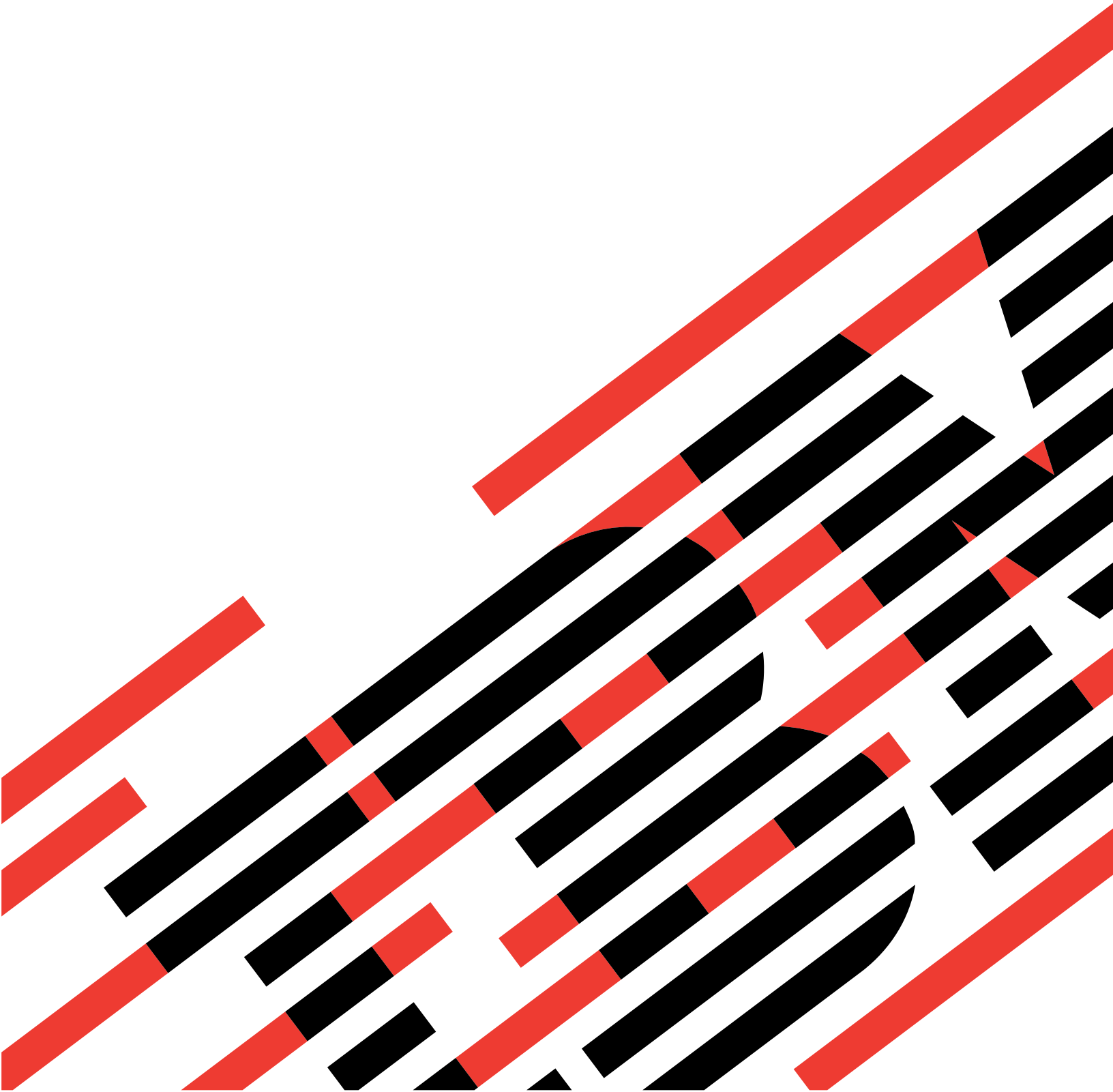
IBM

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pSeries 615

Service Guide

SA38-0630-02



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pSeries 615

Service Guide

SA38-0630-02

Third Edition (October 2003)

Before using this information and the product it supports, read the information in “Safety Notices” on page xi, Appendix A, “Environmental Notices,” on page 389, and Appendix B, “Notices,” on page 391.

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Safety Notices

A *danger* notice indicates the presence of a hazard that has the potential of causing death or serious personal injury. Danger notices appear on the following pages:

- xii
- 98
- 99
- 279
- 347

A *caution* notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury. Caution notices appear on the following pages:

- xii
- xiii
- 98
- 280
- xii
- 316
- 408

Note: For a translation of these notices, see *System Unit Safety Information*, order number SA23-2652.

Rack Safety Instructions

- Do not install this unit in a rack where the internal rack ambient temperatures will exceed 35 degrees C.
- Do not install this unit in a rack where the air flow is compromised. Any side, front or back of the unit used for air flow through the unit must not be in direct contact with the rack.
- Care should be taken to ensure that a hazardous condition is not created due to uneven mechanical loading when installing this unit in a rack. If the rack has a stabilizer it must be firmly attached before installing or removing this unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to the rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement for the supply circuit.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Electrical Safety

Observe the following safety instructions any time you are connecting or disconnecting devices attached to the workstation.

In the system you are about to setup or service:

- The ac power interface connector is considered the main power disconnect device.
- This system has redundant power supply capabilities, meaning that it has the ability to have two power supplies running simultaneously in the same system unit. When instructed to disconnect the power source, ensure that all power cables have been unplugged.

DANGER

To prevent electrical shock hazard, disconnect all power cables from the electrical outlet before relocating the system.
D01

CAUTION:
This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable with a properly grounded electrical outlet to avoid electrical shock.
C01

DANGER

To prevent electrical shock hazard, disconnect all power cables from the electrical outlet before relocating the system.
D01

CAUTION:
A lithium battery can cause fire, explosion, or a severe burn. Do not recharge, disassemble, heat above 100 degrees C (212 degrees F), solder directly to the cell, incinerate, or expose cell contents to water. Keep away from children. Replace only with the part number specified for your system. Use of another battery may represent a risk of fire or explosion.

The battery connector is polarized; do not attempt to reverse the polarity.

Dispose of the battery according to local regulations.
C9

DANGER

Do not attempt to open the covers of the power supply. Power supplies are not serviceable and are to be replaced as a unit.
D02

Laser Safety Information

CAUTION:
This product may contain a CD-ROM, DVD-ROM, or laser module on a PCI card, which are class 1 laser products.
C30

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 the IEC 825 (first edition 1984) as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

CAUTION:
All IBM laser modules are designed so that there is never any human access to laser radiation above a class 1 level during normal operation, user maintenance, or prescribed service conditions. 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. Only trained service personnel should perform the inspection or repair of optical fiber cable assemblies and receptacles.
C25, C26

Data Integrity and Verification

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

About This Book

This book provides maintenance information that is specific to the @server pSeries 615 Models 6C3 and 6E3, as well as adapters and attached devices that do not have their own service information. It also contains Maintenance Analysis Procedures (MAPs) that are not common to other systems. In this book, the pSeries 615 Model 6C3 and Model 6E3 are hereafter referred to as the *system*.

MAPs that are common to all systems are contained in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

This book is used by the service representative to repair system failures. This book assumes that the service representative has had training on the system unit.

ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.

Highlighting

The following highlighting conventions are used in this book:

Bold	Identifies commands, subroutines, keywords, files, structures, directories, and other items whose names are predefined by the system. Also identifies graphical objects such as buttons, labels, and icons that the user selects.
Italics	Identifies parameters whose actual names or values are to be supplied by the user.
`Monospace`	Identifies examples of specific data values, examples of text similar to what you might see displayed, examples of portions of program code similar to what you might write as a programmer, messages from the system, or information you should actually type.

Accessing Information

Documentation for the IBM @server pSeries is available online. Visit the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base.

- To access the pSeries publications, click **Hardware documentation**.
- To view information about the accessibility features of @server pSeries hardware and the AIX operating system, click **AIX and pSeries accessibility**.

References to AIX Operating System

This document may contain references to the AIX operating system. If you are using another operating system, consult the appropriate documentation for that operating system.

This document may describe hardware features and functions. While the hardware supports them, the realization of these features and functions depends upon support from the operating system. AIX provides this support. If you are using another operating system, consult the appropriate documentation for that operating system regarding support for those features and functions.

Related Publications

The following publications provide additional information about your system:

- The *@server pSeries 615 Model 6C3 and Model 6E3 Installation Guide*, order number SA38-0628, contains information on how to set up and cable the system, install and remove options, and verify system operation.

- The *@server pSeries 615 Model 6C4 and Model 6E4 User's Guide*, order number SA38-0629, contains information to help users use the system, use the service aids, and solve minor problems.
- The *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, contains diagnostic information, service request numbers (SRNs), and failing function codes (FFCs).
- The *RS/6000 @server pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems*, order number SA38-0516, contains information about adapters, devices, and cables for your system. This manual is intended to supplement the service information found in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
- The *Site and Hardware Planning Guide*, order number SA38-0508, contains information to help you plan your installation.
- The *System Unit Safety Information*, order number SA23-2652, contains translations of safety information used throughout this book.
- The *PCI Adapter Placement Reference*, order number SA38-0538, contains information regarding slot restrictions for adapters that can be used in this system.
- The *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, contains information for operators and system administrators about how to install and use a hardware management console to manage a system.
- The *Hardware Management Console Maintenance Guide*, order number SA38-0603-04, contains MAPS, removal and replacement, error code, and parts information that helps trained service representatives diagnose and repair the system.

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- @server
- IBM
- LANstreamer
- PowerPC
- pSeries

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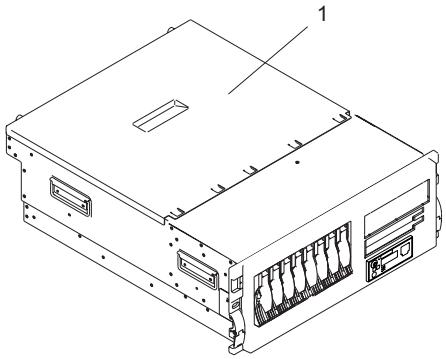
Chapter 1. Reference Information

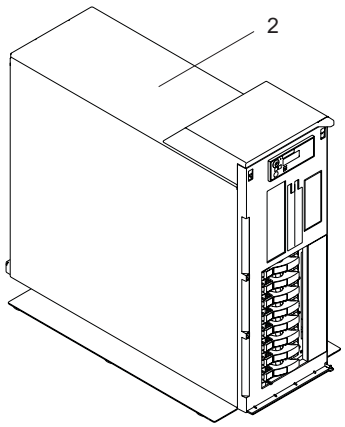
This chapter provides an overview of the system, including a logical description and a physical overview. The following additional details pertaining to the system are also provided:

- "Overview"
- "System Features" on page 2
- "Input/Output Ports" on page 5
- "Security Features" on page 6
- "Powering the System On and Off" on page 7
- "Console" on page 7
- "POST Indicators" on page 8
- "POST Keys" on page 8
- "System Locations" on page 9
- "System Logic Flow" on page 23
- "Location Codes" on page 24
- "Mapping AIX and Physical Location Codes" on page 28
- "System Cables" on page 33
- "Specifications" on page 34
- "External AC Power Cables" on page 36
- "Service Inspection Guide" on page 37

Overview

The pSeries 615 Model 6C3 and Model 6E3 have similar operational capabilities but are packaged differently.





The Model 6C3 is a 4 EIA-unit drawer designed to be housed in a 19-inch rack, while the Model 6E3 is a deskside system. Both models can be configured as a 1-way to 2-way symmetric multiprocessing (SMP) system; each can have up to 8 hot-swapable disk drives and 6 hot-swappable PCI adapters. Both models support redundant hot-swappable power supplies and cooling fans.

Power is provided through AC power cords. Either model can be set up to use 100-127V ac or 200-240V ac power.

The two media slimline bays can be used to accommodate any of the following drives:
- IDE DVD-ROM drive
- IDE CD-ROM drive
- Diskette drive (special mounting carriage needed)

Another full height (1-inch) media bay supports a SCSI tape drive or DVD-RAM drive.

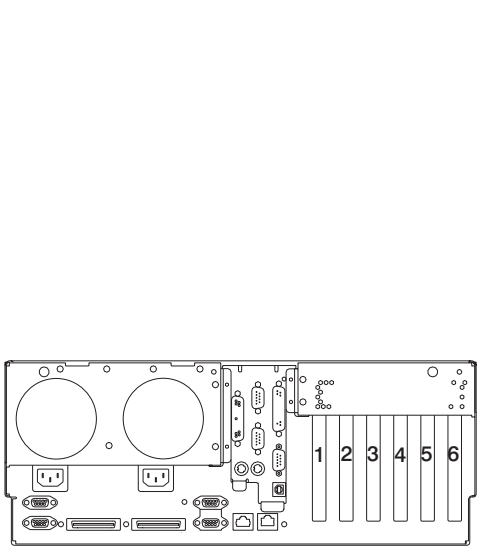
System Features

The Model 6C3 and Model 6E3 support many of the same features. The following figure shows the back of the two system units. Both system units have the same layout from the rear. When the features are described in this section, the descriptions apply to both models.

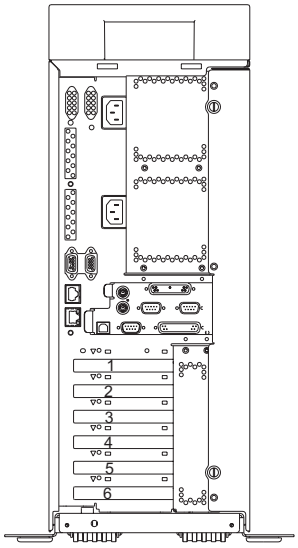
Bus Architecture

Six PCI-X slots are available. Four of these slots (1, 4, 5, and 6) are 64-bit capable at 133 MHz, 3.3 volts. The remaining PCI-X slots (2 and 3) are 32-bit capable at 66 MHz, 3.3 volts. The slots are numbered on the rear of the chassis from left to right or top to bottom, 1 through 6.

All 64-bit PCI-X slots are capable of running either 64-bit or 32-bit adapters. However, a 32-bit adapter operates in a 32-bit mode and shows no performance advantage while running in a 64-bit slot. The following illustration shows the PCI adapter slot locations when viewing from the rear of the system.



Model 6C3



Model 6E3

Processors

- One-way and two-way processor DCMs (double chip modules) are available.
- An 8MB L3 cache is contained in the processor DCM.

Memory

- 1 GB to 16 GB ECC (error code correction) DDR (double data rate) SDRAM (synchronous dynamic random-access memory)
- Memory DIMMs plug into the system backplane (8 DIMM slots).
- DIMMs must be populated in quads (a single memory feature contains four DIMMs).
- Memory quads can be different memory sizes.
- A system can have a maximum of 16 GB of memory.

Media Bays and Media Backplane

Two slimline media bays and one full-height media bay are provided. The slimline media bays are for IDE optical devices or diskette drives. The full-height bay is for a SCSI tape drive or DVD-RAM drive.

Note: The following restrictions apply to the media drives:

1. Media devices are not hot-swappable.

2. The first optical device such as a CD ROM or DVD ROM can only be plugged into bay #3 (bay #3 is the top slimline bay in a rack configuration).
3. Bay #2, the bottom slimline bay in a rack configuration, will accept a second optical device or the single supported floppy drive.
4. An error occurs if 2 diskette drives are installed in the slimline bays simultaneously.

The media backplane plugs into the system backplane and provides connections for the operator panel as well as the devices in the media bays.

- Media bay 1 is for the operator panel.
- Media bay 2 can accommodate an IDE CD-ROM, IDE DVD-ROM, or a diskette drive.
- Media bay 3 can accommodate an IDE CD-ROM or IDE DVD-ROM.
- Media bay 4 can accommodate a SCSI DVD-RAM or tape drive.

Note: A built-in external SCSI port is not provided. Customers can use an optional SCSI adapter for connections to an external SCSI subsystem.

For an updated listing of hot-swappable disk-drive sizes, contact your sales representative.

Disk Drives and Disk Drive Backplane

The system supports up to two DASD backplanes that support 4 hot-swappable disk drives each. The first backplane is standard on the system and is located next to the media backplane. The second DASD backplane is optional and is located next to the first. Supported hot-swap disk-drives are:

- 36.4 GB Ultra160 10K RPM
- 73.4 GB Ultra160 10K RPM
- 146.8 GB Ultra160 10K RPM
- 36.4 GB Ultra160 15K RPM
- 73.4 GB Ultra160 15K RPM
- 146.8 GB Ultra160 15K RPM

Power Supplies

Two power supplies maximum per system; the second power supply is for redundant power.

- AC input type 100-127VAC or 200-240VAC
- Single phase

Keyboard

- Standard: 101-key enhanced keyboard
- 101/102 or 106-key enhanced keyboard is also available

Mouse

- Three-button

Operator Panel

- 32-character LED diagnostics display
- LEDs for power on and attention
- Buttons for power on, system reset
- Service processor reset switch

System Reset Button
Dumps AIX (if dump is enabled) and reboots.

Service Processor Reset Switch

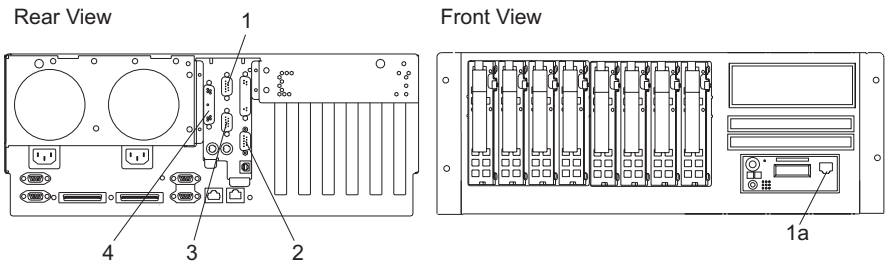
Resets the service processor into standby mode. The service processor reset switch is the pinhole located above the system reset button on the operator panel.

- RJ-45 serial port

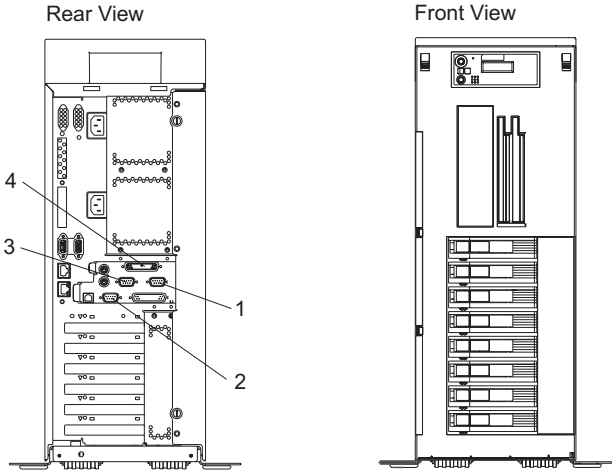
Input/Output Ports

- One 25-pin parallel
- Keyboard
- Mouse
- Two Ultra160 SCSI buses, to which the internal 4-pack disk drive backplanes are connected
- Integrated Drive Electronics (IDE)
- Two System Power Control Network (SPCN) Connectors
- One 10/100 Ethernet and One 1 Gigabit Ethernet (IEEE 802.3 compliant)
- Three serial ports. Serial port 1 (S1) has two physical connectors, one RJ-45 located in front on the operator panel, and a 9-pin D-shell located on the rear of the chassis. The other two serial ports have 9-pin D-shell connectors and are located on the rear of the system chassis.

Model 6C3



Model 6E3



1 Serial Port 2 Connector
1a Serial Port 1 Front Connector (RJ-45)
2 Serial Port 1 Connector
3 Serial Port 3 Connector
4 Parallel Connector

Current usage for the serial port connectors are as follows:

Serial Port Number	Location	Examples of Applicable Usage
Serial Port 1 (S1 Front)	Operator Panel	Service Agent, PDA system management applications (for example: handheld devices, laptop systems), Service Processor menus, ASCII Terminal for operating system Console, and Modems
Serial Port 1 (S1 Rear)	Rear of the System	Service Processor menus, Service Agent, PDA system management applications (interface cable required), ASCII Terminal for operating system Console, and Modems
Serial Port 2 (S2)	Rear of the System	Service Processor menus, HACMP, ASCII Terminal for operating system Console, and Modems
Serial Port 3 (S3)	Rear of the System	HACMP, UPS (uninterruptible power supply), ASCII Terminal for operating system Console, and Modems

Notes:

1. Serial port 1 is never used to run HACMP or attach a UPS. If you are configuring your system to run HACMP with a UPS attached, you must connect the HACMP cable to serial port 2 and the UPS cable to serial port 3. *Do not* run UPS connected to serial port 2. If you decide to disconnect HACMP, you *must* reset the service processor using the pinhole reset switch before running another application. The service processor pinhole reset switch is located on the operator panel.
2. A modem can be attached to any of the serial ports.

Security Features

The Model 6C3 and Model 6E3 allow you to set the following types of passwords to limit access to these systems:

- General-access password - set only from the service processor menus. It provides limited access to the service processor menus and is usually available to all users who are allowed to power on the system.
- Privileged-access password - Set from the service processor menus or from System Management Services (SMS) utilities. Used by the system administrator or root user and allows access to all service processor functions.

Powering the System On and Off

For procedures to power off and power on the system for various system configurations and operating systems, see “Stopping the System” on page 282 and “Starting the System” on page 283.

Console

Note: This section applies to a system without an HMC attached.

The firmware starts a console-selection sequence at system boot time if any of the following is true:

- A console has not yet been selected.
- A previous console-selection sequence timed out.
- A change in the system configuration affects the console (keyboard installed or removed, mouse installed or removed, graphics adapter installed or removed or moved to another PCI slot).

The console-selection sequence allows you to select (from the appropriate input device) any one of the available console devices. If no console is selected within approximately 60 seconds, serial port 1 (S1) is selected as the console and the selection sequence times out.

Attention: If an ASCII terminal is attached to serial port 1 (S1), and there is any interaction with this terminal:

- After `0K` displays in the operator panel

  AND
- Before the power-on sequence is initiated

the firmware will use this terminal as the console, regardless of the previous console selection.

After a console has been selected, the console-selection sequence is only started at boot time if there is a change in the system configuration (as previously described), or the contents of the system’s nonvolatile memory (NVRAM) are lost.

Note: Moving an ASCII terminal from one serial port to another (from S1 to S2) cannot be detected by the firmware, so it does not constitute a configuration change.

You can also initiate a system console-selection sequence from the SMS menus.

Power-On Self-Test

After power is turned on and before the operating system is loaded, the system does a power-on self-test (POST). This test performs checks to ensure that the hardware is functioning correctly before the operating system is loaded. During the POST, a POST screen displays, and POST indicators appear on the firmware console (if one is connected). The next section describes the POST indicators and functions that can be accessed during the POST.

POST Indicators

POST indicators indicate tests that are being performed as the system is preparing to load the operating system. The POST indicators are words that display on the system console. Each time that the system starts a different step in the POST, a POST indicator word appears on the console. Each word is an indicator of the tests that are being performed.

The POST screen displays the following words:

Memory Memory test

Keyboard Initialize the keyboard and mouse. The time period for pressing a key to access the System Management Services, or to initiate a service mode boot is now open. See “POST Keys” for more information.

Network Self-test on network adapters

SCSI Adapters are being initialized

Speaker Sounds an audible tone at the end of POST

POST Keys

The POST keys, if pressed *after* the `keyboard` POST indicator displays and *before* the last POST indicator `speaker` displays, cause the system to start services or to initiate service mode boots used for configuring the system and diagnosing problems. The keys are described below:

Note: The program function keys (F1-F12) on a keyboard attached to the CEC drawer are not used and will be ignored. After the `keyboard` POST indicator displays, you must use the numeric number keys.

1 Key

The numeric 1 key, when pressed during POST, starts the System Management Services (SMS) interface.

5 Key

The numeric 5 key, when pressed during POST, initiates a system boot in service mode using the default service mode boot list.

This mode attempts to boot from the first device of each type found in the list. It does not search for other bootable devices of that type if the first device is not bootable. Instead, it continues to the next device type in the list. The firmware supports up to five entries in the boot list.

Note: This is the preferred method of loading standalone AIX diagnostics from CD-ROM.

The default boot sequence is:
1. Diskette (if installed)
2. CD-ROM (if installed)
3. Hard file
4. Tape drive (if installed)
5. Network
   a. Token ring
   b. Ethernet

6 Key

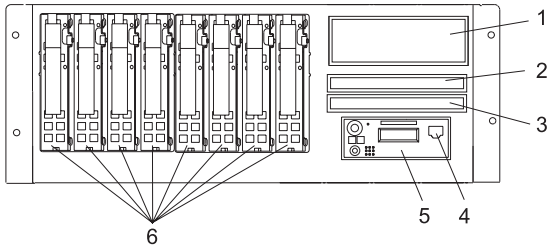
The numeric 6 key works like the numeric 5 key, except that firmware uses the customized service mode bootlist that was set up in the AIX service aids or the service processor menus.

Note: This is the preferred method of loading online AIX diagnostics from the boot hard disk.

System Locations

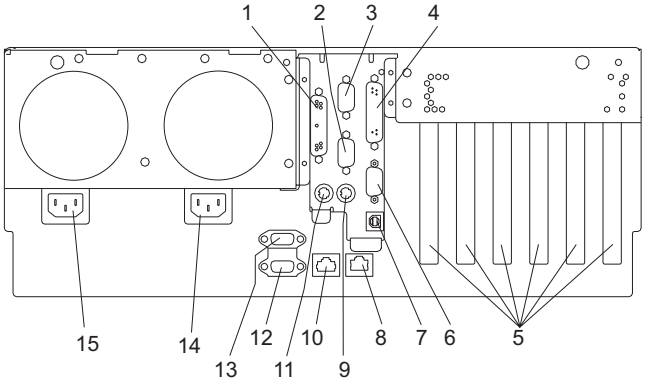
Model 6C3

Front View



1 SCSI Media-Device Bay
2 Slimline Media Bay
3 Slimline Media Bay
4 Front Serial Port (RJ-45 Connector)
5 Operator Panel
6 Hot-Swap Disk Drives

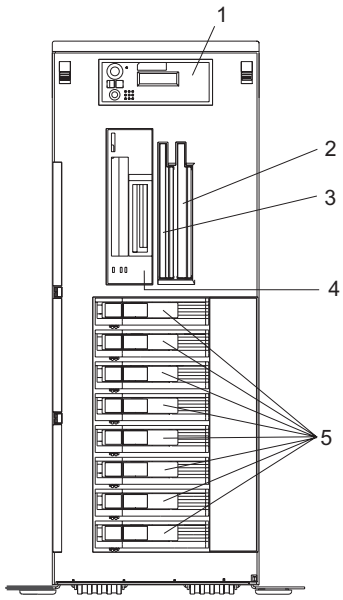
Rear View



1 Parallel Connector
2 Serial Connector 3
3 Serial Connector 2
4 Test Connector (For Manufacturing Use Only)
5 PCI-X Slot Access Locations
6 Serial Connector 1
7 Rack Indicator Connector
8 1 Gb Ethernet Connector
9 Mouse Connector
10 10/100 Gb Ethernet Connector
11 Keyboard Connector
12 Hardware Management Console Connector 2
13 Hardware Management Console Connector 1
14 Primary Power Supply V2 Receptacle
15 Redundant Power Supply V1 Receptacle

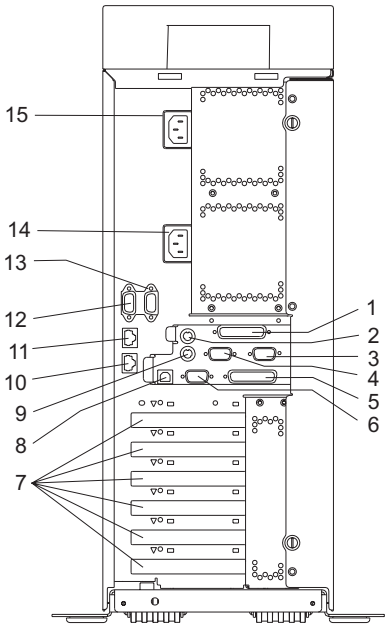
Model 6E3

Front View



1 Operator Panel
2 Slimline Media Bay
3 Slimline Media Bay
4 SCSI Media-Device Bay
5 Hot-swap disk drives

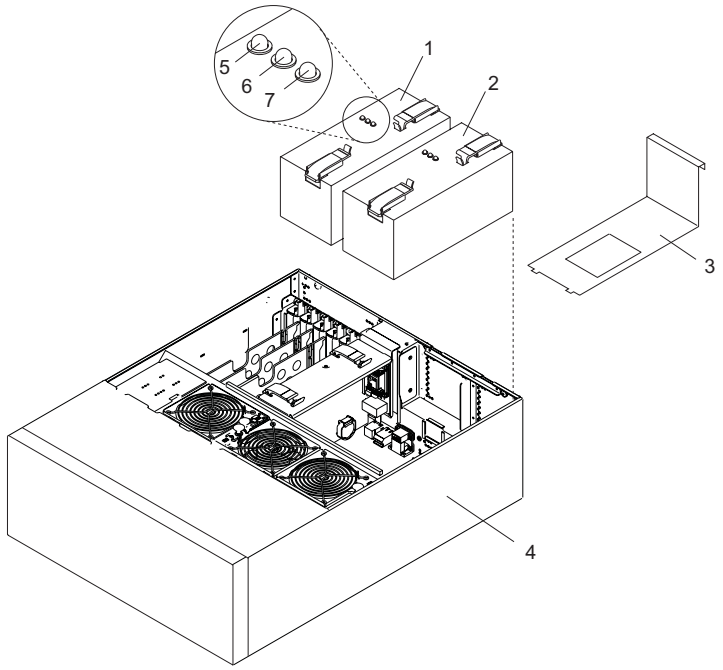
Rear View



1 Parallel Connector
2 Keyboard
3 Serial Connector 2
4 Serial Connector 3
5 Test Connector (For Manufacturing Use Only)
6 Serial Connector 1
7 PCI-X Slot Access
8 Rack Indicator
9 Mouse
10 1 Gb Ethernet Connector
11 10/100 Gb Ethernet Connector
12 Hardware Management Console Connector (HMC 2)
13 Hardware Management Console Connector (HMC 1)
14 Primary Power Supply V2 Receptacle
15 Redundant Power Supply V1 Receptacle

Power Supply Locations (Model 6C3 and Model 6E3)

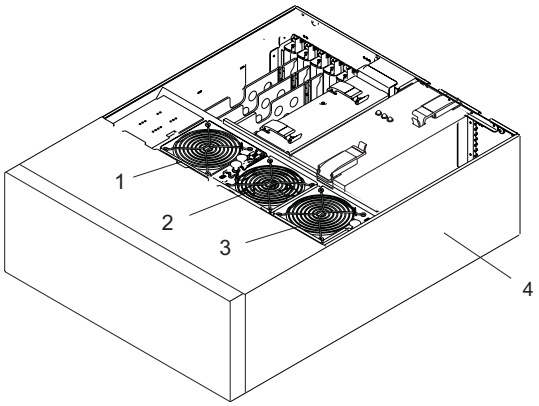
Each power supply has three LEDs. The amber LED on the power supply indicates a problem with the power supply. If a power supply is diagnosed with a cooling problem, the entire power supply must be replaced.



1 Primary Power Supply V2
2 Redundant Power Supply V1
3 Power Supply Filler (Required in place of redundant power supply)
4 System Unit (In Service Position)
5 Fault LED (Amber)
6 DC Good LED (Green)
7 AC Good LED (Green)

Fan Locations (Model 6C3 and Model 6E3)

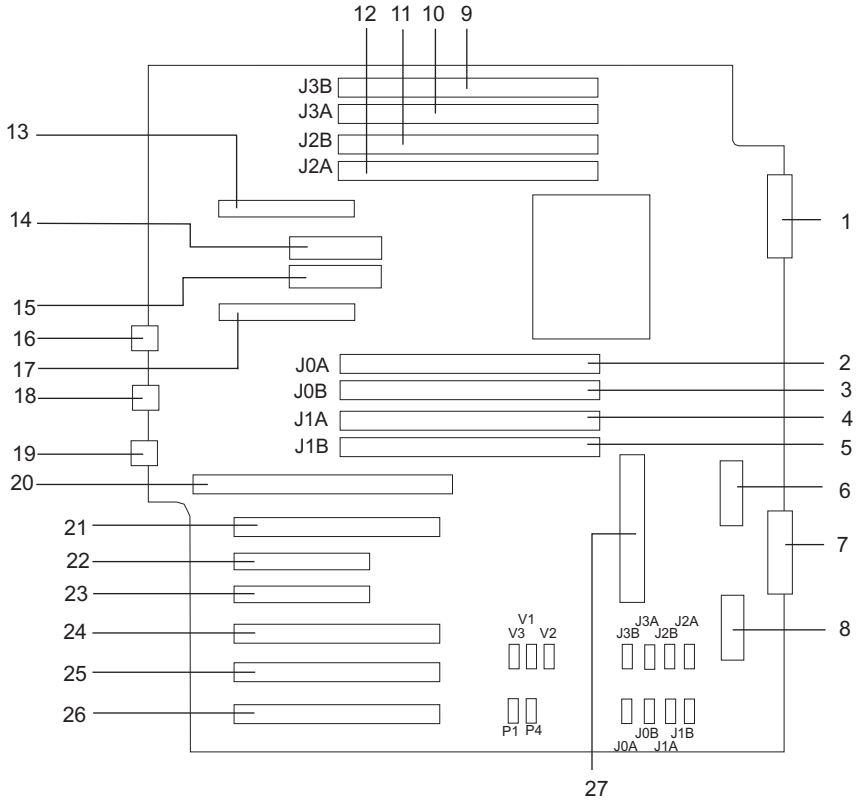
The following illustration identifies the system cooling fans. Each fan has one green LED and one amber LED located on top of the fan. A lit amber LED indicates that the fan is not operating correctly.



1 Cooling Fan 1
2 Cooling Fan 2
3 Cooling Fan 3
4 System Unit

System Backplane Locations (Model 6C3 and Model 6E3)

The following illustration of the system backplane identifies the primary connectors used in your system.



1 Media Backplane

2 Memory DIMM 5, J0A

3 Memory DIMM 6, J0B

4 Memory DIMM 7, J1A

5 Memory DIMM 8, J1B

6 DASD Backplane (Right)

7 (Reserved)

8 DASD Backplane (Left)

9 Memory DIMM 1, J3B

10 Memory DIMM 2, J3A

11 Memory DIMM 3, J2B

12 Memory DIMM 4, J2A

13 Redundant Power Supply V1

14 1.8V Voltage Regulator Module (V1)

15 2.5V Voltage Regulator Module (V2)

16 (Hardware Management Console)

17 Primary Power Supply V2

18 Ethernet #1 10/100

19 Ethernet #2 1GB

20 Service Processor Assembly

21 PCI-X Slot 1

22 PCI-X Slot 2

23 PCI-X Slot 3

24 PCI-X Slot 4

25 PCI-X Slot 5

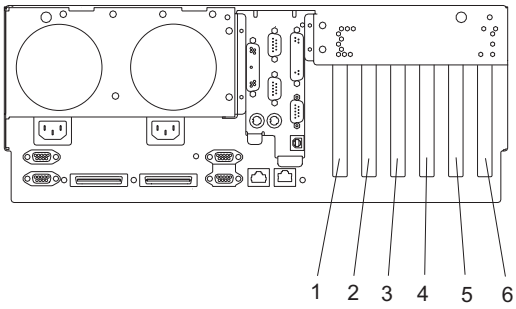
26 PCI-X Slot 6

27 1.2V Voltage Regulator Module (V3)

PCI-X Slot Locations (Model 6C3 and Model 6E3)

Six PCI-X slots are available. Slots 1, 4, 5, and 6 are 64-bit capable at 133 MHz, 3.3 volts. Slots 2 and 3 are 32-bit capable at 66 MHz, 3.3 volts. All slots have hot-swap capabilities. The slots are numbered on the rear of the chassis from left to right, 1 through 6.

All PCI-X slots are capable of running either 64-bit or 32-bit adapters. However, a 32-bit adapter operates in a 32-bit mode and shows no performance advantage while running in a 64-bit slot. The following illustration shows the PCI adapter slot locations when viewing from the rear of the system.



1 PCI-X Slot 1
2 PCI-X Slot 2
3 PCI-X Slot 3
4 PCI-X Slot 4
5 PCI-X Slot 5
6 PCI-X Slot 6

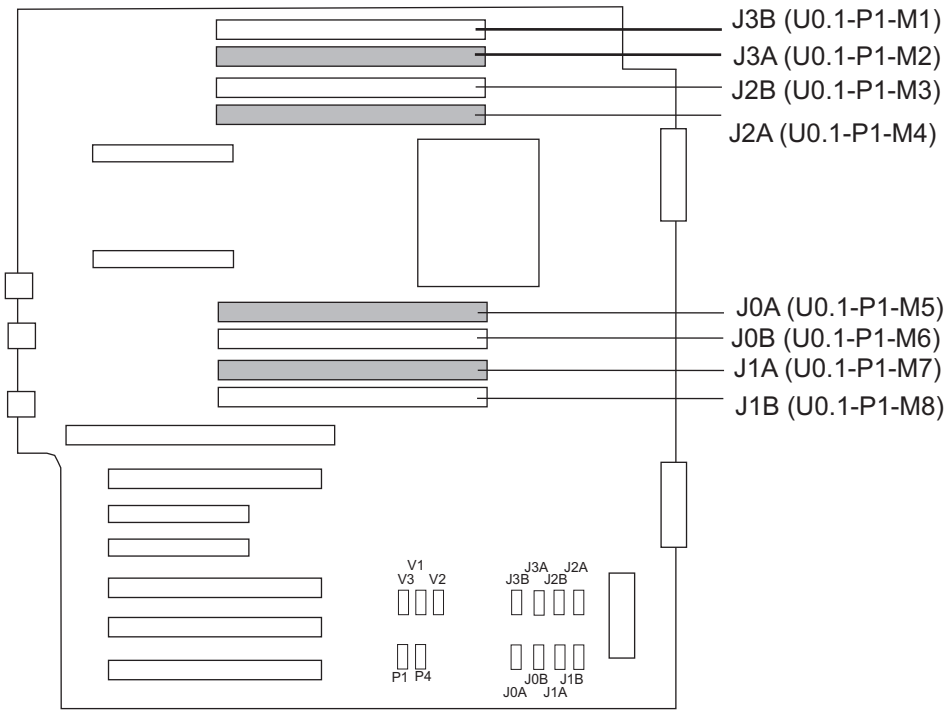
Memory DIMM Locations

The memory DIMMs used in the system are located on the system backplane. Your system contains 8 memory DIMM slots. Associated with each memory DIMM slot is an LED, which is located on the edge of the system backplane. A lit LED indicates a problem with a specific memory DIMM. For more information on the locations of the system LEDs, go to “System LED Locations” on page 22. The following rules must be followed when removing or installing memory DIMMs:

- Memory DIMMs must be installed in quads. However, you do not need to install four new DIMMs in a quad when you have a memory problem. Exchange each DIMM, starting the system after each change, until the faulty DIMM has been replaced.

  Notes:

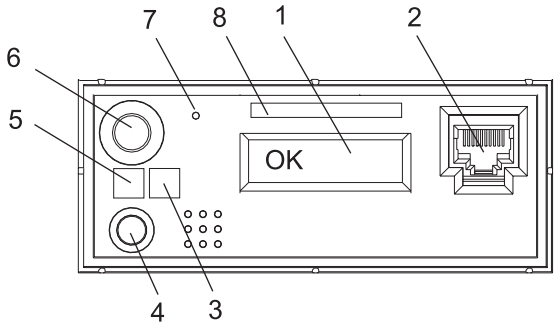
  1. Memory DIMMs must be installed in quads and in the correct slots. A quad is a group of four memory DIMMs.
  2. Quads are populated in DIMM slots 1, 3, 6, 8 first, and then 2, 4, 5, 7. The only two valid slot combinations that you can use are 1, 3, 6, and 8 and 2, 4, 5, and 7.
  3. At least one quad of DIMMs must be installed on the system backplane. See the following illustration.
  4. Each memory DIMM in a quad must be the same type and size. However, both quads on the system backplane are not required to be the same.
- The system must have at least four memory DIMMs installed (1 quad).



Number	Description	Location Code
M1	Memory slot 1 (J3B)	U0.1-P1-M1
M2	Memory slot 2 (J3A)	U0.1-P1-M2
M3	Memory slot 3 (J2B)	U0.1-P1-M3
M4	Memory slot 4 (J2A)	U0.1-P1-M4
M5	Memory slot 5 (J0A)	U0.1-P1-M5
M6	Memory slot 6 (J0B)	U0.1-P1-M6
M7	Memory slot 7 (J1A)	U0.1-P1-M7
M8	Memory slot 8 (J1B)	U0.1-P1-M8

Operator Panel Component Locations

The following illustration shows the component location on the operator panel.



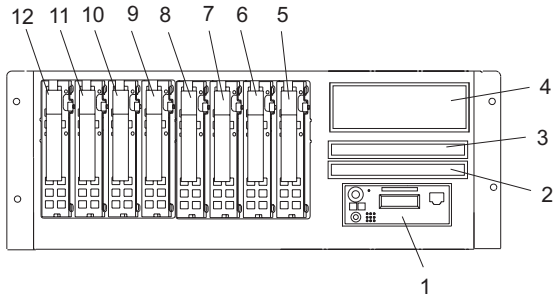
Number	Component Name	Component Description
1	Operator Panel Display	Displays current status of system startup, or diagnostic information in the event of a hardware problem.
2	Front Serial Connector (FS1) (Model 6C3 Only)	Serial port uses RJ-45 connector. Use to plug in external devices at the front of the system unit.
3	Attention LED	Normal State - LED is off
4	System Reset Button	Resets the system
5	Power LED	Blinking - When connected to the power source (System is in standby mode). Solid - When power-on button has been pressed. **Note:** There is approximately a 30-second transition period from the time the power-on button is pressed to when the power LED goes from blinking to on solid. During the transition period, you may observe the blinking intervals speed up.
6	Power-On Button	Turns the system power on and off.
7	Service Processor Reset Switch (Pinhole)	Service Personnel Use
8	Serial Number Label	Displays the system serial number

SCSI IDs and Bay Locations

The following illustrations show the SCSI bay locations for the pSeries 615 Model 6C3 and Model 6E3.

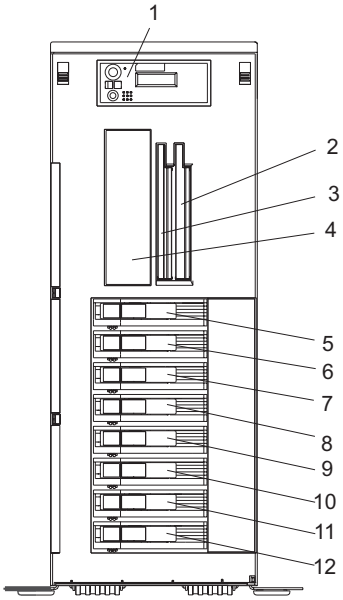
Note: One disk drive backplane (on the right, closest to the media bays, as viewed from the front of the system) is standard in the Model 6C3 and Model 6E3; a second backplane can be added. In the following figure, the systems are shown fully populated with two backplanes and eight disk drives.

