - To exit stand-alone diagnostics, select the exit function key from the menu and press Enter. Continue with the next step.
18. Remove the CD from the drive.
19. When finished, contact your next level of support or your hardware service provider with any information you received during the diagnostics, including service request numbers (SRNs) and any missing resources. **This ends the procedure.**

Running the eServer stand-alone diagnostics from a Network Installation Management server

If the system or logical partition where you would like to run diagnostics has AIX installed but it cannot be started, or you have Linux installed, use this procedure to perform diagnostic procedures from a Network Installation Management (NIM) server when directed from another procedure or by your next level of support.

Diagnostics, which are available for AIX and Linux systems and logical partitions, can help you perform hardware analysis. If a problem is found, you will receive a service request number (SRN) that can help pinpoint the problem and determine a corrective action.

A client system connected to a network with a NIM server can boot stand-alone diagnostics from the NIM server if the client-specific settings on both the NIM server and client are correctly configured.

Note:

1. For NIM clients that have adapters that would normally require that supplemental media be installed when stand-alone diagnostics are run from CD, the support code for these adapters must be installed into the directory pointed to by the NIM SPOT from which you wish to boot that client. Before running stand-alone diagnostics on these clients from the NIM server, the NIM server system administrator must ensure that any needed support for these devices is installed on the server.
2. All operations to configure the NIM server require root user authority.
3. If you replace the network adapter in the client, the network adapter hardware address settings for the client must be updated on the NIM server.
4. The **Cstate** for each stand-alone diagnostics client on the NIM server should be kept in the *diagnostic boot has been enabled* state.
5. On the client system, the NIM server network adapter should be put in the bootlist after the boot disk drive. This allows the system to boot in stand-alone diagnostics from the NIM server if there is a problem booting from the disk drive. Refer to the Multiboot section under "SMS" in the client system's service guide for information on setting the bootlist.

Configuring the NIM server

Refer to the "Advanced NIM configuration tasks" chapter of the AIX Installation Guide and Reference for information on performing the following tasks:

- Registering a client on the NIM server
- Enabling a client to run diagnostics from the NIM server

To verify that the client system is registered on the NIM server and the diagnostic boot is enabled, run the command from the command line on the NIM server: `Isnim -a Cstate -z ClientName`. Refer to the following table for system responses.

Note: The ClientName is the name of the system on which you want to run stand-alone diagnostics.

System response	Client status
#name:Cstate:ClientName:diagnostic boot has been enabled:	The client system is registered on the NIM server and enabled to run diagnostics from the NIM server.
#name:Cstate:ClientName:ready for a NIM operation:or #name:Cstate:ClientName:B0S installation has been enabled:	The client is registered on the NIM server but not enabled to run diagnostics from the NIM server. Note: If the client system is registered on the NIM server but Cstate has not been set, no data will be returned.
0042–053 Isnim: there is no NIM object named "ClientName"	The client is not registered on the NIM server.

Configuring the client and running the stand-alone diagnostics from a NIM server

Perform the following steps to run stand-alone diagnostics on a client from the NIM server:

1. Let the system administrator and system users know that the system unit might be shut down.
2. Stop all programs including the AIX or Linux operating system. For details, see Start or stop the system. If you need help, contact the system administrator.
3. Remove all tapes, diskettes, and CDs.
4. Choose from the following options:
 - If you are running stand-alone diagnostics in a full system partition profile, verify with the system administrator and system users that the system unit can shut down using the shutdown command. Then power down the system.
 - If you are running on a logically partitioned system, make sure the CD drive is available to the partition used to run stand-alone diagnostics. Verify with the system administrator and system users using that partition that all applications on that partition must be stopped, and that the partition will be restarted. Stop all programs on that partition, including the operating system.
5. Choose from the following options:
 - If you are in a full system partition, power on the system unit to run stand-alone diagnostics.
 - If you are in a logically partitioned system, restart the partition to run stand-alone diagnostics.
6. When the keyboard indicator is displayed (the word *keyboard* on an HMC virtual terminal window or the keyboard icon on a graphical display) press the number 1 key on the keyboard to display the SMS menu.
7. Enter any requested passwords.
8. Select **Set Up Remote IPL** (Initial Program Load).
9. Enter the client address, server address, gateway address, if applicable, and subnet mask. If there is no gateway between the NIM server and the client, set the gateway address to 0.0.0.0.
To determine if there is a gateway, either ask the system network administrator or compare the first three octets of the NIM server address and the client address. If they are the same, (for example, if the NIM server address is 9.3.126.16 and the client address is 9.3.126.42, the first 3 octets (9.3.126) are the same), then set the gateway address in the RIPL field to 0.0.0.0.
- Note:** The RIPL is located under the Utility menu in System Management Services (SMS). Refer to it for information on setting these parameters.
10. If the NIM server is set up to allow pinging from the client system, use the ping utility in the RIPL utility to verify that the client system can ping the NIM server.

11. Under the ping utility, choose the network adapter that provides the attachment to the NIM server to do the ping operation. If the ping returns with an OK prompt, the client is prepared to boot from the NIM server. If ping returns with a FAILED prompt, the client cannot proceed with the NIM boot.

Note: If the ping fails, refer to the Boot problems and concerns information. Then follow the steps for network boot problems.

12. Exit the SMS Main screen.
13. Select **Select Boot Options** → **Install or Boot a Device** → **Network**.
14. Record the current bootlist settings. You will need to set the bootlist back to the original settings after running diagnostics from the NIM server.
15. Change the bootlist so the network adapter attached to the NIM is first in the bootlist.
16. Set the network parameters for the adapter from which you want to boot.
17. Exit completely from SMS. The system will start loading packets while doing a bootp from the network.
18. Follow the on-screen instructions.
 - If Diagnostic Operating Instructions Version x.x.x displays, stand-alone diagnostics have installed successfully.
 - If the AIX login prompt displays, stand-alone diagnostics did not load. Continue with step 19.
19. If the diagnostics did not load, check the following items:
 - The bootlist on the client might be incorrect.
 - Cstate on the NIM server might be incorrect.
 - Network problems might be preventing you from connecting to the NIM server.
 - Verify the settings and the status of the network. If you continue to have problems, refer to the Boot problems/concerns section for the system unit. Then follow the steps for network boot problems.
20. After running diagnostics, restart the system and use SMS to change the IP settings and bootlist sequence back to the original settings.

Filter maintenance

Vacuum all filters at least once a year.

Perform preventive maintenance on filters at least once a year. Inspect the filters very six month to insure that there is proper airflow. Replace the filters as needed.

Appendix. Accessibility features

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

The following list includes the major accessibility features:

- Keyboard-only operation
- Interfaces that are commonly used by screen readers
- Keys that are tactilely discernible and do not activate just by touching them
- Industry-standard devices for ports and connectors
- The attachment of alternative input and output devices

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