Model 6C3



Index	Drive Name	SCSI ID	
1	Operator Panel		
2	Diskette Drive or IDE Optical Drive	Location code U0.1-P1-X1-D1 for a diskette drive or U0.1-P1-X1/Q6-A1 for an optical drive	
3	IDE CD-ROM (Default) or IDE DVD-ROM (Optional)	IDE (Non-SCSI) (U0.1-P1-X1/Q6-A0)	
4	Tape Drive (Optional)	SCSI ID 0	
	SCSI DVD-RAM (Optional)	SCSI ID 0	
5	Disk Drive 1	SCSI Bus 0	SCSI ID 3
6	Disk Drive 2		SCSI ID 4
7	Disk Drive 3		SCSI ID 5
8	Disk Drive 4		SCSI ID 8
9	Disk Drive 5	SCSI Bus 1	SCSI ID 3
10	Disk Drive 6		SCSI ID 4
11	Disk Drive 7		SCSI ID 5
12	Disk Drive 8		SCSI ID 8

Model 6E3



Index	Drive Name	SCSI ID	
1	Operator Panel		
2	Diskette Drive or IDE Optical Drive	Location code U0.1-P1-X1-D1 for a diskette drive or U0.1-P1-X1/Q6-A1 for an optical drive	
3	IDE CD-ROM (Default) or IDE DVD-ROM (Optional)	IDE (Non-SCSI)	
4	Tape Drive (Optional)	SCSI ID 0	
	SCSI DVD-RAM (Optional)	SCSI ID 0	
5	Disk Drive 1	SCSI Bus 0	SCSI ID 3
6	Disk Drive 2		SCSI ID 4
7	Disk Drive 3		SCSI ID 5
8	Disk Drive 4		SCSI ID 8
9	Disk Drive 5	SCSI Bus 1	SCSI ID 3
10	Disk Drive 6		SCSI ID 4
11	Disk Drive 7		SCSI ID 5
12	Disk Drive 8		SCSI ID 8

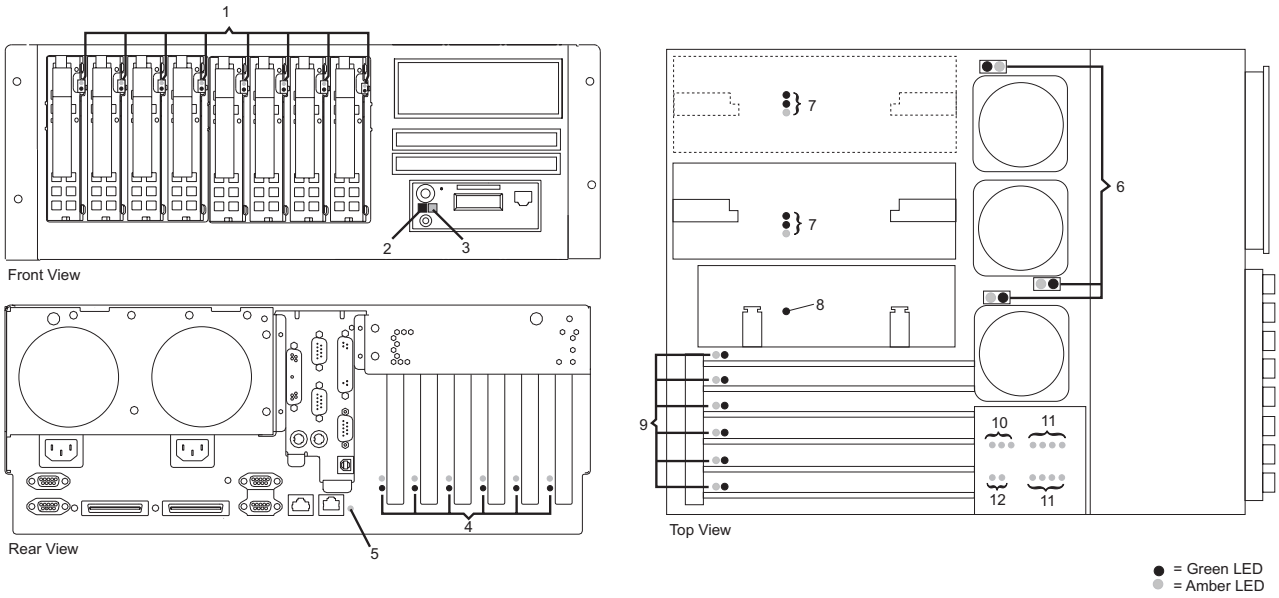
Notes:

1. The SCSI bus IDs are the recommended values and indicate how the IDs are set when the system is shipped from the factory. Field installations might not comply with these recommendations.
2. Media bay location D02 is designed to house one of the following optional devices:
   - IDE Optical Drive
   - Diskette Drive

   Any SCSI device used in media bay location D04 must be connected to a PCI SCSI adapter.

System LED Locations

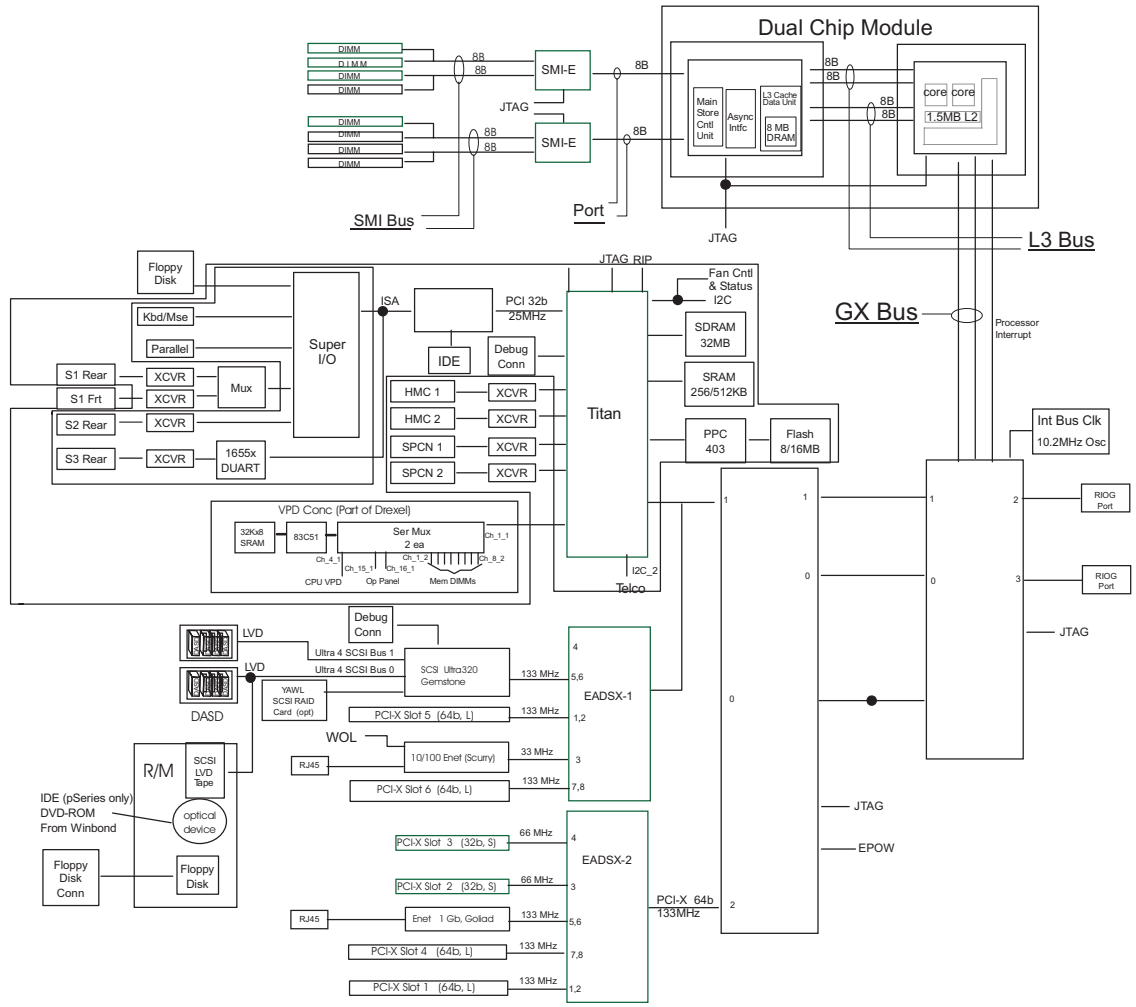
The following illustration shows the system LED locations for the pSeries 615 Model 6C3 and Model 6E3. Pointers in the illustration to grey dots represent amber LEDs. Pointers to black dots represent green LEDs.



1 Disk Drive LEDs
2 Power LED
3 System AttentionLED
4 PCI Adapter LEDs
5 System Attention LED
6 Fan LEDs
7 Power Supply LEDs
8 Service Processor Assembly LED
9 PCI Adapter LEDs
10 Voltage Regulator Modules LEDs
11 Memory DIMM LEDs
12 Backplane LEDs

System Logic Flow

The following diagram is a detailed representation of the system's logic flow.



Location Codes

Note: When the system is running under the Linux operating system no Linux location codes exist, but physical location codes might display in the Linux error logs.

This system unit uses physical location codes in conjunction with AIX location codes to provide mapping of the failing field replaceable units. The location codes are produced by the system unit's firmware and AIX.

Physical Location Codes

Physical location codes provide a mapping of logical functions in a platform (or expansion sites for logical functions, such as connectors or ports) to their specific locations within the physical structure of the platform.

Location Code Format

The location code is an alphanumeric string of variable length, consisting of a series of location identifiers, separated by a dash (-), or slash (/), or a pound sign (#) character. The series is hierarchical; that is, each location identifier in the string is a physical or logical child of the one preceding it.

- The - (dash) separator character represents a normal structural relationship where the child is a separate physical package and it plugs into (or is connected to) the parent. For example, P1-M1 is a memory DIMM (M1) plugged into a system backplane (P1).
- The / (slash) separator character separates the base location code of a function from any extended location information. A group of logical devices can have the same base location code because they are all on the same physical package, but may require extended location information to describe the connectors they support. For example, P1-X1/S1 describes the location of the serial port 1 controller and its connector (S1), which is located on the system backplane P1 (its base location code), but the / indicates that further devices can be connected to it at the external S1 serial connector. The keyboard controller and its connector likewise have location code P1-X1/K1, which means they have the same base location code (P1-X1) as serial port 1, but a different external connector. In contrast, the location code P1-X1/K1-K1 actually points to the device connected to connector K1; that is, the keyboard.

The following are examples:

- U0.1-P1-M1 identifies memory DIMM M1 plugged into the system backplane P1.
- U0.1-P1-X1/S1 identifies serial port 1 controller on a service processor card X1, plugged into the system backplane P1, or the connector for serial port 1.
- U0.1-P1-X1/K1-K1 identifies a keyboard K1, attached to connector K1 on the service processor card X1 plugged into system backplane P1.

AIX Location Codes

Note: When the system is running under the Linux operating system, AIX location codes are not available.

The basic formats of the AIX location codes are as follows:

- For non-SCSI devices/drives:
  - AB-CD-EF-GH
- For SCSI devices/drives:
  - AB-CD-EF-G,H

Non-SCSI Devices/Drives

For planars, cards, and non-SCSI devices, the location code is defined as follows:

```
AB-CD-EF-GH
 |  |  |  |
 |  |  |  Device/FRU/Port ID
 |  |  Connector ID
 |  devfunc Number, Adapter Number or Physical Location
 Bus Type or PCI Parent Bus
```

- The AB value identifies a bus type or PCI parent bus as assigned by the firmware.
- The CD value identifies adapter number, the adapter's devfunc number, or physical location. The devfunc number is defined as the PCI device number times 8, plus the function number.
- The EF value identifies a connector.
- The GH value identifies a port, address, device, or FRU.

Adapters and cards are identified only with AB-CD.

The possible values for AB are:

00	Processor bus
01	ISA bus
02	EISA bus
03	MCA bus
04	PCI bus used in the case where the PCI bus cannot be identified
05	PCMCIA buses
xy	For PCI adapters where x is equal to or greater than 1. The x and y are characters in the range of 0-9, A-H, J-N, P-Z (O, I, and lowercase are omitted) and are equal to the parent bus's 'ibm, aix-location' open firmware property.

The possible values for CD depend on the adapter/card:

- For pluggable PCI adapters/cards, CD is the device's devfunc number (PCI device number times 8, plus the function number). The C and D are characters in the range of 0-9, and A-F (hex numbers). Location codes therefore uniquely identify multiple adapters on individual PCI cards.
- For pluggable ISA adapters, CD is equal to the order of the ISA cards defined/configured either by SMIT or the ISA Adapter Configuration Service Aid.
- For integrated ISA adapters, CD is equal to a unique code identifying the ISA adapter. In most cases, this code is equal to the adapter's physical location code. In cases where a physical location code is not available, CD will be FF.

EF is the connector ID. It is used to identify the adapter's connector to which a resource is attached.

GH is used to identify a port, device, or FRU. For example:

- For ASYNC devices, GH defines the port on the fanout box. The values are 00 to 15.
- For a diskette drive, H identifies either diskette drive 1 or 2. G is always 0.
- For all other devices, GH is equal to 00.

For an integrated adapter, EF-GH is the same as the definition for a pluggable adapter. For example, the location code for a diskette drive is 01-D1-00-00. A second diskette drive is 01-D1-00-01.

SCSI Devices/Drives

For SCSI devices, the location code is defined as follows:

```
AB-CD-EF-G,H
 |  |  | | |
 |  |  | | Logical Unit address of the SCSI Device
 |  |  | Control Unit Address of the SCSI Device
 |  |  Connector ID
 |  devfunc Number, Adapter Number or Physical Location
 Bus Type or PCI Parent Bus
```

Where AB-CD-EF are the same as non-SCSI devices.

G defines the control unit address of the device. Values of 0 to 15 are valid.

H defines the logical unit address of the device. Values of 0 to 255 are valid.

A bus location code is also generated as '00-XXXXXXXX' where XXXXXXXX is equivalent to the node's unit address.

Examples of physical location codes displayed by AIX are as follows:

- Memory DIMM 2 of on system backplane P1:

  U0.1-P1-M2

Examples of AIX location codes displayed are as follows:

- Pluggable PCI adapters:

1Z-08	Any PCI card in slot 1
1c-08	Any PCI card in slot 2
1f-08	Any PCI card in slot 3
1n-08	Any PCI card in slot 4
1H-08	Any PCI card in slot 5
1V-08	Any PCI card in slot 6

- Device attached to SCSI controller:

10-60-00-4,0	Device attached to integrated SCSI Port 1

Multiple FRU Callout Instructions

If an eight-digit error code appears in the operator panel display or in Chapter 5, "Error Code to FRU Index," on page 159, a location code for a failing part may also be specified. If the location code includes a blank space followed by a lowercase x followed by a number, this is an error code with multiple FRU callouts. This error can typically happen with memory DIMMs or processors, and may involve mixed types of parts. In this case, check the system's configuration for FRU part numbers to determine the appropriate set of FRUs.

You can determine the FRU part numbers of the electronic assemblies in the entire system by using the service processor menus. From the General User menu, select Read VPD Image from Last System Boot, then enter 90 to display detailed Vital Product Data (VPD).

If the system is running AIX, you can determine the FRU part numbers of the electronic assemblies in a partition by using the
lscfg -vp | pg command. This command displays the detailed VPD of the electronic assemblies in the system. Notice that the FRU part number information for processors and memory DIMMs may be at the bottom of the command's output.

If the system is running Linux, you can determine the FRU part numbers of the electronic assemblies in a partition by using the **lscfg -vp | more** command. This command displays the detailed VPD of the electronic assemblies in the system.

FRU Identify LEDs

This system is configured with an arrangement of LEDs that help identify various components of the system. These include but are not limited to:

- Rack identify LED

- CEC drawer identify LED
- I/O drawer identify LED
- RIO port identify LED (Not Used)
- FRU identify LED
  - Power subsystem FRUs
  - CEC subsystem FRUs
  - I/O subsystem FRUs
- I/O adapter identify LED
- DASD identify LED.

The identify LEDs are arranged hierarchically with the FRU identify LED at the bottom of the hierarchy, followed by the corresponding CEC or I/O drawer identify LED, and the corresponding rack identify LED to locate the failing FRU more easily.

Any identify LED in the system may be flashed when the system is in the failed state with power on by using the service processor ″LED Control Menu″ contained in the “System Information Menu” on page 238.

Any identify LED in the system may also be flashed by using the ″Identify and Attention Indicators″ task in diagnostics. The procedure to operate the ″Identify and Attention Indicators″ task in diagnostics is outlined in Chapter 27 of the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

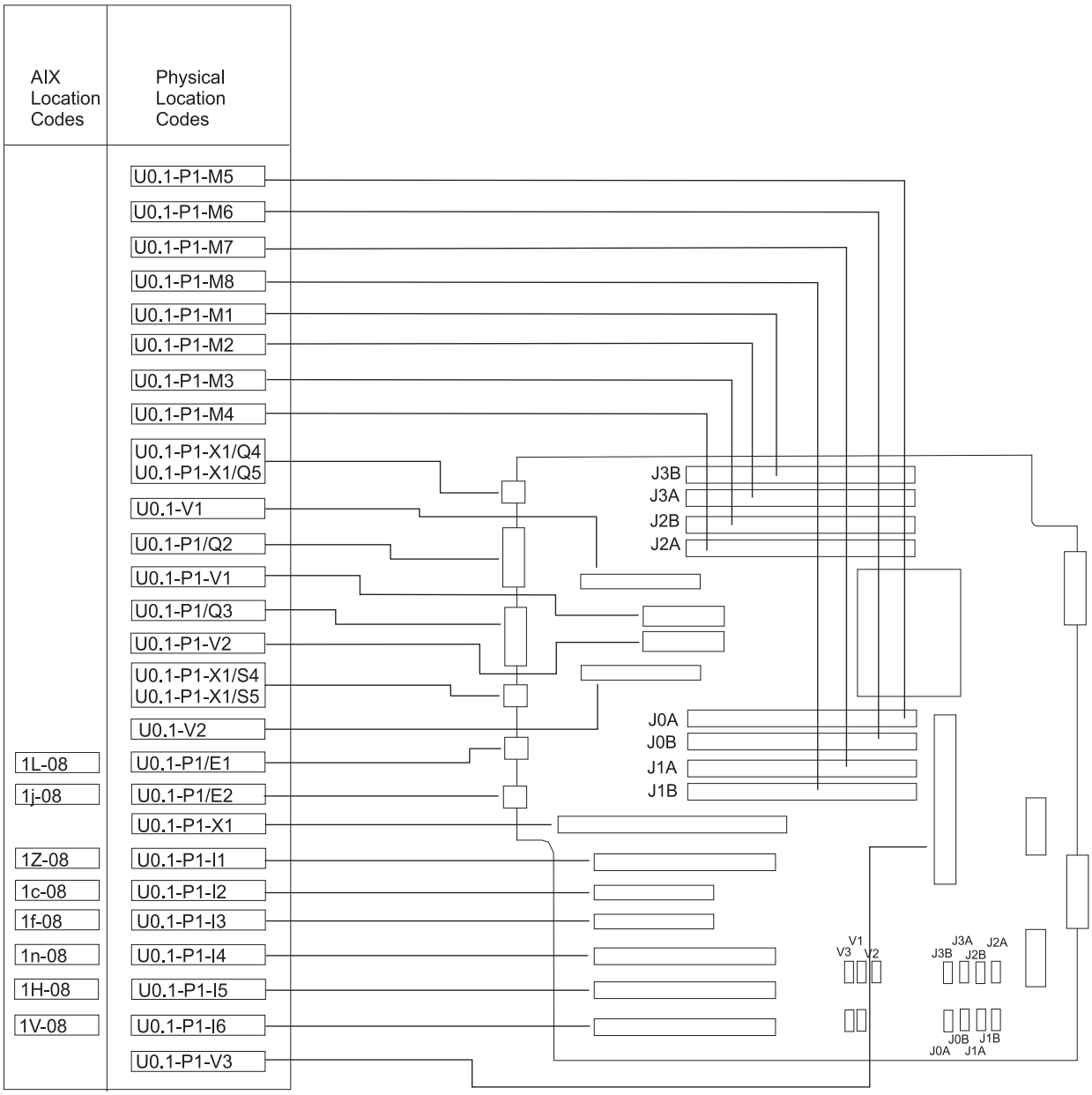
If the service processor menus and the AIX diagnostics are not available, the FRU identify LEDs may be flashed by one of following:

1. If the system is configured as a full system partition, the system can be booted to the open firmware prompt and the **FRU-LED-MENU** command entered. A menu displays that will allow you to turn on the desired FRU identify LED. For instructions on setting the boot mode to enable the boot to the open firmware prompt, see “System Power Control Menu” on page 235.
2. If an HMC is attached, it may be used to activate and deactivate a FRU identify LED. For instructions on activating and deactivating a FRU identify LED, see the Service Focal Point chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.

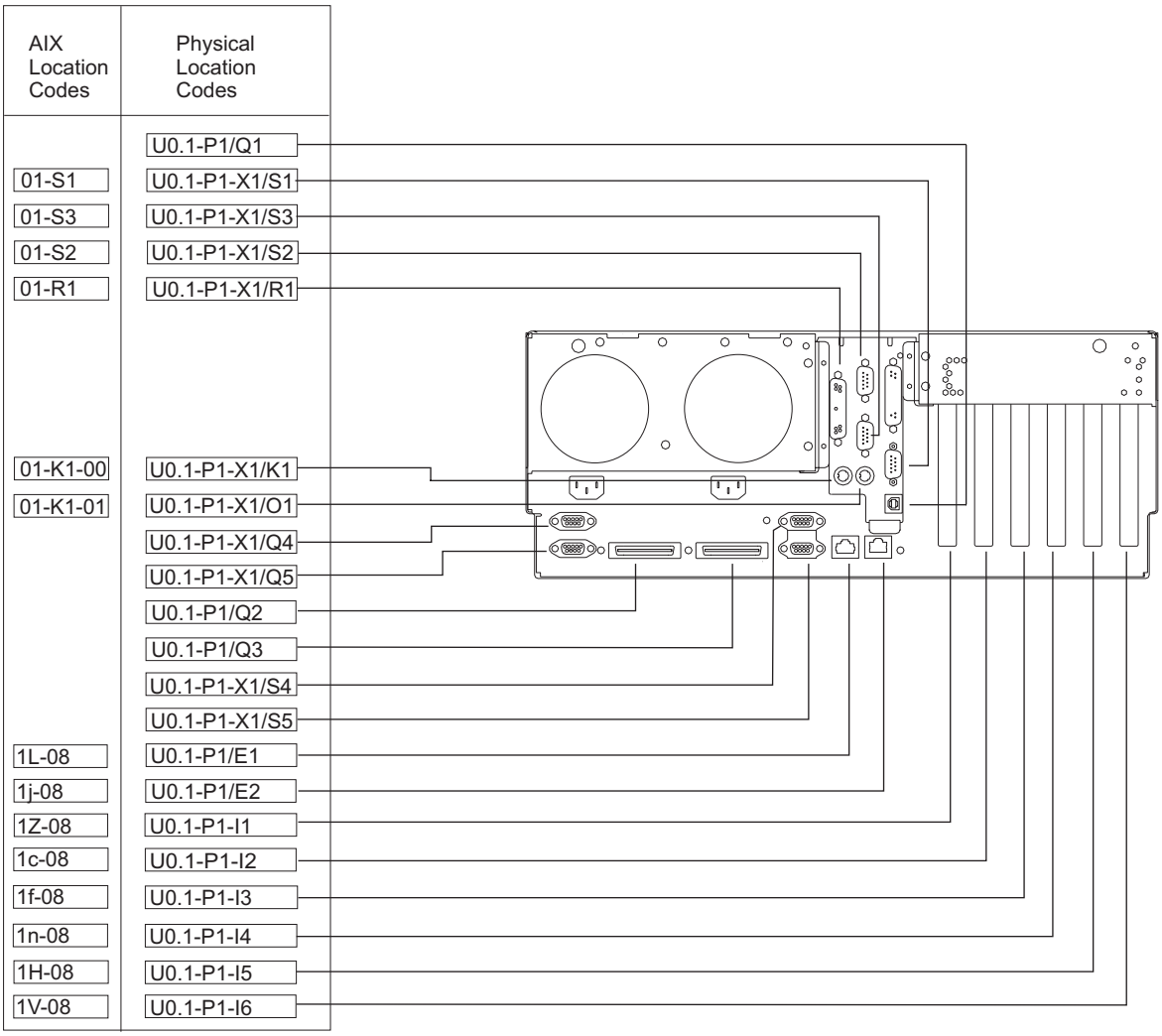
Mapping AIX and Physical Location Codes

Note: AIX location codes are not available when using the Linux operating system.

Use the following illustration to help you map a location code to its connector on the system backplane.



Use the following illustration to help you map a location code to its connector on the rear of the system.



AIX and Physical Location Code Table

Note: AIX location codes are not available when using the LINUX operating system.

The following table contains AIX and physical location codes for the pSeries 615 Model 6C3 and Model 6E3.

Component Name	Physical Location Code	AIX Location Code
System Unit Backplane		
Rack Frame	U0	
System Unit Drawer	U0.1	
System Backplane	U0.1-P1	
IDE Controller	U0.1-P1-X1/Q6	1G-19
IDE Optical Drive	U0.1-P1-X1/Q6-A0	1G-19-00
Other Optical Drive	U0.1-P1-X1/Q6-A1	1G-19-01
PHB2	U0.1-P1	1Y-10, 1Y-12, 1Y-13, 1Y-14, 1Y-16
EADS_X under PHB0	U0.1-P1	
PHB1	U0.1-P1	
EADS_X under PHB1	U0.1-P1	1G-10, 1G-12, 1G-14, 1G-16
Service Processor Card	U0.1-P1-X1	
DASD Backplane (Right)	U0.1-P2	
DASD Backplane (Left)	U0.1-P3	
Media Backplane	U0.1-P4	
Yawl Card	U0.1-P5	
Memory DIMMs		
Memory DIMM 1 J3B	U0.1-P1-M1	
Memory DIMM 2 J3A	U0.1-P1-M2	
Memory DIMM 3 J2B	U0.1-P1-M3	
Memory DIMM 4 J2A	U0.1-P1-M4	
Memory DIMM 5 J0A	U0.1-P1-M5	
Memory DIMM 6 J0B	U0.1-P1-M6	
Memory DIMM 7 J1A	U0.1-P1-M7	
Memory DIMM 8 J1B	U0.1-P1-M8	
System Backplane Integrated Devices		
Debug Connector (Manufacturing Use Only)		Labeled Debug Connector
Parallel Port	U0.1-P1-X1/R1	01-R1
ISA Bus	U0.1-P1-X1	1G-18

Component Name	Physical Location Code	AIX Location Code
HMC1 Connector	U0.1-P1-X1/S4	
HMC2 Connector	U0.1-P1-X1/S5	
SPCN Connector1 (SPCN Port0)	U0.1-P1-X1/Q4	
SPCN Connector2 (SPCN Port1)	U0.1-P1-X1/Q5	
Keyboard Port	U0.1-P1-X1/K1	01-K1-00
Keyboard	U0.1-P1-X1/K1-K1	01-K1-00-00
Mouse Port	U0.1-P1-X1/O1	01-K1-01
Mouse	U0.1-P1-X1/O1-O1	01-K1-01-00
Ethernet #1 Controller	U0.1-P1/E1	1L-08
Ethernet #2 Controller 1Gb	U0.1-P1/E2	1j-08
Rack Indicator Connector	U0.1-P1/Q1	
Serial Connector S1F (Located on Operator Panel)	U0.1-P1-X1/S1	01-S1
Serial Port 1	U0.1-P1-X1/S1	01-S1
Serial Port 2	U0.1-P1-X1/S2	01-S2
Serial Port 3	U0.1-P1-X1/S3	01-S3
Diskette Port	U0.1-P1-X1/D1	01-D1
Diskette Drive	U0.1-P1-X1-D1	01-D1-00-00
Pluggable Adapters		
PCI Slot 1	U0.1-P1/I1	
PCI Slot 1 Card	U0.1-P1-I1	1Z-08
PCI Slot 2	U0.1-P1/I2	
PCI Slot 2 Card	U0.1-P1-I2	1c-08
PCI Slot 3	U0.1-P1/I3	
PCI Slot 3 Card	U0.1-P1-I3	1f-08
PCI Slot 4	U0.1-P1/I4	
PCI Slot 4 Card	U0.1-P1-I4	1n-08
PCI Slot 5	U0.1-P1/I5	
PCI Slot 5 Card	U0.1-P1-I5	1H-08
PCI Slot 6	U0.1-P1/I6	
PCI Slot 6 Card	U0.1-P1-I6	1V-08
SCSI Controller for Internal DASD	U0.1-P1/Z1	1S-08-00
SCSI Controller for Internal devices	U0.1-P1/Z2	1S-08-01
Disk Drive 1 (in backplane on right)	U0.1-P1/Z1-A3	1S-08-00-3,0
Disk Drive 2 (in backplane on right)	U0.1-P1/Z1-A4	1S-08-00-4,0
Disk Drive 3 (in backplane on right)	U0.1-P1/Z1-A5	1S-08-00-5,0
Disk Drive 4 (in backplane on right)	U0.1-P1/Z1-A8	1S-08-00-8,0
SES for SCSI bus 0 (in backplane on right)	U0.1-P1/Z1-Af	1S-08-00-15,0
Disk Drive 5 (in backplane on left)	U0.1-P1/Z2-A3	1S-08-01-3,0
Disk Drive 6 (in backplane on left)	U0.1-P1/Z2-A4	1S-08-01-4,0

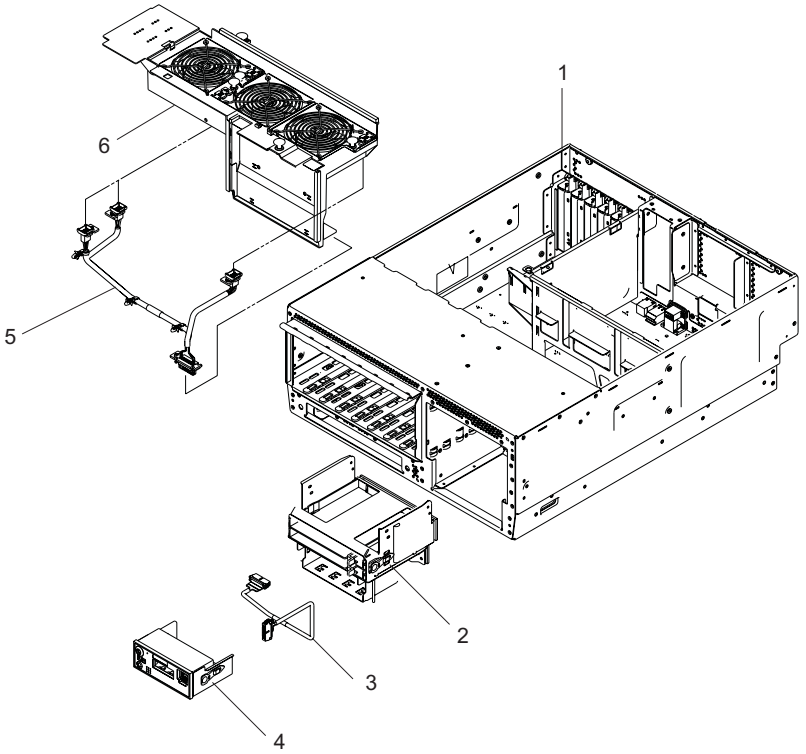
Component Name	Physical Location Code	AIX Location Code
Disk Drive 7 (in backplane on left)	U0.1-P1/Z2-A5	1S-08-01-5,0
Disk Drive 8 (in backplane on left)	U0.1-P1/Z2-A8	1S-08-01-8,0
SES for SCSI bus 1 (in backplane on left)	U0.1-P1/Z2-Af	1S-08-01-15,0
Media Device 1 (for example, SCSI Tape, DVD)	U0.1-P1/Z2-A0	
Fans		
System Cooling Fan 1	U0.1-F1	
System Cooling Fan 2	U0.1-F2	
System Cooling Fan 3	U0.1-F3	
Operator Panel		
CEC Operator panel	U0.1-L1	
System VPD module	U0.1-L1-N1	
Temperature Sensor (on Operator Panel)	U0.1-L1	
Time-of-Day Clock (TOD)	U0.1-P1-X1	
Power Supply		
Power supply V1 (Redundant)	U0.1-V1	
Power supply V2 (Primary)	U0.1-V2	
Voltage Regulator Module - 1.2V	U0.1-P1-V3	
Voltage Regulator Module - 2.5V	U0.1-P1-V2	
Voltage Regulator Module - 1.8V	U0.1-P1-V1	
Battery		
Battery	U0.1-P1-X1-V4	
Platform Firmware		
Platform Firmware	U0.1-P1-X1/Y1	

Notes:

1. The physical location code for the PCI slots, when empty, uses the P1/Ix notation, where the '/' identifies an integrated device (in this case the empty slot). A PCI device plugged into the slot uses the P1-Ix notation, where the '-' identifies a plugged device.
2. The SCSI bus IDs are the recommended values. The SCSI IDs shown for media devices indicate how the devices are set when they are shipped from the factory. Field installations may not comply with these recommendations.

System Cables

The following diagrams show the internal cable routing for the Model 6C3 and Model 6E3.



1 System Chassis
2 Media Mounting Bay
3 Operator Panel Cable
4 Operator Panel
5 Fan Tray Assembly Cable
6 Fan Tray Assembly

Specifications

This section contains system specifications for both Model 6C3 and Model 6E3.

Dimensions	**Rack (Model 6C3)**	**Deskside (Model 6E3)**
Height	172.8 mm 6.8 in. 4 EIA Units	530.0 mm (20.9 in.)
Width	444.4 mm 17.5 in.	300.0 mm (11.8 in.)
Depth	609.60 mm 24 in.	787.4 mm (31 in.)
Weight		
Minimum configuration	32.0 kg 70.4 lbs.	36.0 kg 79.2 lbs.
Maximum configuration	47.3 kg 104.0 lbs.	51.0 kg 112.2 lbs.
Electrical		
Power source loading (maximum in kVA)	1.20	
Power source loading (typical in kVA)	0.75	
Voltage range (VAC)	100-127VAC or 200-240VAC (single phase)	
Frequency (hertz)	50 / 60	
Thermal output (maximum)	2540 Btu/hr	
Thermal output (typical)	Btu/hr	
Power Requirements (minimum load)	350 watts	
Power Requirements (maximum load)	670 watts	
Power factor - U.S., World Trade, Japan	0.95	
Inrush current[1]	75/amps (maximum at <10ms) 25/amps (maximum at 10ms - 150ms) **Note:**The above amps are held for the full input range of 180 V/ac to 259 V/ac and 47 to 63 Hz.	
Maximum Altitude[2], [3]	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 5 to 35°C (41 to 95°F)	**Storage** 1 to 60°C (34 to 140°F)
Humidity Requirements	**Operating**	**Storage**
(Noncondensing)	8 to 80%	5 to 80%
Wet Bulb	27°C (80°F)	27°C (80°F)
Model 6E3 Noise Emissions[4]	**Operating**	**Idle**

The specifications continue on the following page.

Specifications continued from the previous page.

L_{WAd}	6.0 bels	5.9 bels
$<L_{pA}>_m$	42 dBA	41 dBA
Model 6C3 Noise Emissions[4]	**Operating**	**Idle**
L_{WAd}	6.1 bels	6.0 bels
$<L_{pA}>_m$	44 dBA	43 dBA
Install/Air Flow	Maintenance of proper service clearance should allow proper airflow.	
Service	When installing a rack unit, refer to “System Service Clearances” on page 399 for the rack correct clearances.	

1. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
2. The upper limit of the dry bulb temperature must be derated 1 degree C per 137 m (450 ft.) above 915 m (3000 ft.).
3. The upper limit of the wet bulb temperature must be derated 1 degree C per 274 m (900 ft.) above 305 m (1000 ft.).
4. Levels are for a single system installed in a T00 32-EIA rack with the center of the unit approximately 1500 mm (59 in.) off the floor.

External AC Power Cables

To avoid electrical shock, a power cable with a grounded attachment plug is provided. Use only properly grounded outlets.

Power cables used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA). These power cords consist of the following:

- Electrical cables, Type SVT or SJT.
- Attachment plugs complying with National Electrical Manufacturers Association (NEMA) 5-15P, that is:

″For 115V operation, use a UL listed cable set consisting of a minimum 14 AWG, Type SVT or SJT three-conductor cord a maximum of 15 feet in length and a parallel blade, grounding type attachment plug rated at 15 A, 125V.″

″For 230V operation in the United States use a UL listed cable set consisting of a minimum 18 AWG, Type SVT or SJT three-conductor cable a maximum of 15 feet in length, and a tandem blade, grounding type attachment plug rated at 15 A, 250V.″

- Appliance couplers complying with International Electrotechnical Commission (IEC) Standard 320, Sheet C13.

Power cables used in other countries consist of the following:

- Electrical cables, Type HD21.
- Attachment plugs approved by the appropriate testing organization for the specific countries where they are used.

″For units set at 230 V (outside of U.S.): use a cable set consisting of a minimum 18 AWG (1.0 mm^2 nominal cross sectional area). Outside of North America , a more common cordage reference is in mm^2 and for a HAR (harmonized) cord, you may not find a AWG equivalent.

To find the power cables that are available, refer to Chapter 10, “Parts Information,” on page 363.

Service Inspection Guide

Perform a service inspection on the system when:

- The system is inspected for a maintenance agreement.
- Service is requested and service has not recently been performed.
- An alterations and attachments review is performed.
- Changes have been made to the equipment that may affect the safe operation of the equipment.
- External devices with their own power cables have those cables attached.

If the inspection indicates an unacceptable safety condition, the condition must be corrected before anyone can service the machine.

Note: The owner of the system is responsible to correct any unsafe conditions.

Perform the following checks:

1. Check the covers for sharp edges and for damage or alterations that expose the internal parts of the system.
2. Check the covers for proper fit to the system. They should be in place and secure.
3. Gently rock the system from side to side to determine if it is steady.
4. Set the power button of the system to Off.
5. Remove the covers.
6. Check for alterations or attachments. If there are any, check for obvious safety hazards, such as broken wires, sharp edges, or broken insulation.
7. Check the internal cables for damage.
8. Check for dirt, water, and any other contamination within the system.
9. Check the voltage label on the back of the system to ensure that it matches the voltage at the outlet.
10. Check the external power cable for damage.
11. With the external power cable connected to the system, check for 0.1 ohm or less resistance between the ground lug on the external power cable plug and the metal frame.
12. Perform the following checks on each device that has its own power cables:
    a. Check for damage to the power cable.
    b. Check for the correctly grounded power cable.
    c. With the external power cable connected to the device, check for 0.1 ohm or less resistance between the ground lug on the external power cable plug and the metal frame of the device.
13. Install the covers.

Chapter 2. Diagnostic Overview

The system uses an integrated set of software diagnostic procedures to help isolate failing components and system maintenance. This book, along with the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, is the basis of the diagnostic procedures for the system. In particular, Chapter 4, "Checkpoints," on page 131, Chapter 5, "Error Code to FRU Index," on page 159, Chapter 6, "Using the Online and Standalone Diagnostics," on page 217, and Chapter 10, "Parts Information," on page 363, in this book are important for the trained service representative to understand and use when isolating a failure on the system.

The manufacturer recommends that systems configured with 4 GB of memory or greater have access to a 4-mm or 8-mm tape drive for submission of system dump information if required. This function can be accomplished through locally attached or network-attached devices, as appropriate.

Maintenance Analysis Procedures (MAPs)

Maintenance Analysis Procedures (MAPs) guide the trained service representative through the system. These MAPs are the entry point for all isolation and error recovery procedures. The MAPs are consistent with existing procedures and methods. The system uses a set of integrated procedures, mentioned earlier, to which the MAPs are the primary entry point.

The MAPS are as follows:

- Entry MAP
- Quick Entry MAP
- MAP 1020: Problem Determination MAP
- MAP 1240: Memory Problem Resolution
- MAP 1320: Service Focal Point Procedures
- MAP 1321: Quick Entry MAP for Systems with Service Focal Point. This MAP contains information for systems not running the AIX operating system.
- MAP 1322: End of Call MAP for Systems with Service Focal Point
- MAP 1520: Power MAP
- MAP 1521: The Base System Drawer will not Power On and No Error Codes are Available
- MAP 1522: Cannot Power On the I/O Drawer, Power Present LED Does Not Come On
- MAP 1523: The SPCN Error Codes Table Directed You Here and the Error Code is 1011 1B0x
- MAP 1540: Problem Isolation Procedures
- MAP 1541: JTAG Problem Isolation
- MAP 1548: Processor Subsystem Problem Isolation
- MAP 1549: Attention Problem Isolation

The Entry Map is the starting point for problem determination. The purpose of this MAP is to quickly point to the appropriate MAP or service reference information either in this book, or in the common book set, which includes the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* and *PCI Adapter Placement Reference*.

The Quick Entry MAP is a subset of the Entry MAP and helps to save time for some types of problems.

The Problem Determination MAP provides a structured analysis method to get an error code if one is not provided by the customer, or if diagnostics cannot be loaded.

The Power MAP deals with isolation of components to diagnose a power problem. Power problems can be related to powering on and powering off the system, or power failures that occur after power is turned on.

The Minimum Configuration MAP is used to locate defective components not found by normal diagnostics or error-isolation methods. This MAP provides a systematic method of isolation to the failing item.

System LEDs

LEDs provides a means to identify components in your system. For more information about these LEDs, see Chapter 12, “Component and Attention LEDs,” on page 387.

System Attention LED

The system attention LED on the operator panel turns on when an entry is made in the service processor error log. When the LED is on, it indicates that user intervention or service is needed. The error entry is transmitted and recorded in the following logs:

- The system-level error logs
- The operating system error log
- The service action event log (such as loss of surveillance from the HMC to a logical partition) in the Service Focal Point application

If the system attention LED is turned on, you can access the system logs to determine the reason. The method used to access your system logs depends on how your system is set up. For more information about how to access the system logs, refer to “Accessing System Log Error Information” on page 49.

Checkpoints

The system uses various types of checkpoints, error codes, and SRNs, which are referred to throughout this book (primarily in Chapter 4, “Checkpoints,” on page 131, Chapter 5, “Error Code to FRU Index,” on page 159, Chapter 6, “Using the Online and Standalone Diagnostics,” on page 217, and Chapter 10, “Parts Information,” on page 363). These codes can appear in the service processor boot progress log, the operating system error log, and the operator panel display. Understanding the definition and relationships of these codes is important to the service personnel who are installing or maintaining the system.

Codes that can appear in the service processor boot progress log, the operating system error log, the virtual terminal, and the operator panel display are as follows:

Checkpoints Checkpoints display in the operator panel from the time ac power is connected to the system until the operating system login prompt is displayed after a successful operating system boot. These checkpoints have the following forms:

8xxx 8xxx checkpoints are displayed from the time ac power is connected to the system until the `0K` prompt is displayed by the service processor on the operator panel display. (Several 9xxx checkpoints are displayed just before the `0K` prompt displays.)

9xxx 9xxx checkpoints are displayed by the service processor after the power-on sequence is initiated. A system processor takes control when `91FF` displays on the operator panel display.

Note: Certain checkpoints may remain in the display for long periods of time. A spinning cursor is visible in the upper-right corner of the display during these periods to indicate that system activity is continuing.

Exxx Exxx checkpoints indicate that a system processor is in control and is initializing the system resources. Control is being passed to the operating system when `E105` displays on the operator panel display. Location code information may also display on the operator panel during this time.

0xxx and

2xxx 0xxx and 2xxx codes are AIX progress codes and configuration codes. Location codes may also be shown on the operator panel display during this time. AIX progress codes and location codes will not appear if the LINUX operating system is booting.

Error Codes If a fault is detected, an 8-digit error code is displayed in the operator panel display. A location code may be displayed at the same time on the second line.

SRNs Service request numbers, in the form xxx-xxx, xxx-xxxx, xxxx-xxx, or xxxx-xxxx may also be displayed on the operator panel display and be noted in the AIX error log. SRNs will not appear in the Linux system error log when Linux is the operating system.

Checkpoints can become error codes if the system fails to advance past the point at which the code is presented. For a list of the checkpoints, see Chapter 4, “Checkpoints,” on page 131. Each entry provides a description of the event and the recommended action if the system fails to advance.

SRNs are listed in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.

FRU Isolation

For a list of error codes and recommended actions for each code, see Chapter 5, “Error Code to FRU Index,” on page 159. These actions can refer to Chapter 10, “Parts Information,” on page 363, Chapter 3, “Maintenance Analysis Procedures (MAPs),” on page 51, or provide informational message and directions. If a replacement part is indicated, direct reference is made to the part name. The respective AIX and physical location codes are listed for each occurrence as required. For a list of locations codes, see “Location Codes” on page 24.

Note: When the system is running under the Linux operating system, AIX location codes are not available.

To look up part numbers and view component diagrams, see Chapter 10, “Parts Information,” on page 363. The beginning of that chapter provides a parts index with the predominant field replaceable units (FRUs) listed by name. The remainder of the chapter provides illustrations of the various assemblies and components that make up the system.

FRU Identify LEDs

This system is configured with an arrangement of LEDs that help identify various components of the system. These include, but are not limited to the following:

- Rack identify LED
- CEC drawer identify LED
- I/O drawer identify LED
- RIO port identify LED
- FRU identify LED
  - Power subsystem FRUs
  - CEC subsystem FRUs
  - I/O subsystem FRUs
- I/O adapter identify LED
- DASD identify LED

The identify LEDs are arranged hierarchically, with the FRU identify LED at the bottom of the hierarchy, followed by the corresponding CEC or I/O drawer identify LED, and the corresponding rack identify LED to locate the failing FRU more easily.

Any identify LED in the system can be flashed when the system is in the failed state with power on by using the service processor LED Control Menu contained in the “System Information Menu” on page 238.

Any identify LED in the system can also be flashed by using the ″Identify and Attention Indicators″ task in AIX online diagnostics. The procedure to operate the ″Identify and Attention Indicators″ task in diagnostics is outlined in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

If the service processor menus and the AIX diagnostics are not available, the FRU identify LEDs can be flashed by one of following:

- Boot to the open firmware prompt. See the “System Power Control Menu” on page 235 for instructions on setting up the boot mode to enable the boot to the open firmware prompt. To display a menu that will allow you to turn on the desired FRU identify LED, type `FRU-LED-MENU` on the command line.
- If an HMC is attached, it may be used to activate and deactivate a FRU identify LED. For instructions on activating and deactivating a FRU identify LED, see the Service Focal Point chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.

Service Agent for the Model 6C3 and Model 6E3

Service support for the Model 6C3 and Model 6E3 can be enhanced through the use of the service agent application. This application provides a number of advantages for the system user, including automatic error reporting and analysis without customer intervention. The service agent is shipped with the system or with the Hardware Management Console for pSeries.

Using the Service Processor and Service Agent Features

The service processor and service agent features protect users against unnecessary system downtime by advising support personnel of any unexpected changes in the system environment. For more information about the service processor, see Chapter 7, “Using the Service Processor,” on page 225. For more information about the service agent application, see the *IBM Hardware Management Console for pSeries Installation and Operations Guide*.

Service Focal Point

The Service Focal Point application is used to help the service representative diagnose and repair problems on systems. Service representatives use the HMC as the starting point for all service issues. The HMC groups various system management issues at one control point, allowing service representatives to use the Service Focal Point application to determine an appropriate service strategy.

The following types of errors are reported to Service Focal Point:

- Permanent hardware errors (detected by the managed system or operating system)
- LAN Surveillance errors detected by Service Focal Point
- Hardware boot failure errors

The following errors are not reported to Service Focal Point:

- Software errors
- Temporary hardware errors
- Undetermined hardware errors
- Informational hardware errors

Getting Started

When you are setting up Service Focal Point, keep the following in mind:

- If the time configured on a partition is 90 days older than time configured on the HMC, serviceable events cannot be reported.
- Verify that the HMC host names are defined. For more information about using fully qualified and short host names, see the *IBM Hardware Management Console Operations Guide for pSeries*, order number SA38-0590.
- If you need to add or change a partition name, see the *IBM Hardware Management Console Operations Guide for pSeries*.

Testing Error Reporting

To ensure that Service Focal Point is configured correctly, generate a test error by doing the following:

1. In the partition, run diagnostics to test the managed system's operator panel.
2. When the diagnostics window asks you if you see 0000 on the managed system's operator panel, select **NO**. This action generates an error.
3. In the SRN window, press Enter to proceed.
4. When the system asks you if you want the error sent to Service Focal Point, select **YES**.
5. Type F3 to exit diagnostics.
6. Wait for one minute while the managed system sends the error to Service Focal Point.
7. Check the Serviceable Event window to ensure that the error was sent to Service Focal Point and that Service Focal Point reported the error. For more information about working with serviceable events, see "Working With Serviceable Events" on page 45.

Service Focal Point Settings

The Service Focal Point Settings task in the HMC Contents area allows you to configure your Service Focal Point application.

Note: The Advanced Operator, Operator, and Viewer roles have read-only access to the following tasks.

Automatic Call-Home Feature

You can configure the HMC to automatically call an appropriate service center when it identifies a serviceable event.

To enable or disable the call-home feature, you must be a member of one of the following roles:
- System Administrator
- Service Representative

To enable or disable the call-home feature for one or more systems, do the following:

Note: It is strongly recommended that you not disable the call-home feature. When you disable the call-home feature, serviceable events are not automatically reported to your service representative.

1. In the Navigation area, click the **Service Applications** icon.
2. In the Navigation area, double-click the **Service Focal Point** icon.
3. In the Contents area, click **Service Focal Point Settings**.
4. The Service Focal Point Settings window opens. Select the **CEC Call Home** tab at the top of the window.
5. Click on the managed system you want to enable or disable.
6. Click **Enable** to enable call-home for the selected system, or click **Disable** to disable call-home for the selected system.
7. Click **OK**.

Setting Up Surveillance

Service Focal Point surveillance generates serviceable events when it detects communication problems between the HMC and its managed systems.

You can configure how you want the HMC to survey the following:
- The number of disconnected minutes that are considered an outage
- The number of connected minutes you want the HMC to consider a recovery
- The number of minutes between outages that are considered a new incident

To set up surveillance, you must be a member of one of the following roles:
- System Administrator
- Service Representative

To set up surveillance, do the following:

1. In the Navigation area, click the **Service Applications** icon.
2. In the Navigation area, double-click the **Service Focal Point** icon.
3. In the Contents area, select **Service Focal Point Settings**.
4. The Service Focal Point Settings window opens. Select the **Surveillance Setup** tab on the top of the window.
5. In the first field, select the number of minutes you want the HMC to wait before sending a disconnection error message.
6. In the second field, select the amount of connection time that the HMC is considered to be recovered. This amount is expressed in minutes.
7. In the third field, select the number of minutes between outages that you want the HMC to wait before sending a new incident report.
8. Select one or more managed systems from the table in the lower part of the window, then click **Enable** or **Disable**. Surveillance is then either enabled or disabled for the selected managed systems.

Enabling Surveillance Notifications

You can enable or disable surveillance-error notification from this HMC to connected managed systems. Enabling this notification causes errors to be passed to the Service Agent application for notification.

Note: You must further configure Service Agent to handle notifications sent by Service Focal Point. For more information about Service Agent, refer to the *IBM Hardware Management Console Operations Guide for pSeries*, order number SA38-0590

To set up surveillance, you must be a member of one of the following roles:

- System Administrator
- Service Representative

To set up surveillance-error notification, do the following:

1. In the Navigation area, click the **Service Applications** icon.
2. In the Navigation area, double-click the **Service Focal Point** icon.
3. In the Contents area, select **Service Focal Point Settings**.
4. The Service Focal Point Settings window opens. Select the **Surveillance Notification** tab at the top of the window.
5. Select one or more managed systems from the list, and click **Enable** or **Disable**. Surveillance notification is then either enabled or disabled for the selected managed systems.

Working With Serviceable Events

You can view, add, or update serviceable event information, including error details.

Viewing Serviceable Events

To view serviceable events, you must be a member of one of the following roles:

- System Administrator
- Service Representative
- Advanced Operator
- Operator
- Viewer

To view a serviceable event, do the following:

1. In the Navigation area, click the **Service Applications** icon.
2. In the Navigation area, double-click the **Service Focal Point** icon.
3. In the Contents area, click **Select Serviceable Event**.
4. Designate the set of serviceable events you want to view. When you are finished, click **OK**.
5. The Serviceable Event Overview window opens, and the entries displayed are ordered by time stamp. Each line in the Serviceable Event Overview window corresponds to one error within a serviceable event. On this window, designate the set of serviceable events you want to view by specifying your search criteria (such as event status or error class).

   Note: Only events that match *all* of the criteria that you specify are shown.
6. When you are finished, click **OK**.

When you select a line in the Serviceable Event Overview window, all lines in the same serviceable event are selected. To open the Serviceable Event Details window for the selected event, select the event and click **Event Details**.

Viewing Serviceable Event Details

To view serviceable event details, do the following:

1. Perform the steps in “Viewing Serviceable Events.”
2. The Serviceable Event Details window opens, showing extended serviceable event information, including the following:
   - Status

- Earliest original time stamp of any managed object
- AIX error log. (The Linux system error log does not place entries into Service Focal Point.)
- Should this error ever get called home?
- Error was called home
- Pointer to extended error-data collection on the HMC

The window's lower table displays all of the errors associated with the selected serviceable event. The information is shown in the following sequence:

- Failing device system name
- Failing device machine type/model/serial
- Error class
- Descriptive error text

Viewing Serviceable Event Error Details: To view serviceable event error details, do the following:

1. Perform the steps in "Viewing Serviceable Event Details" on page 45.
2. Select an error in the lower table, and click **Error Details**.

Viewing Service Processor Error Details: To view service processor error details, do the following:

1. Perform the steps in "Viewing Serviceable Event Error Details."
2. If the serviceable event error details you are viewing are for a service processor-class error, the lower table on the resulting window contains service processor errors. Select a service processor error from the lower table, and click **Service Processor Error Details** to see further details.

Saving and Managing Extended Error Data

To save extended error (EE) data, do the following:

1. Perform the steps in "Viewing Serviceable Event Details" on page 45.
2. Click **Save EE Data**. To save extended error data for only *one* error associated with the serviceable event (rather than for the entire serviceable event), select the error from the lower table, and click **Error Details**. In the next menu, click **Manage EE Data**.

Viewing and Adding Serviceable Event Comments

To add comments to a serviceable event, you must be a member of the Service Representative or System Administrator roles.

To add comments to a serviceable event, do the following:

Note: You cannot edit or delete previous comments.

1. Perform the steps in "Viewing Serviceable Event Details" on page 45.
2. Select the error to which you want to add comments to and click **Comments**. If you want to close the event and add comments, click **Close Event** from this window. The Serviceable Event Comments window opens.
3. Type your name and add comments as appropriate. You can also review previous comments, but you cannot edit this information.
4. If you clicked **Comments** on the Serviceable Event Details window, clicking **OK** commits your entry and returns you to the Serviceable Event Details window.

If you clicked **Close Event** on the Serviceable Event Details window, clicking **OK** commits all changes and opens the Update FRU Information window. For more information about updating field replaceable unit information, see "Updating Field Replaceable Unit (FRU) Information" on page 47.

Closing a Serviceable Event

To close a serviceable event, do the following:

1. Perform the steps in "Viewing Serviceable Event Details" on page 45.

2. Click **Close Event** from this window. The Serviceable Event Comments window opens.
3. Click **OK** to commit your comments. The Update FRU Information window displays. For information on completing this window, see “Updating Field Replaceable Unit (FRU) Information”. To close the serviceable event, click **OK** on the Update FRU Information window .

   Note: You must close a serviceable event after it has been serviced to ensure that if a similar error is reported later, it is called home. If an old problem remains open, the new similar problem is reported as a duplicate. Duplicate errors are neither reported nor called home to a service center. Close a serviceable event when the partition that reports the error is active. Closing the event causes the new status of the serviceable event to be correctly sent to the partition.

Updating Field Replaceable Unit (FRU) Information

This task allows you to update the FRU information you changed or modified as a result of this serviceable event. From this panel, you can also activate and deactivate LEDs and search for other serviceable events that contain the same FRU entries.

To update FRU information, do the following:

1. Perform the steps in “Viewing Serviceable Event Details” on page 45.
2. Click **FRU Information**. The Update FRU Information window opens.

   The lower table shows any parts that you have replaced or added during your current update session but that have not been committed to the serviceable event. The changes from the lower table are committed by clicking **OK** or **Apply**.

From this window, you can also activate and deactivate LEDs and search for other serviceable events that contain the same FRU entries.

Replacing an Existing FRU

To replace a part already listed for this serviceable event, do the following:

1. Perform the steps in “Updating Field Replaceable Unit (FRU) Information.”
2. In the upper table, double-click the part you want to replace.
3. If the FRU has a new part number, type it in the New FRU Part Number field.
4. Click **Replace FRU**. The Update FRU Information window displays the FRU replacement information in the lower table. Click **OK** or **Apply** to commit the changes to the serviceable event.

Adding a New FRU

You can add a part to the serviceable event that was not listed in the upper table of the Update FRU Information window. To add a new FRU for this serviceable event, do the following:

1. Perform the steps in “Updating Field Replaceable Unit (FRU) Information.”
2. Click **Add New FRU**.
3. Type the FRU’s location code and its part number in the appropriate fields.
4. Click **Add to List**. The Update FRU Information window opens and displays the newly added FRU in the lower table.
5. Click **OK** or **Apply** to commit these changes to the serviceable event.

   Note: After you click **OK** or **Apply**, you cannot change this information. If you clicked the **Close Event** button in the Serviceable Event Details window, then clicking **OK** also completes the close dialog and changes the status of the serviceable event to *Closed*.

Viewing Serviceable Event Partition Information

You can view partition information associated with this serviceable event. This information includes each affected partition’s state and resource use.

1. Perform the steps in “Viewing Serviceable Event Details” on page 45.
2. Click **Partition Information**.

Activating and Deactivating FRU LEDs

This task allows you to activate or deactivate a managed system's system attention LED or any FRU LED. FRU LEDs are helpful in determining which FRUs need servicing.

To activate or deactivate a managed system's system attention LED, do the following:

1. In the Navigation area, click the **Service Applications** icon.
2. In the Navigation area, double-click the **Service Focal Point** icon.
3. In the Contents area, select **Hardware Service Functions**. The LED Management window opens.
4. In the LED Management window, select one or more managed systems from the table.
5. Select either **Activate LED** or **Deactivate LED**. The associated System Attention LED is then either turned on or off.

To activate or deactivate a FRU associated with a particular managed system, do the following:

1. In the Navigation area, click the **Service Applications** icon.
2. In the Navigation area, double-click the **Service Focal Point** icon.
3. In the Contents area, click **Hardware Service Functions**. The LED Management window opens.
4. In the LED Management window, select one managed system from the table.
5. Click the **List FRUs...** button. The list of FRU slot indexes and their respective current LED states display.
6. Select one or more FRU slot indexes.
7. Click either the **Activate LED** or the **Deactivate LED** button.

The associated FRU LEDs are now either enabled (blinking) or off.

Accessing System Log Error Information

Note: The system attention LED can be reset by following the procedures described in “Resetting the System Attention LED” on page 50.

When an error is detected by the system, information about the error is stored in error logs. The following sections explain how to access the logs that are available on a system. The error logs are accessed from the console that is used to manage the system. From the following console descriptions, go to the instructions under the heading that best describes the system on which you are working:

- “Accessing Errors when a System is Attached to an HMC.”
- “Accessing Errors when a System is Running AIX and the Console is Not an HMC.”
- “Accessing Errors when a System is Running Linux and the Console is Not an HMC.”

Accessing Errors when a System is Attached to an HMC

If the system attention LED comes on and the system is attached to an HMC for its console, do the following to access the error logs:

1. Open the Service Action Event Log in the Service Focal Point application on the HMC.
2. Check the open service events using the procedure described in ″Working with Serviceable Events″ in the *Hardware Management Console Maintenance Guide*.

Note: For information on these Service Focal Point settings, see ″Setting Up Surveillance and Enabling Surveillance Notifications″ in the *Hardware Management Console Maintenance Guide*.

Events requiring customer intervention are marked `Call Home Candidate? NO`. For each of these events, examine the description in the serviceable event error details. If actions are listed in the description, perform those actions. If the error indicates a loss of surveillance between the HMC and a partition, check the status of the partition, the network, and the cabling between the HMC and the partition. Correct any problems found. If a surveillance problem is still indicated, call service support.

If the service action event is labeled `Call Home Candidate? YES`, an error code is supplied to identify the problem. If the system is configured to automatically call home on error, the request for service is placed.

If the system attention LED comes on and an HMC is used to manage the system, do one of the following:

- If you performed “Step 1321-43” on page 92 in “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 80, return to “Step 1321-43” on page 92 to process any other symptoms.
- If you have not performed any of the steps in “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 80, go to step “Step 1321-1” on page 80 and perform the procedures in the MAP.

Accessing Errors when a System is Running AIX and the Console is Not an HMC

If the system attention LED comes on and the system is running AIX and the console is not an HMC, do the following to access the error logs:

1. If the system is operational, examine the AIX error log to see if user intervention is required.
2. If the system is powered off, examine the service processor error log for entries.
3. If the AIX error log indicates service support is required, or there are entries in the service processor error log, go to “Entry MAP” on page 51 with the information noted from the error log.

Accessing Errors when a System is Running Linux and the Console is Not an HMC

If the system attention LED comes on and the system is running Linux and is not attached to an HMC, do one of the following:

- If you performed “Step 1321-43” on page 92 in “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 80, return to “Step 1321-43” on page 92 to process any other symptoms.
- If you have not performed any of the steps in “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 80, go to step “Step 1321-1” on page 80 and perform the procedures in the MAP.

Resetting the System Attention LED

Choose one of the following procedures to reset your attention LED.

Resetting the LED when a System is Attached To an HMC

To reset the system attention LED on HMC-attached systems, do the following:

1. On the HMC graphical interface, click **Service Applications**.
2. Double-click **Service Focal Point**.
3. In the Contents area of the screen, select **Hardware Service Functions**. The LED Management window opens.
4. In the LED Management window, select one or more managed systems from the table.
5. Select **Deactivate LED**. The associated system attention LED is turned off.

For more information about the virtual operator panel on the HMC, see the *Hardware Management Console for pSeries Installation and Operations Guide* .

Resetting the LED when a System is Running AIX and the Console is not an HMC

As a user with root authority, type `diag` on the AIX command line, and do the following:

1. Select **Task Selection**.
2. On the Task Selection Menu, select **Identify and Attention Indicators**.
3. When the list of LEDs displays, use the cursor to highlight **Set System Attention Indicator to Normal**.
4. Press Enter, and then press F7 to commit. This action turns off the LED.

If the system is powered off, access the service processor menus. From the service processor main menu, do the following:

1. Select **System Information Menu**.
2. Select **LED Control Menu**.
3. Select **Clear System Attention Indicator**. This action turns off the LED.

Resetting the LED when a System is Running Linux and the Console is not an HMC

The system must be powered off to access the service processor menus. From the service processor main menu, do the following:

1. Select **System Information Menu**.
2. Select **LED Control Menu**.
3. Select **Clear System Attention Indicator**. This action turns off the LED.

Chapter 3. Maintenance Analysis Procedures (MAPs)

This chapter contains Maintenance Analysis Procedures (MAPs) for the Model 6E3 and Model 6C3.

Entry MAP

When possible, run online diagnostics in service mode. Online diagnostics perform additional functions compared to standalone diagnostics. This ensures that the error state of the system that was captured in NVRAM is available for your use in fixing the problem. The AIX error log and SMIT are only available when diagnostics are run from the hard drive. Always check Service Focal Point for any open service events in Service Action Event log.

Note: Online AIX diagnostics from the hard drive are not available when the running operating system is Linux.

If this system has a *IBM Hardware Management Console*(HMC) with Service Focal Point (SFP) and you have not previously been directed to MAP 1321, go to “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 80. Otherwise, use the following table to help determine your next step.

Notes:

1. Licensed programs frequently rely on system information stored in the VPD module on the media subsystem operator panel. If the MAPs indicate that the media subsystem operator panel should be replaced, swap the VPD module from the old media subsystem operator panel to the new one (see “Operator Panel and Power Cable” on page 341). If the old VPD module has to be replaced, call technical support for recovery instructions. If recovery is not possible, notify the system owner that new keys for licensed programs may be required.
2. If a network adapter is replaced, the network administrator must be notified so that the client IP addresses used by the system can be changed. In addition, the operating system configuration of the network controller may need to be changed in order to enable system startup. Also check to ensure that any client or system that addresses this system is updated.

Note: The various codes that might display on the HMC are all listed as error codes by Service Focal Point (SFP). To assist you in identifying the types of error data in this guide, use the following table.

SFP Name	Number of Digits in Error Code	Error code	Service Guide Name
Error Code	Any	Contains #	Menu Goal
Error Code	Any	Contains - (hyphen)	SRN
Error Code	5	Does not contain # or -	SRN
Error Code	6	Does not contain # or -	Error Code
Error Code	8	Does not contain # or -	Error Code, SRC, or Ref Code

Symptom	Starting Point
You have a problem that does not prevent the system from booting and the media subsystem operator panel is functional.	Go to the Fast Path MAP in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
You do not have a symptom.	Go to MAP 0020 in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
You have an SRN, from a partition running Linux, that is one of the following: 651-88x, 651-89x, 652-88x, 652-89x, Axx-xxx, or Axx-xxxx.	Go to Chapter 11, “SRNs for Linux,” on page 373 and perform the actions listed there.
You have an SRN, from a partition running Linux, that is not one of the following: 651-88x, 651-89x, 652-88x, 652-89x, Axx-xxx, or Axx-xxxx.	Go to the Fast Path MAP in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
You have an SRN from a partition running AIX or AIX standalone diagnostics	Go to the Fast Path MAP in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
The system stops and a 3-digit number is displayed in the operator panel display.	Record SRN 101-xxx, where xxx is the 3-digit number displayed in the operator panel display, then go to the Fast Path MAP in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
The system stops and a 4-digit number beginning with 0 or 2 is displayed in the operator panel display.	Go to the Fast Path MAP in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
All other symptoms.	Go to “Quick Entry MAP” on page 53.

Quick Entry MAP

Quick Entry MAP Table of Contents

Problem Description	Page No.
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The rack indicator LED does not operate as expected.	54
The system attention LED on the operator panel is on.	54
OK does not appear in the operator panel display before pressing the power-on button. Other symptoms appear in the operator panel display or LEDs before the power-on button is pressed.	54
8-digit error codes	55
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System stops with a 4-digit number displayed that does not begin with 0 or 2.	55
System stops with a 3-digit number displayed (see below for 888 sequence).	55
Hardware Management Console (HMC) Problem	55
There appears to be a display problem (distortion, blurring, and so on)	56
Power and cooling problems	57
888 sequence in operator panel display	57
Other symptoms or problems	57

Attention: If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Problem Isolation Procedures” on page 110 unless you were directed to MAP 1540 by the error code. Otherwise, call for support if the actions for an error code do not resolve the problem.

If you replace FRUs or perform an action, and the problem is corrected, go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Note: If the only service actions you perform are on the HMC, do not use MAP 0410 to do the repair checkout.

Symptom	Action
Service Actions	
You have an open service event in the service action event log.	Go to “Service Focal Point” on page 43.
You have parts to exchange or a corrective action to perform.	1. Go to Chapter 9, “Removal and Replacement Procedures,” on page 279. 2. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
You need to verify that a part exchange or corrective action corrected the problem.	Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
You need to verify correct system operation.	Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
The rack indicator LED does not operate as expected.	
The rack indicator LED does not turn on, but a drawer identify LED is on.	1. Make sure the rack indicator LED is properly mounted to the rack. 2. Make sure that the rack identify LED is properly cabled to the bus bar on the rack and to the drawer identify LED connector. 3. Replace the following parts one at a time: • rack LED to bus bar cable • LED bus bar to drawer cable • LED bus bar 4. Call support
The system attention LED on the operator panel is on.	
The system attention LED on the operator panel is on.	Go to “System Attention LED” on page 40 and perform the listed actions.
OK does not appear in the operator panel display before pressing the power-on button. Other symptoms appear in the operator panel display or LEDs before the power on button is pressed.	
A bouncing or scrolling ball remains on the operator panel display, or the operator panel display is filled with dashes or blocks.	Verify the operator panel cable from the operator panel to the CEC backplane is connected and properly seated at both ends. If an ASCII terminal is available, connect it to the system through serial port 1. • If the service processor menu is displayed, replace the operator panel assembly, location U0.1-L1. Refer to “Operator Panel and Power Cable” on page 341. • If the service processor menu is not displayed, replace the service processor, location: U0.1-P1-X1 (See notes on page 51). If an ASCII terminal is not available, replace the following one at a time. 1. Operator panel assembly, location: U0.1-L1. Refer to “Operator Panel and Power Cable” on page 341. 2. Service processor, location: U0.1-P1-X1. (See notes on page 51).

Symptom	Action
You have a blank display on the operator panel. Other LEDs on the operator panel appear to behave normally.	1. Replace the operator panel assembly, Location: U0.1-L1. Refer to “Operator Panel and Power Cable” on page 341. 2. Replace the service processor, location: U0.1-P1-X1. (See notes on page 51).

You have a blank display on the operator panel. Other LEDs on the operator panel are off.	Go to “MAP 1520: Power” on page 98.

8-Digit Error Codes	
You have an 8-digit error code displayed	Look up the error code in the table in “Checkpoint and Error Code Index” on page 162.
System stops with an 8-digit number displayed	
The system stops with an 8-digit error code displayed when booting.	Look up the error code in the table in “Checkpoint and Error Code Index” on page 162.
System stops with a 4-digit number displayed	
The system stops with a 4-digit number displayed that does not begin with 0 or 2.	Go to “Checkpoint and Error Code Index” on page 162. If you do not find the error code there, go to the Fast Path MAP in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
System stops with a 3-digit number displayed	
The system stops with a 3-digit error code.	Add 101- to the left of the three digits to create an SRN. Go to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*. If there is a location code displayed under the 3-digit error code, look at the location to see if it matches the failing component that the SRN pointed to. If they do not match, perform the action from *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* first. If the problem still exists, then replace the failing component from that location code.
Hardware Management Console (HMC) Problem	

Hardware Management Console (HMC) cannot be used to manage a managed system, or the connection to the managed system is failing.	If the managed system is operating normally (no error codes or other symptoms), the HMC might have a problem, or the connection to the managed system might be damaged or incorrectly cabled. Do the following: 1. Check the connections (serial cable) between the HMC and the managed system. Correct any cabling errors if found. If another serial cable is available, connect it in place of the existing cable and refresh the HMC graphical user interface. You may have to wait up to 30 seconds for the managed system to reconnect. 2. Verify that any connected HMC is connected to the managed system by checking the Management Environment of the HMC. **Note:** The managed system must have power connected and the system running, or waiting for a power-on instruction (the `0K` prompt is in the operator panel.) If the managed system does not appear in the Navigation area of the HMC Management Environment, the HMC or the connection to the managed system might be failing. 3. Go to the ″Entry MAP″ in the *Hardware Management Console Maintenance Guide*, order number SA38-0603. 4. There might be a problem with the service processor card or the system backplane. If you cannot fix the problem using the HMC tests in the *Hardware Management Console Maintenance Guide*: a. Replace the service processor card. b. Replace the system backplane.
Hardware management console (HMC) cannot call out using the attached modem and the customer's telephone line.	If the managed system is operating normally (no error codes or other symptoms), the HMC might have a problem, or the connection to the modem and telephone line may have a problem. Do the following: 1. Check the connections between the HMC and the modem and telephone line. Correct any cabling errors if found. 2. Go to the Entry MAP in the *Hardware Management Console Maintenance Guide*, order number SA38-0603.
There is a Display Problem (Distortion, Blurring, Etc.)	

All display problems.	1. If you are using the Hardware Management Console, go to the *Hardware Management Console Maintenance Guide*, order number SA38-0603. 2. If you are using a graphics display: a. Go to the problem determination procedures for the display. b. If you do not find a problem: • Replace the display adapter, location: U0.1-P1-I*n* or U0.dd-P1-I*n*. • Replace the backplane in which the card is plugged. 3. If using an ASCII terminal: a. Make sure that the ASCII terminal is connected to S1. b. If problems persist, go to the problem determination procedures for the terminal. c. If you do not find a problem, replace the service processor, location: U0.1-P1-X1. (See notes on page 51).
Power and Cooling Problems	
The system will not power on and no error codes are available.	Go to “MAP 1520: Power” on page 98.
The power LEDs on the operator panel and the power supply do not come on or stay on.	1. Check the service processor error log. 2. Go to “MAP 1520: Power” on page 98.
The power LEDs on the operator panel and the power supply come on and stay on, but the system does not power on.	1. Check the service processor error log. 2. Go to “MAP 1520: Power” on page 98.
A rack or a rack-mounted unit will not power on.	1. Check the service processor error log. 2. Go to “MAP 1520: Power” on page 98.
The cooling fan(s) do not come on, or come on but do not stay on.	1. Check the service processor error log. 2. Go to “MAP 1520: Power” on page 98.
The system attention LED on the operator panel is on and there is no error code displayed.	1. Check the service processor error log. 2. Go to “MAP 1520: Power” on page 98.
888 Sequence in Operator Panel Display	
An 888 sequence is displayed in the operator panel display.	Go to the Fast Path MAP in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
Other Symptoms or Problems	
The operator panel displays `0K` and the fans are off.	The service processor is ready. The system is waiting for power-on. Boot the system. If the boot is unsuccessful, and the system returns to the OK “MAP 1020: Problem Determination” on page 61.
The operator panel displays STBY.	The service processor is ready. The system was shut down by the operating system and is still powered on. This condition can be requested by a privileged system user with no faults. See the service processor error log for possible operating system fault indications.

All of the system POST indicators are displayed on the system console, the system pauses and then restarts. The term *POST indicators* refers to the device mnemonics (the words `memory`, `keyboard`, `network`, `scsi`, and `speaker`) that appear on the system console during the power-on self-test (POST).	Go to “Boot Problems/Concerns” on page 155.
The system stops and all of the POST indicators are displayed on the system console. The term *POST indicators* refers to the device mnemonics (the words `memory`, `keyboard`, `network`, `scsi`, and `speaker`) that appear on the system console during the power-on self-test (POST).	Go to “Boot Problems/Concerns” on page 155.
The system stops and the message STARTING SOFTWARE PLEASE WAIT... is displayed on the firmware console.	Go to Chapter 4, “Checkpoints,” on page 131.
The system does not respond to the password being entered or the system login prompt is displayed when booting in service mode.	1. If the password is being entered from the Hardware Management Console (HMC), go to the *Hardware Management Console Maintenance Guide*. 2. If the password is being entered from a keyboard attached to the system, the keyboard or its controller may be faulty. In this case, replace these parts in the following order: a. Keyboard b. Service processor, location: U0.1-P1-X1. (See notes on page 51). 3. If the password is being entered from an ASCII terminal, use the problem determination procedures for the ASCII terminal. Make sure the ASCII terminal is connected to S1. If the problem persists, replace the service processor, location: U0.1-P1-X1. (See notes on page 51). If the problem is fixed, go to ″MAP 0410: Repair Checkout″, in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*. If the problem is still not corrected, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.
No codes are displayed on the operator panel within a few seconds of turning on the system. The operator panel is blank before the system is powered on.	Reseat the operator panel cable. If the problem is not resolved, replace in the following order: 1. Operator panel assembly, location: U0.1-L1. Swap the VPD module from the old operator panel to the new operator panel. 2. Service processor, location: U0.1-P1-X1. (See notes on 51). If the problem is fixed, go to ″MAP 0410: Repair Checkout″, in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*. If the problem is still not corrected, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.

The SMS configuration list or boot sequence selection menu shows more SCSI devices attached to a controller/adapter than are actually attached.	A device may be set to use the same SCSI bus ID as the control adapter. Note the ID being used by the controller/adapter (this can be checked and/or changed through an SMS utility), and verify that no device attached to the controller is set to use that ID. If settings do not appear to be in conflict: 1. Go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113. 2. Replace the SCSI cable. 3. Replace the device. 4. Replace the SCSI adapter **Note:** In a ″twin-tailed″ configuration where there is more than one initiator device (normally another system) attached to the SCSI bus, it may be necessary to use SMS utilities to change the ID of the SCSI controller or adapter.
The System Management Services menu is displayed.	If you are loading diagnostics from the CD-ROM, you may not have pressed the correct key when you were trying to indicate a service mode IPL of the diagnostic programs. If this is the case, start again at the beginning of this step. If you are sure you pressed the correct key, the device or media you are attempting to boot from may be faulty. 1. If you are using the hardware management console (HMC) or an ASCII terminal: • Select **View Error Log** • If an error is logged, check the time stamp. • If the error was logged during the current boot attempt, record it. • Look up the error in Chapter 5, “Error Code to FRU Index,” on page 159 and do the listed action. • If no recent error is logged in the error log, go to step 3. 2. If you are using a keyboard and a graphic display attached to the system: • Select **View Error Log** • If an error is logged, check the time stamp. • If the error was logged during the current boot attempt, record it. • Look up the error in Chapter 5, “Error Code to FRU Index,” on page 159 • If no recent error is logged in the error log, go to step 3. 3. Try to boot from an alternate boot device connected to the same controller as the original boot device. If the boot succeeds, replace the original boot device (for removable media devices, try the media first). 4. Go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.

You suspect a cable problem.	Go to *RS/6000 @server pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems*.
All other problems.	Go to “MAP 1020: Problem Determination” on page 61.

MAP 1020: Problem Determination

Purpose of This MAP

Use this MAP to get an error code if you were not provided one by the customer or you are unable to load diagnostics. If you are able to load the diagnostics, go to MAP 0020 in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

The service processor may have recorded one or more symptoms in its error log. Examine this error log before proceeding (see “System Information Menu” on page 238). The system may have been set up by using the HMC. Check the Service Action Event (SAE) log in the Service Focal Point. The SAE log may have recorded one or more symptoms in the Service Focal Point. To avoid unnecessary replacement of the same FRU for the same problem, it is necessary to check the SAE log for evidence of prior service activity on the same subsystem.

The service processor may have been set by the user to monitor system operations and to attempt recoveries. You can disable these actions while you diagnose and service the system. If the system was set up according to the recommendations of the *@server pSeries 615 Model 6C4 and Model 6E4 User's Guide*, all the settings of the service processor (except language) were saved by using the SAVE/RESTORE HARDWARE MAINTENANCE POLICIES service aid. You can use the same service aid to restore the settings at the conclusion of your service action.

In case the service processor settings were not saved by the user, if you disable them, make notes of their current settings for restoration before you leave.

In addition to the parameters in the following table, you can disconnect the modem to prevent incoming signals that could cause the system to power on.

Following are the service processor settings. The service processor menus are described in Chapter 7, “Using the Service Processor,” on page 225.

Surveillance	From the service processor Setup Menu, go to the Surveillance Setup Menu and disable surveillance.
Unattended Start	From the service processor System Power Control Menu, disable unattended start mode.
Reboot Policy	From the System Power Control Menu, go to the Reboot/Restart Policy Setup Menu and set: 1. Number of reboot attempts to **0** (zero) 2. Use OS-Defined restart policy to **No** 3. Enable supplemental restart policy to **No**.
Call-Out	From the Call-In/Call-Out Setup Menu, go to the Serial Port Selection Menu and disable call-out on both serial ports.

Another feature that could disrupt a service action by powering on the system is an AIX function called timed power-on. This function is not available when using the Linux operating system. For more information about timed power-on, see “System Power-On Methods” on page 249.

Be prepared to record code numbers and use those numbers in the course of analyzing a problem. Go to “Step 1020-1.”

Step 1020-1

The following steps analyze a failure to load the diagnostic programs.

Note: Be prepared to answer questions regarding the operator panel display and to perform certain actions based on displayed POST indicators. Please be observant of these conditions.

1. Power off the system. Refer to “Stopping the System” on page 282.
2. Select slow boot mode (select disable fast boot) on the system power control menu from the service processor main menu.
3. Power on the system. Refer to “Starting the System” on page 283.
4. Insert the diagnostic CD-ROM into the CD-ROM drive.
5. When the keyboard indicator is displayed (the word keyboard), press the 5 key on the system console.
6. Enter a password, if requested.
7. Wait until the diagnostics are loaded or the system appears to stop. If you receive an error code or if the system stops before diagnostics are loaded, find your symptom in the following table, then follow the instructions given in the Action column.

   If no fault is identified, continue to the next step.
8. Run the standalone diagnostics on the entire system. Find your symptom in the following table, then follow the instructions given in the Action column.

   If no fault is identified, call service support for assistance.

Symptom	Action
The system stopped and a code is displayed on the operator panel.	Go to the “Quick Entry MAP” on page 53.
The rack identify LED does not operate properly.	Go to the “Entry MAP” on page 51.
The system stops with a prompt to enter a password.	Enter the password. You cannot continue until a correct password has been entered. When you have entered a valid password, go to the beginning of this table and wait for one of the other conditions to occur.
The diagnostic operating instructions are displayed.	Go to ″MAP 0020: Problem Determination Procedure″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
The system login prompt is displayed.	If you are loading the diagnostics from a CD-ROM, you may not have pressed the correct key or you may not have pressed the key soon enough when you were trying to indicate a service mode IPL of the diagnostic programs. If this is the case, start again at the beginning of this step. **Note:** Perform the system shutdown procedure before turning off the system. If you are sure you pressed the correct key in a timely manner, go to “Step 1020-2” on page 65. If you are loading diagnostics from a NIM server, check for the following: • The bootlist on the client may be incorrect. • Cstate on the NIM server may be incorrect. • There may be network problems 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 “Boot Problems/Concerns” on page 155 and follow the steps for network boot problems.
The system does not respond when the password is entered.	Go to “Step 1020-2” on page 65.

Symptom	Action
The system stopped. A POST indicator is displayed on the system console and an eight-digit error code is not displayed.	If the POST indicator represents: 1. Memory, go to “MAP 1240: Memory Problem Resolution” on page 67. 2. Keyboard a. Replace the keyboard. b. Replace the service processor, location: U0.1-P1-X1. (See notes on page 51). c. Go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113. 3. Network, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113. 4. SCSI, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113. 5. Speaker a. Replace the operator panel, location: U0.1-L1. Refer to “Operator Panel and Power Cable” on page 341. b. Replace the service processor, location: U0.1-P1-X1. (See notes on page 51). c. Go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.

Symptom	Action
The System Management Services menu is displayed.	If you are loading diagnostics from the CD-ROM, you may not have pressed the correct key when you were trying to indicate a service mode IPL of the diagnostic programs. If this is the case, start again at the beginning of this step. If you are sure you pressed the correct key, the device or media you are attempting to boot from may be faulty. 1. If you are using the Hardware Management Console (HMC) or an ASCII terminal: • Select **View Error Log** • If an error is logged, check the time stamp. • If the error was logged during the current boot attempt, record it. • Look up the error in Chapter 5, “Error Code to FRU Index,” on page 159 and do the listed action. • If no recent error is logged in the error log, go to step 3. 2. If you are using a keyboard and a graphic display attached to the system: • Select **View Error Log** • If an error is logged, check the time stamp. • If the error was logged during the current boot attempt, record it. • Look up the error in Chapter 5, “Error Code to FRU Index,” on page 159 and do the listed action. • If no recent error is logged in the error log, go to step 3. 3. Try to boot from an alternate boot device connected to the same controller as the original boot device. If the boot succeeds, replace the original boot device (for removable media devices, try the media first). 4. Go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.
All other symptoms.	If you were directed here from the Entry MAP, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113. Otherwise, find the symptom in the “Quick Entry MAP” on page 53.

Step 1020-2

There is a problem with the keyboard.

Find the type of keyboard you are using in the following table; then follow the instructions given in the Action column.

Keyboard Type	Action
Type 101 keyboard (U.S.). Identified by the size of the Enter key. The Enter key is in only one horizontal row of keys.	• Replace the type 101 keyboard. • Replace the service processor, location: U0.1-P1-X1. (See notes on page 51.)

Keyboard Type	Action
Type 102 keyboard (W.T.). Identified by the size of the Enter key. The Enter key extends into two horizontal rows.	• Replace the type 102 keyboard. • Replace the service processor, location: U0.1-P1-X1. (See notes on page 51.)
Type 106 keyboard. (Identified by the Japanese characters.)	• Replace the type 106 keyboard. • Replace the service processor, location: U0.1-P1-X1. (See notes on page 51.)
ASCII terminal keyboard	Go to the documentation for this type of ASCII terminal and continue with problem determination.

If the problem was not corrected by one of the previous actions and you were not already directed to go to MAP 1548, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.

MAP 1240: Memory Problem Resolution

Note: The firmware or error code that sent you here could be one of the following:

- Service Processor Checkpoints 910B, 910C, 910E or 95xx
- Firmware Checkpoints E134 or E701
- System Power Control Network Error Code 1011840C
- Firmware Error Codes 25Cyy001, 25Cyy002, 25B00001 or 25B00004
- Service Processor Error Codes 406x001x, 406x010x, 406x013x, 406x0CA6 or 450x30xx
- Common Firmware Error Codes B1xx466x
- Problem Determination Error Code M0MEM002

These checkpoints and error codes are referred to as *a memory code* in this MAP.

Purpose of This MAP

This MAP is used to troubleshoot a problem when the system stops with a memory checkpoint or memory error code on the operator panel display or console.

Notes:

1. If the symptom changes while you are using this MAP, check for loose cards, cables, and obvious problems. If you do not find a problem, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.
2. The service processor may have recorded one or more symptoms in its error log. It is a good idea to examine that error log before proceeding (see Service Processor System Information Menu).
3. The service processor may have been set by the user to monitor service operations and to attempt recoveries. You might want to disable these actions while you diagnose and service the system. If you disable them, make note of their current settings so that you can restore them before you leave. The following settings may be of interest to you.

Surveillance	From the Service Processor Setup Menu, go to the Surveillance Setup menu and disable surveillance.
Unattended Start	From the Service Processor System Power Control Menu, disable unattended start mode.
Reboot Policy	From the System Power Control Menu, go to the Reboot/Restart Policy Setup Menu and set: 1. Number of reboot attempts to **0** (zero) 2. Use OS-Defined restart policy to **No**. 3. Enable supplemental restart policy to **No**.
Call Out	From the Call-In/Call-Out Setup Menu, go to the Serial Port Selection Menu and disable call-out on both serial ports.

General Memory Information

Be sure to unplug the power cables before removing or installing memory DIMMs to avoid damage to them.

Memory DIMMs must be installed in matched (size and speed) quads. Refer to “Memory DIMMs” on page 354 for labeling of the system backplane and instructions on memory DIMM removal and installation. Do not, however, replace the covers as directed while troubleshooting this problem. Memory DIMM quads can only be installed in one of the following two memory DIMM slot combinations:

- 1, 3, 6, and 8

- 2, 4, 5, and 7

There is no requirement that memory DIMM slots 1, 3, 6, and 8 be populated before memory DIMM slots 2, 4, 5, and 7.

Attention: Go to the service processor menus. In the System Information Menu, select **Memory Configuration/ Deconfiguration**. Verify on the first screen that memory repeat gard is disabled. If it is enabled, disable it for the duration of this MAP. When exiting this MAP to go to MAP 0410 in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, return the setting to enabled if necessary.

Step 1240-1

1. Turn off the power. Remove the power cord.
2. Reseat the DIMMs.
3. Reattach the power cord. Wait for `0K` in the operator panel.
4. Turn on the power. Attempt to boot to the SMS menus. (The system may stop with an 8-digit error code before it reaches the SMS menus.)
5. Power down the system using the white button. After the `0K` appears in the operator panel, look at the memory configuration/deconfiguration menu.

Are any DIMMs deconfigured or does the error code recorded in "Step 1240-1" still appear?

NO Reseating the DIMMs has corrected the problem.

Enable memory repeat gard if necessary.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES If there is only one quad of DIMMs on the planar, go to "Step 1240-5" on page 69.

If there are two quads of DIMMs on the planar, go to "Step 1240-2."

Step 1240-2

1. Turn off the power. Remove the power cord.
2. Remove one quad of DIMMs. Record the positions of the DIMMs as they are removed. When instructed to reinstall the DIMMs, install them back into the same slots from which they were removed.
3. Reattach the power cord. Wait for `0K` in the operator panel.
4. Turn on the power. Attempt to boot to the SMS menus. (The system may stop with an 8-digit error code before it reaches the SMS menus.)
5. Power down the system using the white button. After the `0K` appears in the operator panel, look at the memory configuration/deconfiguration menu.

Are any DIMMs deconfigured or does the error code recorded in "Step 1240-1" still appear?

NO Go to "Step 1240-3" on page 69.

YES Go to "Step 1240-5" on page 69.

Step 1240-3

1. Turn off the power. Remove the power cord.
2. Move the quad of DIMMs located on the card to the other quad's slots.
3. Reattach the power cord. Wait for 0K in the operator panel.
4. Turn on the power. Attempt to boot to the SMS menus. (The system may stop with an 8-digit error code before it reaches the SMS menus.)
5. Power down the system using the white button. After the 0K appears in the operator panel, look at the memory configuration/deconfiguration menu.

Are any DIMMs deconfigured or does the error code recorded in "Step 1240-1" on page 68 still appear?

NO Go to "Step 1240-4."

YES Replace the system planar.

Enable memory repeat gard if necessary.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1240-4

The failing DIMM(s) is in the quad of DIMMs that was removed in "Step 1240-2" on page 68. Do the following:

1. Turn off the power. Remove the power cord.
2. Remove the quad of DIMMs that is on the system planar and reinstall the quad of DIMMs that had been removed. The DIMMs can be reinstalled in either quad.
3. Go to "Step 1240-6" on page 70.

Step 1240-5

1. Turn off the power. Remove the power cord.
2. Move the quad of DIMMs that is on the system planar to the other quad's location.
3. Reattach the power cord. Wait for 0K in the operator panel.
4. Turn on the power. Attempt to boot to the SMS menus. (The system may stop with an 8-digit error code before it reaches the SMS menus.)
5. Power down the system using the white button. After the 0K appears in the operator panel, look at the memory configuration/deconfiguration menu.

Are any DIMMs deconfigured or does the error code recorded in "Step 1240-1" on page 68 still appear?

NO Replace the system planar.

Enable memory repeat gard if necessary.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES One or more of the DIMMs on the card is defective. Go to "Step 1240-6" on page 70.

Step 1240-6

Note: If only one quad of DIMMs is on the system planar, you must have at least one replacement DIMM of the same size and speed as the DIMMs that are on the system planar.

If there were two quads of DIMMs on the system planar, but they are not the same size, you must have at least one replacement DIMM of the same size and speed as the DIMMs in the quad that is failing.

If there were two quads of DIMMs on the system planar, and they are the same size and speed, DIMMs from the good quad can be used when isolating the failing DIMM in the suspect quad.

1. Turn off the power. Remove the power cord.
2. Remove one of the DIMMs on the system planar, and install the replacement DIMM or another DIMM that is known to be good.
3. Reattach the power cord. Wait for `0K` in the operator panel.
4. Turn on the power. Attempt to boot to the SMS menus. (The system may stop with an 8-digit error code before it reaches the SMS menus.)
5. Power down the system using the white button. After the `0K` appears in the operator panel, look at the memory configuration/deconfiguration menu.

Are any DIMMs deconfigured or does the error code recorded in "Step 1240-1" on page 68 still appear?

NO The DIMM that was just removed was the failing DIMM; replace it.

Enable memory repeat gard if necessary.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES Go to "Step 1240-7."

Step 1240-7

Have all the DIMMs in the quad located on the system planar been replaced?

NO Go to "Step 1240-6" to test the next DIMM of the quad on the system planar.

YES Go to "Step 1240-8."

Step 1240-8

Did the processor originally have only one quad of DIMMs at the start of this map?

NO Call support.

YES Replace the system planar. This ends the procedure. Enable memory repeat gard if necessary. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

MAP 1230: Linux Platform Error Problem Resolution

Purpose of This MAP

Use this MAP to resolve problems reported by SRNs A00-000 to A1F-FFF from a partition running Linux.

Step 1230-1

1. The last character of the SRN is bit-encoded as follows:

```
8   4   2   1
|   |   |   |
|   |   |   Replace all FRUs listed
|   |   Hot-swap is supported
|   Software or Firmware could be the cause
Reserved
```

2. Refer to the last character in the SRN. A 4, 5, 6, or 7 indicates a possible software or firmware problem.

Does the last character indicate a possible software or firmware problem?

NO Go to “Step 1230-4” on page 72.

YES Go to “Step 1230-2.”

Step 1230-2

Ask the customer if any software or firmware has been installed recently.

Has any software or firmware been installed recently?

NO Go to “Step 1230-4” on page 72.

YES Go to “Step 1230-3.”

Step 1230-3

Suspect the new software or firmware.

Check with your support center for any known problems with the new software or firmware.

Are there any known problems with the software or firmware?

NO Go to “Step 1230-4” on page 72.

YES Obtain and follow the procedure to correct the software problem. This completes the repair.

Step 1230-4
Were any FRUs or location code reported with the SRN?

NO Go to “Step 1230-5.”

YES Go to “Step 1230-9.”

Step 1230-5
Run the diagnostics in problem determination mode on **sysplanar0**.

Were there any FRUs reported with the SRN?

NO Go to “Step 1230-6.”

YES Go to “Step 1230-9.”

Step 1230-6
Did the system display: ″Previous Diagnostic Results - Do you want to review the previously displayed error?″

NO Go to “Step 1230-7.”

YES You have a pending item in the error log. To see this error, select **YES** at the prompt. Information from the error log displays in order of last event first. Record the error code, the FRU names and the location code of the FRUs. Go to “Step 1230-7.”

Step 1230-7
Were there any other SRNs that begin with an A00 to A1F reported?

NO Go to “Step 1230-8.”

YES Go to “Step 1230-1” on page 71 and use the new SRN.

Step 1230-8
Attempt to boot the system on slow boot mode.

If the system boots, run the diagnostics in problem determination mode on **sysplanar0**

Were any new error codes or SRNs reported?

NO Call your support center.

YES Follow the procedure for the new error code or SRN.

Step 1230-9
1. Record the physical location codes and FRU numbers.
2. Refer to the last character in the SRN. A 2, 3, 6, or 7 indicates that hot-swap is possible.

Does the last character indicate that hot-swap is possible?

NO Go to “Step 1230-10.”

YES Go to “Step 1230-14” on page 75.

Step 1230-10

Note: If necessary, refer to “Stopping the System” on page 282 for information on system shut down and powering the system on and off.

1. If the operating system is running, perform the operating system’s shutdown procedure.
2. Turn off power to the system.

3. Refer to the last character in the SRN. A 1, 3, 5, or 7 indicates that all FRUs listed on the Problem Report Screen need to be replaced. For SRNs ending with any other character, exchange one FRU at a time, in the order listed.

   Note: Use the appropriate procedure in “Procedure List” on page 281 to replace any FRUs indicated.
4. Turn on power to the system.
5. Load standalone AIX diagnostics in service mode.

   Note: If the Diagnostics Operating Instructions do not display or you are unable to select the **Task Selection** option, check for loose cards, cables, and obvious problems. If you do not find a problem, go to “MAP 1020: Problem Determination” on page 61 and get a new SRN.
6. Wait until the **Diagnostics Operating Instructions** are displayed or the system appears to stop.
7. Press Enter.
8. Select **Diagnostic Routines** at the function selection menu.
9. Select **System Verification.**
10. If a missing options exist, particularly if it is related to the device that was replaced, resolve the missing options before proceeding
11. If the resource associated with your repair action is not displayed on the resource list, select **sysplanar0**.
12. Run diagnostics on all resources.

Was a problem reported?

NO The repair is complete. Go to MAP 0410: Repair Checkout, located in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.

YES Go to “Step 1230-11.”

Step 1230-11

Is the problem the same as the original problem?

NO The symptom has changed. Check for loose cards, cables, and obvious problems. If you do not find a problem, go to “MAP 1020: Problem Determination” on page 61 and get a new SRN.

YES Go to “Step 1230-12.”

Step 1230-12

Look at the physical location codes and FRU part numbers you recorded.

Have you exchanged all the FRUs that were listed?

NO Go to “Step 1230-13.”

YES The SRN did not identify the failing FRU. Call your support person for assistance.

Step 1230-13

1. After performing a shutdown of the operating system, turn off power to the system.
2. Remove the new FRU and install the original FRU.
3. Exchange the next FRU in list.
4. Turn on power to the system.
5. Load standalone diagnostics in service mode.

   Note: If the Diagnostics Operating Instructions do not display or you are unable to select the **Task Selection** option, check for loose cards, cables, and obvious problems. If you do not find a problem, go to “MAP 1020: Problem Determination” on page 61 and get a new SRN.
6. Wait until the Diagnostics Operating Instructions are displayed or the system appears to stop.

7. Press Enter.
8. Select **Diagnostic Routines** at the function selection menu.
9. Select **System Verification.**
10. If a missing options exist, particularly if it is related to the device that was replaced, resolve the missing options before proceeding
11. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**.
12. Run diagnostics on all resources.

Was a problem reported?

NO The repair is complete. Go to MAP 0410: Repair Checkout, located in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.

YES Go to “Step 1230-11” on page 73.

Step 1230-14

The FRUs can be hot-swapped. If you do not want to use the hot-swap capabilities of an identified hot-swap FRU, go to “Step 1230-10” on page 72.

Note: For a procedure to replace a hot-plug (swap) PCI adapter go to “PCI Adapters” on page 293.

1. Refer to the last character in the SRN. A 1, 3, 5, or 7 indicates that all FRUs listed on the Problem Report Screen must be replaced. For SRNs ending with any other character, exchange one FRU at a time, in the order listed.

   Note: Although some components are physically hot-swappable, there are no procedures available to determine if a repair has been successful while the Linux operating system is running. If you desire to verify the repair with diagnostics, you must shutdown the system and run the AIX standalone diagnostics.

2. After replacing a hot-swappable FRU, examine the HMC or the platform error log to determine if the error has reappeared. You may need to wait 30 minutes or longer before the error is written back to the HMC or platform error log.

Was a problem reported?

NO The repair is completed. Return the system to the customer.

YES Go to “Step 1230-15” on page 76.

Step 1230-15
Is the problem the same as the original problem?

NO The symptom has changed. Check for loose cards, cables, and obvious problems. If you do not find a problem, go to “MAP 1020: Problem Determination” on page 61 and get a new SRN.

YES Go to “Step 1230-16.”

Step 1230-16
Look at the physical location codes and FRU part numbers you recorded.

Have you exchanged all the FRUs that were listed?

NO Go to “Step 1230-17.”

YES The SRN did not identify the failing FRU. Call your support person for assistance.

Step 1230-17
1. Remove the new FRU and install the original FRU.
2. Exchange the next hot-swappable FRU in the list. If there are more FRUs in the list that are not hot-swappable, go to “Step 1230-10” on page 72 to replace the rest of the FRUs, if required.

   Note: Although some components are physically hot-swappable, there are no procedures available to determine if a repair has been successful while the Linux operating system is running. If you desire to verify the repair with diagnostics, you must shutdown the system and run the AIX standalone diagnostics.
3. After replacing a hot-swappable FRU, examine the HMC or the platform error log to determine if the error has reappeared. You may need to wait 30 minutes or longer before the error is written back to the HMC or platform error log.

Was a problem reported?

NO The repair is complete. Return the system to the customer.

YES Go to “Step 1230-15.”

MAP 1235: System Array Self-Repair Problem Resolution for Linux

Purpose of This MAP
Use this MAP to resolve problems reported by SRNS A11-560 to A11-580.

Note: The following steps may require that the system be rebooted to invoke Array bit steering, so you may wish to schedule deferred maintenance with the system administrator to arrange a convenient time to reboot their system.

Step 1235-1
Was the SRN A11-560?

NO Go to “Step 1235-3” on page 77.

YES Go to “Step 1235-2.”

Step 1235-2
Were there any other errors on the resource reporting the array bit steering problem?

NO Go to “Step 1235-4” on page 78.

YES Resolve those errors before proceeding.

Step 1235-3

Were there any other errors on `procx`?

NO Go to “Step 1235-4” on page 78.

YES Resolve those errors before proceeding.

Step 1235-4

Schedule deferred Maintenance with the customer. When it is possible, reboot the system to invoke Array Bit steering

Go to “Step 1235-5.”

Step 1235-5

Reboot the system. To determine if the original error code or SRN does not reproduce, examine the problem Linux partition with the HMC, or by listing errors in the platform error log.

1. If there is no problem on the resource that originally reported the problem, then array bit steering was able to correct the problem. Go to MAP 0410: Repair Checkout, located in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.
2. If a problem is reported use the SRN to resolve the problem. Go to “Entry MAP” on page 51 with the new symptom.

MAP 1320: Service Focal Point

These procedures define the steps to take when servicing a machine that is equipped with Service Focal Point (SFP). You might also be directed to these procedures if the system is running Linux as its only operating system.

Note: If the system is attached to an HMC and Service Focal Point is enabled, the various codes that might display on the HMC are all listed as error codes by Service Focal Point (SFP). To assist you in identifying the types of error data in this guide, use the following table.

Number of Digits in Error Code	Error code	Name Used in this Service Guide
Any	Contains # (pound sign)	Menu Goal
Any	Contains - (hyphen)	SRN
5	Does not contain # or -	SRN
6	Does not contain # or -	Error Code
8	Does not contain # or -	Error Code, Service Reference Code (SRC)

For steps to be taken when beginning service on a machine with SFP, see the “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 80.

For steps to be taken after service is complete on a machine with SFP, see the “MAP 1322: End of Call MAP for Systems with Service Focal Point” on page 93.

MAP 1321: Quick Entry MAP for Systems with Service Focal Point

Notes:

1. If you are working on a system that is managed by an HMC, the term *service action event* is synonymous with *serviceable event* in this MAP.
2. If you are working on a system that is managed by an HMC, some steps in this MAP may ask you to open the details of the service action event and obtain error codes and FRU location codes. Depending on the error code(s), this operation may involve looking at service processor error code details. Be sure you select all listed error codes one at a time. Select details to display all error codes and location codes for the serviceable event that you are working with.

Step 1321-1

For future reference, record the error code and the location code (that brought you to this MAP) of the FRU to be replaced. Record any other symptoms if an error code is not available.

Does the system have an HMC attached?

No Go to “Step 1321-23” on page 83.

Yes Go to “Step 1321-2.”

Step 1321-2

At the HMC console, start Service Focal Point (SFP) and examine the service action event log for any open service action events. For SFP operating instructions, see “Service Focal Point” on page 43.

Does the HMC appear to operate correctly?

No Go to “Quick Entry MAP” on page 53, look up the HMC symptom, and follow the directions there.

Yes Go to “Step 1321-3.”

Step 1321-3

Are there any service action events that are open?

No Go to “Step 1321-40” on page 91.

Yes Go to “Step 1321-4.”

Step 1321-4

Record the list of open service action events.

Step 1321-5

From the list of serviceable events recorded in “Step 1321-4,” open the details of each service action event and examine the FRU list and error code(s) for each.

Step 1321-6

Are there any serviceable actions events with error codes of the form #xxxxxx in the list of error codes found in “Step 1321-5”?

No Go to “Step 1321-7.”

Yes Go to “Step 1321-18” on page 82.

Step 1321-7

Are there any serviceable events with FRU location codes reported in “Step 1321-5”?

No Go to “Step 1321-14.”

Yes Go to “Step 1321-8.”

Step 1321-8

From the list of open service action events with FRUs reported, examine the details of each service action event and record the error code.

Step 1321-9

Examine the list of error codes you obtained from “Step 1321-8” and look for any of the form 4xxB xxxx, A0D-34x, or A1D-34x.

Step 1321-10

Are there any error codes from “Step 1321-8” of the form 4xxB xxxx, A0D-34x, or A1D-34x?

No Go to “Step 1321-13.”

Yes Go to “Step 1321-11.”

Step 1321-11

Do any of the error codes from “Step 1321-8” of the form 4xxB xxxx, A0D-34x, or A1D-34x have the same first two characters on the left as the first two characters on the left of the error code recorded in “Step 1321-1” on page 80 that sent you to this MAP?

No Go to “Step 1321-13.”

Yes Record the error codes from “Step 1321-8” of the form 4xxB xxxx, A0D-34x, or A1D-34x that have the same first two characters on the left as the first two characters on the left of the error code recorded in “Step 1321-1” on page 80 that sent you to this MAP. Also, record the service action event associated with each error code. Go to “Step 1321-12.”

Step 1321-12

From the list of open service action events with error codes of the form 4xxB xxxx, A0D-34x, or A1D-34x recorded in “Step 1321-11,” choose the service action event with the earliest time stamp (the one that occurred first), record its error code and FRU location(s), and proceed to “Step 1321-14” with this new code.

When future steps refer to the error code recorded in “Step 1321-1” on page 80, use this new error code and its location code(s) instead of the original error code that sent you to this MAP.

Step 1321-13

From the list of open service action events with FRUs reported, choose the service action event with the earliest time stamp (the one that occurred first), record its error code and FRU location(s), and proceed to “Step 1321-14” with this new error code. When future steps refer to the error code recorded in “Step 1321-1” on page 80, use this new error code and its location code(s) instead of the original error code that sent you to this MAP.

Step 1321-14

At the HMC console, open Service Focal Point (SFP) and examine the service action event log for any closed service action events. For SFP operating instructions, refer to “Service Focal Point” on page 43.

Step 1321-15

Are there any service action events that are closed?

No Go to the table in “Entry MAP” on page 51.

Yes Go to “Step 1321-16.”

Step 1321-16

Examine the details of the ten most-recently closed service action events.

Are there any error codes or symptoms in the ten latest closed service action events that are the same as the error code or symptom recorded in “Step 1321-1” on page 80?

No Go to the table in “Entry MAP” on page 51.

Yes Go to “Step 1321-17.”

Step 1321-17

Examine the FRUs of the same error codes or symptoms.

Are there any FRUs in the same error codes or symptoms of the closed service action events left to be replaced?

No Go to the table in “Entry MAP” on page 51.

Yes Replace the next FRU of same error codes or symptoms of the closed service action events. Go to ″MAP 0410: Repair Checkout″ in *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1321-18

From the list of serviceable events with error code(s) of the form #xxxxxx, examine the details of each serviceable event to display the description field of the error code(s) of the form #xxxxxx.

Step 1321-19

Double-click on the description field to view the complete text.

Step 1321-20

Perform any actions that may be listed in the descriptions of all error codes of the form #xxxxxx before proceeding.

Step 1321-21

Did you find a problem?

No Make a note of the eight character error code number in the bottom of the description field. Use this error code when you are directed to the “Entry MAP” on page 51 later in this MAP. Go to “Step 1321-7” on page 80.

Yes Go to ″MAP 0410: Repair Checkout″ in *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1321-22

Look for and record any additional error information or software messages on the operator panel or the console (serial TTY, Vterm, or HMC). Choose a running Linux partition (preferably the partition with the problem).

Step 1321-23

Is Linux usable in any partition with Linux installed?

No Go to “Step 1321-30” on page 89.

Yes Go to “Step 1321-24.”

Attention: “Step 1321-24” through “Step 1321-36” on page 90 must be performed on a partition running the Linux operating system.

Step 1321-24

1. If your system is functional, determine your level of Linux by logging in to the system as the root user and entering the following command: `ls -l /var/log/platform`

   If the /var/log/platform file exists, go to substep 3.
2. Examine the Linux system log by entering the following command:

   `cat /var/log/messages |grep RTAS |more`

   Linux run-time RTAS error messages are logged in the **messages** file under **/var/log**. The following is an example of the Linux system RTAS error log messages.

```
Aug 27 18:13:41 rasler kernel: RTAS: -------- event-scan begin --------
Aug 27 18:13:41 rasler kernel: RTAS: Location Code: U0.1-P1-C1
Aug 27 18:13:41 rasler kernel: RTAS: WARNING: (FULLY RECOVERED) type: INTERN_DEV_FAIL
Aug 27 18:13:41 rasler kernel: RTAS: initiator: UNKNOWN target: UNKNOWN
Aug 27 18:13:41 rasler kernel: RTAS: Status: predictive new
Aug 27 18:13:41 rasler kernel: RTAS: Date/Time: 20020827 18134000
Aug 27 18:13:41 rasler kernel: RTAS: CPU Failure
Aug 27 18:13:41 rasler kernel: RTAS: CPU id: 0
Aug 27 18:13:41 rasler kernel: RTAS: Failing element: 0x0000
Aug 27 18:13:41 rasler kernel: RTAS: A reboot of the system may correct the problem
Aug 27 18:13:41 rasler kernel: RTAS: -------- event-scan end ----------
```

Go to “Step 1321-25” on page 86.

3. Record that, for this Linux partition, you performed substep 3 of “Step 1321-24” on page 83 for later steps.

Use the following command to list diagela messages recorded in the Linux system log:
cat /var/log/platform |grep diagela |more
Linux run-time diagela error messages are logged in the platform file under /var/log.
The following is an example of the Linux system error log diagela messages.
Aug 13 09:38:45 larry diagela: 08/13/2003 09:38:44
Aug 13 09:38:45 larry diagela: Automatic Error Log Analysis has detected a problem.
Aug 13 09:38:45 larry diagela: Aug 13 09:38:45 larry diagela: The Service Request Number(s)/Probable Cause(s)
Aug 13 09:38:45 larry diagela: (causes are listed in descending order of probability):
Aug 13 09:38:45 larry diagela:
Aug 13 09:38:45 larry diagela: 651-880: The CEC or SPCN reported an error. Report the SRN and the following reference and physical location codes to your service provider.
Aug 13 09:38:45 larry diagela: Location: n/a FRU: n/a Ref-Code: B1004699
Aug 13 09:38:45 larry diagela:
Aug 13 09:38:45 larry diagela: Analysis of Error log sequence number: 3
Aug 29 07:13:04 larry diagela: 08/29/2003 07:13:04
Aug 29 07:13:04 larry diagela: Automatic Error Log Analysis has detected a problem.
Aug 29 07:13:04 larry diagela:
Aug 29 07:13:04 larry diagela: The Service Request Number(s)/Probable Cause(s)
Aug 29 07:13:04 larry diagela: (causes are listed in descending order of probability):
Aug 29 07:13:04 larry diagela:
Aug 29 07:13:04 larry diagela: 651-880: The CEC or SPCN reported an error. Report the SRN and the following reference and physical location codes to your service provider.
Aug 29 07:13:04 larry diagela: Location: U0.1-F4 FRU: 09P5866 Ref-Code: 10117661
Aug 29 07:13:04 larry diagela:
Aug 29 07:13:04 larry diagela: Analysis of /var/log/platform sequence number: 24
Sep 4 06:00:55 larry diagela: 09/04/2003 06:00:55
Sep 4 06:00:55 larry diagela: Automatic Error Log Analysis reports the following:
Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: 651204 ANALYZING SYSTEM ERROR LOG
Sep 4 06:00:55 larry diagela: A loss of redundancy on input power was detected.
Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: Check for the following:
Sep 4 06:00:55 larry diagela: 1. Loose or disconnected power source connections.
Sep 4 06:00:55 larry diagela: 2. Loss of the power source.
Sep 4 06:00:55 larry diagela: 3. For multiple enclosure systems, loose or
Sep 4 06:00:55 larry diagela: disconnected power and/or signal connections
Sep 4 06:00:55 larry diagela: between enclosures.
Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: Supporting data:
Sep 4 06:00:55 larry diagela: Ref. Code: 10111520
Sep 4 06:00:55 larry diagela: Location Codes: P1 P2 Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: Analysis of /var/log/platform sequence number: 13

4. Also use the following command to list RTAS messages recorded in the Linux system log:
   `cat /var/log/platform |grep RTAS |more`

   Linux RTAS error messages are logged in the platform file under /var/log. The following is an example of the Linux system error log RTAS messages.

```
Aug 27 12:16:33 larry kernel: RTAS: 15 -------- RTAS event begin --------
Aug 27 12:16:33 larry kernel: RTAS 0: 04440040 000003f8 96008508 19155800
Aug 27 12:16:33 larry kernel: RTAS 1: 20030827 00000001 20000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 2: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 3: 49424d00 55302e31 2d463400 00503034
Aug 27 12:16:33 larry kernel: RTAS 4: 10117661 04a0005d 10110000 00000000
Aug 27 12:16:33 larry kernel: RTAS 5: 00007701 000000e0 00000003 000000e3
Aug 27 12:16:33 larry kernel: RTAS 6: 00000000 01000000 00000000 31303131
Aug 27 12:16:33 larry kernel: RTAS 7: 37363631 20202020 20202020 55302e31
Aug 27 12:16:33 larry kernel: RTAS 8: 2d463420 20202020 20202020 03705a39
Aug 27 12:16:33 larry kernel: RTAS 9: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 10: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 11: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 12: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 13: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 14: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 15: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 16: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 17: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 18: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 19: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 20: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 21: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 22: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 23: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 24: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 25: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 26: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 27: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 28: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 29: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 30: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 31: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 32: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 33: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 34: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 35: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 36: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 37: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 38: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 39: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 40: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 41: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 42: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 43: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 44: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 45: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 46: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 47: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 48: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 49: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 50: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 51: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 52: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 53: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 54: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 55: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 56: 00000000 00000000 00000000 00000000
```

Aug 27 12:16:33 larry kernel: RTAS 57: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 58: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 59: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 60: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 61: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 62: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 63: 00000000 00000000 00000000 00020000
Aug 27 12:16:33 larry kernel: RTAS: 15 -------- RTAS event end ----------
Error codes and location codes may appear as RTAS messages.
The extended data is also provided in the form of an RTAS message. The extended data contains
other error code words that help in isolating the correct FRUs. The start of the extended data is marked, for example, by the line
Aug 27 12:16:33 larry kernel: RTAS: 15 -------- RTAS event begin --------. The number after the colon is a
sequence number that correlates this data any diagela data with the same sequence number. The end of the extended data is marked by the line
Aug 27 12:16:33 larry kernel: RTAS: 15 -------- RTAS event end ---------- with the same sequence number.
Word 13 and word 19 are found in the RTAS messages. For example,
to find word 13, first find the error code in the left column of words of the extended data, 10117661. In this example, we find the error code
to the right of ″RTAS 4:″. This is also word 11. To get word 13, 10110000, simply count the words left-to-right, beginning at word 11.

Step 1321-25

If you performed substep 2 of “Step 1321-24” on page 83, then record any RTAS messages found in the Linux system log in “Step 1321-24” on page 83. If you performed substep 3 of “Step 1321-24” on page 83, then record any RTAS and diagela messages found in the Linux system log in “Step 1321-24” on page 83, and also record any extended data found in the RTAS messages, especially word 13 and word 19. Ignore all other messages in the Linux system log. If the system is configured with more than one logical partition with Linux installed, repeat “Step 1321-24” on page 83 and “Step 1321-25”for all logical partitions that have Linux installed.

Step 1321-26

If you performed substep 3 of “Step 1321-24” on page 83 for the current Linux partition, go to “Step 1321-27,” and when asked in “Step 1321-27,” do not record any RTAS messages from “Step 1321-26” for the current Linux partition.

Examine the Linux boot (IPL) log by logging in to the system as the root user and entering the following command:

```
cat /var/log/boot.msg |grep RTAS |more
```

Linux boot (IPL) error messages are logged into the **boot.msg** file under **/var/log**. The following is an example of the Linux boot error log.

```
RTAS daemon started
RTAS: -------- event-scan begin --------
RTAS: Location Code: U0.1-F3
RTAS: WARNING: (FULLY RECOVERED) type: SENSOR
RTAS: initiator: UNKNOWN target: UNKNOWN
RTAS: Status: bypassed new
RTAS: Date/Time: 20020830 14404000
RTAS: Environment and Power Warning
RTAS: EPOW Sensor Value: 0x00000001
RTAS: EPOW caused by fan failure
RTAS: -------- event-scan end ----------
```

Step 1321-27

Record any RTAS messages found in the Linux boot (IPL) log in Step 1321-26. Ignore all other messages in the Linux boot (IPL) log. If the system is configured with more than one logical partition with Linux installed, repeat “Step 1321-26” and “Step 1321-27” for all logical partitions that have Linux installed.

Step 1321-28

If you performed substep 3 of “Step 1321-24” on page 831321-24 for the current Linux partition, go to “Step 1321-29” on page 89, and when asked in “Step 1321-29” on page 89, do not record any additional extended data from “Step 1321-26” for the current Linux partition.

Examine the extended data in both logs.

The following is an example of the Linux extended data.

<3>RTAS daemon started
<3>RTAS: -------- event-scan begin --------
<3>RTAS: Location Code: U0.1-P1-C2
<4>RTAS: Log Debug: 04
4b2726fb04a00011702c00140000000000000000000000000f1800001001801d3ffffffff0100000000000000042343138
20202020383030343236464238454134303030303 030303030303030
<4>RTAS: Log Debug: D2
5046413405020d0a000001000271400100000033434d5020444154410000010000000000010000f180000153595
32044415441000000000000000020021627150105092002162715010509200206371501050953524320444154417 0
2c00140000000000000000020018820201d382000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000280048ea40000000000000000000000
00000000000000000000435054204441544 1702cff08000000001c000000702cf008000000080000000702cf10070
2cf200702c000400000800702c01040bf2002e702c02040c1fffbf702c0300702c1000702c11040bf2002e702c12040
c1fffbf702c1300702ca000702ca108000000000000a03c702ca208000000000000effc702cb000702cb10800000000
0000a03c702cb208000000000000effc702cc000702cc108000000000000a03c702cc208000000000000effc702c3
000702c3108000000000000000003702c32080000000000000007b702c8000702c81080000000020e27a39702c820800
000000fffeffff702cd000702cd10800000001 0004010702cd208000000007777f3ffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffff
<3>RTAS: WARNING: (FULLY RECOVERED) type: INTERN_DEV_FAIL
<3>RTAS: initiator: UNKNOWN target: UNKNOWN
<3>RTAS: Status: unrecoverable new
<3>RTAS: Date/Time: 20020905 15372200
<3>RTAS: CPU Failure
<3>RTAS: Internal error (not cache)
<3>RTAS: CPU id: 0
<3>RTAS: Failing element: 0x0000
<3>RTAS: -------- event-scan end ---------

Step 1321-29

Record any extended data found in the Linux system log in Step 1321-24 or the Linux boot (IPL) log in Step 1321-26. Be sure to record word 13.

Note: The line(s) in the Linux extended data that begin with ″<4>RTAS: Log Debug: 04″ contain the error code listed in the next 8 hex characters. In the previous example, ″4b27 26fb″ is an error code. The error code is also known as word 11. Each 4 bytes after the error code in the Linux extended data is another word (for example, ″04a0 0011″ is word 12, and ″702c 0014″ is word 13, and so on).

If the system is configured with more than one logical partition with Linux installed, repeat “Step 1321-28” on page 87 and “Step 1321-29” for all logical partitions that have Linux installed.

Step 1321-30

Were any error codes or checkpoints recorded in Steps 1321-1, 1321-22, 1321-25, 1321-27, or 1321-29?

No Go to “Step 1321-31.”

Yes Go to the “Quick Entry MAP” on page 53 with each recorded error code or symptom. Perform the indicated actions one at a time for each error code until the problem has been corrected. If all recorded error codes have been processed and the problem has not been corrected, go to “Step 1321-31.”

Step 1321-31

If no additional error information is available and the problem has not been corrected, shut down the system.

If an HMC is not attached, you need a laptop computer (and cable, part number 62H4857) capable of connecting to serial port 1 on the processor subsystem.

Note: The Linux login prompt cannot be seen on a laptop computer connected to serial port 1.

1. If there is no HMC, attach the laptop computer and cable to serial port 1 on the processor subsystem.
2. When OK displays in the operator panel, press a key on the virtual terminal on the laptop computer. The service processor menus are available on the attached laptop computer or on the HMC.
3. Examine the service processor (SP) error log. Record all error codes and messages written to the SP error log. Go to “Step 1321-32.”
4. If the service processor menus are not available, perform the following steps:
   a. Examine and correct all connections to the service processor.
   b. Replace the service processor.

      Note: The service processor might be contained on a separate card or book. Or in some systems, the service processor is built into the service processor/PCI backplane, or into the system backplane.

   c. If you have not already replaced the system backplane in an earlier step, replace the system backplane.

      Note: Call service support before replacing the system backplane.

Step 1321-32

Boot the system to the system management services (SMS) menus. Record all error codes and messages written to the SMS error log.

Step 1321-33

Were any error codes recorded in steps 1321-31 or 1321-32?

No Go to “Step 1321-41” on page 91.

Yes Go to the “Quick Entry MAP” on page 53 with each error code or symptom you have recorded. Perform the indicated actions, one at a time, until the problem has been corrected. If all recorded error codes have been processed and the problem has not been corrected, go to “Step 1321-41” on page 91.

Step 1321-34

Reboot the system and and bring all partitions to the login prompt. If Linux is not usable in all partitions, go to “Step 1321-38” on page 91.

Step 1321-35

Use the **lscfg** command to list all resources assigned to all partitions. Record the adapter and the partition for each resource.

Step 1321-36

To determine if any device(s) or adapter(s) are missing, compare the list of found resources and partition assignments to the customer’s known configuration. Record the location of any missing devices. Also record any differences in the descriptions or the locations of devices.

You may also compare this list of found resources to a prior version of the device tree as follows:

Note: Every time that the partition is booted, the **update-device-tree** command is run and the device tree is stored in the **/var/lib/lsvpd/** directory in a file with the file name device-tree-YYYY-MM-DD-HH:MM:SS, where YYYY is the year, MM is the month, DD is the day, and HH, MM, and SS are the hour, minute and second, respectively, of the date of creation.

- At the command line, type the following:
  `cd /var/lib/lsvpd/`
- At the command line, type the following:
  `lscfg -vpd device-tree-2003-03-31-12:26:31`.
  This displays the device tree created on 03/31/2003 at 12:26:31.

The **diff** command offers a way to compare the output from a current **lscfg** command to the output from an older **lscfg** command. If the files names for the current and old device trees are **current.out** and **old.out**, respectively, type: `diff old.out current.out`. Any lines that exist in the old, but not in the current will be listed and preceded by a less-than symbol (<). Any lines that exist in the current, but not in the old will be listed and preceded by a greater-than symbol (>). Lines that are the same in both files are not listed; for example, files that are identical will produce no output from the diff command. If the location or description changes, lines preceded by both < and > will be output.

If the system is configured with more than one logical partition with Linux installed, repeat “Step 1321-35” and “Step 1321-36” for all logical partitions that have Linux installed.

Step 1321-37

Was the location of one and only one device recorded in “Step 1321-36”?

No If you previously answered Yes to “Step 1321-37,” return the system to its original configuration. This ends the procedure. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

If you did not previously answer Yes to “Step 1321-37,” go to “Step 1321-38” on page 91.

Yes Perform the following steps one at a time. Power off the system before performing each step. After performing each step, power on the system and go to “Step 1321-34” on page 90.

1. Check all connections from the system to the device.
2. Replace the device (for example, tape or DASD)
3. If applicable, replace the device backplane.
4. Replace the device cable.
5. Replace the adapter.
6. If the adapter resides in an I/O drawer, replace the I/O backplane.
7. If the device adapter resides in the CEC, replace the I/O riser card, or the CEC backplane where the device adapter is located.
8. Call service support. Do not go to “Step 1321-34” on page 90.

Step 1321-38

Does the system appear to stop or hang before reaching the login prompt or did you record any problems with resources in “Step 1321-36” on page 90?

Note: If the system console or VTERM window is always blank, choose NO. If you are sure the console or VTERM is operational and connected correctly, answer the question for this step.

No Go to “Step 1321-39.”

Yes There may be a problem with an I/O device. Go to “MAP 1542: I/O Problem Isolation” on page 112. In MAP 1542, when instructed to boot the system, boot a full system partition.

Step 1321-39

Boot the AIX standalone diagnostics, and run diagnostics in problem determination mode on all resources. Be sure to boot a full system partition. Ensure that AIX diagnostics was run on all known resources. You may need to select each resource individually and run diagnostics on each resource one at a time.

Did AIX standalone diagnostics find a problem?

No Go to “Step 1321-43” on page 92.

Yes Go to the table in “Entry MAP” on page 51 with each error code or SRN you have recorded. Until the problem has been corrected, perform the indicated actions, one at a time, for each SRN or error code not already processed in “Step 1321-37” on page 90. If all recorded SRNs or error codes have been processed and the problem has not been corrected, go to “Step 1321-43” on page 92.

Step 1321-40

Does the system have Linux installed on one or more partitions?

No Go to “Step 1321-14” on page 81.

Yes Go to “Step 1321-22” on page 82.

Step 1321-41

Were any location codes recorded in Steps 1321-1, 1321-22, 1321-25, 1321-27, 1321-29, 1321-31, or 1321-32?

No Go to “Step 1321-34” on page 90.

Yes Replace, one at a time, all parts whose location code was recorded in Steps 1321-1, 1321-22, 1321-25, 1321-27, 1321-29, 1321-31, and 1321-32 that have not been replaced. Power off the system before replacing a part. After replacing the part, power on the system to check if the

problem has been corrected. Go to “Step 1321-42” when the problem has been corrected, or all parts in the location codes list have been replaced.

Step 1321-42

Was the problem corrected in Step 1321-41?

No Go to “Step 1321-34” on page 90.

Yes Return the system to its original configuration. This ends the procedure. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1321-43

Were any other symptoms recorded in step 1321-1?

No Call support.

Yes Go to the “Quick Entry MAP” on page 53 with each symptom you have recorded. Perform the indicated actions for all recorded symptoms, one at a time, until the problem has been corrected. If all recorded symptoms have been processed and the problem has not been corrected, call support.

MAP 1322: End of Call MAP for Systems with Service Focal Point

Note: If you are working on a system that not managed by an HMC go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*

Step 1322-1

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

Step 1322-2

For Service Focal Point operating instructions, refer to “Service Focal Point” on page 43. At the HMC, open Service Focal Point and examine the service action event log for any open service action events.

Step 1322-3

Are there any service action events that are open?

No If the system attention LED is still on, use the HMC to turn off the LED as described in “Resetting the System Attention LED” on page 50. This completes the repair, return the system to the customer.

Yes Go to “Step 1322-4”.

Step 1322-4

Record the list of open service action events.

Step 1322-5

From the list of serviceable events recorded in “Step 1322-4,” perform “Step 1322-6” through “Step 1322-33” on page 96 for each open service action event.

Step 1322-6

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

Step 1322-7

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 1322-1″?

No Go to “Step 1322-8.”

Yes Go to “Step 1322-11” on page 94.

Step 1322-8

Examine the FRU list of the service action event.

Are there any FRUs listed for the service action event?

No Go to “Step 1321-11” on page 81.

Yes Go to “Step 1321-9” on page 81.

Step 1322-9

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 1322-1" on page 93?

No Go to "Step 1322-10."

Yes Go to "Step 1322-11."

Step 1322-10

The FRU list is different.

Is the FRU you replaced and recorded in "Step 1322-1" on page 93 in the list of FRUs for this service action event?

No Go to "Step 1322-33" on page 96.

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.

Yes Go to "Step 1322-11."

Step 1322-11

Examine the details of this service action event, and record the partition(s) involved in this service action event for use in a later step.

Step 1322-12

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

No Go to "Step 1322-17" on page 95.

Yes Go to "Step 1322-13."

Step 1322-13

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

No Go to "Step 1322-14."

Yes Go to "Step 1322-15."

Step 1322-14

Begin a new list of "Axx" partitions by copying the list of partitions obtained in "Step 1322-11." Go to "Step 1322-16" on page 95.

Step 1322-15

Add the partition list obtained in "Step 1322-11" to the existing list of "Axx" partitions obtained from processing previous service action events in this MAP.

Step 1322-16

Remove all entries in the list of all partition(s) you recorded in “Step 1322-11” on page 94. If you are referred to the list of partition(s) obtained in “Step 1322-11” on page 94 in future steps, the list is empty. Go to “Step 1322-17.”

Step 1322-17

Select and highlight the service action event from the “Error Associated With This Serviceable Event” window.

Step 1322-18

Click **Close Event**.

Step 1322-19

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

Step 1322-20

The following steps will add or update FRU information.

Step 1322-21

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

No Go to “Step 1322-23.”

Yes Go to “Step 1322-22.”

Step 1322-22

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 1322-24.”

Step 1322-23

Select the **No FRU Replaced for this Serviceable Event** option.

Step 1322-24

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

Step 1322-25

Is the list of all partition(s) you recorded in “Step 1322-11” on page 94 empty?

No Go to “Step 1322-26.”

Yes Go to “Step 1322-33” on page 96.

Step 1322-26

Does the list of all partition(s) you recorded in “Step 1322-11” on page 94 contain more than one entry?

No Go to “Step 1322-33” on page 96.

Yes Go to “Step 1322-27” on page 96.

Step 1322-27

Is the error class recorded in "Step 1322-6" on page 93 AIX?

No Go to "Step 1322-33."

Yes Go to "Step 1322-28."

Step 1322-28

Perform the following steps for each entry in the list of all partition(s) you recorded in "Step 1322-11" on page 94, except the partition you were using to debug the original problem.

Step 1322-29

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

Step 1322-30

1. When the diagnostic operating instructions are displayed, 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.

Step 1322-31

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

Step 1322-32

Have all the partitions in the list of all partition(s) you recorded in "Step 1322-11" on page 94 been processed?

No Go to "Step 1322-28" to process the next partition in the list you recorded in "Step 1322-11" on page 94.

Yes Go to "Step 1322-33".

Step 1322-33

Have all the serviceable events recorded in "Step 1322-4" on page 93 been processed?

No Go to "Step 1322-5" on page 93 and process the next service action event in the list of serviceable events recorded in "Step 1322-4" on page 93.

Yes Go to "Step 1322-34" on page 97.

Step 1322-34

While processing all service action events, were you directed to "Step 1322-14" on page 94?

No If the system attention LED is still on, use the HMC to turn off the LED as described in "Resetting the LED when a System is Attached To an HMC" on page 50. 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.

Yes Go to "Step 1322-35."

Step 1322-35

Perform the following steps for each entry in the list of "Axx" partitions you began recording in "Step 1322-14" on page 94, except the partition you were using to debug the original problem.

Step 1322-36

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

Step 1322-37

1. When the diagnostic operating instructions are displayed, 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.

Step 1322-38

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

Step 1322-39

Have all the partitions in the list of "Axx" partitions(s) you began recording in "Step 1322-14" on page 94 been processed?

No Go to "Step 1322-35" to process the next partition in the list you recorded in "Step 1322-14" on page 94.

Yes If the system attention LED is still on, use the HMC to turn off the LED as described in "Resetting the LED when a System is Attached To an HMC" on page 50. 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.

MAP 1520: Power

Notes:

1. This is not a start-of-call MAP. Use this Power MAP only if you have been directed here from another MAP, an SRN in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, or an error code.
2. This procedure is used to locate power problems in system units. If a problem is detected, this procedure helps you isolate the problem to a failing unit.
3. The Model 6C3 and Model 6E3 can accommodate two power supplies with separate power receptacles on the rear of the power supply. There are three LEDs located on the front and top of the power supply:
   - AC Good LED (green)
   - DC Good LED (green)
   - Power Supply Fault Indicator LED (amber)

   The LEDs indicate the condition of the power supply. The meaning of each LED and the conditions that light it are explained in this section. For additional information, refer to “Component LEDs” on page 387.
4. The condition of two power supplies present, but only one working, can be determined by the service processor and a warning level EPOW.
5. Observe the following safety notices during service procedures.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.
D05

CAUTION:
This product is equipped with a three-wire power cable and plug for the user’s safety. Use this power cable with a properly grounded electrical outlet to avoid electrical shock.
C01

DANGER

To prevent electrical shock hazard, disconnect all power cables from the electrical outlet before relocating the system.
D01

FRU Identify LEDs

This system is configured with an arrangement of LEDs that help identify various components of the system. These include, but are not limited to:

- Rack identify LED
- CEC drawer identify LED
- I/O drawer identify LED
- RIO port identify LED
- FRU identify LED
- Power subsystem FRUs
- CEC subsystem FRUs
- I/O subsystem FRUs
- I/O adapter identify LED
- DASD identify LED

The identify LEDs are arranged hierarchically with the FRU identify LED at the bottom of the hierarchy, followed by, the corresponding CEC or I/O drawer identify LED, and the corresponding rack identify LED to locate the failing FRU more easily. Any identify LED in the system may be flashed when the system is in the failed state with power on by using the service processor LED Control Menu contained in the “System Information Menu” on page 238. See “System Information Menu” on page 238 for information on how to use the LED Control Menu.

Any identify LED in the system may also be flashed by using the “Identify and Attention Indicators” task in the AIX diagnostic programs. The procedure for operating the Identify and Attention Indicators task in the AIX diagnostics is outlined in the chapter entitled “Tasks and Service Aids” in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.

If the service processor menus and the AIX diagnostics are not available, the FRU identify LEDs may be flashed by one of following additional procedures.

1. If the system is configured as a full partition, the system can be booted to the open firmware prompt and the **FRU-LED-MENU** command entered. A menu displays that will allow you to turn on the desired FRU identify LED. For instructions on setting up the boot mode to enable the boot to the open firmware prompt, see the “System Power Control Menu” on page 235.
2. If an HMC is attached, it may be used to activate and deactivate a FRU identify LED. For instructions on activating and deactivating a FRU identify LED, see the Service Focal Point chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.

Find the symptom in the following table; then follow the instructions given in the action column.

Symptom	Action
The base system drawer will not power on and no error codes are available.	Go to “MAP 1521: Base System Drawer With Power Failure and No Error Codes” on page 100.
Error code 1011 1B0x in the SPCN error codes table directed you here.	Go to “MAP 1523: The SPCN Error Codes Table Directed You Here and the Error Code is 1011 1B0x” on page 107.

MAP 1521: Base System Drawer With Power Failure and No Error Codes

Step 1521-1

For Model 6C3, do the following:

1. Place the drawer into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284.
2. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288.

For Model 6E3, do the following:

1. Place the deskside unit into a comfortable position for you to work on.
2. Remove the service access cover as described in “Removing the Model 6E3 Service Access Cover” on page 289.

You may have been directed to this MAP for one or more of the following reasons:

- The ac power supply power LEDs are not on. The power LEDs on the operator panel and the power LEDs on the rear of the system unit are not blinking. The operator panel display is blank. Do the following:
  - Model 6C3, go to “Step 1521-2.”
  - Model 6E3, go to “Step 1521-5” on page 101.
- The ac power supply power LEDs are on. If equipped with dc power, the dc power supply power LEDs are blinking. Power LEDs, for either ac or dc power supplies, on the operator panel and the rear of the system unit are not blinking, and the operator panel display is blank. Go to “Step 1521-7” on page 102.
- The ac power supply power LEDs are on. If equipped with dc power, the dc power LEDs are blinking. Power LEDs located on the operator panel and the rear of the system unit are blinking and `OK` is displayed on the operator panel.

  When the power button, located on the operator panel, is pressed:
  - If equipped with dc power, the dc power LEDs, located on the power supplies, do not come on.
  - The power LED (for either ac or dc-powered systems), located on the operator panel, does not come on.
  - None of the cooling fans start to turn.

  Go to “Step 1521-7” on page 102.
- The ac power supply power LEDs are on. If equipped with dc power, the dc power supply power LEDs are blinking. The power LED, located on the operator panel, is blinking and `OK` is displayed on the operator panel.

  When the power button on the operator panel is pressed:
  - If equipped with dc power, the dc power LEDs on the power supplies come on.
  - The power LED (for either ac or dc-powered systems) on the operator panel, comes on and all the fans start to turn. However, the dc power LEDs located on the power supplies, and the power LED located on the operator panel, and the cooling fans do not stay on.

  Go to “Step 1521-7” on page 102.
- An SRN referenced in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* listed MAP 1521 in the ″Actions/Descriptions″ column. Go to “Step 1521-11” on page 104.

Step 1521-2

Is the green power light on the power distribution bus on?

NO Go to “Step 1521-3.”

YES Go to “Step 1521-5.”

Step 1521-3

Do the following:

1. Unplug the main power cable from the wall outlet.
2. If you are servicing a drawer unit that is mounted in a rack, unplug the main power cable from the power distribution bus.
3. Check that the power cable has continuity.
4. Check that the wall outlet has been wired correctly with the correct voltage.

Did you find a problem?

NO Go to “Step 1521-4.”

YES Correct the problem. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1521-4

If you are servicing a drawer unit that is mounted in a rack, do the following:

1. Unplug the the system unit power cables from the power distribution bus.
2. Plug in the main power cable into the power distribution bus.
3. Plug in the main power cable from the wall outlet.

Is the green power light on the power distribution bus on?

NO Replace the rack-mounted power distribution bus.

YES Go to “Step 1521-5.”

Step 1521-5

Turn off the power and do the following:

For Model 6C3:

1. Unplug the the system unit power cables from the power distribution bus.
2. Unplug the power cables from the system unit.
3. Check that the power cables have continuity.
4. Check that the power distribution bus outlets have the correct voltage.

For Model 6E3:

1. Unplug the power cables from the wall outlet.
2. Unplug the power cables from the system unit.
3. Check that the power cables have continuity.
4. Check that the wall outlet has been wired correctly with the correct voltage.

Did you find a problem?

NO Go to “Step 1521-6” on page 102.

YES Correct the problem. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1521-6

1. One of the following may be defective:
   - Power supplies
   - VRMs
   - Memory DIMMs
   - System backplane
2. To test each FRU, exchange the FRUs that have not already been exchanged in the following order.
   - Primary power supply
   - Redundant power supply (if installed)
   - VRM at U0.1-P1-V1
   - VRM at U0.1-P1-V2
   - VRM at U0.1-P1-V3
   - Memory DIMMs
   - System backplane
3. Unplug the power cables from the system unit.
4. Exchange one of the FRUs in the list.
5. Connect the power cables to the system unit.

Do the ac power LEDs on the power supplies come on within 30 seconds after applying ac power?

NO Reinstall the original FRU.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service representative for assistance.

YES Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1521-7

1. Unplug the power cables from the system unit.
2. Exchange the operator panel assembly.
3. Plug the power cables into the system unit and wait for the OK prompt located on the operator panel display.
4. Turn on the power.

Does the power LED on the operator panel come on and stay on?

NO Reinstall the original operator panel assembly. Go to “Step 1521-8.”

YES Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1521-8

1. Turn off the power.
2. Unplug the power cables from the system unit.
3. Record the slot numbers of all the adapters. Label and record the location of any cables attached to the adapters. Disconnect any cables attached to the adapters and remove all the adapters
4. Remove all but one quad of memory DIMMs from the system planar.
5. Unplug the signal and power cables from the DASD backplane.

6. Unplug the disk drives from the DASD backplane.
7. Unplug the signal and power cables from any devices in the media bays.
8. Remove all the fans.
9. Plug the power cables into the system unit.
10. Turn on the power.

Does the power LED on the operator panel come on and stay on?

NO Go to “Step 1521-9.”

YES Go to “Step 1521-10.”

Step 1521-9

Note: Either the CEC backplane or the power supplies may be defective.

To test each FRU, exchange the FRUs that have not already been exchanged in the following order:

1. Primary power supply
2. Redundant power supply (if installed)
3. VRM at U0.1-P1-V1
4. VRM at U0.1-P1-V2
5. VRM at U0.1-P1-V3
6. Memory DIMMs
7. System backplane.

Perform the following procedures as you exchange each of the above FRUs in the order listed:

1. Turn off the power.
2. Unplug the power cable from the system unit.
3. Exchange one of the FRUs in the list.
4. Connect the power cable to the system unit.
5. Turn on the power.

Does the power LED on the operator panel come on and stay on?

NO Reinstall the original FRU.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your service support person for assistance.

YES Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1521-10

One of the parts that was removed or unplugged is causing the problem. Install or connect the parts in the following order:

1. Memory DIMMs
2. DASD backplanes
3. Disk drives
4. Media bay devices
5. PCI adapters, lowest slot to highest slot
6. Fans

Turn on the power after each part is installed or connected. If the system does not power on or the power LED located on the operator panel does not stay on, the most recently installed or connected part is causing the failure.

Perform the following procedures as you exchange each of the above FRUs in the order listed:

1. Turn off the power.
2. Unplug the power cable from the system unit.
3. Install or connect one of the parts in the list.
4. Plug the power cable into the system unit.
5. Turn on the power.

Does the power LED on the operator panel come on and stay on?

NO Replace the last part installed. If memory DIMMs on the system planar were the last parts installed, exchange the memory DIMMs one at a time to isolate the failing module. If all memory DIMMs have been exchanged and the problem is not resolved, replace the system planar.

Repeat until all the parts have been installed. Go to "Step 1521-11."

YES Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1521-11

Does the system contain two power supplies?

NO Go to "Step 1521-12."

YES Go to "Step 1521-14" on page 105.

Step 1521-12

Shut down the system, and remove all power cables from the rear of the system unit.

Exchange the following FRUs in the order listed:

1. Power supply
2. VRM at U0.1-P1-V1
3. VRM at U0.1-P1-V2
4. VRM at U0.1-P1-V3
5. System backplane

Restart the system and perform error log analysis.

Do you get an SRN indicating a voltage sensor is out of range?

NO The last FRU exchanged is defective. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES Reinstall the original FRU.

Repeat the FRU replacement steps until a defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all FRUs have been exchanged, go to "Step 1521-13" on page 105.

If the symptom changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the "Quick Entry MAP" on page 53 and follow the instructions for the new symptom.

Step 1521-13

Check that the wall outlet is properly wired and is providing the correct voltage.

Did you find a problem?

NO Go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.

YES Correct the problem. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1521-14

Because the Model 6C3 and Model 6E3 accommodate redundant power supplies, it is not necessary to power down the system when replacing a power supply.

The power supplies are symmetrical. Replacement starts with the unit closest to the system wall of the system drawer (power supply 1). For instructions on replacing a power supply, refer to “Power Supply” on page 347.

Notes:

1. Always service first the power supply whose green LED, located on the front of the power supplies, is out.
2. Before removing a power supply, be sure the redundant power supply is operational by observing the green LED. The green LED must be on solid.

Replace the following FRUs in order:

1. Power supply #1 (primary)
2. Power supply #2 (redundant)

Perform error log analysis.

Do you receive an SRN indicating a voltage sensor out of range?

NO The last FRU exchanged is defective. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES Reinstall the original FRU.

Repeat the FRU replacement steps until a defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all FRUs have been exchanged, go to “Step 1521-15.”

If the symptom changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

Step 1521-15

The problem is within the system unit hardware or with the line voltage/wiring.

Shut down the system, and remove the power cable from the system unit.

Exchange the following FRUs in the order listed.

1. VRM at U0.1-P1-V1
2. VRM at U0.1-P1-V2
3. VRM at U0.1-P1-V3
4. System backplane

Restart the system, and perform error log analysis.

Do you get an SRN indicating a voltage sensor is out of range?

NO The last FRU exchanged is defective. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES Reinstall the original FRU.

Repeat the FRU replacement steps until a defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all FRUs have been exchanged, go to “Step 1521-13” on page 105.

If the symptom changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

MAP 1523: The SPCN Error Codes Table Directed You Here and the Error Code is 1011 1B0x

A base system power supply is reporting a load fault.

Note: Read the danger and caution notices under “Safety Notices” on page xi before continuing with this procedure.

Perform the following steps to isolate the problem.

Step 1523-1

1. Turn off the power.
2. Disconnect the ac power cables (dc power cables in a dc-powered system) from the base system drawer.
3. At the top of the base system drawer, remove the following cards, in the sequence listed:
   a. One quad of DIMMs
   b. Other quad of DIMMs, if installed
   c. PCI adapter card(s)
   d. DASD device(s)
   e. Media bay device(s)
4. Reconnect the ac power cables (dc power cables in a dc-powered system) to the base system drawer.
5. Turn on the power.

Is the error code 1011 1B0x displayed?

NO Go to “Step 1523-7” on page 109.

YES Go to “Step 1523-2.”

Step 1523-2

1. Turn off the power.
2. Disconnect the ac power cables (dc power cables in a dc-powered system) from the base system drawer.
3. Remove base system power supply 2.
4. Reconnect the ac power cable (dc power cable in a dc-powered system) to the base system power supply 1.
5. Turn on the power.

Is the error code 1011 1B0x displayed?

NO Go to “Step 1523-3.”

YES Go to “Step 1523-4” on page 108

Step 1523-3

1. Turn off the power.
2. Reinstall base system power supply 2 that was removed in “Step 1523-2.”
3. Reconnect the ac power cable (dc power cable in a dc-powered system) to the base system power supply 2.
4. Turn on the power.

Is the error code 1011 1B0x displayed?

NO The symptom has changed.

This ends the procedure.

YES Replace base system power supply 2, location: U0.1-V2.

This ends the procedure. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1523-4

1. Turn off the power.
2. Reinstall base system power supply 2 that was removed in “Step 1523-2” on page 107.
3. Reconnect the ac power cable (dc power cable in a dc-powered system) to the base system power supply 2.
4. Disconnect the ac cable (dc power cable in a dc-powered system) to base system power supply 1.
5. Remove base system power supply 1.
6. Turn on the power.

Is the error code 1011 1B0x displayed?

NO Replace base system power supply 1, location: U0.1-V1.

This ends the procedure. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES Go to “Step 1523-5.”

Step 1523-5

1. Turn off the power.
2. Reinstall base system power supply 2 that was removed in “Step 1523-4.”
3. Reconnect the ac power cable (dc power cable in a dc-powered system) to the base system power supply 2.
4. Remove base system fan 3. If a base system fan error code occurs during this step, ignore it.
5. Turn on the power.

Is the error code 1011 1B0x displayed?

NO Replace base system fan 3, location: U0.1-F3. **This ends the procedure.** Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES Go to “Step 1523-6.”

Step 1523-6

1. Turn off the power.
2. Reinstall base system fan 3 that was removed in “Step 1523-5.”
3. Remove base system fan 2. Disregard a base system fan error code if it occurs during this step.
4. Turn on the power.

Is the error code 1011 1B0x displayed?

NO Replace base system fan 2, location: U0.1-F2. **This ends the procedure.** Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES Go to “Step 1523-9” on page 109

Step 1523-7

1. Turn off the power.
2. Disconnect the ac power cables (dc power cables in a dc-powered system) from the base system drawer.
3. Reinstall one of the cards that was removed in “Step 1523-1” on page 107, in the sequence listed:
   a. One quad of DIMMs
   b. Other quad of DIMMs, if previously installed
   c. PCI adapter card(s)
   d. DASD device(s)
   e. Media bay device(s)
4. Reconnect the ac power cables (dc power cables in a dc-powered system) to the base system drawer.
5. Turn on the power.

Is the error code 1011 1B0x displayed?

NO Go to “Step 1523-8.”

YES The last card you installed is defective. Replace the last card you installed. **This ends the procedure.** Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1523-8

Have all the cards that were removed in “Step 1523-7” been reinstalled?

NO Go to “Step 1523-7” and reinstall the next card in the list.

YES Replace the base system backplane, location: U0.1-P1.

This ends the procedure. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1523-9

1. Turn off the power.
2. Reinstall base system fan 2 that was removed in “Step 1523-6” on page 108.
3. Remove base system fan 1. If a base system fan error code occurs during this step, ignore it.
4. Turn on the power.

Is the error code 1011 1B0x displayed?

NO Replace base system fan 1, location: U0.1-F1. This ends the procedure. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES Replace the base system backplane, location: U0.1-P1. **This ends the procedure**. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

This ends the procedure. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

MAP 1540: Problem Isolation Procedures

These procedures are used to locate problems in the processor subsystem, I/O subsystem(s) or rack. If a problem is detected, these procedures help you isolate the problem to a failing unit.

FRU Identify LEDs

This system is configured with an arrangement of LEDs that help identify various components of the system. These include but are not limited to:

- Rack identify LED
- CEC drawer identify LED
- I/O drawer identify LED
- RIO port identify LED
- FRU identify LED
- Power subsystem FRUs
- CEC subsystem FRUs
- I/O subsystem FRUs
- I/O adapter identify LED
- DASD identify LED

The identify LEDs are arranged hierarchically with the FRU identify LED at the bottom of the hierarchy, followed by, the corresponding CEC or I/O drawer identify LED, and the corresponding rack identify LED to locate the failing FRU more easily. Any identify LED in the system may be flashed when the system is in the failed state with power on by using the service processor LED Control Menu contained in the “System Information Menu” on page 238. For information on how to use the LED Control Menu, see “System Information Menu” on page 238.

Any identify LED in the system may also be flashed by using the “Identify and Attention Indicators” task through the AIX diagnostic programs. The procedure for operating the Identify and Attention Indicators task of the AIX diagnostics is outlined in the chapter entitled “Tasks and Service Aids” in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.

If the service processor menus and the AIX diagnostics are not available, the FRU identify LEDs may be flashed by one of following additional procedures.

1. If the system is configured as a full partition, the system can be booted to the open firmware prompt and the **FRU-LED-MENU** command entered. A menu will display that will allow you to turn on the desired FRU identify LED. For instructions on setting up the boot mode to enable the boot to the open firmware prompt, see the “System Power Control Menu” on page 235.

2. If an HMC is attached, it may be used to activate and deactivate a FRU identify LED. For instructions on activating and deactivating a FRU identify LED, see the Service Focal Point chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.

Problem Isolation Procedures	
Symptom/Reference Code/Checkpoint	**Action**
You were sent here by the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* book.	Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 113.
406x 00B7	Go to "MAP 154B: Insufficient Hardware Resources Problem Isolation" on page 128.
406x 0EB1, 406x 0EB2, 406x 0EB3, 406x 0EB4, 406x 0EB5, 406x 0EB6, 406x 0EB7, 406x 0EB8, 406x 0EB9, 406x 0EBA, 406x 0EBB, 406x 0EBC	Go to "MAP 1549: Attention Problem Isolation" on page 125.
406x 0EB0	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
1011 8400, 1011 8401, 1011 8409, 1011 840A, 1011 840B, 406x 0CA5, B1xx 4643, B1xx 4644, B1xx 4645, B1xx 4646, B1xx 4648	Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 113.
E101, E102, E10A, E10B, E111, E120, E121, E122, E130, E131, E132, E133, E134, E135, E138, E139, E13A, E149, E14C, E191, E19A, E19B, E19D, E1A0, E1A1, E1A2, E1A3, E1A4, E1A5, E1A6, E1A7, E1A8, E1A9, E1AA, E1AB, E1AC, E1AD, E1AE, E1AF, E1B1, E1C4, E1C5, E1C6, E1D0, E1D3, E1D4, E1DB, E1F0, E1F1, E1F4, E1F5, E1F6, E1F8, E1F9, E1FA, E1FB, E1FD, E1FE, E5E0, E5E2, E5E3, E5E4, E5E5, E900, E901, E5E6, E5E7, E5E8, E5E9, E5EE, E5FE, B1xx 4601, B1xx 4602, B1xx 4650, B1xx 469E, B1xx 469F B1xx 4660, B1xx 4661, B1xx 4662	Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 113.
E150, E151, E1FF, E500, E501, E502, E503, E504, E505, E506, E507, E508, E509, E50A, E50B, E50C, E50D, E50E, E50F, E51F, E520, E521, E522, E523, E524, E525, E526, E527, E52F, E530, E531, E532, E533, E534, E535, E536, E537, E538, E539, E53A, E53B, E53C, E540, E541, E560, E56F, E57F, E580, E581, E582, E583, E584, E585, E586, E587, E588, E589, E58A, E58B, E58C, E58D, E58E, E58F, E590, E591, E592, E593, E594, E595, E59E, E708, E70C, E70F, E7FF, E852, E853, E854, E855, E861, E871, 2602 0010	Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 113.

MAP 1541: JTAG Problem Isolation

Step 1541-1

Record the error code and location code(s) that sent you to this MAP.

Step 1541-2

Turn off the power.

Step 1541-3

Replace the following, if present, one at a time and in the order listed:

- First location code item recorded, if any, “Step 1541-1.”
- Second location code item recorded, if any, in “Step 1541-1.”
- Third location code item recorded, if any, in “Step 1541-1.”
- Fourth location code item recorded, if any, in “Step 1541-1.”
- Replace the service processor card at U0.1-P1-X1.
- All memory DIMMS on the system backplane at location U0.1-P1-M*n* (*n* equals 1 to 8), if not recorded in “Step 1541-1.”
- System backplane at location U0.1-P1, if not recorded in “Step 1541-1.”

Step 1541-4

Turn on the power.

Step 1541-5

Did the system stop with the same error code as recorded in “Step 1541-1”?

Yes Go to “Step 1541-6.”

No The part just replaced was defective. **This ends the procedure.**

Return the system to its original configuration.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1541-6

Have all the cards listed in “Step 1541-3” been replaced?

Yes Go to “Step 1541-7.”

No Go to “Step 1541-2.”

Step 1541-7

Turn off the power. Call for support.

MAP 1542: I/O Problem Isolation

This procedure is typically used to isolate problems associated with externally I/O subsystems and the CEC subsystem. This system unit does not have the capability to attach external I/O subsystems. To isolate problems associated with I/O whenever you are directed to MAP 1542, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.

Note: This MAP is included to be consistent with MAP 1321, which is common to all machines that might use an HMC for system management.

MAP 1548: Processor Subsystem Problem Isolation

Notes:

1. Be sure to unplug the power cords before removing or installing processor cards or the system backplane to avoid damage to it.
2. This MAP assumes that a CD-ROM drive is installed and connected to the integrated EIDE adapter, and a diagnostic CD-ROM disc is available.
3. If a power-on password or privileged-access password is set, you are prompted to enter the password before the diagnostic CD-ROM can load.
4. The term *POST indicators* refers to the device mnemonics that appear during the power-on self-test (POST).
5. The service processor might have recorded one or more symptoms in its error log.
   - If you arrived here after performing a slow boot, look for a possible new error that occurred during the slow boot. If there is a new error, and its actions call for a FRU replacement, perform those actions. If this does not resolve the problem, go to “Step 1548-1” on page 114.
   - If an additional slow boot has not been performed, or if the slow boot did not yield a new error code, look at the error that occurred just before the original error. Perform the actions associated with that error. If the problem is not resolved, go to“Step 1548-1” on page 114.
   - If a slow boot results in the same error code, and there are no error codes before the original error code, go to “Step 1548-1” on page 114.

   It is a good idea to examine that error log before proceeding (see “System Information Menu” on page 238).
6. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these actions while you diagnose and service the system. If you disable them, make notes of their current settings so that you can restore them before you leave. The following settings may be of interest to you.

Surveillance	From the Service Processor Setup Menu, go to the Surveillance Setup Menu and disable surveillance.
Unattended Start Mode	From the Service Processor System Power Control Menu, disable unattended start mode.
Reboot Policy	From the System Power Control Menu, go to the Reboot/Restart Policy Setup Menu and set: 1. Number of reboot attempts to **0** (zero) 2. Use OS-Defined restart policy to **No** 3. Enable supplemental restart policy to **No**.
Call Out	From the Call-In/Call-Out Setup Menu, go to the Serial Port Selection Menu and disable call-out on both serial ports.

7. Verify that the system has not been set to boot to the SMS menus or to the open firmware prompt. From the System Power Control Menu, select **Boot Mode Menu**. Verify that all four options are set to disabled.

Purpose of this MAP

This MAP is used to locate defective FRUs not found by normal diagnostics. For this procedure, diagnostics are run on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

Step 1548-1

1. Ensure that the diagnostics and the operating system are shut down.
2. Turn on the power.
3. Insert the diagnostic CD-ROM into the CD-ROM drive.

   Note: If you cannot insert the diagnostic CD-ROM, go to "Step 1548-2."
4. When the **keyboard** indicator is displayed:
   - on an ASCII terminal or hardware management console (HMC), press the number 5 key.
   - on a graphical display, press the number 5 key on the directly attached keyboard.
5. If you are prompted to do so, enter the appropriate password.

Is the ″Please define the System Console″ screen displayed?

NO Go to "Step 1548-2."

YES Go to "Step 1548-17" on page 123.

Step 1548-2

1. Turn off the power.
2. If you have not already done so, configure the service processor with the instructions in note 6 on page 113. Then return here and continue.
3. Exit the service processor menus and remove the power cords.
4. Disconnect all external cables (parallel, serial port 1, serial port 2, serial port 3, keyboard, mouse, Ethernet, and so on).
5. Remove the service access cover (Model 6E3), or place the drawer (Model 6C3), into the service position and remove the service access cover.
6. Record the slot numbers of the PCI adapters. Label and record the locations of any cables attached to the adapters. Disconnect any cables attached to the adapters and remove all the adapters.
7. Disconnect all power and signal cables from the media drives, located in media bay 1 and media bay 2.
8. Remove the media drives as described in "Removing a SCSI Media Device" on page 327.
9. Record the slot numbers of the memory DIMMs on the CEC backplane. Remove all memory DIMMs except for one quad from the CEC backplane.

   Notes:

   1. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
   2. Memory DIMMs must be installed in quads and in the correct connectors. Refer to "Memory DIMM Locations" on page 17 for complete information on memory DIMMs.
10. Disconnect the IDE cable from the IDE connector on the CEC backplane.
11. If your system is equipped with a diskette drive, disconnect the diskette drive cable from the diskette drive connector on the CEC backplane.
12. Disconnect the signal and power connectors from both disk drive backplanes.
13. Disconnect the disk drives from the connectors of both disk drive backplanes.
14. Plug in the power cords and wait for the `0K` prompt to display on the operator panel display.
15. Turn on the power.

Does the system stop with code E1F2, E1F3, STBY or 20EE000B, 4BA00830 displayed on the operator panel?

NO Go to "Step 1548-6" on page 115.

YES Go to “Step 1548-3.”

Step 1548-3

Were there any memory DIMMs removed from the CEC backplane?

NO Go to “Step 1548-8” on page 116.

YES Go to “Step 1548-4.”

Step 1548-4

1. Turn off the power, and remove the power cords.
2. Replug the memory DIMMs that were removed from the CEC backplane in “Step 1548-2” on page 114 in their original locations.

   Notes:

   1. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.
   2. Memory DIMMs must be installed in quads in the correct connectors. Refer to “Memory DIMM Locations” on page 17 for complete information on memory DIMMs.
3. Plug in the power cords and wait for the 0K prompt to display on the operator panel display.
4. Turn on the power.

   Does the system stop with code E1F2, E1F3, STBY, 20EE000B or 4BA00840 displayed in the operator panel?

NO A memory DIMM in the quad you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that quad, one at a time with new or previously removed memory DIMMs.

Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow instructions for the new symptom.

YES Go to “Step 1548-8” on page 116.

Step 1548-5

This step is reserved.

Step 1548-6

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, ensure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
   a. Memory DIMMs. Exchange one at a time with new or previously removed memory DIMMs.
   b. CEC backplane (See the notes on page 51.)
   c. Power supplies.
2. Plug in the power cords and wait for the 0K prompt to display on the operator panel display.
3. Turn on the power.

Does the system stop with code E1F2, E1F3, STBY or 20EE000B, 4BA00830 displayed on the operator panel?

NO Reinstall the original FRU.

Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

YES Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1548-7

This step is reserved.

Step 1548-8

1. Turn off the power.
2. Reconnect the system console.

   Notes:

   1. If an HMC has been defined as the firmware console, attach the HMC cable to the HMC1 connector on the rear of the system unit.
   2. If an ASCII terminal has been defined as the system console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
   3. If a display attached to a display adapter has been defined as the system console, install the display adapter and connect the display to the adapter. Plug the keyboard into the keyboard connector on the rear of the system unit.
3. Turn on the power.
4. If the ASCII terminal or graphics display (including display adapter) is connected differently than it was previously, the console selection screen appears and requires that a new console be selected.
5. When the word **keyboard** is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. If you are using the hardware management console (HMC) go to the ″Entry MAP″ in the *Hardware Management Console Maintenance Guide*, order number SA38-0603. If you cannot fix the problem using the HMC tests, there may be a problem with the CEC backplane. If you do not find a problem, replace the CEC backplane, location U0.1-P1. (See notes on page 51.)
2. If you are using a graphics display, go to the problem determination procedures for the display. If you do not find a problem, do the following:
   - Replace the display adapter.
   - Replace the backplane in which the graphics adapter is plugged.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

YES Go to “Step 1548-9.”

Step 1548-9

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the CEC backplane.
4. Connect the signal and power connectors to the IDE CD-ROM drive.
5. Plug in the power cords and wait for the `0K` prompt to display on the operator panel display.
6. Turn on the power.
7. Insert the diagnostic CD-ROM into the CD-ROM drive.
8. After the word **keyboard** is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
9. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. IDE cable
2. CD-ROM drive
3. CEC backplane (see notes on page 51)

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

YES Go to “Step 1548-10.”

Step 1548-10

The system is working correctly with this configuration. One of the SCSI devices that you disconnected may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and remove the power cords.
3. Plug the SCSI cable into the SCSI connector on the CEC backplane.
4. Connect the signal and power connectors to one of the SCSI devices (for example: CD-ROM drive, tape drive, disk drive, and so on). Do not connect the signal and power connectors to the disk drive backplane at this time.
5. Plug in the power cords and wait for the `0K` prompt to display on the operator panel display.
6. Turn on the power.
7. After the word **keyboard** is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.

8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. Last SCSI device connected (for example: disk drive, tape drive)
3. CEC backplane (See notes on page 51.)

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the return to “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

YES Repeat this step, adding one SCSI device at a time, until all the SCSI devices that were attached to the integrated SCSI adapter, except the disk drive backplanes, are connected and tested.

Go to “Step 1548-11.”

Step 1548-11

The system is working correctly with this configuration. One of the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and remove the power cords.
3. Connect the signal and power connectors to one of the disk drive backplanes.
4. Plug in the power cords and wait for the `0K` prompt to display on the operator panel display.
5. Turn on the power.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word **keyboard** is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. Disk drive backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

YES If both disk drive backplanes have been reconnected, go to “Step 1548-12” on page 119. Otherwise, repeat “Step 1548-11” for the other disk drive backplane.

Step 1548-12

The system is working correctly with this configuration. One of the disk drives that you removed from the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and remove the power cords.
3. Install a disk drive in a disk drive backplane.
4. Plug in the power cords and wait for the `0K` prompt to display on the operator panel display.
5. Turn on the power.
6. After the word **keyboard** is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

No Exchange the FRUs that have not been exchanged, in the following order:

1. Last disk drive installed
2. Disk drive backplane where the disk drive was installed

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

Yes Repeat this step with all disk drives that were installed in the disk drive backplanes.

If the system has a diskette drive, go to “Step 1548-13.”

Go to “Step 1548-14” on page 120.

Step 1548-13

The system is working correctly with this configuration. The diskette drive may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and remove the power cords.
3. Plug the diskette drive cable into the diskette drive connector on the CEC backplane.
4. Connect the signal and power connectors to the diskette drive.
5. Plug in the power cords and wait for the `0K` prompt to display on the operator panel display.
6. Turn on the power.
7. After the word **keyboard** displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. Diskette drive
2. Diskette drive cable
3. CEC backplane (see notes on page 51)

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem return, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

YES Go to “Step 1548-14.”

Step 1548-14

The system is working correctly with this configuration. One of the devices that you disconnected from the CEC backplane may be defective.

1. Turn off the power and remove the power cords.
2. Attach a CEC backplane device (for example: parallel, serial port 1, serial port 2, serial port 3, keyboard, mouse, Ethernet, Ultra-2 SCSI, keyboard or mouse) that had been removed.
3. Plug in the power cords and wait for the `0K` prompt to display on the operator panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word **keyboard** displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective.

To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. CEC backplane (see notes on page 51).

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES Repeat this step until all of the devices are attached.

Go to “Step 1548-15.”

Step 1548-15

The system is working correctly with this configuration. One of the FRUs (adapters) that you removed may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for the `0K` prompt to display on the operator panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word **keyboard** displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to “Step 1548-16” on page 122.

YES Repeat this step until all of the FRUs (adapters) are installed.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1548-16

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for the `OK` prompt to display on the operator panel display.
5. Turn on the power.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word **keyboard** displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)
2. CEC backplane (see notes on page 51)

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective.

Exchange the defective device or cable.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1548-17

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select **Advanced Diagnostics Routines**.
4. If the terminal type has not been defined, you must use the Initialize Terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen displays, select an option from the bottom of the screen.

   Note: Adapters or devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.
6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select **All Resources** (if you were sent here from "Step 1548-21" on page 124, select the adapter or device that you loaded from the supplemental media).

Did you get an SRN?

NO Go to "Step 1548-19" on page 124.

YES Go to "Step 1548-18."

Step 1548-18

Look at the FRU part numbers associated with the SRN.

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged.

If the CEC backplane or a network adapter is removed, see notes on page 51.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

Step 1548-19

Does the system have adapters or devices that require supplemental media?

NO Go to “Step 1548-20.”

YES Go to “Step 1548-21.”

Step 1548-20

Consult the PCI adapter configuration documentation for your operating system to verify that all installed adapters are configured correctly.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

Step 1548-21

1. Select **Task Selection**.
2. Select **Process Supplemental Media** and follow the onscreen instructions to process the media.

Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to “Step 1548-22” on page 125.

YES Press F3 to return to the FUNCTION SELECTION screen.

Go to “Step 1548-17” on page 123, substep 4.

Step 1548-22

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. CEC backplane (see notes on page 51)

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the “Quick Entry MAP” on page 53 and follow the instructions for the new symptom.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

MAP 1549: Attention Problem Isolation

Step 1549-1

Record the error code and the location code(s) that sent you to this MAP.

Step 1549-2

Turn off the power.

Step 1549-3

Examine the following table and locate the error code that sent you to this MAP to determine your next step.

Error Code	Action
406x 0EB1	Go to “Step 1549-7” on page 127.
406x 0EB2	Go to “Step 1549-7” on page 127.
406x 0EB3	Go to “Step 1549-7” on page 127.
406x 0EB4	Go to “Step 1549-7” on page 127.
406x 0EB5	Go to “Step 1549-7” on page 127.
406x 0EB6	Go to “Step 1549-7” on page 127.
406x 0EB7	Go to “Step 1549-7” on page 127.
406x 0EB8	Go to “Step 1549-7” on page 127.
406x 0EB9	Go to “Step 1549-7” on page 127.
406x 0EBA	Go to “Step 1549-7” on page 127.
406x 0EBB	Go to “Step 1549-7” on page 127.
406x 0EBC	Go to “Step 1549-7” on page 127.

Step 1549-4

Replace the following cards if present, one at a time:

- First location code item recorded, if any, in “Step 1549-1” on page 125.
- Second location code item recorded, if any, in “Step 1549-1” on page 125.
- Third location code item recorded, if any, in “Step 1549-1” on page 125.
- Processor card 1 at U0.1-P1-C1, if not recorded in “Step 1549-1” on page 125.
- Processor card 2 at U0.1-P1-C2, if not recorded in “Step 1549-1” on page 125.

  Attention: Before replacing the system backplane, call support.
- CEC backplane at U0.1-P1, if not recorded in “Step 1549-1” on page 125.

Step 1549-5

Turn on the power.

Step 1549-6

Did the system stop with the same error code as recorded in "Step 1549-1" on page 125?

No The card just replaced was defective. This ends the procedure. Return the system to its original configuration. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Yes If all of the cards listed in "Step 1549-4" on page 126 have been replaced, go to "Step 1549-10." Otherwise, continue with "Step 1549-4" on page 126 and replacing the next card on the list.

Step 1549-7

Replace, one at a time the following cards (if present):

- First location code item recorded, if any, in "Step 1549-1" on page 125.
- Second location code item recorded, if any, in "Step 1549-1" on page 125.
- Third location code item recorded, if any, in "Step 1549-1" on page 125.
- Service processor card at U0.1-P1-X1, if not recorded in "Step 1549-1" on page 125.

  Attention: Before replacing the system backplane, call support.
- CEC backplane at U0.1-P1, if not recorded in "Step 1549-1" on page 125.

Step 1549-8

Turn on the power.

Step 1549-9

Did the system stop with the same error code as recorded in "Step 1549-1" on page 125?

No The card just replaced was defective. This ends the procedure. Return the system to its original configuration. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Yes If all of the cards listed in "Step 1549-7" have been replaced, go to "Step 1549-10," otherwise continue with "Step 1549-7" and replacing the next card on the list.

Step 1549-10

Call support.

MAP 154B: Insufficient Hardware Resources Problem Isolation

Step 154B-1
Record the error code, location code(s) and word 13 that sent you to this MAP.

Step 154B-2
Turn off the power.

Step 154B-3
Make sure the power is off on the base system drawer.

Step 154B-4
Attention: Before replacing any parts examine the base system drawer for violation of any of the following configuration constraints.

- Memory DIMMs must be installed in quads and in the correct slots. A quad is a group of four memory DIMMs.
- Quads are populated in DIMM slots 1, 3, 6, 8 first, and then 2, 4, 5, 7. The only two valid slot combinations that you can use are 1, 3, 6, and 8 OR 2, 4, 5, and 7.
- At least one quad of DIMMs must be installed on the system backplane: U0.1-P1-My, where y is 1, 3, 6, and 8. See the illustration in “Memory DIMM Locations” on page 17.
- Each memory DIMM in a quad must be the same type and size. However, both quads on the system backplane are not required to be the same.

Replace the following cards, if present, one at a time:

- First location code item recorded, if any, in “Step 154B-1.”
- Second location code item recorded, if any, in “Step 154B-1.”
- Third location code item recorded, if any, in “Step 154B-1.”
- Replace the service processor card at U0.1-P1-X1, if not recorded in “Step 154B-1.”
- If the value of word 13, recorded in “Step 154B-1,” is 402F0000, 403F0000, or 40FF0000, replace the processor backplane at U0.1-P1, if not recorded in“Step 154B-1.”
- If the value of word 13, recorded in “Step 154B-1,” is 40600000, replace the system backplane at U0.1-P1, if not recorded in “Step 154B-1.”
- If the value of word 13, recorded in “Step 154B-1,” is 41100000, replace the system backplane at U0.1-P1, if not recorded in “Step 154B-1.”
- Memory DIMMs at locations U0.1-P1-M1, M3, M6, M8, if not recorded in “Step 154B-1.”
- Memory DIMMs at locations U0.1-P1-M2, M4, M5, M7, if not recorded in “Step 154B-1.”
- System backplane at U0.1-P1, if not recorded in “Step 154B-1” and if not already replaced.

Step 154B-5
Turn on the power.

Step 154B-6
Did the system stop with the same error code as recorded in “Step 154B-1”?

No The card just replaced was defective. **This ends the procedure.**

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Yes Go to “Step 154B-7.”

Step 154B-7
Have all the cards listed in “Step 154B-4” been replaced?

No Go to “Step 154B-2.”

Yes Go to “Step 154B-8” on page 129.

Step 154B-8
Turn off the power.

Step 154B-9
Ensure that the power is off on the base system drawer.

Step 154B-10
Attention: Before replacing the processor backplane, call for support.

Replace the processor backplane at U0.1-P1, if not already replaced.

Step 154B-11
Turn on the power.

Step 154B-12
Did the system stop with the same error code as recorded in "Step 154B-1" on page 128?

No The card just replaced was defective. **This ends the procedure.**

Return the system to its original configuration.

Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Yes Go to "Step 154B-13."

Step 154B-13
Turn off the power.

Step 154B-14
Call for support. **This ends the procedure.**

Chapter 4. Checkpoints

Checkpoints display on the media subsystem operator panel and the virtual terminal while the system is powering on and going through the initial program load (IPL). This chapter explains the IPL flow of the system and provides a table that lists checkpoints that you might see in the operator panel and in a virtual terminal window on the HMC.

IPL Flow

The IPL process starts when ac power is connected to the system. The IPL process has the following phases:

- **Phase 1: Service Processor Initialization**

  Phase 1 starts when ac power is connected to the system and ends when OK is displayed in the operator panel. 8xxx checkpoints are displayed during this phase. Several 9xxx codes may also be displayed. Service processor menus are available at the end of this phase by striking any key on the console keyboard.
- **Phase 2: Hardware Initialization by the Service Processor**

  Phase 2 starts when system power-on is initiated by pressing the power on button on the operator panel. 9xxx checkpoints are displayed during this time. 91FF, the last checkpoint in this phase, indicates the transition to phase 3 is taking place.
- **Phase 3: System Firmware initialization**

  At phase 3, a system processor takes over control and continues initializing partition resources. During this phase, checkpoints in the form Exxx are displayed. E105, the last checkpoint in this phase, indicates that control is being passed to the operating system boot program.
- **Phase 4: Operating System Boot**

  When the operating system starts to boot, checkpoints in the form 0xxx and 2xxx are displayed if the system is booting AIX. This phase ends when the operating system login prompt displays on the operating system console.

The following table outlines the IPL phases from power-on to the operating system login prompt, matching the phases to corresponding operator-panel checkpoints for a typical partition boot. Also listed are the approximate boot times for each phase, along with their dependencies for each phase.

Note: The following table lists the major checkpoints only.

Phase #	Checkpoints on Operator Panel or HMC	Time in Phase (minutes)	Major Contributors to Time in Phase
Phase 1	8xxx => OK	Approx. 1	
Phase 2	9xxx => 91FF	3 to 6	Number of I/O drawers
Phase 3	Exxx => E105	1 to 3	Number of bootable adapters
Phase 4	0xxx or 2xxx => blank (if booting AIX)	2 to 30+	Number of SSA drives Number of SCSI drives Number of async sessions Number of processors Number of adapters Amount of memory

Phase #	Checkpoints on Operator Panel or HMC	Time in Phase (minutes)	Major Contributors to Time in Phase

Checkpoints enable users and service personnel to know what the server is doing, with some detail, as it initializes. These checkpoints are not intended to be error indicators, but in some cases a server could hang at one of the checkpoints without displaying an 8-character error code. It is for these hang conditions, only, that any action should be taken with respect to checkpoints. The most appropriate action is included with each checkpoint.

Before taking actions listed with a checkpoint, check for additional symptoms in the service processor error log. See the "System Information Menu" on page 238 for information on how to access the service processor error log.

Notes:

1. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 113 for any of the following checkpoint hang conditions:
   - A four-digit code in the range of 8xxx-E4FF, E5Ex, or E700-EFFF that is not listed in the checkpoint tables.
   - A four-digit code in the range of 8xxx-E4FF, E5Ex, or E700-EFFF that is listed in the checkpoint tables but does not contain a repair action or FRU listing.
   - A four-digit code in the range of 8xxx-E4FF, E5Ex, or E700-EFFF, in which all of the FRUs listed have been replaced or service actions have been performed and the problem has not been corrected.
2. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 113 for any of the following checkpoint hang conditions:
   - A four-digit code in the range of E500 through E6FF (except E5Ex - see note 1 above) that is not listed in the checkpoint tables.
   - A four-digit code in the range of E500 through E6FF (except E5Ex - see note 1 above) that is listed in the checkpoint tables but does not contain a repair action or FRU listing.
   - A four-digit code in the range of E500 through E6FF (except E5Ex - see note 1 above), in which all of the FRUs listed have been replaced or service actions have been performed and the problem has not been corrected.

Checkpoints listed in the following tables are in the format 8xxx, 9xxx, Axxx, Bxxx, or Exxx, where x is any hexadecimal digit from 1-9 or A-F. If your system hangs with a checkpoint displayed that begins with anything other than 8, 9, A, B, or E, go to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Use the following table to determine where to find the checkpoint.

Symptom	Action
You have a code that is of the form 8xxx, 9xxx, Axxx, or Bxxx.	Go to "Service Processor Checkpoints" on page 133.
You have a code of the form Exxx.	Go to "Firmware Checkpoints" on page 140.
You have a four-character code that is *not* of the form 8xxx, 9xxx, Axxx, Bxxx, or Exxx.	Refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* manual.

Service Processor Checkpoints

Service processor checkpoints are in the range 8xxx to Bxxx. The message **OK** indicates successful service processor testing and initialization. Firmware checkpoints are listed in “Firmware Checkpoints” on page 140.

Note: A spinning (or twirling) slash displays in the upper-right corner of the operator panel display while some checkpoints are being displayed. If the slash stops spinning, a hang condition is indicated.

Table 1. Service Processor Checkpoints

Checkpoint	Description	Action/ Possible Failing FRU
8000	Test of the service processor DRAM	See note 1 on page 138.
8004	Verify base code checksum	See note 1 on page 138.
8008	Verify base code mirror checksum	See note 1 on page 138.
8009	Set NVRAM configuration in TITAN	See note 1 on page 138.
800F	Start base code	See note 1 on page 138.
8010	Start supervisor in base code	See note 1 on page 138.
8012	Initialize hardware interrupts	See note 1 on page 138.
8014	Allocate and initialize area in DRAM	See note 1 on page 138.
8016	Initialize debugger and build VPD	See note 1 on page 138.
8018	Initialize service processor interfaces	See note 1 on page 138.
801A	Initialize external FLASH load	See note 1 on page 138.
801B	Initialize and test ISA hub chip	See note 1 on page 138.
801C	Initialize and test SUPER I/O chip	See note 1 on page 138.
801F	Initialize diskette, verify VDASD and start operational loader	See note 1 on page 138.
809x	Related to recovery mode system firmware update from diskette	See note 3 on page 138.
8092	Diskette initialization during recovery mode system firmware update	See note 3 on page 138.
8098	Firmware image being read during recovery mode system firmware update	See note 3 on page 138.
809C	Firmware image being written during recovery mode system firmware update	See note 3 on page 138.
809F	Diskette error during recovery mode system firmware update	See note 3 on page 138.
8100	Start operational loader	See note 1 on page 138.
81xx	Load code into DRAM from VDASD (where xx = number of loads)	See note 1 on page 138.
81FE	Load service processor operating system	See note 1 on page 138.
81FF	Start service processor operating system	See note 1 on page 138.
9000	Primary service processor task initializing	See note 1 on page 138.
9009	System processor IPL has started	See note 1 on page 138.
9010	Primary service processor thread waiting for response	See note 1 on page 138.
9020	Service processor state set to pre-standby	See note 1 on page 138.

Table 1. Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
9021	Service processor state set to standby	See note 1 on page 138.
9022	Service processor state set to IPL	See note 1 on page 138.
9023	Service processor state set to runtime	See note 1 on page 138.
9024	Service processor state set to terminate	See note 1 on page 138.
9025	Service processor state set to DPO	See note 1 on page 138.
9030	Waiting for secondary thread acknowledgement	See note 1 on page 138.
9033	I/O base initialization	See note 1 on page 138.
9034	I2C initialization	See note 1 on page 138.
9035	ISA initialization	See note 1 on page 138.
9036	Mailbox initialization	See note1 on page 138.
9037	SLLA initialization (VPD)	See note 1 on page 138.
9038	NVRAM initialization	See note 1 on page 138.
9039	Serial port initialization	See note 1 on page 138.
903A	Serial I/O initialization	See note 1 on page 138.
903B	SPCN initialization	See note 1 on page 138.
9051	End of reset/reload operation: service processor dump has completed	See note 1 on page 138.
9055	Start menus thread	See note 1 on page 138.
9060	Checking/configuring modem on serial port 1	See note 4 on page 138.
9061	Checking/configuring modem on serial port 2	See note 4 on page 138.
906A	Create mailbox processing thread	See note 1 on page 138.
906B	Create menu interface thread	See note 1 on page 138.
906C	Create general thread	See note 1 on page 138.
906D	Create SPCN thread	See note 1 on page 138.
9070	Create thread to control LEDs on I/O subsystems	See note 1 on page 138.
9071	Initialize thread to control LEDs on I/O subsystems	See note 1 on page 138.
9080	Start VPD collection program	See note 1 on page 138.
9081	Start SC VPD data collection	See note 1 on page 138.
9082	I2C/SPCN VPD data collection	See note 1 on page 138.
9083	End SC VPD data collection	See note 1 on page 138.
9084	End I2C/SPCN VPD data collection	See note 1 on page 138.
90FD	Waiting for IBIST to complete	See note 1 on page 138.
9101	Setup load source	See note 1 on page 138.
9102	Open load source	See note 1 on page 138.
9103	Verify open status of load source	See note 1 on page 138.

Table 1. Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
9104	Waiting for SPCN VPD collection to be completed	See note 1 on page 138.
9105	Load IPL LIDs	See note 1 on page 138.
9106	Initialize MOPs	See note 1 on page 138.
9107	System flush	See note 1 on page 138.
9108	Processor scan interface BATs and LBIST	See note 1 on page 138.
9109	ABIST	See note 1 on page 138.
910A	Non-processor scan interface BATs and LBIST	See note 1 on page 138.
910B	Wire test	See note 1 on page 138.
910C	Initialize main storage (system memory)	See note 1 on page 138.
910D	Configure processors	See note 1 on page 138.
910E	Configure and initialize I/O	See note 1 on page 138.
910F	Test and initialize main storage (system memory)	See note 1 on page 138.
9110	Free IPL LIDs	See note 1 on page 138.
9111	Load run-time LIDS	See note 1 on page 138.
9112	Load dump LIDs	See note 1 on page 138.
9113	Enable attention	See note 1 on page 138.
9114	Enable function 22	See note 1 on page 138.
9115	Load system IPL program	See note 1 on page 138.
9116	Load system data areas (NACA/PACA)	See note 1 on page 138.
9117	Start system IPL program	See note 1 on page 138.
9119	Waiting for VPD collection to complete	See note 1 on page 138.
9184	Firmware image being loaded into service processor's control storage during firmware update.	1. Remove, then reapply power to the system. If the service processor enters recovery mode, (indicated by A1FD 0000 in the display), attempt to update the firmware again in recovery mode. If the service processor comes up to the OK prompt, try again to update the firmware using the service processor menus. 2. Call service support.
91C4	Flash update pending, either a firmware update or hypervisor dump.	**Note:** This checkpoint may be displayed during the firmware update process. The checkpoint may be displayed for a long period of time during the process. If process does not complete, the system may be hung. See note 1 on page 138.
91FF	Control being handed to system processor from service processor	See note 1 on page 138.
9200	Scan interface BATs	See note 1 on page 138.

Table 1. Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
9300	Logic BIST	See note 1 on page 138.
9301	Scanned ABIST	See note 1 on page 138.
9302	Dedicated ABIST	See note 1 on page 138.
9303	Dedicated ABIST array fuse repair calculation	See note 1 on page 138.
9380	Built-in-self-test (BIST)	See note 2 on page 138.
9400	Service processor is requesting system flush	See note 1 on page 138.
9410	Service processor is issuing request to start instruction execution	See note 1 on page 138.
9411	Service processor is issuing request to stop instruction execution	See note 1 on page 138.
9420	Service processor is issuing request to start system clocks	See note 1 on page 138.
9421	Service processor is issuing request to stop system clocks	See note 1 on page 138.
94B0	Wire test faulty driver status refcode	See note 2 on page 138.
94B1	Wire test shorted net status refcode	See note 2 on page 138.
94B2	Wire test elastic interface test	See note 2 on page 138.
94BB	Wire test starting	See note 2 on page 138.
9501	IPL diagnostic initialization	See note 2 on page 138.
9502	IPL diagnostic L3 cache march test	See note 2 on page 138.
9503	IPL diagnostic L3 connections test	See note 2 on page 138.
9504	IPL diagnostic L2 cache march test	See note 2 on page 138.
9506	IPL diagnostic cleanup	See note 2 on page 138.
9507	IPL diagnostic test	See note 2 on page 138.
9508	IPL diagnostic main storage march test	See note 2 on page 138.
9509	IPL diagnostic main storage connections test	See note 2 on page 138.
950A	IPL diagnostic elastic interface slack test	See note 2 on page 138.
950B	IPL diagnostic fast initialization to zeros	See note 2 on page 138.
96C2	IPL MOPs processor configuration	See note 2 on page 138.
96C3	IPL MOPs main storage size	See note 2 on page 138.
96C4	IPL MOPs main storage configuration	See note 2 on page 138.
96C6	IPL MOPs I/O configuration	See note 2 on page 138.
96C7	IPL MOPs: enable chip machine checks	See note 2 on page 138.
96E1	Initialize run-time PRD objects and memory	See note 2 on page 138.
96E2	Run-time initialization: enable attention handling	See note 2 on page 138.

Table 1. Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
99FD	Service processor receiving firmware update module	See note 2 on page 138. **Attention:** This checkpoint may stay in the operator panel for some period of time during a firmware update or hypervisor dump with no indication of activity. Do not assume that the service processor is hung unless this checkpoint has been in the operator panel for at least 15 minutes. with no indication of activity. **Attention:** Do not remove power from the system, or reset the service processor, during a firmware update or hypervisor dump.
99FF	Service processor writing firmware update module	See note 2 on page 138. **Attention:** This checkpoint may stay in the operator panel for some period of time during a firmware update or hypervisor dump with no indication of activity. Do not assume that the service processor is hung unless this checkpoint has been in the operator panel for at least 15 minutes. with no indication of activity. **Attention:** Do not remove power from the system, or reset the service processor, during a firmware update or hypervisor dump.
A800	Start service processor dump process	See note 1 on page 138.
A801	Start dump to NVRAM	See note 1 on page 138.
A802	Start dump to debug port	See note 1 on page 138.
A803	NVRAM not usable	See note 1 on page 138.
A804	NVRAM dump done	See note 1 on page 138.
A805	Start dump to flash	See note 1 on page 138.
A806	Flash dump area done	See note 1 on page 138.
A807	Flash area not usable	See note 1 on page 138.
A808	Flash error log to debug port	See note 1 on page 138.
A809	Flash erase start	See note 1 on page 138.
A80A	Flash erase end	See note 1 on page 138.
A80B	Reserved; not used	See note 1 on page 138.
A80C	Reserved; not used	See note 1 on page 138.
A80D	Reserved; not used	See note 1 on page 138.
A80E	Reserved; not used	See note 1 on page 138.
A80F	Service processor dump done	See note 1 on page 138.

Table 1. Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
A810-A8FF	Scan log dump in progress	Informational message. (See "Scan Log Dump Policy" on page 233.) The last two characters of the checkpoints will change as the scan log dump progresses. If the last two characters do not change after 5 minutes, the service processor is hung and must be reset. Follow the procedure outlined in Note 1 following this table. When the scan log dump is complete, depending on how the reboot policy is set, the system will either: • Go to the standby state (and the service processor menus will be available), indicated by OK or STBY in the operator panel, OR • Attempt to reboot.
B0F5	Delayed power-off sequence has begun	See note 1.
B0FA	Delayed power-off acknowledged	See note 1.
B0FF	Power-off requested program executing	See note 1.

Notes:

1. If the system fails to progress after this checkpoint is put in the display, do the following:
   a. Activate the service processor pinhole reset switch on the system's operator panel.
   b. If the hang repeats, check with service support to see if there is a firmware update that fixes the problem.
   c. If not, or the update does not fix the problem, replace the service processor, location: U0.1-P1-X1.
   d. If replacing the service processor does not fix the problem, replace the system backplane, location: U0.1-P1.
   e. If this procedure does not fix the problem, call service support.
2. If the system fails to progress after this checkpoint is put in the operator display, do the following:
   a. Activate the service processor pinhole reset switch on the system's operator panel.
   b. Reboot the system in slow mode. (Slow/fast IPL is set using a service processor menu.) If the hang repeats, check with service support to see if there is a system firmware update that fixes this problem.
   c. If not, or the update does not fix the problem, call service support.
3. Recovery mode flash update has failed. Do the following:
   a. Activate the service processor pinhole reset switch on the system's operator panel and try the recovery mode flash update again.
   b. If the system hangs again, make a new set of firmware update diskettes, using new, blank diskettes. Retry the flash update with the new diskettes.
   c. If the same hang occurs with the new diskettes, replace the following FRUs one at a time in this order:
      1) Diskette drive
      2) Service processor, location: U0.1-P1-X1
   d. If this procedure does not fix the problem, call service support.
4. The service processor was unable to configure the modem(s) attached to the serial port(s) on the CEC backplane (a problem with the modem attached to the HMC is not indicated). Do the following:

a. Check the modem, modem cable, and serial port for loose or unconnected cables. Reset the service processor using the pinhole reset switch on the system's operator panel.
b. If the hang repeats, check with service support to see if there is a firmware update that fixes the problem.
c. If there is not, or the update does not fix the problem, replace the following FRUs, one at a time, in the following order:
   1) Modem cable
   2) Modem
d. If this procedure does not fix the problem, call service support.

Firmware Checkpoints

Firmware uses checkpoints (progress codes) in the range of Exxx to EFFF. These checkpoints occur during system startup and can be useful in diagnosing certain problems. Service processor checkpoints are listed in “Service Processor Checkpoints” on page 133.

If you have a checkpoint with no location code associated with it, see “Determining Location Code” on page 161. If a checkpoint has a location code associated with a FRU replacement, see “Mapping AIX and Physical Location Codes” on page 28 for physical location information.

If you replace FRUs and the problem is still not corrected, go to “MAP 1540: Problem Isolation Procedures” on page 110 unless otherwise indicated in the tables.

Note: If you receive a four-digit code in the range of E1xx to EFFF that is not listed in the table above, go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 2. Firmware Checkpoints

Checkpoint	Description	Action/ Possible Failing FRU
E101	Create RTAS node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E102	Load/Init RTAS	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E105	Transfer control to operating system (normal boot).	See “Boot Problems/Concerns” on page 155.
E10A	Load RTAS device tree	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E10B	Set RTAS device properties	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E111	GOOD CRC - jump to composite image	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E120	Initialize I/O and early memory block	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E121	Initialize service processor	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E122	RTAS sensor setup complete	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E130	Build device tree	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E131	Build device tree	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E132	Build device tree	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E133	Build device tree	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E135	Configuring memory nodes	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E134	Create memory node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E138	Create options node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E139	Create node aliases and system aliases	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E13A	Create packages node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E140	Operating system load	See “Boot Problems/Concerns” on page 155.
E145	Early debug code activated; firmware is halted	Press the **g** key on the serial interface.
E149	Create boot mgr node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E14C	Create terminal-emulator node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E14D	Loading boot image	See “Boot Problems/Concerns” on page 155.
E150	Create host (primary) PCI controller node	If a location code is specified, replace the adapter at that location code. If no location code is specified, go to “MAP 1540: Problem Isolation Procedures” on page 110.
E151	Probing primary PCI bus	If a location code is specified, replace the adapter at that location code. If no location code is specified, go to “MAP 1540: Problem Isolation Procedures” on page 110.
E152	Probing for adapter FCODE, evaluate if present	Follow the repair action listed for checkpoint E151.
E153	End adapter FCODE, probe/evaluate	Follow the repair action listed for checkpoint E151.
E154	Create PCI bridge node	Follow the repair action listed for checkpoint E151.
E155	Probing PCI bridge secondary bus	Follow the repair action listed for checkpoint E151.
E156	Create PCI Ethernet node	If a location code is specified, replace the adapter at that location code. If no location code is specified, go to “MAP 1540: Problem Isolation Procedures” on page 110.
E158	System firmware waiting for a virtual terminal to be opened on an HMC for SMS menus to be displayed.	Open a virtual terminal window on the HMC.
E15B	Transferring control to operating system (service mode boot)	See “Boot Problems/Concerns” on page 155.
E15F	Adapter VPD probe	Follow the repair action listed for checkpoint E151.
E170	Start of PCI Bus Probe	Follow the repair action listed for checkpoint E151.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E172	First pass of PCI device probe	Follow the repair action listed for checkpoint E151.
E174	Establishing host connection	If the system is not connected to an active network, or if the target server is inaccessible (which can result from incorrect IP parameters being specified), the system still attempts to boot and because time-out durations are necessarily long to accommodate retries, the system may appear to hang. Restart the system and get to the SMS utilities menu. Under **Select Boot Options**, verify: • Is the intended boot device correctly specified in the boot list? • Are the IP parameters correct? • Look at the server configuration for this client. • Attempt to ping the target server using the ping utility in SMS.
E175	BootP request	Follow the repair actions for checkpoint E174.
E176	TFTP file transfer	Follow the repair actions for checkpoint E174.
E177	Transfer failure due to TFTP error condition	See “Boot Problems/Concerns” on page 155.
E17B	Processor clock speed measurement	Call service support.
E183	Service processor POST	1. Replace the service processor, location: U0.1-P1-X1. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E18D	A system reset request has been sent to the service processor.	1. Check for system firmware updates. 2. Call service support.
E191	Create ISA reserved node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E19A	NVRAM auto-boot? variable not found - assume FALSE	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E19B	NVRAM menu? variable not found - assume FALSE	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E19D	Create NVRAM node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E19E	Real-time clock (RTC) initialization	Refer to error code 28030xxx in “Checkpoint and Error Code Index” on page 162.
E1A0	User requested boot to SMS menus via keyboard entry	Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1A1	User requested boot to open firmware prompt via keyboard entry	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1A2	User requested boot using default service mode boot list via keyboard entry	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1A3	User requested boot using customized service mode boot list via keyboard entry	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1A4	User requested boot to SMS menus via HMC or CSP command	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1A5	User requested boot to open firmware prompt via HMC or CSP command	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1A6	User requested boot using default service mode boot list via HMC or CSP command	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1A7	User requested boot using customized service mode boot list via HMC or CSP command	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1A8	System booting to open firmware prompt	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1A9	System booting to SMS menus	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1AA	System NVRAM settings during boot	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1AB	System booting using default service mode boot list	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1AC	System booting using customized service mode boot list	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1AD	System booting to operating system	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1AE	System booted to multiboot menu via NVRAM settings	1. This checkpoint is posted on the operator panel when system firmware has entered the boot devices menu in SMS because the multiboot flag was turned on. The firmware is waiting for user input. If the firmware console is not open, the boot devices menu will not be seen, and the system will appear to be hung even though it is not. System firmware will only progress past this point when the required input is provided. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1AF	System booted to utilities menu via NVRAM settings	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1B1	Create serial node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1B2	XOFF received - waiting for XON	1. The system firmware is waiting for a virtual terminal to be opened on the HMC; open a virtual terminal. 2. If a virtual terminal is open, the user might have entered a CTRL-S key sequence to stop the scrolling of data off of the screen. If this is the case, enter a CTRL-Q key sequence to resume scrolling. 3. Check the serial connection between the HMC and the managed system. 4. Reboot the HMC. 5. There may be a hardware problem with the HMC. Refer to the *HMC Management Console for pSeries Maintenance Guide*. 6. There may be a hardware problem with the service processor in the managed system. Check the service action event log in Service Focal Point for error codes that indicate a problem with the serial ports on the service processor. (The service processor is at location U0.1-P1-X1.) Take the appropriate actions based on the error codes that are found.
E1B3	XON received	This checkpoint will flash by too quickly to be seen on the operator panel. It may be recorded in the progress indicators log, which is accessed using the service processor menus. If a partition hangs on this checkpoint: 1. Check for platform firmware updates. Apply if available. 2. Call service support.
E1B6	Probe for (ISA) keyboard	Replace the service processor, Location: U0.1-P1-X1.
E1BD	Probe for (ISA) mouse	Replace the service processor, Location: U0.1-P1-X1.
E1C4	Build ISA timer chip node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1C5	Create ISA interrupt controller (pic) node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1C6	Create DMA node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1D0	Create PCI SCSI node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1D3	Create SCSI block device node (SD)	Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1D4	Create SCSI byte device node (ST)	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1DB	Create floppy controller (FDC) node	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1DC	Dynamic console selection.	1. If a console is attached, but nothing is displayed on it, go to ″All display problems″ in the Entry MAP. 2. If selection screens can be seen on the terminals and the appropriate key on the input device is pressed within 60 seconds but there is no response to the keystroke: a. If selecting the console with a keyboard attached to the system, replace the keyboard, then replace the service processor, Location: U0.1-P1-X1. b. If selecting the console with an ASCII terminal, suspect the terminal. Use the problem determination procedures for the terminal. **Note:** Terminal setting should be: • 9600 baud • no parity • 8 data bits • 1 stop bit
E1F0	Start O.B.E.	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1F1	Begin selftest sequence on boot devices.	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1F2	Power-on password prompt	The prompt should be visible on the firmware console . If a console is attached but nothing is displayed on it, go to the “Quick Entry MAP” on page 53 with the symptom ″All display problems.″
E1F3	Privileged-access password prompt	The prompt should be visible on the firmware console (may be a VTERM on the HMC). If a console is attached but nothing is displayed on it, go to the “Quick Entry MAP” on page 53 with the symptom ″All display problems.″
E1F4	End self-test sequence on boot devices; begin SMS.	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1F5	Build boot device list	Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1F6	Determine boot device sequence	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1F7	No boot image located	Go to “Boot Problems/Concerns” on page 155.
E1F8	Building boot device list for SCSI adapters. (The location of the SCSI adapter being scanned is also displayed.)	1. If a location code is available, follow the Repair actions listed for error code 21A0 00XX. 2. If no location code is available, go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1F9	Building boot device list for fibre-channel adapters. (The location of the SAN adapter being scanned is also displayed.)	1. If a location code is available, follow the Repair actions listed for error code 21A0 00XX. 2. If no location code is available, go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1FA	Building boot device list for SCSI adapters. (The device ID and the device LUN being scanned are also displayed.)	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1FB	Scan SCSI bus for attached device8	1. If a location code is available, follow the Repair actions listed for error code 21A0 00XX. 2. If no location code is available, go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1FC	Building boot device list for SSA adapters. (The location code of the SSA adapter being scanned is also displayed.)	Go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.
E1FD	The operator panel alternates between the code E1FD and another Exxx code, where Exxx is the point at which the error occurred.	1. If a location code is available, follow the actions listed for error code 21A0 00xx. 2. If no location code is available, go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1FE	Building boot device list for fibre-channel adapters. (The WWPN of the SAN adapter being scanned is also displayed.)	1. If a location code is available, follow the Repair actions listed for error code 21A0 00XX. 2. If no location code is available, go to “MAP 1540: Problem Isolation Procedures” on page 110.
E1FF	Building boot device list for fibre-channel adapters. (The WWPN of the SAN adapter being scanned is also displayed.)	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E20F	System firmware has exited to open firmware prompt	1. Replace the service processor, Location: U0.1-P1-X1. 2. Call service support.
E440	Validate NVRAM, initialize partitions as needed	1. Check for system firmware updates. 2. Replace the service processor, Location: U0.1-P1-X1. 3. Call service support.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E441	Generate /options node NVRAM configuration variable properties	1. Check for system firmware updates. 2. Replace the service processor, Location: U0.1-P1-X1. 3. Call service support.
E442	Validate NVRAM partitions	1. Check for system firmware updates. 2. Replace the service processor, Location: U0.1-P1-X1. 3. Call service support.
E443	Generate NVRAM configuration variable dictionary words	Suspect a system firmware problem if problem persists. If a system firmware update is available, install it.
E500	Begin I/O drawer configuration	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E501	Initialize I/O data structures	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E502	Set up I/O data structure pointers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E503	Initialize location code data structures	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E504	Initialize memory map data structures	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E506	Reset time base of processors	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E509	Begin configuring EADS	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E50C	Copy all of the memory ranges	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E50D	Copy all of the I/O data	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E50F	Clean up the error registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E51F	End of I/O configuration	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E523	Initialize data structures	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E537	Configuring the I/O subsystem	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E53B	End of looking for next node port	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E540	Begin initialization of I/O drawer	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E541	Initialize the routing table	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E54A	Configure the I/O drawer	Replace the CEC backplane, U0.1-P1.
E560	Begin initializing the I/O drawer	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E56F	End initializing the service processor control chip	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E580	Begin initializing the EADS module.	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E581	Read the PCI bus configuration header.	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E582	EADS has been detected.	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E583	Running BIST on the current EADS	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E584	Checking function of current EADS	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E585	Valid function of current EADS detected	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E586	Set up EADS function	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E587	Set up EADS BIST	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E588	Set up EADS function register	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E589	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E58A	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E58B	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E58C	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E58D	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E58E	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E58F	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E590	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E591	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E592	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E593	Set up EADS function registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E594	Begin probing slots	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E595	Detected valid adapter in slot	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E59E	End of walking bus of current EADS	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5E0	Initialize system processor array	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5E1	Reserved	
E5E2	Initialization of the hypervisor, phase 1	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5E3	Not in quick-restart: load and set up open firmware code in memory	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5E4	Activate slave processors	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5E5	Initialize the hypervisor, phase 2	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5E6	Set L2 and processor status	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5E7	Save I/O hub information for RTAS and open firmware	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5E8	Set up registers	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5E9	Reset the quick restart path	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5EE	Hang state in main control code	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E5EF	End of low-level firmware	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E5FE	Get the system's licensed memory quantity from the service processor	1. Replace the I/O drawer subsystem backplane specified by the location code. 2. Power down, then power up the system. 3. Call service support.
E600	SSA PCI adapter open firmware has run successfully.	Replace the adapter.
E601	SSA PCI adapter BIST has started but failed to complete after 4 seconds.	Replace the adapter.
E602	SSA PCI open firmware has started.	Replace the adapter.
E603	SSA PCI adapter BIST has completed with an error.	Replace the adapter.
E604	SSA PCI adapter BIST and subsequent POSTs have completed successfully.	Replace the adapter.
E605	SSA PCI adapter BIST has completed successfully but subsequent POSTS have failed.	Replace the adapter.
E60E	SSA PCI open firmware about to exit (no stack corruption).	Replace the adapter.
E60F	SSA PCI open firmware has run unsuccessfully.	Replace the adapter.
E6FF	SSA PCI open firmware about to exit (with stack corruption).	Replace the adapter.
E700	Create system firmware VPD	System firmware may be corrupted. Reinstall system firmware.
E701	Create memory VPD.	1. Check for system firmware updates. 2. Call for support.
E702	Create processor card VPD.	1. Check for system firmware updates. 2. Call for support.
E703	Create operator panel VPD.	1. Check for system firmware updates. 2. Call for support.
E704	Create CEC VPD.	1. Check for system firmware updates. 2. Call for support.
E705	Create VPD.	1. Check for system firmware updates. 2. Call for support.
E706	Create VPD.	1. Check for system firmware updates. 2. Call for support.
E707	Create system VPD.	1. Check for system firmware updates. 2. Call for support.
E708	Create VPD.	Go to "MAP 1540: Problem Isolation Procedures" on page 110.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E709	Create VPD via SPCN.	1. Check for system firmware updates. 2. Call service support.
E70A	Create service processor VPD.	1. Check for system firmware updates. 2. Call for support.
E70B	Create L3 module VPD	1. Check for system firmware updates. 2. Call service support.
E70C	Create I/O backplane VPD (I2C problem)	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E70D	Create VPD	1. Check for system firmware updates. 2. Call service support.
E70F	Collect CEC VPD	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E7EE	Delaying while waiting for power subsystem VPD collection to be completed; informational only	1. Check for system firmware updates. 2. Call service support.
E7FF	Successful end of VPD creation	Informational message. If the system hangs here, go to “MAP 1540: Problem Isolation Procedures” on page 110.
E800	RTAS initialization problem	1. Check for system firmware updates. 2. Call service support.
E841	Initializing RTAS/open firmware device tree interface	1. Check for system firmware updates. 2. Call service support.
E842	Initializing RTAS/service processor interface	1. Check for system firmware updates. 2. Replace the CEC backplane Location: U0.1-P1. 3. Call service support.
E843	Initializing RTAS/sensor interface	1. Check for system firmware updates. 2. Call service support.
E844	Initializing RTAS/time-of-day clock interface	1. Check for system firmware updates. 2. Replace the CEC backplane Location: U0.1-P1. 3. Call service support.
E845	Initializing interface/sensor access	1. Check for system firmware updates. 2. Call service support.
E846	Initializing interface/sensor access	1. Check for system firmware updates. 2. Call service support.
E84F	Initializing RTAS/operator panel interface	1. Check for system firmware updates. 2. Call service support.
E850	Initializing RTAS/cache interface	1. Check for system firmware updates. 2. Call service support.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E851	Initializing RTAS/hardware access	1. Check for system firmware updates. 2. Call service support.
E852	Initializing RTAS/PCI bus interface	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110. 3. Call service support.
E853	Start cable ID request process	1. Remove, then reapply power to the system. 2. Go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113. 3. Call service support.
E854	Start collecting cable IDs	1. Remove, then reapply power to the system. 2. Go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113. 3. Call service support.
E860	Initializing RTAS/power subsystem interface	1. Check for system firmware updates. 2. Call service support.
E861	Initializing RTAS/PCI bus interface	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110. 3. Call service support.
E870	Initializing RTAS/logs interface	1. Check for system firmware updates. 2. Call service support.
E871	Initializing RTAS/EEH handling interface	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110. 3. Call service support.
E872	Initializing RTAS/error inject interface	1. Check for system firmware updates. 2. Call service support.
E873	Initializing RTAS/error handling interface	1. Check for system firmware updates. 2. Call service support.
E880	Initializing RTAS/debug interface	1. Check for system firmware updates. 2. Call service support.
E881	Initializing RTAS/utility interface	1. Check for system firmware updates. 2. Call service support.
E882	Initializing RTAS/softpatch register interface	1. Check for system firmware updates. 2. Call service support.
E890	Initializing RTAS/hot-swap interface	1. Check for system firmware updates. 2. Call service support.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E8C1	Initializing interface/client interface access	1. Check for system firmware updates. 2. Call service support.
E8D1	Initializing interface/memory access	1. Check for system firmware updates. 2. Call service support.
E900	The system firmware is in the recoverable non-maskable interrupt code	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
E901	The system firmware is in the recoverable non-maskable interrupt code	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
EAA1	Probe PCI-PCI bridge bus	Follow the repair actions for checkpoint E151.

Boot Problems/Concerns

Depending on the boot device, a checkpoint may be displayed on the operator panel for an extended period of time while the boot image is retrieved from the device. This is particularly true for tape and network boot attempts. If booting from CD-ROM or tape, watch for activity on the drive's LED indicator. A blinking LED indicates that the loading of either the boot image or additional information required by the operating system being booted is still in progress. If the checkpoint is displayed for an extended period of time and the drive LED is not indicating any activity, there might be a problem loading the boot image from the device.

Note: For network boot attempts, if the system is not connected to an active network or if the target server is inaccessible (this can also result from incorrect IP parameters being supplied), the system will still attempt to boot. Because time-out durations are necessarily long to accommodate retries, the system may appear to be hung.

This procedure assumes that a diagnostic CD-ROM is available and that a CD-ROM or DVD-RAM drive is connected to the media backplane. Booting the diagnostics image from CD-ROM or a NIM server is referred to as running standalone diagnostics.

Step 1

Restart the system and access the firmware SMS Main Menu. Select **Select Boot Options**.

1. Check to see if the intended boot device is correctly specified in the boot list. If it is in the boot list:
   a. Remove all removable media from devices in the boot list from which you do not want to boot.
   b. If attempting to boot from the network, go to "Step 2."
   c. If attempting to boot from a disk drive or CD-ROM, go to "Step 3" on page 156.
2. If the intended boot device is not correctly identified in the boot sequence, add it to the boot sequence using the SMS menus. If the device can be added to the boot sequence, reboot the system, then go to MAP 0410: Repair Checkout in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*. If the intended boot device cannot be added to the boot list, go to "Step 3" on page 156.

Step 2

If attempting to boot from the network:

1. Verify that IP parameters are correct.
2. Attempt to ″ping″ the target server using the SMS Ping utility. If the ping is not successful, have the network administrator verify the server configuration for this client.
3. Check with the network administrator to ensure that the network is up.
4. Check the network cabling to the adapter.
5. Turn the power off, then on and retry the boot operation.

Step 3

Try to boot and run standalone diagnostics against the system, particularly against the intended boot device.

If diagnostics do not boot successfully, and a SCSI boot failure (cannot boot from a SCSI-attached device) is also occurring, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.

If diagnostics do not boot successfully, and a SCSI boot failure (cannot boot from a SCSI-attached device) is not occurring:

1. Check IDE cabling to boot device.
2. Check device configuration jumpers.

If no problem is found with the cabling or the jumpers, go to “Step 4” on page 157.

If diagnostics boot successfully and ″No Trouble Found″ was the result when diagnostics were run against the intended boot device, go to substep 4. If the diagnostics boot successfully, but the intended boot device was not present in the output of the ″Display Configuration and Resource List″, which is run from the Task Selelction Menu:

1. If you booted standalone diagnostics from IDE CD-ROM, follow these steps. After each action, do the following:

   Restart the system. Stop at the SMS menus and select **Select Boot Options**. If the device is present in the boot list, and it was not showing up previously, go to MAP 0410: Repair Checkout in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

   If the device still does not show up, continue with the actions shown in the list.

   a. Check the SCSI cables
   b. Remove all hot-swap disk drives except the intended boot device if its a hot-swap drive. If the boot device is present in the boot list when the system is booted to the SMS menus, add the hot-swap disk drives back in, one at a time, until the failing device is isolated.
   c. Disconnect all other internal SCSI devices. If the boot device is present in the boot list when the system is booted to the SMS menus, reconnect the internal SCSI devices, one at a time, until the failing device or cable is isolated.
   d. Replace the SCSI cables
   e. Replace the SCSI (DASD / Media) backplane
   f. Replace the intended boot device.
   g. Replace the CEC backplane.
2. Go to the Task Selection Menu and select **Task, Display Configuration and Resource List**. If the intended boot device is not listed, go to ″MAP 0290: Missing Resource Problem Resolution″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* manual.
3. If an SRN, not an 8-digit error code, is reported, go to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* manual.
4. Choose one of the following, then go to step 5.
   - If the diagnostics are successful, and no other devices have been disconnected, it may be necessary to perform an operating system-specific recovery process, or reinstall the operating system.
   - If the diagnostics are successful, and devices have been removed, reinstall them one at a time. After each device is reinstalled, reboot the system. Continue this procedure until the failing device is isolated. Replace the failing device.
5. If you replaced the indicated FRUs and the problem is not corrected, or the above descriptions did not address your particular situation, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.

If the problem has been corrected, go to ″MAP 0410: Repair Checkout″ in *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 4

It is possible that another installed adapter is causing the problem. Do the following:

1. Remove all installed adapters except the one the CD-ROM drive is attached to and the one used for the console.
2. Try to boot the standalone diagnostics again.
3. If unable to load standalone diagnostics, go to “Step 5.”
4. If standalone diagnostics load, reinstall adapters (and attached devices as applicable) one at a time and retry the boot operation until the problem recurs. Then replace the adapter or device that caused the problem. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 5

The CD-ROM drive, IDE or SCSI cable, graphics adapter (if installed), or the system board is most likely defective. A TTY terminal attached to the serial port also can be used to determine if the graphics adapter is causing the problem. This is done by removing the graphics adapter, attaching a TTY to the serial port, and retrying standalone diagnostics. If the standalone diagnostics load, replace the graphics adapter.

1. Replace the CD-ROM drive.
2. Replace the IDE or SCSI cable that goes to the CD-ROM drive.
3. Replace the system board.
4. If you replaced the indicated FRUs and the problem is still not corrected, or the above descriptions did not address your particular situation, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.
5. Go to ″MAP 0410: Repair Checkout″ in *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Chapter 5. Error Code to FRU Index

Attention: Start your activity in this chapter by going to “Checkpoint and Error Code Index” on page 162. In this section, you may be asked to perform additional isolation procedures before looking up the actions for a 4-character checkpoint or 8-character error code.

The Error Code to FRU Index lists fault symptoms and possible causes. The most likely cause is listed first. Use this index to help you decide which FRUs to replace when servicing the system.

- If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Problem Isolation Procedures” on page 110 unless otherwise indicated in the tables.
- If you replace FRUs and the problem is corrected, go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Note: Do not shut down the system if the FRU was replaced by hot-swap.

Performing Slow Boot

On this system, the error code displayed in the operator panel may not indicate the root cause of the problem. To fully analyze all of the available information, perform the following steps before doing a hardware repair or replacement:

1. Record the 8-character error code (and location code if present) in the operator panel.
2. Power off the system using the white button. Refer to “Stopping the System” on page 282.
3. Select slow boot mode (select disable fast boot) on the system power control menu from the service processor main menu.
4. Do a slow-mode boot to the SMS menus. This boot can be specified using the System Power Control Menu on the service processor main menu. Refer to “System Power Control Menu” on page 235. (A fast-mode boot skips much of the built-in diagnostic testing.) A slow-mode boot may yield a new 8-character error code on the operator panel and new errors in the service processor error log. Power on the system. Refer to “Starting the System” on page 283.
   - If a new error code is reported, use it in subsequent steps to continue problem analysis.
   - If the system hangs with the same error code, continue with the next step in the Checkpoints and Error Codes Index.
   - If no 8-character error code is displayed in the operator panel, use the original error code and continue with the next step in the Checkpoints and Error Codes Index.
5. Power off the system.
6. At this point, the service processor menus should be available to examine the service processor error log.

Confirming Initial Error Code

The service processor may have recorded one or more symptoms in its error log. If the system has attempted to boot since an error terminated normal operation, there may be specific fault information in the service processor error log. Examine this error log before proceeding (see “System Information Menu” on page 238).

In the service processor error log, the most recent error is at the top of the list and the oldest error is at the bottom. It is also important to look at the time stamp associated with each error. (The time stamps in the service processor error log reflect coordinated universal time (UTC), which is also referred to as Greenwich mean time.)

On this system, the error code displayed in the operator panel may not be indicative of the root cause of the problem. This is also true of the most recent error in the service processor error log.

Attempt to find the error code that originally sent you to the “Checkpoint and Error Code Index” on page 162 table.

1. If you can not find the error code in the service processor error log, start with the error code at the bottom of the list. Proceed to 3 below.
2. If you can find the error code in the service processor error log, observe the time stamps and look for a group of failures that happened within minutes prior to this error code. In this group, start at the error code with the earliest time stamp. Proceed to 3.
3. Examine the list of error codes you obtained from 1 or 2 and look for any of the form 4xxB xxxx.

   Can you find any error codes of the form 4xxB xxxx?

   No Proceed to step 6.

   Yes Proceed to step 4.
4. Do any of the error codes of the form 4xxB xxxx have the same first two characters on the left as the first two characters on the left of the error code that sent you to the MAP?

   No Proceed to step 6.

   Yes Proceed to step 5.
5. Adjust the order of the list of error codes you obtained from steps 1 or 2 by placing the error codes of the form 4xxB xxxx with the same first two characters as the error code that sent you to this MAP on the bottom of the list. Start step 6 at the bottom of the adjusted list of error codes. Proceed to step 6.
6. To get a list of possible FRUs, select the detail screen for each error code. Record the listed location codes and their order.

   Note: If the error code that results from this procedure is 406*x* 0EA0, 406*x* 0EA1, 406*x* 0EA2, or 406*x* 0EA4, do not go back to the “Checkpoint and Error Code Index” on page 162 with this error code. Look for a hardware error in the service processor error log of the form 450*x yyyy*, 460*x yyyy*, or 4B2*x yyyy* that occurred just prior to the 406*x* 0EA*y* error. Use this hardware error code instead when returning to the “Checkpoint and Error Code Index” on page 162.

   Note: If there are no hardware error codes in the form 450x yyyy, 460x yyyy, or 4B2x yyyy that occurred just prior to the 406x 0EAy error, look for the last firmware checkpoint of the form Exxx before the 406x 0EAy error. (Ignore checkpoints that do not have the form Exxx.) Use this checkpoint when returning to the Checkpoints and Error Codes Index.

   Return to the step in the “Checkpoint and Error Code Index” on page 162 table immediately after the step that sent you to this ″Confirming Initial Error Code″ procedure to perform the listed repair actions. If the repair actions for an error code are ineffective, continue to work upward through this group of error codes (which is forward in time from the earliest time stamp to the latest) until either the problem is fixed, you reach the error code that was first reported, or you are at the top of the list.

Four-Character Checkpoints

Four-character progress codes and checkpoints in the form 8xxx, 9xxx, Axxx, Bxxx, and Exxx are listed in “Firmware Checkpoints” on page 140. If you have a four-character code that begins with any character other than 8, 9, A, B, or E, refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Replacing the Operator Panel

Licensed programs frequently rely on system information that is stored in the vital product data (VPD) module on the operator panel. If you replace the operator panel, the system VPD information (for example the machine type and serial number) is restored to the new VPD module in the operator panel.

Replacing the Network Adapter

If a network adapter is replaced, the network administrator must be notified so that the client IP addresses used by the system can be updated. In addition, the operating system configuration of the network controller may need to be changed in order to enable system startup. Also check to ensure that any client or server that accesses this system is updated.

Determining Location Code

If you have an error code in the form 2xxx xxxx or Exxx, and no location code associated with it, the location code may possibly be found in three places, depending on the state of the system:

- For systems with AIX installed: if the system will boot into AIX, the location code will be reported when error log analysis is run under AIX diagnostics.
- If the system will boot into the system management services (SMS) menus, the SMS error log will contain the location code associated with the error code. See “View Error Log” on page 268.
- If the system halted when the error occurred, the error code and location can be found in the LCD progress indicator log, which can be accessed using the service processor menus. See “System Information Menu” on page 238, then select **Read Progress Indicators From Last System Boot**. Find the error code in the list that directed you to this note, and the location code should be a part of the entry in the log.

FRU Identify LEDs

This system is configured with an arrangement of LEDs that help identify various components of the system. These include but are not limited to:

- Rack identify LED
- CEC drawer identify LED
- RIO port identify LED
- FRU identify LED
- Power subsystem FRUs
- CEC subsystem FRUs
- I/O subsystem FRUs
- I/O adapter identify LED
- DASD identify LED

A failed FRU will turn on the FRU identify LED, the corresponding CEC or I/O drawer identify LED, and the corresponding rack identify LED to locate the failing FRU more easily. Any identify LED in the system may be flashed by using the service processor LED Control Menu contained in the “System Information Menu” on page 238. See “System Information Menu” on page 238 for information on how to use the LED Control Menu.

Any identify LED in the system may also be flashed by using the “Identify and Attention Indicators” task in the AIX diagnostic programs. The procedure for operating the Identify and Attention Indicators task in the AIX diagnostics is outlined in the chapter entitled “Tasks and Service Aids” in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.

If the service processor menus and the AIX diagnostics are not available, the FRU identify LEDs may be flashed:

1. The system may be booted to the open firmware prompt. Enter **FRU-LED-MENU** on the command line to display a menu that will allow you to turn on the desired FRU identify LED. See the “System Power Control Menu” on page 235 for instructions on setting up the boot mode to enable the boot to the open firmware prompt.
2. If an HMC is attached, it may be used to activate and deactivate a FRU identify LED. For instructions on activating and deactivating a FRU identify LED, see the Service Focal Point chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.

Checkpoint and Error Code Index

The following table is an index to the checkpoints or error codes that you may receive to help diagnose a failure. Locate the code you received, and follow the instructions to determine your next step.

Checkpoint or Error Code	What You Should Do
0000 xxxx	Operator Panel Error Codes Go to “Operator Panel Error Codes” on page 166 and follow the instructions in the Operator Panel Error Code table.

Checkpoint or Error Code	What You Should Do
1xxx xxxx	System Power Control Network (SPCN) Error Codes 1. There may be additional error codes and information in the service processor error log. The system must be powered off to examine the contents of the service processor error log. a. Is the system still powered on? **NO** Go to step 2 below. **Yes** Ask the customer if the system can be powered off, then go to substep B. b. Can the system be powered off? **NO** Go to step 3 below. **YES** Power off the system, then go to step 2 below. 2. Confirm that this is the first error code that caused the failure as described in ″Confirming Initial Error Code″ on page xxx. 3. Did you come to this step from step 2? **NO** Go to “SPCN Error Codes” on page 167 with the error codes you already have and follow the instructions in the SPCN error code table. **YES** Go to “SPCN Error Codes” on page 167 with the error code(s) from step two and follow the instructions in the SPCN error code table.
2xxx xxxx	Firmware Error Codes Go to “Firmware Error Codes” on page 170 and follow the instructions in the Firmware Error Code table.

Checkpoint or Error Code	What You Should Do
4xxx xxxx	Service Processor Error Codes 1. Is the system powered up? **NO** Go to step 2 below. **YES** Go to step 4 below. 2. Find the error code in the service processor error log and check the value of word 13. Go to 3 below. 3. Is the value of word 13 C0xx xxxx? **NO** Go to step 7 below. **YES** Go to “MAP 1541: JTAG Problem Isolation” on page 112. 4. Is the system running Linux? **NO** Go to step 6 below. **YES** Go to step 5 below. 5. If the system is not functional, go to step 7 below. If the system is functional, do the following: Examine the Linux system log by logging in to the system as the root user and entering the following command: `cat /var/log/messages | grep RTAS |more` Record any RTAS messages found in the Linux system log entry. Ignore all other messages in the Linux system log. Find the value of word 13 in the Linux system log entry. For detailed instructions on finding word 13 in a Linux system log entry, refer to the actions under error code B1xx 4699 in this service guide. Is the value of word 13 C0xx xxxx? **NO** Go to step 7 below. **YES** Go to “MAP 1541: JTAG Problem Isolation” on page 112. 6. If the system is not functional, go to step 7. If the system is functional, do the following: Examine the AIX error log entry. Find the value of word 13. For detailed instructions on finding word 13 in a AIX error log entry, refer to the actions under error code B1xx 4699 in this service guide. Is the value of word 13 C0xx xxxx? **NO** Go to step 7 below. **YES** Go to “MAP 1541: JTAG Problem Isolation” on page 112. 7. There might be additional error codes and information in the service processor error log. The system must be powered off to examine the contents of the service processor error log. a. Is the system still powered on? **NO** Go to step 8 below. **YES** Ask the customer if the system can be powered off, then go to 7b. b. Can the system be powered off? **NO** Go to step 10 below. **YES** Power off the system, then go to step8. 8. Perform slow boot procedure as described in “Performing Slow Boot” on page 159. 9. Confirm this is the first error code that caused the failure as described in “Confirming Initial Error Code” on page 159. 10. Did you come to this step from step 9? **NO** Go to “Service Processor Error Codes” on page 191 with the error codes you already have and follow the instructions in the service processor error codes table. **YES** Go to “Service Processor Error Codes” on page 191 with the error codes from 9 above and follow the instructions in the service processor error codes table.

Checkpoint or Error Code	What You Should Do
8xxx 9xxx Axxx Bxxx	Service Processor Checkpoints Go to “Service Processor Checkpoints” on page 133 for more information on these checkpoints.
A1FD 000x	The system has entered recovery mode. Go to “Recovery Mode” on page 255.
B006 xxxx B1xx xxxx	Common Firmware Error Codes 1. There may be additional error codes and information in the service processor error log. The system must be powered off to examine the contents of the service processor error log. **a. Is the system still powered on?** **NO** Go to step 2 below. **YES** Ask the customer if the system can be powered off, then go to step 1b below. **b. Can the system be powered off?** **NO** Go to step 3 below. **YES** Power off the system, then go to step 2 below. 2. Confirm that this is the first error code that caused the failure as described in “Confirming Initial Error Code” on page 159. 3. Did you come to this step from step 2? **NO** Go to “Common Firmware Error Codes” on page 199 with the error codes you already have and follow the instructions in the “Common Firmware Error Codes” on page 199 table. **YES** Go to “Common Firmware Error Codes” on page 199 with the error codes from 2 and follow the instructions in the “Common Firmware Error Codes” on page 199 table.
B3xx xxxx	HMC Surveillance Error Codes Go to “HMC Surveillance Error Codes” on page 214 for more information on these error codes.
Exxx	Firmware Checkpoints Go to “Firmware Checkpoints” on page 140 for more information on these checkpoints.
Mxxx xxxx	Problem Determination-Generated Error Codes Go to “Problem Determination Generated Error Codes” on page 215 and follow the instructions in the Problem Determination Generated Error Codes table.

Operator Panel Error Codes

Attention: If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Problem Isolation Procedures” on page 110 unless otherwise indicated in the tables.

If you replace FRUs and the problem is corrected, go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Table 3. Operator Panel Error Codes.

Error Code	Description	Action/ Possible Failing FRU
0000 1111	At power on, failure of power-good signal from power supply.	1. CEC backplane Location: U0.1-P1 2. CEC backplane power supply Locations: U0.1-V1 U0.1-V2
0000 1112	At power off, failure of power-good signal from power supply.	1. CEC backplane Location: U0.1-P1 2. CEC backplane power supply Locations: U0.1-V1 U0.1-V2
0000 1113	While power on, failure of power-good signal from power supply.	1. CEC backplane Location: U0.1-P1 2. CEC backplane power supply Locations: U0.1-V1 U0.1-V2
0000 1114	Operator panel and service processor have been reset after main power disturbance.	Informational message
0000 2222	Operator panel not communicating with service processor	1. If system cannot be powered off, reset the service processor (via the pinhole reset or by disconnecting then reconnecting power). 2. CEC backplane Location: U0.1-P1
0000 3333	SPCN communications error	CEC backplane Location: U0.1-P1
0000 3334	I2C repeater error	CEC backplane Location: UO.1-P1
0000 BBBB	TOD battery malfunction	TOD battery Location: U0.1-P1-V3

SPCN Error Codes

Attention: If a power supply or fan is hot-swapped, wait five minutes, then recheck the operating system error log. If the system has to be shut down to replace a power supply or fan, reboot the system, wait five minutes after the operating system login prompt appears, then recheck the operating system error log. If the detailed information for the most recent error with the same identifier indicates that the original problem has not been fixed by performing the first action in the action column, continue with the next action in the action column.

Attention: If you replace FRUs or perform an action and the problem is still not corrected, go to "MAP 1540: Problem Isolation Procedures" on page 110 unless otherwise indicated in the tables.

If you replace FRUs and the problem is corrected, go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Table 4. SPCN Error Codes for the CEC (system unit)

Error Code	Description	Action/ Possible Failing FRU
1011 00AC	AC loss	Informational message
1011 00EF	Emergency power off	Informational message
1011 1510	Power supply 1 AC fault	1. Check input power to the power supply. 2. System drawer power supply 1 Location: U0.1-V1
1011 1511	Power supply 1 power fault	System drawer power supply 1 Location: U0.1-V1
1011 1512	Power supply 1 non-power fault	System drawer power supply 1 Location: U0.1-V1
1011 1513	Domain fault allocated to power supply 1	System drawer power supply 1 Location: U0.1-V1
1011 1514	Power supply 1 fan fault	System drawer power supply 1 Location: U0.1-V1
1011 1520	Power supply 2 AC fault	1. Check input power to the power supply. 2. System drawer power supply 2 Location: U0.1-V2
1011 1521	Power supply 2 power fault	System drawer power supply 2 Location: U0.1-V2
1011 1522	Power supply 2 non-power fault	System drawer power supply 2 Location: U0.1-V2
1011 1523	Domain fault allocated to power supply 2	System drawer power supply 2 Location: U0.1-V2
1011 1524	Power supply 2 fan fault	System drawer power supply 2 Location: U0.1-V2
1011 1B0A	+12/-12V load fault	Go to "MAP 1520: Power" on page 98.
1011 1B0B	1.8V load fault	Go to "MAP 1520: Power" on page 98.
1011 1B0C	3.3/1.5V load fault	Go to "MAP 1520: Power" on page 98.
1011 1B0D	2.5V load fault	Go to "MAP 1520: Power" on page 98.
1011 1B0E	+5V load fault	Go to "MAP 1520: Power" on page 98.
1011 1B0F	1.5/1.2V load fault	Go to "MAP 1520: Power" on page 98.
1011 1F01	TMS limit reached - Log Only	Informational message

Table 4. SPCN Error Codes for the CEC (system unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 2600	Pgood fault - power supply domain good	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
1011 2603	Pgood fault - power supply domain bad	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
1011 2612	Optical converter fault	System backplane Location: U0.1-P1
1011 2630	1.2v VRM fault	VRM module Location: U0.1-P1-V3
1011 2631	1.5v VRM fault	System backplane Location: U0.1-P1
1011 2632	1.8v VRM fault	VRM module Location: U0.1-P1-V1
1011 2633	2.5v VRM fault	VRM module Location: U0.1-P1-V2
1011 3100	I2C controller fault	System backplane Location: U0.1-P1
1011 3104	I2C bus 4 fault	DASD backplane Location: U0.1-P2 DASD backplane Location: U0.1-P3 Media backplane Location: U0.1-P4 Service processor Location: U0.1-P1-X1 System backplane Location: U0.1-P1
1011 3105	I2C interface fault	System backplane Location: U0.1-P1
1011 3106	I2C interface fault	System backplane Location: U0.1-P1
1011 3114	I2C interface fault	System backplane Location: U0.1-P1
1011 3116	I2C interface fault	System backplane Location: U0.1-P1
1011 3118	SPCN VPD collection fault	System backplane Location: U0.1-P1
1011 3119	DASD backplane fault	DASD backplane Location: U0.1-P2
1011 311A	DASD backplane fault	DASD backplane Location: U0.1-P3
1011 311B	Media backplane fault	Media backplane Location: U0.1-P4
1011 7610	System fan 1 fault	Fan 1 Location: U0.1-F1
1011 7611	System fan 1 missing	Fan 1 Location: U0.1-F1
1011 7616	Power supply 2 fan missing	System drawer power supply 2 Location: U0.1-V2

Table 4. SPCN Error Codes for the CEC (system unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 7620	System fan 2 fault	Fan 2 Location: U0.1-F2
1011 7621	System fan 2 missing	Fan 2 Location: U0.1-F2
1011 7626	Power supply 1 fan missing	System drawer power supply 1 Location: U0.1-V1
1011 7630	System fan 3 fault	Fan 3 Location: U0.1-F3
1011 7631	System fan 3 missing	Fan 3 Location: U0.1-F3
1011 8400	Invalid configuration decode	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
1011 8401	VPD access problem	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
1011 8402	VPD concentrator fault	Service processor card Location: U0.1-P1-X1
1011 8403	VPD level mismatch	1. System VPD module Location: U0.1-L1-N1 2. Service processor card Location: U0.1-P1-X1
1011 8404	VPD mismatch	System backplane Location: U0.1-P1
1011 8405	VPD mismatch	System backplane Location: U0.1-P1
1011 8406	VPD mismatch	System backplane Location: U0.1-P1
1011 8409	No processors installed	System backplane Location: U0.1-P1
1011 840A	VPD: 5V won’t turn off	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
1011 840B	VPD: 5V won’t turn on	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
1011 840C	Memory DIMM(s) are not properly installed	Verify that all of the memory DIMMs are properly installed and seated.
1011 840D	SPCN configuration fault	1. Check the SPCN cabling. 2. Set the I/O type. See the“”Power Control Network Utilities Menu″ on page ” on page 242. 3. Replace the service processor card, location: U0.1-P1-X1.
1011 840E	SPCN default configuration loaded	1. Check the SPCN cabling. 2. Set the I/O type. See the“”Power Control Network Utilities Menu″ on page ” on page 242. 3. Replace the service processor card, location: U0.1-P1-X1.

Table 4. SPCN Error Codes for the CEC (system unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 8413	Invalid processor VPD	System backplane Location: U0.1-P1
1011 8414	Invalid processor VPD	System backplane Location: U0.1-P1
1011 8415	Invalid processor VPD	System backplane Location: U0.1-P1
1011 8416	Invalid processor VPD	System backplane Location: U0.1-P1
1011 8423	No processor VPD	System backplane Location: U0.1-P1
1011 8424	No processor VPD	System backplane Location: U0.1-P1
1011 8425	No processor VPD	System backplane Location: U0.1-P1
1011 8426	No processor VPD	System backplane Location: U0.1-P1

Firmware Error Codes

Attention: If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113 unless otherwise indicated in the tables.

If you replace FRUs and the problem is corrected, go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Table 5. Firmware Error Codes.

Error Code	Description	Action/ Possible Failing FRU
20A8 0000	Insufficient information to boot.	Verify the IP address.
20A8 0001	The client IP address is already in use by some other network device.	Change IP address.
20A8 0002	Cannot get gateway IP address.	Refer to Table 2 on page 140 using code **E174**.
20A8 0003	Cannot get system hardware address.	Refer to Table 2 on page 140 using code **E174**.
20A8 0004	Bootup failed.	Refer to Table 2 on page 140 using code **E175**.
20A8 0005	File transmission (TFTP) failed.	Check network connection, try again.
20A8 0006	Boot image too large	Contact your next level of support for assistance.
20D0 000F	Self-test failed on a device, no error and/or location code information available.	Refer to “Mapping AIX and Physical Location Codes” on page 28 to see if a location code is available for the device the error was reported against. 1. Replace device indicated by the location code (if available). 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110
20D0 0010	Self-test failed on a device, cannot locate package	Contact your service support representative for assistance.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
20D0 0011	Firmware RTAS attempt to allocate memory failed.	Contact your next level of support for assistance.
20D0 0800	Firmware update failure	Retry the flash update.
20D0 0801	System firmware update failure	Retry the firmware update.
20D0 0997	Operating system terminated with error string	Call service support.
20D0 0998	Operating system terminated with error string	Call service support.
20D0 0999	Operating system terminated with error string	Call service support.
20D0 0A01	Error initializing RTAS NVRAM	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A02	Error initializing RTAS debugging token	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A03	Error initializing interface/service processor access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A04	Error initializing interface/operator panel access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A05	Error initializing hardware access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A06	Error initializing interface/PCI access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A07	Error initializing interface/operating system access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A08	Error initializing interface/client_interface access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A09	Error initializing interface	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
20D0 0A0A	Error initializing interface/interrupt access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A0B	Error initializing interface/OFDT access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A0C	Error initializing interface/sensor access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A0D	Error initializing interface/sensors/led_table access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A0E	Error initializing interface/timebase access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A0F	Error initializing interface/time-of-day access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A10	Error initializing interface/cache access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A11	Error initializing interface/power access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A12	Error initializing interface/hot-swap access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A13	Error initializing interface/log access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A14	Error initializing interface/EEH access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
20D0 0A15	Error initializing interface/error injection access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A16	Error initializing interface/handling access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A17	Error initializing interface/utility access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 0A18	Error initializing register softpatch access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D0 9001	Subsystem information not found in VPD	1. Power off, then power on the system. 2. If the error persists, call service support.
20D0 9002	Subsystem machine type and model information not found in VPD	1. Power off, then power on the system. 2. If the error persists, call service support.
20D0 9003	Subsystem serial number information not found in VPD	1. Power off, then power on the system. 2. If the error persists, call service support.
20D0 9004	Subsystem machine type and model field is empty in VPD	1. Power off, then power on the system. 2. If the error persists, call service support.
20D0 9005	Subsystem serial number field is empty in VPD	1. Power off, then power on the system. 2. If the error persists, call service support.
20D0 9006	Duplicate subsystem serial number found in VPD	1. Power off, then power on the system. 2. If the error persists, call service support.
20D0 9007	Invalid subsystem machine type and model information in VPD	1. Power off, then power on the system. 2. If the error persists, call service support.
20D0 9008	Invalid subsystem serial number found in VPD	1. Power off, then power on the system. 2. If the error persists, call service support.
20D1 0001	Failed to send state-change message to service processor	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 0002	Failed to disable heartbeat alarm	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
20D1 0003	Failed to send boot status	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 0004	Failed to locate service processor device tree node	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 0005	Failed to reboot system	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 0006	Failed to reboot a partition	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 0007	Failed to set PCI read/write permissions array	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 0008	Failed to set PCI read/write permissions array for slot	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 0009	**Description:** Missing or invalid subsystem serial number **Action:** 1. Check for system firmware updates. Apply update if available. 2. If a location code is shown with this error code, replace the part at that location. 3. Contact your next level of support for assistance. **Note:** The location code identifies the failing subsystem.	
20D1 000A	Failed to send boot failed message to service processor	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 000B	Failed to reset PCI read/write permissions array	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 000C	Failed to send LMB-TABLE-INFO mailbox repair	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
20D1 000D	Function to get time-of-day failed.	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 000E	Function to get time-of-day failed.	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 000F	Hypervisor call to reset PHB or to check for drawer existence failed	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 0010	Stack underflow from fiber channel adapter	1. Check for microcode updates for the fiber channel adapter. Apply an update if available. 2. Check for system firmware updates. Apply an update if available. 3. Contact your next level of support for assistance.
20D1 0011	PHB recovery was not successful. Open firmware received failure in phb-recovery-buff	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
20D1 0012	**Attention:** One of the I/O subsystems has been disconnected from the system.	This is indicates that an I/O subsystem that was previously in the configuration was not found during the current boot. If an I/O subsystem has been configuration has not changed, do the following: 1. If not already booted, boot the system and match the I/O subsystem location codes reported by the operating system to the subsystems attached to the CEC. Check the SPCN and RIO cabling to the I/O subsystems. If an cabling problem is found, correct it. 2. Check for system firmware updates. Apply the update if available. 3. Contact your next level of support for assistance.
20E0 0001	Privileged-access password entry error.	The password has been entered incorrectly. Retry installing the password.
20E0 0004	Battery drained or needs replacement	1. Replace battery. Location: U0.1-P1-X1-V3 2. If problem persists, replace the service processor card Location: U0.1-P1-X1

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
20E0 0009	Invalid password entered - system locked	The password has been entered incorrectly 3 times. Turn off, then turn on the system unit, then enter the password correctly.
20EE 0003	IP parameter requires 3 dots ″.″	Enter valid IP parameter. Example: 000.000.000.000
20EE 0004	Invalid IP parameter	Enter valid IP parameter. Example: 000.000.000.000
20EE 0005	Invalid IP parameter (>255)	Enter valid IP parameter. Example: 255.192.002.000
20EE 0007	Keyboard not found	1. Plug in keyboard. 2. Replace the CEC backplane. Location: U0.1-P1
20EE 0008	No configurable adapters were found in the system by the remote IPL menu in the SMS utilities.	This warning occurs when the remote IPL menu in the SMS utilities cannot locate any LAN adapters that are supported by the remote IPL function. If a supported device is installed: 1. Replace the adapter. 2. Go to “MAP 1542: I/O Problem Isolation” on page 112.
20EE 0009	Unable to communicate with the service processor.	1. Replace the service processor Location: U0.1-P1-X1. 2. Replace the CEC backplane Location: U0.1-P1.
20EE 000A	The image size on the boot or installation device	1. Check for system firmware updates. Apply if available. 2. Call service support.
20EE 000B	The system was not able to find an operating system boot record on the devices listed in the boot list. This can be caused by the wrong devices being in the boot list, a problem that prevents the system from communicating with the device that contains the boot record, or the boot record being corrupted.	Go to “Boot Problems/Concerns” on page 155.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
20EE 000C	**Description:** Pointer to the operating system not found in non-volatile storage. **Action:** Values normally found in non-volatile storage that point to the location of an operating system were not found. This can happen for two reasons, either your installed operating system does not support storing the values or some event occurred that caused the system to lose non-volatile storage information (drainage or replacement of the battery). If you are running AIX, this information can be reconstructed by running the **bootlist** command specifying the device that the operating system is installed on. Refer to your AIX documentation for the exact syntax and usage of the **bootlist** command. To boot the operating system so that the above-mentioned values can be reconstructed, power off the system and power it on again. This should cause the system to look for the operating system in the devices contained in the custom boot list or in the default boot list, depending on the condition of the system. If this is not successful, use the System Management Services Menus to modify the boot sequence (also known as boot list) to include devices that are known to contain a copy of the operating system. For example, select a hard disk known to have a copy of the operating system as the first and only device in the boot sequence (boot list) and attempt to boot again. If the problem persists, replace the CEC backplane. Location: U0.1-P1.	
20EE 000E	Unable to execute the open firmware method.	1. Reboot the system. 2. Reflash the system with the latest level of system firmware. 3. Call service support.
20EE 000F	Unable to find the package node.	1. Reboot the system. 2. Reflash the system with the latest level of system firmware. 3. Call service support.
20EE 0010	Unable to execute the root VPD method.	1. Reboot the system. 2. Reflash the system with the latest level of system firmware. 3. Call service support.
20EE 0011	Unable to execute the VPD method.	1. Reboot the system. 2. Reflash the system with the latest level of system firmware. 3. Call service support.
20EE 0012	Unable to execute the mem-dimm-VPD method	1. Reboot the system. 2. Reflash the system with the latest level of system firmware. 3. Call service support.
20EE 0013	Unable to allocate memory for VPD.	1. Reboot the system. 2. Reflash the system with the latest level of system firmware. 3. Call service support.
20EE 0014	Unable to allocate memory for location codes.	The system firmware may be corrupted.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
20EE 0020	The environment variable ″boot-device″ exceeds the allowed character limit.	If this error occurs during the installation of AIX by a ″NIM push″, the **set_bootlist** attribute may not have been set correctly on the NIM master. For more information, see the *AIX 5.2 Installation Guide and Reference*, order number SC23-4389. If this error occurs at any other time: 1. Check for platform firmware updates. Apply if available. 2. Call service support.
20EE 0021	The environment variable ″boot-device″ contained more than five entries	If this error occurs during the installation of AIX by a ″NIM push″, the **set_bootlist** attribute may not have been set correctly on the NIM master. For more information, see the *AIX 5.2 Installation Guide and Reference*, order number SC23-4389. If this error occurs at any other time: 1. Check for platform firmware updates. Apply if available. 2. Call service support.
20EE 0022	The environment variable ″boot-device″ contained an entry that exceeded 255 characters in length	If this error occurs during the installation of AIX by a ″NIM push″, the **set_bootlist** attribute may not have been set correctly on the NIM master. For more information, see the *AIX 5.2 Installation Guide and Reference*, order number SC23-4389. If this error occurs at any other time: 1. Check for platform firmware updates. Apply if available. 2. Call service support.
20EE 0100	Fcode resident on an I/O adapter is not supported on this system	Informational message. The adapter's Fcode driver is not supported on this system. Additional information may be available from service support. This error code only affects boot-time operation, not the adapter's functionality under the operating system.
20FC 0020	Failed to retrieve power, packaging, and/or cooling VPD via SPCN for the corresponding subsystem. Service processor mailbox failed to get VPD.	1. Check the RIO cabling. 2. Check for system firmware updates. 3. Replace the part specified by the location code.
20FC 0021	Failed to retrieve power, packaging, and/or cooling VPD via SPCN for the corresponding subsystem. Service processor mailbox failed to get power, packaging, and cooling device VPD.	1. Check the RIO cabling. 2. Check for system firmware updates. 3. Replace the part specified by the location code.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
20FC 0030	Corrupted power, packaging, and cooling device VPD format in the SPCN configuration table.	1. Check for system firmware updates. 2. Replace the part specified by the location code.
20FF 0001	Problem with VPD	1. Replace the part indicated by the location code. 2. If no location code is specified, call service support.
2100 0xxx	SCSI controller fault	1. Before replacing any system components, refer to the notes in error code 21A00001. 2. Replace the SCSI device.
2101 0010	The IDE device remained busy longer than time-out period allows.	1. Retry the operation. 2. Check for system firmware updates. 3. Call service support.
2101 0011	Execution of the command by the IDE CD-ROM was not completed within the allowed time.	1. Retry the operation. 2. The CD in the IDE CD-ROM may not be readable. Try another CD.
2101 0012	Execution of the ATA command by the IDE CD-ROM failed.	1. Check the power and signal connectors going to the IDE CD-ROM. 2. Retry the operation. 3. The CD in the IDE CD-ROM may not be readable. Try another CD.
2101 0013	Bootable media is missing from the IDE CD-ROM	Put a bootable CD in the IDE CD-ROM drive.
2101 0014	The media in the IDE CD-ROM drive has been changed	1. Retry the operation. 2. Check for system firmware updates. 3. Call service support
2101 0015	Packed command execution by the IDE CD-ROM failed	1. The CD in the IDE CD-ROM may not be readable. Try another CD. 2. Check for system firmware updates. 3. Call service support.
21A0 0001	**Description:** SCSI DASD - test unit ready failed - hardware error **Action:** **Note:** 1. Before replacing any system components: a. Ensure that the controller and each device on the SCSI bus is assigned a unique SCSI ID. b. Ensure SCSI bus is properly terminated. c. Ensure SCSI signal and power cables are securely connected and not damaged. 2. The location code information is required to identify the ID of SCSI device failures as well as to indicate the location of the controller to which the device is attached. Check the system error logs to determine the location code information associated with the error code. a. Replace the SCSI device. b. Replace the SCSI cable. c. Replace the SCSI controller.	

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
21A0 0002	SCSI DASD - test unit ready failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the media (removable media devices). 2. Replace the SCSI device.
21A0 0003	SCSI DASD - send diagnostic failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
21A0 0004	SCSI DASD - send diagnostic failed - DevOfl cmd	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
21E0 0001	SCSI tape - test unit ready failed - hardware error	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the SCSI device. 2. Replace the SCSI cable. 3. Replace the SCSI controller.
21E0 0002	SCSI tape - test unit ready failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the media. 2. Replace the SCSI device.
21E0 0003	SCSI tape - send diagnostic failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
21E0 0004	SCSI tape - send diagnostic failed - DevOfl cmd	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
21ED 0001	SCSI changer - test unit ready failed - hardware error	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the SCSI device. 2. Replace the SCSI cable. 3. Replace the SCSI controller.
21ED 0002	SCSI changer - test unit ready failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the media. 2. Replace the SCSI device.
21ED 0003	SCSI changer - send diagnostic failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
21ED 0004	SCSI changer - send diagnostic failed - DevOfl cmd	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
21EE 0001	Undetermined SCSI device type - test unit ready failed - hardware error	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the SCSI device. 2. Replace the SCSI cable. 3. If the missing SCSI devices are connected to the same backplane, replace the SCSI backplane. 4. Replace the SCSI controller.
21EE 0002	Undetermined SCSI device type - test unit ready failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the media (removable media devices). 2. Replace the SCSI device.
21EE 0003	Undetermined SCSI device type - send diagnostic failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
21EE 0004	Undetermined SCSI device type - send diagnostic failed - DevOfl cmd	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
21F0 0001	SCSI CD-ROM - test unit ready failed - hardware error	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the SCSI device. 2. Replace the SCSI cable. 3. Replace the SCSI controller.
21F0 0002	SCSI CD-ROM - test unit ready failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the media. 2. Replace the SCSI device.
21F0 0003	SCSI CD-ROM - send diagnostic failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
21F0 0004	SCSI CD-ROM - send diagnostic failed - DevOfl cmd	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
21F2 0001	SCSI read/write optical - test unit ready failed - hardware error	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the SCSI device. 2. Replace the SCSI cable. 3. Replace the SCSI controller.
21F2 0002	SCSI read/write optical - test unit ready failed - sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. 1. Replace the media. 2. Replace the SCSI device.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
21F2 0003	SCSI read/write optical - send diagnostic failed-sense data available	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
21F2 0004	SCSI read/write optical - send diagnostic failed-DevOfl cmd	Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device.
2200 0001	PCI Ethernet BNC/RJ-45 or PCI Ethernet AUI/RJ-45 adapter internal wrap test failure	Replace the adapter. See “Checkpoint and Error Code Index” on page 162 for location code information related to this error. Also see “Replacing the Network Adapter” on page 161.
2200 1001	10/100 Mbps Ethernet PCI Adapter internal wrap test failure	Replace the adapter. See “Checkpoint and Error Code Index” on page 162 for location code information related to this error. Also see “Replacing the Network Adapter” on page 161.
2200 1002	10/100 Mbps Ethernet PCI adapter failure	Replace the adapter. See “Checkpoint and Error Code Index” on page 162 for location code information related to this error. Also see “Replacing the Network Adapter” on page 161.
2201 0001	PCI Auto LANstreamer token ring adapter failed to complete hardware initialization.	Replace the adapter. See “Checkpoint and Error Code Index” on page 162 for location code information related to this error. Also see “Replacing the Network Adapter” on page 161.
2201 1001	PCI token ring adapter failed to complete hardware initialization.	Replace the adapter. See “Checkpoint and Error Code Index” on page 162 for location code information related to this error. Also see “Replacing the Network Adapter” on page 161.
25A0 0001	Cache L2 controller failure	Replace the CEC backplane assembly. Location: U0.1-P1.
25A1 0001	Cache L2 SRAM failure	Replace the CEC backplane, Location: U0.1-P1-C1
25A8 0xxx	**Description:** NVRAM problems **Action:** Errors reported against NVRAM can be caused by low battery voltage and (more rarely) power outages that occur during normal system usage. With the exception of the 25A80000 error, these errors are warnings that the NVRAM data content had to be re-established and do not require any FRU replacement unless the error is persistent. When one of these errors occurs, any system customization (for example, boot device list) information has been lost, the system may need to be reconfigured. If the error is persistent, replace service processor Location: U0.1-P1-X1	
25A8 0000	Initialization failed, device test failed	Refer to Action under error code 25A80xxx.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
25A8 0100	NVRAM data validation check failed.	Turn off, then turn on system unit and retry the operation before replacing any system component. Refer to Action under error code 25A80xxx.
25A8 0201	Unable to expand target partition - saving configuration variable.	Refer to Action under error code 25A80xxx.
25A8 0202	Unable to expand target partition - writing error log entry.	Refer to Action under error code 25A80xxx.
25A8 0203	Unable to expand target partition - writing VPD data.	Refer to Action under error code 25A80xxx.
25A8 0210	Setenv/$Setenv parameter error - name contains a null character.	Refer to Action under error code 25A80xxx.
25A8 0215	NVRAM RIO-USR-select variable not found	1. Check for platform firmware updates. Apply if available. 2. Call service support.
25A8 0211	Setenv/$Setenv parameter error - value contains a null character.	Refer to Action under error code 25A80xxx.
25A8 0998	**Description:** NVRAMRC script evaluation error - command line execution error **Action:** Execution of a command line within the nvram configuration variable “nvramrc” (script) resulted in a “throw” being executed. This script can be modified by the system firmware **SMS** utilities, the operating system, PCI adapter ROM code or utility, or an operator (via the open firmware script editing command **nvedit**). It may not be possible to resolve the problem without a detailed analysis of the nvram script, the current system configuration, and device tree contents. 1. The problem can be caused by a SCSI adapter, whose SCSI bus ID has been changed from the default setting, no longer appearing in the system. This can be caused either by removing a SCSI adapter, or a problem with a SCSI adapter. a. Select the SCSI ID utility from the **SMS** menu(s). 1) Verify the list of SCSI controllers/adapters. If the list is not correct, suspect a problem with the adapter(s) installed but not listed. 2) Select the option to Save the configuration information. 3) Restart the system. b. If the problem persists, boot the operating system and verify the SCSI bus IDs of any installed/available SCSI controllers (change as necessary), and restart the system. 2. Contact your support representative for further assistance.	
25A8 0999	NVRAMRC script evaluation error - stack unbalanced on completion	This is a firmware debug environment error. There is no user action or FRU replacement for this error.
25A8 0A00	Unable to retrieve NVRAM LPAR table information	Refer to the actions column for error code 25A8 0xxx.
Memory Error Notes Use the location code obtained from the SMS Error Log utility (described in “Error Log Utility Procedure” on page 199) to identify which memory DIMM (or memory DIMM quad) the error is reported against. Memory error codes are in the form **25Cyyxxx** where **yy** indicates memory DIMM present detect-bits (PD-bits) and **xxx** indicates the last 3 digits of the error code. See “Memory DIMM Present Detect Bits (PD-Bits)” on page 198 for information on how to interpret PD bits.		

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
25B0 0001	No memory DIMMs detected.	Go to “MAP 1240: Memory Problem Resolution” on page 67.
25B0 0004	Multiple memory DIMMs failed a memory test.	Go to “MAP 1240: Memory Problem Resolution” on page 67.
25Cy y001	DIMM is not supported	Replace unsupported DIMM(s). **Note:** Memory DIMMs must be replace with a supported type of memory DIMM. If an unsupported type of memory DIMM is replaced with the same unsupported type, the error persists. See the ″Memory Error Notes″ on page 183 for more information.
25Cy y002	Memory DIMM fails memory test.	Go to “MAP 1240: Memory Problem Resolution” on page 67.
2602 0001	**Description:** Invalid PCI adapter vendor ID **Action:** 1. Move adapter to another slot (behind a different PCI bus). 2. Check for available firmware updates for adapter. Apply update if available. 3. Run AIX diagnostics on adapter. Replace if indicated. 4. Replace adapter. 5. Check for system firmware updates. Apply if update available. 6. Replace the CEC backplane, location U0.1-P1.	
2602 0002	**Description:** Invalid PCI adapter device ID **Action:** 1. Move adapter to another slot (behind a different PCI bus). 2. Check for available firmware updates for adapter. Apply update if available. 3. Run AIX diagnostics on adapter. Replace if indicated. 4. Replace adapter. 5. Check for system firmware updates. Apply if update available. 6. Replace the CEC backplane, location U0.1-P1.	
2602 0007	**Description:** PCI device I/O or memory space request could not be satisfied **Action:** 1. If the location code identifies a slot: a. Reseat the adapter and reboot the system. b. Replace the adapter. c. Check for system firmware update. Apply update if available. 2. If the location code identifies the CEC backplane or an I/O planar: a. Check for system firmware updates. Apply if available. b. Replace the CEC backplane or I/O planar. 3. Call service support.	

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
2602 0008	**Description:** PCI device Fcode evaluation error **Action:** 1. If the location code identifies a slot: a. Check for adapter firmware updates. Apply if available. b. Replace the adapter. c. Check for system firmware updates. Apply if available. 2. If the location code identifies CEC backplane or an I/O planar: a. Check for system firmware updates. Apply if available. b. Replace the CEC backplane or I/O planar. 3. Call service support.	
2602 0010	**Description:** PCI probe error, bridge in freeze state **Action:** If the location code identifies a slot, do the following: 1. Check for system firmware updates. Apply if available. 2. Check the cabling to the adapter, in particular, the adapters that have serial ports. Serial ports may require null modems or special cabling configurations to avoid connecting driver outputs together. This may create a PCI slot power problem and force the adapter to be deconfigured. 3. **Is the system running Linux?** **YES** Go to The System is Running Linux on page 185. **NO** Check the *RS/6000 & pSeries PCI Adapter Placement Reference* to see if the adapter is hot-swappable. If it is not hot-swappable, go to The System is Running Linux on page 185 because the system must be powered off to continue. If it is hot-swappable, continue. 4. Use the hot-swap service aid to reseat the card specified by the location code. See “Replacing a Hot-Pluggable PCI Adapter” on page 301. If reseating the adapter fixes the problem, go to MAP 410: ″Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* manual. If the problem is not resolved, continue. **Attention:** Before moving the adapter to another slot, verify with the customer or system administrator that the slot that the adapter is being moved to is available to the partition in which the adapter presently resides. 5. **Is there an empty slot available into which the adapter could be plugged?** **YES** Use the hot-swap task to move the adapter card to another slot behind a different PCI bridge. The “System Logic Flow” on page 23 identifies the PCI bridges and the associated slots. See “Removing a Hot-Pluggable PCI Adapter” on page 298 when removing the adapter, and “Installing a Hot-Pluggable PCI Adapter” on page 304 when installing the card in the new slot. If the card is successfully reconfigured in the new slot (behind a different PCI bridge), the slot in which the card was originally plugged is bad. Replace the system planar, location: U0.1-P1. If the adapter does not reconfigure successfully in the new slot, replace the adapter. **NO** Replace the adapter. If the problem is not resolved, replace the system planar, location: U0.1-P1. 6. Go to “MAP 1540: Problem Isolation Procedures” on page 110.	
The System is Running Linux		

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
1. Power off the system. See “Removing a Non-Hot-Pluggable PCI Adapter” on page 294 and “Replacing or Installing a Non-Hot-Pluggable PCI Adapter” on page 296 for instructions on reseating the card. If reseating the adapter fixes the problem, go to ″MAP 410, Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* manual. **Attention:** Before moving the adapter to another slot, verify with the customer or system administrator that the slot that the adapter is being moved to is in the partition in which the adapter presently resides. 2. **Is there an empty slot available into which the adapter could be plugged?** **YES** Move the adapter to another slot behind a different PCI bridge. The “System Logic Flow” on page 23 identifies the PCI bridges and the associated slots. See “Removing a Non-Hot-Pluggable PCI Adapter” on page 294 when removing the adapter, and “Replacing or Installing a Non-Hot-Pluggable PCI Adapter” on page 296 when installing the card in the new slot. If the card is successfully reconfigured in the new slot (behind a different PCI bridge), the slot in which the card was originally plugged is bad. Replace the CEC backplane, location: U0.1-P1. If the adapter does not reconfigure successfully in the new slot, replace the adapter. **NO** Replace the adapter. If the problem is not resolved, replace system backplane in which the card was installed, location: U0.1-P1. 3. Go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113. If the location code does not identify a slot or PCI adapter, or no location code is specified, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113.		
2602 0011	**Description:** PCI probe error, bridge is not usable **Action:** If the location code identifies a slot: 1. Check the cabling to the adapter, in particular, the adapters that have serial ports. Serial ports may require null modems or special cabling configurations to avoid connecting driver outputs together. This may create a PCI slot power problem and force the adapter to be deconfigured. **Attention:** Before moving the adapter to another slot, verify with the customer or system administrator that the slot that the adapter is being moved to is available to the partition in which the adapter presently resides. 2. Move adapter to another slot (behind a different PCI bus). 3. Check for available firmware updates for adapter. Apply update if available. 4. Replace the adapter. 5. Check for system firmware updates. Apply update if available. 6. If the card is in the system drawer, replace the system backplane, location: U0.1-P1. If the card is in an I/O subsystem, replace the I/O backplane that contains the slot in which the adapter was originally installed, location: U0.dd-P1.	
2602 0012	**Description:** PCI device run-time error, bridge in freeze state **Action:** If the location code identifies a slot: 1. Check the cabling to the adapter. In particular, the adapters that have serial ports. Serial ports may require null modems or special cabling configurations to avoid connecting driver outputs together. This may create a PCI slot power problem and force the adapter to be deconfigured. 2. Move adapter to another slot (behind a different PCI bus). 3. Check for available firmware updates for adapter. Apply update if available. 4. Replace adapter. 5. Check for system firmware updates. Apply if update available. 6. If the card is in the system drawer, replace the CEC backplane, location: U0.1-P1. If the card is in an I/O subsystem, replace the I/O backplane that contains the slot in which the adapter was originally installed, location: U0.dd-P1.	

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
2602 0014	A PCI adapter is not properly seated, or an invalid type of adapter is installed in the system	• If the location code identifies a slot: 1. Check the PCI adapter specified by the location code for proper seating. 2. Verify that the PCI adapter specified by the location code is supported on this system. 3. Replace the adapter. • If the location code identifies an I/O planar: 1. Check for system firmware updates. Apply the update if one is available. 2. Replace the I/O planar.
2602 0Fxy	PCI bridge chip failure	Replace the system backplane, location: U0.1-P1.
2680 0Axy	MX-PCI bridge BIST failure	The problem is associated with bridge ″y″ in I/O drawer ″x.″ Replace the I/O backplane in I/O drawer ″x.″ Location U0.x-P1 See “Determining Location Code” on page 161 or location code information related to this error.
2680 0Cxx	Machine check occurred	1. Replace the part identified by the location code associated with this error code. 2. If the location code associated with this error code identifies an adapter, and replacing the adapter does not correct the problem, replace the CEC backplane or I/O planer, location: U0.1-P1 or U0.dd-P1
2680 0Dxx	Machine check occurred; unable to isolate to a single device	Go to “MAP 1540: Problem Isolation Procedures” on page 110
27A0 0001	Error obtaining external RIO cable IDs	1. Check the SPCN and RIO cabling going to the I/O subsystem specified by the location code. 2. Check for system firmware updates. 3. Replace the I/O subsystem planar specified by the location code.
2803 0xxx	**Description:** Real-time-clock (RTC) errors **Action:** 1. Errors reported against the real-time clock can be caused by low battery voltage and (more rarely) power outages that occur during normal system usage. These errors are warnings that the real-time clock data content needs to be re-established and do not require any FRU replacement unless the error is persistent. When one of these errors occurs, the time and date information has been lost. To set/restore the time and date, use the operating system facility. 2. If the error is persistent, replace the battery. Location: U0.1-P1-X1-V4 3. If the error is persistent after the battery is replaced, replace the service processor. Location: U0.1-P1-X1	

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
2803 0001	RTC not updating - RTC initialization required	1. Set time and date. 2. Refer to Action under error code 2803 0xxx.
2803 0002	Bad time/date values	1. Set time and date. 2. Refer to Action under error code 2803 0xxx.
2803 0003	RTC not updating - not correctable	Replace service processor Location: U0.1-P1-X1
2803 0004	RTC operating mode parameters (eg. data mode) changed	1. Set time and date. 2. Refer to Action under error code 28030001.
2803 0005	RTC battery error	1. Replace the battery. **Note:** Password, time, and date need to be set. 2. Refer to Action under error code 2803 0001.
2803 F003	Real-time-clock not updating - not correctable (detected by hypervisor)	Replace the service processor Location: U0.1-P1-X1
2900 0002	Keyboard/mouse controller failed self-test	Replace service processor Location: U0.1-P1-X1
29A0 0003	Keyboard not present/detected	1. Keyboard 2. Replace service processor Location: U0.1-P1-X1
29A0 0004	Keyboard stuck key detected	1. Keyboard 2. Replace service processor Location: U0.1-P1-X1
29B0 0004	Mouse not present/detected	1. Mouse 2. Replace service processor Location: U0.1-P1-X1
2B20 0011	Processor is manually disabled	Use the service processor menus to re-enable the processor and reboot the system
2B20 0012	This is an informational code that is generated when the AIX **cpu_deallocate**command is used to take a processor off-line.	There is no action required. To bring the processor back on-line (back into the system's or partition's configuration), reboot the operating system.
2B20 0022	Processor is deconfigured by the system	The processor has previously failed BIST or POST. Replace the processor card indicated by the location code associated with the error code in the error log.
2B20 0031	Processor is failing POST.	Replace the processor card indicated by the location code associated with the error code in the error log.
2B20 0042	Unknown processor card	Remove the unknown/unsupported CEC backplane.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
2B20 8880	Unrecoverable internal hardware error	If Linux is the only operating system on the failing system, call service support. If AIX is available, and the system is powered down, replace the FRU indicated by the service processor error log entry. If AIX is available and the system has been rebooted, run online AIX diagnostics and look for an AIX error log entry in which the description says cache or cache controller error. Replace the FRUs listed with this entry.
2B20 8881	Software error	Call service support.
2B20 8882	Software error	Call service support.
2B20 8883	Software error	Call service support.
2B20 8884	Unrecoverable processor subsystem error	If Linux is the only operating system on the failing system, call service support. If AIX is available, and the system is powered down, replace the FRU indicated by the service processor error log entry. If AIX is available and the system has been rebooted, run online AIX diagnostics and look for an AIX error log entry in which the description says cache or cache controller error. Replace the FRUs listed with this entry.
2B20 8885	Unrecoverable internal hardware error	If Linux is the only operating system on the failing system, call service support. If AIX is available, run online AIX diagnostics and look for an AIX error log entry in which the description says I/O bus time-out, access, or other error, or I/O bridge/device internal error. Replace the FRUs listed with this entry.
2B20 8888	Operating system termination request received	Informational message.
2B2x 00EE	**Description:** An exception error has been reported on a global processor **Action:** The type of interrupt that caused the exception is specified by the x as follows: **0:** Unknown interrupt **1:** System reset interrupt (SRI) **2.** Machine check interrupt (MCI) **3.** Data storage interrupt (DSI) **4.** Instruction storage interrupt (ISI) **5.** External interrupt (EXI) **6.** Alignment interrupt (ALI) **7.** Program interrupt (SRI) **8.** Floating unavailable interrupt (FUI) 1. Check for system firmware updates. Apply if available. 2. Call service support.	

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
2BA0 0000	Service processor POST failure	Replace service processor Location: U0.1-P1-X1
2BA0 0012	Service processor reports self test failure	Replace service processor Location: U0.1-P1-X1
2BA0 0013	Service processor reports bad NVRAM CRC	Refer to the actions for error code 25A8 0xxx.
2BA0 0017	Service processor reports bad or low battery.	1. Replace the battery, U0.1-P1-X1-V3. 2. Refer to the actions for error code 25A8 0xxx.
2BA0 0021	Open firmware mailbox call to activate attention LED failed	Call service support.
2BA0 0041	Service processor VPD is corrupted.	Replace system backplane Location: U0.1-P1-X1
2BA0 0071	VPD data is corrupted for processor 1.	Replace the service processor Location: U0.1-P1
2BA0 0073	Reserved	Reserved
2BA0 0080	Service processor hardware reset request failure	1. Check for system firmware updates. Apply if available. 2. Call service support.

Service Processor Error Codes

Attention: Follow the procedure defined in the “Checkpoint and Error Code Index” on page 162. If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1548: Processor Subsystem Problem Isolation” on page 113 unless otherwise indicated in the tables.

If you replace FRUs and the problem is corrected, go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Table 6. Service Processor Error Codes.

Error Code	Description	Action/ Possible Failing FRU
406x 0002	CEC backplane fault	CEC backplane Location: U0.1-P1
406x 0003	Scan interface basic assurance tests detected processor fault	CEC backplane Location: U0.1-P1
406x 000E	Processor capacity card	Operator panel Location: U0.1-L1
406x 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-M5
406x 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-M7
406x 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-M4
406x 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-M2
406x 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-M6
406x 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-M8
406x 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-M3
406x 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-M1
406x 00B0	Bus controller failure	1. Check for system firmware updates. Apply if available. 2. Replace the service processor, location: U0.1-P1-X1 3. Replace the CEC backplane, location: U0.1-P1
406x 00B1	Bus controller failure	1. Check for system firmware updates. Apply if available. 2. Replace the service processor, location: U0.1-P1-X1 3. Replace the CEC backplane, location: U0.1-P1

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406x 00B3	Processor/VPD failure	1. Check for system firmware updates. Apply if available. 2. Replace the service processor, location: U0.1-P1-X1 3. Replace the CEC backplane, location: U0.1-P1
406x 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor sub system testing and initialization was completed.	Go to "MAP 1540: Problem Isolation Procedures" on page 110
406x 00D1	Informational message	Informational message
406x 0100	Memory quad A failure	Go to "MAP 1240: Memory Problem Resolution" on page 67
406x 0101	Memory quad B failure	Go to "MAP 1240: Memory Problem Resolution" on page 67
406x 0A03	Reboot message (run-time array gard failure) for processor 0.	Array bit steering, which is a function in the firmware, may be able to correct this problem without replacing hardware. If AIX is available on the system, go to ″MAP 0235: System Array Self-Repair Problem Resolution″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*. If Linux is the only operating system on the system, schedule deferred maintenance with the customer. When it is possible to reboot the system, do the following: 1. Using the service processor's system power control menu, disable fast mode boot. (Disabling fast mode automatically enables slow mode.) 2. Boot the AIX diagnostic CD-ROM. 3. Run diagnostics in problem determination mode. If no errors are recorded against any of the processors (devices with a resource name of proc*x*), array bit steering was successful and the problem has been corrected. If errors are reported against the hardware, follow the actions for the error code or SRN.
406x 0B00	Problem with internal RIO interface	CEC backplane, U0.1-P1
406x 0B01	Problem with internal RIO interface	CEC backplane, U0.1-P1
406x 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. CEC backplane, U0.1-P1 3. Call service support.
406x 0C10	Proc 0 config error: VPD mismatch for proc card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406x 0CA5	Invalid system configuration	1. Check that the processor cards and memory DIMMs are properly installed and configured. 2. If there are any FRUs listed in the service processor error log entry, replace them one at a time. 3. Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0CA6	No usable memory left in the system. The system must be rebooted.	Go to “MAP 1240: Memory Problem Resolution” on page 67.
406x0 CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
406x 0CAA	System memory exceeds the limit for this system type and model.	Remove the memory DIMMs until the memory does not exceed the limit for this system type and model.
406x 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
406x 0EA1	Operating system code on main processor	1. Check for operating system code updates. 2. If there are other symptoms, go (one symptom at a time) to the “Quick Entry MAP” on page 53 and follow the instructions. 3. Call service support.
406x 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
406x 0EA4	The service processor firmware detected a hardware problem but was unable to isolate the source	Call service support.
406x 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.
406x 0EB0	JTAG problem	Go to “MAP 1541: JTAG Problem Isolation” on page 112.
406x 0EB1	Attention line 0 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EB2	Attention line 1 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EB3	Attention line 2 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EB4	Attention line 3 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EB5	Attention line 4 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EB6	Attention line 5 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EB7	Attention line 6 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EB8	Attention line 7 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406x 0EB9	Attention line 8 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EBA	Attention line 9 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EBB	Attention line 10 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EBC	Attention line 11 stuck fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
406x 0EBF	Memory error	1. Reboot the system in slow mode to the SMS menus. See “Performing Slow Boot” on page 159. 2. Examine the service processor error log. a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot calling out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code. b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.
406x 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
406x 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.
406x 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
4503 26F5	**Description:** System backplane with 2 processors fault **Action:** This error code indicates that the processor repeat gard function has deconfigured a processor. Do the following: 1. Go to the processor configuration/deconfiguration menu, located under the system information menu in the service processor menus. Look at the status of the processors. If any of the processors have a status of *manually deconfigured*, reconfigure the processor(s) and boot the system to the SMS menus. Power off the system using the white power button and look again at the status of the processors. If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved. If any of the processors have a status of *deconfigured by the system*, either before or after the boot to the SMS menus, go to step 2. 2. Replace the processor card (on which the deconfigured processor resides) specified by the location code.	

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 271C	**Description:**System backplane with 2 processors fault **Action:** This error code indicates that the processor repeat gard function has deconfigured a processor. Do the following: 1. Go to the processor configuration/deconfiguration menu, located under the system information menu in the service processor menus. Look at the status of the processors. If any of the processors have a status of *manually deconfigured*, reconfigure the processor(s) and boot the system to the SMS menus. Power off the system using the white power button and look again at the status of the processors. If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved. If any of the processors have a status of *deconfigured by the system*, either before or after the boot to the SMS menus, go to step 2. 2. Replace the processor card (on which the deconfigured processor resides) specified by the location code.	
4503 30D1	**Description:** 256 MB DIMM fault **Action:** This error code indicates that the memory repeat gard function has deconfigured a quad of memory. Do the following: 1. Go to the memory configuration/deconfiguration menu, located under the system information menu in the service processor menus. Look at the status of the DIMMs. If any of the DIMMs have a status of *manually deconfigured*, reconfigure the DIMMs and boot the system to the SMS menus. Power off the system using the white power button and look again at the status of the DIMMs. If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved. If all of the DIMMs are still configured in the memory configuration/deconfiguration menu, the problem has been resolved. If any of the DIMMs have a status of *deconfigured by the system*, either before or after the boot to the SMS menus, go to step 2. 2. Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.	
4503 30D2	**Description:** 512MB DIMM fault **Action:**This error code indicates that the memory repeat gard function has deconfigured a quad of memory. Do the following: 1. Go to the memory configuration/deconfiguration menu, located under the system information menu in the service processor menus. Look at the status of the DIMMs. If any of the DIMMs have a status of *manually deconfigured*, reconfigure the DIMMs and boot the system to the SMS menus. Power off the system using the white power button and look again at the status of the DIMMs. If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved. If all of the DIMMs are still configured in the memory configuration/deconfiguration menu, the problem has been resolved. If any of the DIMMs have a status of *deconfigured by the system*, either before or after the boot to the SMS menus, go to step 2. 2. Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.	

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 30D3	**Description:** 1 GB DIMM fault **Action:** This error code indicates that the memory repeat gard function has deconfigured a quad of memory. Do the following: 1. Go to the memory configuration/deconfiguration menu, located under the system information menu in the service processor menus. Look at the status of the DIMMs. If any of the DIMMs have a status of *manually deconfigured*, reconfigure the DIMMs and boot the system to the SMS menus. Power off the system using the white power button and look again at the status of the DIMMs. If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved. If all of the DIMMs are still configured in the memory configuration/deconfiguration menu, the problem has been resolved. If any of the DIMMs have a status of *deconfigured by the system*, either before or after the boot to the SMS menus, go to step 2. 2. Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.	
4503 30D4	**Description:** 1 GB DIMM fault **Action:** This error code indicates that the memory repeat gard function has deconfigured a quad of memory. Do the following: 1. Go to the memory configuration/deconfiguration menu, located under the system information menu in the service processor menus. Look at the status of the DIMMs. If any of the DIMMs have a status of *manually deconfigured*, reconfigure the DIMMs and boot the system to the SMS menus. Power off the system using the white power button and look again at the status of the DIMMs. If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved. If all of the DIMMs are still configured in the memory configuration/deconfiguration menu, the problem has been resolved. If any of the DIMMs have a status of *deconfigured by the system*, either before or after the boot to the SMS menus, go to step 2. 2. Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.	
4503 30D5	**Description:** 2 GB DIMM fault **Action:** This error code indicates that the memory repeat gard function has deconfigured a quad of memory. Do the following: 1. Go to the memory configuration/deconfiguration menu, located under the system information menu in the service processor menus. Look at the status of the DIMMs. If any of the DIMMs have a status of *manually deconfigured*, reconfigure the DIMMs and boot the system to the SMS menus. Power off the system using the white power button and look again at the status of the DIMMs. If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved. If all of the DIMMs are still configured in the memory configuration/deconfiguration menu, the problem has been resolved. If any of the DIMMs have a status of *deconfigured by the system*, either before or after the boot to the SMS menus, go to step 2. 2. Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.	
450x 26F4	System backplane with 1 processor fault	Replace the CEC backplane Location: U0.1-P1
450x 26F5	System backplane with 2 processors fault	Replace the CEC backplane Location: U0.1-P1

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450x 271B	System backplane with 1 processor fault	Replace the CEC backplane Location: U0.1-P1
450x 271C	System backplane with 2 processors fault	Replace the CEC backplane Location: U0.1-P1
450x 30D1	256 MB DIMM	Go to “MAP 1240: Memory Problem Resolution” on page 67.
450x 30D2	512 MB DIMM	Go to “MAP 1240: Memory Problem Resolution” on page 67.
450x 30D3	1 GB DIMM	Go to “MAP 1240: Memory Problem Resolution” on page 67.
450x 30D4	1 GB DIMM	Go to “MAP 1240: Memory Problem Resolution” on page 67.
450x 30D5	2 GB DIMM	Go to “MAP 1240: Memory Problem Resolution” on page 67.
460x 26F4	System backplane with 1 processor	Replace the system backplane, Location: U0.1-P1
460x 26F5	System backplane with 2 processors	Replace the system backplane, Location: U0.1-P1
460x 271B	System backplane with 1 processor	Replace the system backplane, Location: U0.1-P1
460x 271C	System backplane with 2 processors	Replace the system backplane, Location: U0.1-P1
460x 28D0	Service processor	Replace the service processor, Location: U0.1-P1-X1
4B23 26F5	**Description:** 2-way processor card fault **Action:** This error code indicates that the processor repeat gard function has deconfigured a processor. Do the following: 1. Go to the processor configuration/deconfiguration menu, located under the system information menu in the service processor menus. Look at the status of the processors. If any of the processors have a status of *manually deconfigured*, reconfigure the processor(s) and boot the system to the SMS menus. Power off the system using the white power button and look again at the status of the processors. If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved. If any of the processors have a status of *deconfigured by the system*, either before or after the boot to the SMS menus, go to step 2. 2. Replace the processor card (on which the deconfigured processor resides) specified by the location code.	

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B23 271C	**Description:** 2-way processor card fault **Action:** This error code indicates that the processor repeat gard function has deconfigured a processor. Do the following: 1. Go to the processor configuration/deconfiguration menu, located under the system information menu in the service processor menus. Look at the status of the processors. If any of the processors have a status of *manually deconfigured*, reconfigure the processor(s) and boot the system to the SMS menus. Power off the system using the white power button and look again at the status of the processors. If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved. If any of the processors have a status of *deconfigured by the system*, either before or after the boot to the SMS menus, go to step 2. 2. Replace the processor card (on which the deconfigured processor resides) specified by the location code.	
4B2x 26F4	**Description:** System backplane with 1 processor **Action:** Replace the system backplane, Location: U0.1-P1	
4B2x 26F5	**Description:** System backplane with 2 processors **Action:** Replace the system backplane, Location: U0.1-P1	
4B2x 271B	**Description:** System backplane with 1 processor **Action:** Replace the system backplane, Location: U0.1-P1	
4B2x 271C	**Description:** System backplane with 2 processors **Action:** Replace the system backplane, Location: U0.1-P1	

Memory DIMM Present Detect Bits (PD-Bits)

The following table expands on the Memory Error Notes found on page 183, where *yy* is the PD value in the table below and *xxx* are the last three digits of the error code. Use these values to identify the type of memory that generated the error.

If you replace FRUs or perform an action, and the problem is still not corrected, go to “MAP 1540: Problem Isolation Procedures” on page 110 unless otherwise indicated in the Memory Error Notes found on page 183.

Table 7. Memory DIMM PD bits

PD value	Size
28	512 MB
38	128 MB
68	256 MB
78	1024 MB
88	2048 MB

Note: Memory DIMMs must be installed in quads.

Error Log Utility Procedure

When the System Management Services menu appears, check the error log for any errors. Use the location code obtained from the SMS error log utility to identify the component the error is reported against. To obtain the location code from the error log utility do the following:

1. From the SMS main menu, choose **View Error Log**.
2. If an error is logged, check the time stamp.
3. If the error was logged during the current boot attempt, record it.
4. Look up the error in the Chapter 5, “Error Code to FRU Index,” on page 159 and perform the listed action.
5. If no recent error is logged in the error log, go to “MAP 1540: Problem Isolation Procedures” on page 110.

System Firmware Update Messages

Table 8. System Firmware Update Messages

Error Code	Description	Action/ Possible Failing FRU
A1FD 0000	Recovery mode entered	Information message
A1FD 0001	Service processor flash recovery	Insert Diskette #1
A1FD 0002	Service processor flash recovery	Insert Diskette #2
A1FD 0003	Service processor flash recovery	Insert Diskette #3
A1FD 0004	Service processor flash recovery	Insert Diskette #4

Scan Dump Messages

Error Code	Description	Action/ Possible Failing FRU
A100 3000	Successful completion of scan dump	Informational message; may or may not be seen during a scan log dump.
A1FF 3000	Scan dump has been disabled	Informational message; may or may not be seen during a scan log dump.

Common Firmware Error Codes

Attention: Follow the procedure defined in “Checkpoint and Error Code Index” on page 162. If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Problem Isolation Procedures” on page 110 unless otherwise indicated in the tables.

If you replace FRUs and the problem is corrected, go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Table 9. Common Firmware Error Codes

Error Code	Description	Action/ Possible Failing FRU
B006 1403	Missing service processor resource	1. Update system firmware 2. Service processor Location: U0.1-P1-X1

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B006 1404	Service processor firmware fault	1. Update system firmware 2. Service processor Location: U0.1-P1-X1
B006 1405	Service processor firmware fault	1. Update system firmware 2. Service processor Location: U0.1-P1-X1
B006 1406	Service processor program error	1. Update system firmware 2. Check for operating system updates 3. Service processor Location: U0.1-P1-X1
B006 1407	Service processor resource allocation problem	1. Update system firmware 2. Check for operating system updates 3. Service processor Location: U0.1-P1-X1
B006 1408	Service processor program error	1. Update system firmware 2. Check for operating system updates 3. Service processor Location: U0.1-P1-X1
B006 1409	Service processor program error	1. Update system firmware 2. Service processor Location: U0.1-P1-X1
B10F 1000	Service processor DRAM failure	Service processor Location: U0.1-P1-X1
B10F 1002	Service processor failure	Service processor Location: U0.1-P1-X1
B10F 1005	Service processor failure	Service processor Location: U0.1-P1-X1
B10F 1007	Service processor failure	Service processor Location: U0.1-P1-X1
B10F 1008	Service processor failure	Service processor Location: U0.1-P1-X1
B10F 100E	Service processor boot flash corrupted	Service processor Location: U0.1-P1-X1
B10F 100F	Service processor base flash corrupted	Service processor Location: U0.1-P1-X1
B10F 1300	Service processor failure	Service processor Location: U0.1-P1-X1
B10F 1370	Service processor flash update failure	1. Retry flash update 2. Service processor Location: U0.1-P1-X1
B10F 1380	Service processor program failure	1. Update system firmware 2. Service processor Location: U0.1-P1-X1

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B10F 1381	Service processor flash error	1. Update system firmware 2. Service processor Location: U0.1-P1-X1
B10F 1384	Service processor failure	Service processor Location: U0.1-P1-X1
B10F 1387	Service processor failure	Service processor Location: U0.1-P1-X1
B10F 1400	Service processor failure	Service processor Location: U0.1-P1-X1
B10F 1401	Service processor failure	Service processor Location: U0.1-P1-X1
B10F 1670	Service processor flash update failure	1. Retry flash update 2. Service processor Location: U0.1-P1-X1
B10F 1672	Service processor firmware update invalid	Call service support
B10F 1675	Service processor failure	Service processor Location: U0.1-P1-X1
B10F 1681	Service processor firmware update invalid	Call service support
B10F 1682	Service processor firmware update invalid	Call service support
B10F 1683	Service processor firmware update invalid	Call service support
B1xx 0013	An attempt was made to flash (update) the firmware from AIX using the wrong image for this system. No flashing took place; the firmware level was not changed.	Retry the firmware update from AIX using the correct flash image.
B1xx 4600	Service processor failure	Service processor Location: U0.1-P1-X1
B1xx 4601	System processor failure	Go to “MAP 1540: Problem Isolation Procedures” on page 110.

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1xx 4602	Hardware failure	1. Was this error code logged just after the system crashed? **NO** Go to step 3. **Yes** Go to step 2. 2. Examine the service processor error log. Look for a 4xxx yyyy error that calls out FRU(s) in the CEC whose timestamp just precedes the B1xx 4602 error. If a 4xxx yyyy error occurred, replace the FRU indicated by the location code. If there is no 4xxx yyyy error whose timestamp just precedes the B1xx 4602 error, continue to step 3. 3. a. Reboot the system in slow mode to the SMS menus. See “Performing Slow Boot” on page 159. b. Examine the service processor error logs. Look for a 4xxx yyyy error that occurred during the slow boot that calls out FRU(s) in the CEC. c. If a 4xxx yyyy error occurred during the slow boot, replace the FRU(s) indicated by the location code(s). d. If a 4xxx yyyy error did not occur during the slow boot, replace: • the service processor Location: U0.1-P1-X1. • the system planar Location: U0.1-P1.
B1xx 4603	Service processor firmware corrupted	1. Reload system firmware 2. Service processor Location: U0.1-P1-X1
B1xx 4606	Firmware failure	1. Check for system firmware updates 2. Operator panel Location: U0.1-L1 3. Service processor Location: U0.1-P1-X1
B1xx 4608	Service processor early termination	1. Reset the system by disconnecting and reconnecting system power 2. Reload system firmware 3. Service processor Location: U0.1-P1-X1
B1xx 460A	TOD clock has been reset	1. Set TOD clock 2. Service processor Location: U0.1-P1-X1
B1xx 460B	TOD battery failure	TOD battery Location: U0.1-P1-X1-V4

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1xx 4611	Service processor failure	System backplane Location: U0.1-P1
B1xx 4620	Modem configuration failure	1. Check modem configuration files 2. Check for system firmware update 3. Modem 4. Service processor Location: U0.1-P1-X1
B1xx 4621	Modem disconnect failure	1. Check modem configuration files 2. Check for system firmware update 3. Modem 4. Service processor Location: U0.1-P1-X1
B1xx 4622	Service processor failure	1. Operator panel Location: U0.1-L1 2. Check for system firmware update 3. Service processor Location: U0.1-P1-X1

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1xx 4633	System power control (SPCN) network failure This error code may be informational, or it may indicate a failure in the SPCN firmware update. Before changing any parts, examine word 13 in the service processor error log entry, or bytes 68 and 69 in the AIX error log entry. For detailed instructions on finding word 13 in the service processor error log entry, or bytes 68 and 69 in the AIX error log entry, refer to error code B1xx 4699 in this service guide. All of the following values of word 13 (or bytes 68 and 69) indicate a failure of an SPCN firmware update: A701 A702 A703 A704 A705 A706 A707 For these values of word 13, do the following: 1. Power down the system. 2. Collect the service processor error log data for the B1xx 4633 error. From the main service processor menu, enter 3 to access the ″System Information menu. Select option 3, ″Service Processor Error Logs″. 3. Collect the SPCN trace data. From the main service processor menu, enter 3 to access the ″System Information menu. Select option 9, the ″Power Control Network Utilities Menu″. Then select option 4, ″Collect and Display the SPCN Trace Data″. 4. Power on the system. 5. Wait 10 minutes after the system has reached the AIX prompt. Look at the AIX error log for new B1xx 4633 errors with the word 13 values (in bytes 68 and 69 in the error log entry). If there are no B1xx 4633 errors with matching timestamps, the SPCN down load was successful. If the download failed again (there is another B1xx 4633 error in the AIX error log with the correct timestamp), do the following: a. Power down the system. b. Collect the service processor error log data for the B1xx 4633 error (see step 2 above). c. Collect the SPCN trace data (see step 3 above). d. Contact service support. For all other values of word 13, or bytes 68 and 69, do the following: 1. Check for system firmware updates. Apply if available. 2. Call service support.	
B1xx 4634	SPCN loop fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
B1xx 4643	I2C card/flex cable detection error	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
B1xx 4644	Processor VPD system fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
B1xx 4645	I2C (Non-processor) VPD System Fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
B1xx 4646	General VPD fault	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
B1xx 4647	Write TM field in system VPD	Replace the operator panel, location: U0.1-L1.

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1xx 4648	CPU backplane VPD or power source	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
B1xx 4649	Power supply VPD failure	CEC power supply Location: U0.1-V1, U0.1-V2
B1xx 4650	A system processor failure has been detected by the service processor. All system processors have been reset in an attempt to recover operations.	Information only. If the problem persists, check the error logs for other fault indications. If no other fault indications are found, go to “MAP 1540: Problem Isolation Procedures” on page 110.
B1xx 4651	CPU VPD fault	CEC backplane Location: U0.1-P1
B1xx 4660	Memory subsystem failure	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
B1xx 4661	Memory card VPD failure	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
B1xx 4662	Memory DIMM VPD failure	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
B1xx 4670	Processor drawer cooling	1. Check ambient temperature 2. Check air supply to fans 3. Check fans for proper installation and operation 4. Check for any unsupported cards (that may be too hot) 5. Operator panel Location: U0.1-L1 6. Service processor card Location: U0.1-P1-X1
B1xx 4671	Critical temperature in CEC drawer	1. Check ambient temperature. 2. Check air supply to fans. 3. Check fans for proper installation and operation. 4. Check for unsupported cards (which may be too hot) 5. Operator panel Location: U0.1-L1 6. Service processor card Location: U0.1-P1-X1
B1xx 4672	Critical temperature in I/O subsystem	1. Check ambient temperature. 2. Check air supply to fans. 3. Check fans for proper installation and operation. 4. Check for unsupported cards (which may be too hot) 5. I/O subsystem planar, U0.x-P1

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1xx 4681	JTAG scan interface	1. JTAG cabling 2. backplane Location: U0.1-P1
B1xx 4682	Problem with system VPD on operator panel.	1. Replace the operator panel, location: U0.1-L1. Do not attempt to swap the old VPD module onto the new operator panel. 2. Call service support.
B1xx 4690	**Description:** Operating system surveillance time out (AIX to service processor interface failure). **Action:** 1. This error code indicates that the operating system terminated early (which usually implies an operating system crash). This error code may appear in the service processor error log by itself. However, in the AIX error log, another error that points to the cause of the operating system crash. Use the other error as the starting point for your service action. If the system will not boot to AIX, power off and look at the service processor error log. Look for error codes (with time stamps that correspond to the boot that was just attempted) that indicate hardware failures. If these error codes are found, record them, find the error code listed in the Chapter 5, “Error Code to FRU Index,” on page 159, and perform the indicated actions. 2. The other possibility is that the operating system was not found during a prior boot attempt. To determine if this occurred, do the following: a. Look at the AIX error log entry containing B1xx4690. This will be a ″SCAN_ERROR_CHRP″ error with an identifier of BFEC0425. Look at the AIX error log entry containing B1xx4690. b. In the detail data, find the string ″B1xx4690″ (If present, it will be at byte 60 of the detail data.) c. Go forward 8 bytes after the ″B1″ to byte 68 and look at bytes 68 and 69. If the values of bytes 68 and 69 are A2B0, this indicates that the firmware was unable to find a bootable device in the boot list that is set in the SMS menus. If the system is up, the boot list problem has been corrected and the B1xx 4690 can be treated as an informational message with no actions required. 3. Call service support.	
B1xx 4691	**Description:** System firmware to service processor interface failure. (System firmware surveillance time out) **Action:** 1. Check for system firmware updates. 2. Go to the service processor main menu and select **System Information Menu**. Then select **Read Progress Indicators From Last System Boot.** Begin your repair action with the error code or checkpoint immediately preceding B1xx 4691. If a location code displays with the error code or checkpoint, replace the part at that location. 3. If the problem is not resolved, call service support.	
B1xx 4692	Operator panel task interface failure	1. Check for system firmware updates. 2. Call service support.
B1xx 4693	Service processor firmware error	1. Check for system firmware updates. 2. Call service support.
B1xx 4694	System processor firmware failure	1. Check for system firmware updates. 2. CEC backplane Location: U0.1-P1

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1xx 4695	System power control network to service processor interface failure	1. Check for system firmware updates. 2. Service processor Location: U0.1-P1-X1
B1xx 4696	System firmware interface failure	1. Check for system firmware updates. 2. Call service support.
B1xx 4698	Firmware problem	1. Check for system firmware updates. 2. Call service support.

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1xx 4699	Service processor firmware: This is usually an indication of a problem in the communication path between the HMC and the service processor. It may only be an informational message. If the managed system is down, go to the service processor error log and find the error log entry containing B1xx 4699. Look at the first two bytes of word 13 of the detailed entry information. If the managed system is running, look at the AIX error log entry containing B1xx 4699. This is a ″SCAN_ERROR_CHRP″ error with an identifier of BFE4C025. In the detail data, find the string ″B1xx 4699″. (If present, it will be at byte 60 of the detail data.) Go forward 8 bytes after the ″B1″ to byte 68 and look at bytes 68 and 69. If the system is running Linux, examine the Linux system log. The line(s) in the extended data that begin with <4>RTAS: Log Debug: 04″ contain the error code in the next 8 hex characters. (This error code is also known as word 11). Each 4 bytes after the error code in the Linux extended data is another word. The 4 bytes after the error code are word 12 and the next four bytes are word 13. An example of the Linux extended data, and finding words 11, 12, and 13, is shown in MAP 1321, step 1321-28, and step 1321-29, in this service guide. Perform the following actions based on the following values of bytes 68 and 69 from the AIX error log entry, or on the first two bytes of word 13 from the service processor error log entry: **2306:** No processor card is detected; a processor card is required for the system to boot. **Actions:** Replace the service processor location U0.1-P1. **35EF:** The scan dump code was not able to successfully complete the request to close the connection to the load source. **Actions:** This is an informational message. No action is required by the customer or service representative. **9900:** Memory allocation failure during firmware update. Actions: 1. Reset the system using the pin-hole reset button on the operator panel. Retry the operation that caused this error code. 2. Check for a later level of firmware than the one that you were trying to install. Apply if available. 3. Call service support. **9901:** State sequence error found during CRC query during firmware update. Actions: 1. Reset the system using the pin-hole reset button on the operator panel. Retry the operation that caused this error code. 2. Check for a later level of firmware than the one that you were trying to install. Apply if available. 3. Call service support.	

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1xx 4699 (continued)	**9902:** Mailbox LID data failure during firmware update. Actions: 1. Reset the system using the pin-hole reset button on the operator panel. Retry the operation that caused this error code. 2. Check for a later level of firmware than the one that you were trying to install. Apply if available. 3. Call service support. **9903:** State sequence error found after a firmware update LID was received during firmware update. Actions: 1. Reset the system using the pin-hole reset button on the operator panel. Retry the operation that caused this error code. 2. Check for a later level of firmware than the one that you were trying to install. Apply if available. 3. Call service support. **9904:** Error while flashing an update LID during firmware update. Actions: 1. Reset the system using the pin-hole reset button on the operator panel. Retry the operation that caused this error code. 2. Check for a later level of firmware than the one that you were trying to install. Apply if available. 3. Call service support. **9905:** CRC mismatch after a firmware update LID was received during firmware update. Actions: 1. Reset the system using the pin-hole reset button on the operator panel. Retry the operation that caused this error code. 2. Check for a later level of firmware than the one that you were trying to install. Apply if available. 3. Call service support.	

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1xx 4699 (continued)	**9906:** Software problem during firmware update from operating system. **Actions:** 1. Check for a system firmware update that is later than the one that just caused this error. Apply if available. 2. Call service support. **A205:** Machine type and model fields are not valid in the VPD module. Replace the service processor card. Do not attempt to swap the old VPD module onto the new service processor card. The VPD information is rebuilt on the new service processor card when the system is booted. **A20B:** Error requesting trace buffer for service processor. **Actions:** 1. Reset the service processor, if possible. 2. Check for system firmware updates. Apply the updates if they are available. **A218:** Unknown return code detected. **Actions:** Check for system firmware updates. Apply the updates if they are available. **A21A:** Error allocating an internal service processor. **Actions:** 1. Reset the service processor, if possible. 2. Check for system firmware updates. Apply the updates if they are available. **A800:** This indicates an HMC/service processor initialization failure. **Actions:** 1. Check for system firmware updates. 2. Replace the service processor, location: U0.1-P1-X1. **A801:** This indicates an HMC wrap failure. **Actions:** Replace the service processor, location: U0.1-P1-X1.	

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1xx 4699 (continued)	(Continued from the previous page.) **A806:** This indicates a loss of the surveillance heartbeat between the HMC and the service processor. **Actions:** 1. Make sure that the HMC is booted and operational. 2. Check the serial cables that go from the HMC to the service processor, location: U0.1-P1-X1. If there are no other error codes or indications of a problem, the A806 (loss of surveillance heartbeat) was a temporary condition and has been resolved; the B1xx 4699 code is then an informational message only. **If the problem persists:** 1. Run diagnostics on the serial port on the HMC. 2. Replace the service processor, location: U0.1-P1-X1. 3. Replace the system backplane, location: U0.1-P1. Values of A009 and A719 of bytes 68 and 69 in the AIX error log entry or the first two bytes of word 13 in the service processor error log entry are also informational entries: **A009:** The system received a power-off request at run time from the HMC. **A719:** Primary power failed; the system switched to battery backup power. For all other values of bytes 68 and 69, or the first two bytes of word 13, do the following: 1. Check for system firmware updates. 2. Reset the service processor by activating the pinhole reset switch on the operator panel. 3. Call service support.	
B1xx 469A	System firmware interface	1. Check for system firmware updates. 2. Call service support.
B1xx 469B	Firmware to I/O interface	1. Check for system firmware updates. 2. CEC backplane Location: U0.1-P1
B1xx 469C	Firmware to I/O interface	1. Check for system firmware updates. 2. CEC backplane Location: U0.1-P1
B1xx 469E	Service processor firmware failure	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110 3. CEC backplane Location: U0.1-P1
B1xx 469F	Service processor failure	1. Check for system firmware updates. 2. Go to “MAP 1540: Problem Isolation Procedures” on page 110 3. CEC backplane Location: U0.1-P1
B1xx 8FF0	Informational message	See B1xx 8FF0 in “Error Code B1xx 8FF0” on page 212.

Table 9. Common Firmware Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
B1FD 0013	A firmware update has failed because the update image is invalid. The update was stopped before any changes were made to the currently installed firmware.	Reset the service processor (by activating the pinhole reset switch or by disconnecting, then reconnecting power). Install a valid firmware update image for the specific system type and model.
B1FD 0015	Too many firmware update diskettes inserted (or wrong or faulty update image)	1. Ensure the firmware update image is correct for the specific system type and model. 2. Replace the update diskettes with a new set of firmware update diskettes.
B1FD 0016	Diskette read error	1. The firmware diskette may be faulty. Try another diskette. 2. Replace the diskette drive. 3. Replace the CEC backplane Location: U0.1-P1
B1FD 001A	Service processor recovery mode update fault	Reset service processor (by activating pinhole reset switch or by disconnecting, then reconnecting power)
B1FD 001E	Service processor recovery mode update fault	Wrong firmware update diskette (Insert correct diskette)
B1FD 001F	Bad firmware update diskette	Replace diskette

Error Code B1xx 8FF0

The following error code was moved out of the Common Firmware Error Code table because of the size of the description column.

Error Code	Description:	Action/ Possible Failing FRU:
B1xx 8FF0	Informational message	No action required. (The data in these informational log entries may be used by support personnel to gather additional debug information.)

For complete information regarding this error code, read through this entire section.

If the managed server is down, go to the service processor error log and find the error log entry containing B1xx 8FF0. Examine the first two bytes of word 13 of the detailed entry information.

If the managed server is running, do the following:

- Examine the AIX error log entry containing B1xx 8FF0. This is a FIRMWARE_EVENT error with an identifier of A6D1BD62.
- In the detail data, find the string B1xx 8FF0. (If present, it will be at byte 60 of the detail data.)
- Move forward 8 bytes to bytes 68 and 69; this is the value of word 13 in the service processor error log entry.

If the system is running Linux, examine the Linux system log. The line(s) in the extended data that begin with <4>RTAS: Log Debug: 04 contain the error code in the next 8 hex characters. (This error code is also known as word 11). Each 4 bytes after the error code in the Linux extended data are another word. The 4 bytes after the error code are word 12 and the next four bytes are word 13. An example of the Linux extended data, and finding words 11, 12, and 13, is shown in MAP 1321, step 1321-28, and step 1321-29, in this service guide.

SPCN Informational Codes

The following values of word 13 indicate an SPCN informational message: C006, C007, C00C, C030, C0E0, C0E2, C0F0. No action is required by the customer or service representative.

VPD Informational Codes

The following values of word 13 indicate a VPD informational message: E104, E10D, E112, E113, E114. No action is required by the customer or service representative.

Scan Log Dump Progress Codes

A scan dump is the collection of chip data that the service processor gathers after a system malfunction, such as a check stop or hang. The scan dump data may contain chip scan rings, chip trace arrays, and SCOM contents. For more information on scan dumps, refer to “Scan Log Dump Policy” on page 233.

The following table shows the error code produced by a scan dump.

Error Code	Description	Action/Possible Failing FRU
A1FF 3000	Scan log dump request rejected	This is an informational message. The service processor firmware was not able to perform a scan log dump even though one was requested.
D130 xxxx	Scan log dump in progress	Informational message only. As the dump progresses, the xxx characters in the display changes. When completed, the system may reboot, depending on the reboot policy settings.

HMC Surveillance Error Codes

The HMC surveillance error codes generated only by the HMC are listed in the following table.

Error Code	Description	Action/ Possible Failing FRU
B301 0001	HMC/partition surveillance fault	Contact service support.
B301 0002	HMC/partition surveillance fault	Verify the network between the HMC and the partition by pinging in both directions. If problems are found, correct them. Reboot the HMC.
B301 0012	HMC/partition surveillance fault	Contact service support.
B301 0013	HMC/partition surveillance fault	Contact service support.
B301 0019	HMC/partition surveillance fault	Contact service support.
B301 0020	HMC/partition surveillance fault	Contact service support.
B301 0023	HMC/partition surveillance fault	Contact service support.
B301 0025	HMC/partition surveillance fault	Contact service support.
B301 0026	HMC/partition surveillance fault	Contact service support.
B301 0027	HMC/partition surveillance fault	1. If short host names are being used for the HMC and the partitions, ensure that the short host names are set up correctly according to the instructions in ″Using Network Adapters to Communicate with Partitions″ in the *IBM Hardware Management Console for pSeries Installation and Operations Guide*. Correct any problems that are found, then verify that you can ping in both directions between the HMC and partitions. 2. If short host names are not being used, or the previous step does not correct the problem, contact service support.
B301 0029	HMC/partition surveillance fault	Contact service support.
B301 002B	HMC/partition surveillance fault	Contact service support.
B301 002C	HMC/partition surveillance fault	Contact service support.
B301 002D	HMC/partition surveillance fault	Contact service support.
B302 0001	HMC/partition surveillance fault	1. If short host names are being used for the HMC and the partitions, ensure that the short host names are set up correctly according to the instructions in ″Using Network Adapters to Communicate with Partitions″ in the *IBM Hardware Management Console for pSeries Installation and Operations Guide*. Correct any problems that are found, then verify that you can ping in both directions between the HMC and partitions. 2. If short host names are not being used, or the previous step does not correct the problem, contact service support.

Problem Determination Generated Error Codes

Table 10. Problem Determination Generated Error Codes

Error Code	Description	Action/ Possible Failing FRU
M0BT 0000	The system hung during speaker POST. This error code is generated by the customer performing “Problem Determination” in the *@server pSeries 615 Model 6C4 and Model 6E4 User’s Guide*.	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
M0BT 0001	The system hung during “Starting Software...”. This error code is generated by the customer performing “Problem Determination” in the *@server pSeries 615 Model 6C4 and Model 6E4 User’s Guide*.	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
M0KB D000	The system hung during keyboard POST. This error code is generated by the customer performing “Problem Determination” in the *@server pSeries 615 Model 6C4 and Model 6E4 User’s Guide*.	1. Keyboard 2. Service processor Location: U0.1-P1-X1
M0KB D001	The system did not respond to a keyboard entry. This error code is generated by the customer performing “Problem Determination” in the *@server pSeries 615 Model 6C4 and Model 6E4 User’s Guide*.	Type 101 keyboard 1. Keyboard 2. Service processor Location: U0.1-P1-X1
M0KB D002	The system did not respond to a keyboard entry. This error code is generated by the customer performing “Problem Determination” in the *@server pSeries 615 Model 6C4 and Model 6E4 User’s Guide*.	Type 102 keyboard 1. Keyboard 2. Service processor Location: U0.1-P1-X1
M0KB D003	The system did not respond to a keyboard entry. This error code is generated by the customer performing “Problem Determination” in the *@server pSeries 615 Model 6C4 and Model 6E4 User’s Guide*.	1. Keyboard 2. Service processor Location: U0.1-P1-X1
M0ME M002	The system hung during memory POST. This error code is generated by the customer performing “Problem Determination” in the *@server pSeries 615 Model 6C4 and Model 6E4 User’s Guide*.	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
M0NE T000	The system hung during network POST. This error code is generated by the customer performing “Problem Determination” in the *@server pSeries 615 Model 6C4 and Model 6E4 User’s Guide*.	Go to “MAP 1540: Problem Isolation Procedures” on page 110.
M0PS 0000	Power failure. This error code is generated by the customer performing “Problem Determination” in the *@server pSeries 615 Model 6C4 and Model 6E4 User’s Guide*.	Go to “MAP 1520: Power” on page 98.
M0SC SI00	Unable to load diagnostics. This error code is generated by the customer performing “Problem Determination” in the *@server pSeries 615 Model 6C4 and Model 6E4 User’s Guide*.	Go to “Boot Problems/Concerns” on page 155.

Table 10. Problem Determination Generated Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
M0SC SI01	Unable to load diagnostics. This error code is generated by the customer performing "Problem Determination" in the *@server pSeries 615 Model 6C4 and Model 6E4 User's Guide*.	Go to "Boot Problems/Concerns" on page 155.

Chapter 6. Using the Online and Standalone Diagnostics

The AIX diagnostics consist of online diagnostics and standalone diagnostics.

Attention: The AIX operating system must be installed in order to run online diagnostics on the system. If the AIX operating system is not installed, use the standalone diagnostic procedures.

Online diagnostics, when they are installed, reside with AIX in the file system. They can be booted:

- In single user mode (referred to as *service mode*)
- To run in maintenance mode (referred to as *maintenance mode*)
- To run concurrently with other applications (referred to as *concurrent mode*)

Standalone diagnostics must be booted before they can be run. If booted, the diagnostics have no access to the AIX error log or the AIX configuration data.

Does the system have AIX diagnostics preinstalled?

Yes If there is an HMC attached to the system, go to "Operating Considerations for Online and Standalone Diagnostics."

If an HMC is not attached to the system, go to "Running the Online Diagnostics with No HMC Attached" on page 220.

No If there is an HMC attached to the system, go to "Loading the Standalone Diagnostics from CD-ROM Using an HMC" on page 222.

If an HMC is not attached to the system, go to "Running the Standalone Diagnostics with CD-ROM with No HMC Attached" on page 222.

If standalone diagnostics will be run from a NIM server, go to "Running Standalone Diagnostics from a Network Installation Management (NIM) Server" on page 223. If an HMC is not attached to the system, follow the directions for a full system partition.

Operating Considerations for Online and Standalone Diagnostics

Note: When possible, run online diagnostics in service mode. Online diagnostics perform additional functions compared to standalone diagnostics. Running online diagnostics 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. The AIX error log and certain SMIT functions are only available when diagnostics are run from the disk drive.

When diagnostics are installed, the device support for some devices might not get installed. If this is the case, that device does not display in the diagnostic test list when running disk-based diagnostics.

Identifying the Terminal Type to the Diagnostics

When you run diagnostics, you must identify which type of terminal you are using. If the terminal type is not known when the FUNCTION SELECTION menu is displayed, the diagnostics do not allow you to continue until a terminal is selected from the DEFINE TERMINAL option menu. Choose the ″lft″ selection when running diagnostics from a Hardware Management Console for pSeries(HMC).

Undefined Terminal Types

If you specify an undefined terminal type from the DEFINE TERMINAL option menu, the menu prompts the user to enter a valid terminal type. The menu redisplays until either a valid type is entered or you exit the DEFINE TERMINAL option. For a system attached to an HMC use VT320 emulation. If the AIX operating system is being used, from the command line, type: `export term=vt320`

Resetting the Terminal

If you enter a terminal type that is valid (according to the DEFINE TERMINAL option menu) but is not the correct type for the Hardware Management Console for pSeries (HMC) virtual terminal window being used, you may be unable to read the screen, use the function keys, or use the Enter key. Bypass these difficulties by pressing Ctrl-C to reset the terminal. The screen display that results from this reset depends on the mode in which the system is being run:

- Online Normal or Maintenance Mode - The command prompt displays.
- Standalone Mode or Online Service Mode - The terminal type is reset to `dumb`, the Diagnostic Operating Instruction panel displays, and you are required to go through the DEFINE TERMINAL process again.

Online Diagnostics Modes of Operation

Notes:

1. When running online diagnostics on a partition in a partitioned system, diagnostics can be run only on resources that are allocated to that partition.
2. Online diagnostics can only be run in a partition with AIX installed.

The online diagnostics can be run in the following modes:

- Service Mode
- Concurrent Mode
- Maintenance Mode

Service Mode

Service mode provides the most complete checkout of the system resources. This mode also requires that no other programs be running on the partition or on a full system partition. Except for the SCSI adapter and the disk drives used for paging, resources on all partitions or systems on a full system partition can be tested. However, note that the memory and processor are only tested during POST, and the results of the POST tests are reported by diagnostics.

Error-log analysis is done in service mode when you select the **Problem Determination** option on the DIAGNOSTIC MODE SELECTION menu.

Consider the following when you run the online diagnostics from a server or a disk:

- The diagnostics cannot be loaded and run from a disk until the AIX operating system has been installed and configured.
- The diagnostics cannot be loaded on a system (client) from a server if that system is not set up to boot from a server over a network. When the system is set up to boot from a server, the diagnostics are run in the same manner as they are from disk.
- If the diagnostics are loaded from disk or a server, you must shut down the AIX operating system before turning off the system unit to prevent possible damage to disk data. Do this in either of the following ways:
  - If the diagnostics were loaded in standalone mode, press the F3 key until `DIAGNOSTIC OPERATING INSTRUCTIONS` displays. Then press the F3 key once again to shut down the AIX operating system.
  - If the diagnostics were loaded in maintenance or concurrent mode, type the `shutdown -F` command.
- Under some conditions, the system might stop, with instructions displayed on attached displays and terminals. Follow the instructions to select a console display.

Running Online Diagnostics in Service Mode with an HMC Attached to the System

To run the online diagnostics in service mode from the boot hard disk, do the following:

1. From the HMC, select **Partition Manager**.
2. Right-click on the mouse and select **Open Terminal Window**.

3. From the Service Processor Menu on the VTERM, select Option 2 **System Power Control**.
4. Select option 6. Verify that the state changes to `currently disabled`. Disabling fast system boot automatically enables slow boot.
5. Select Option 98 to exit the system power control menu.
6. Use the HMC to power on the managed system in a full system partition by selecting the managed system in the Contents area.
7. Right-click or select the desired system in the Contents area. Next, on the menu, choose **Selected**.
8. Select **Power On**.
9. Select the **Power on Diagnostic Stored Boot list** option (refer to “Full System Management Tasks” in the *IBM Hardware Management Console*, order number SA38-0590, for more information on full system partitions).
10. Make sure that there is no media in the devices in the media drive.
11. Enter any passwords, if requested.

Running the Online Diagnostics with No HMC Attached

Online diagnostics can be loaded by booting from a hard file in the custom boot list by pressing the numeric 6 key on the keyboard.

To boot from the devices listed in the service mode boot list, perform the following procedure:

1. Verify with the system administrator and users that all programs may be stopped, then do so.
2. Turn off the system.

   Note: If AIX is running, type the `shutdown` command. If Linux is running, type the `shutdown -h now` command.
3. Wait until the Power-on LED stops flashing and remains off, then press the power button to turn the system on.
4. When the **keyboard** indicator appears during startup, press the numeric 6 key on the keyboard.
5. Enter any requested passwords.

After any requested passwords have been entered, the system attempts to boot from the first device of each type found on the list. If no bootable image is found on the first device of each type on the list, the system does not search through the other devices of that type for a bootable image; instead, it polls the first device of the next type.

If all types of devices in the boot list have been polled without finding a bootable image, the system restarts. This action gives the user the opportunity to start the System Management Services (by pressing the number 1 key on a directly attached keyboard or the number 1 on an ASCII terminal) before the system attempts to boot again.

Concurrent Mode

Running the online diagnostics in concurrent mode is started by entering **diag** at an AIX prompt. 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
- Memory (tested during POST)
- Processor (tested during POST)

The following levels of testing exist in concurrent mode:

- The **share-test 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.
- The **sub-test level** tests a portion of a resource while the remaining part of the resource is being used in normal operation. For example, this test could test one port of a multiport device while the other ports are being used in normal operation.
- The **full-test level** requires the device not be assigned to or used by any other operation. This level of testing on a disk drive might require the use of the **varyoff** command. The diagnostics display menus to allow you to vary off the needed resource.

Error-log analysis is done in concurrent mode when you select the **Problem Determination** option on the DIAGNOSTIC MODE SELECTION menu.

To run the online diagnostics in concurrent mode, you must be logged in to the AIX operating system and have proper authority to issue the commands (if help is needed, see the system operator).

The **diag** command loads the diagnostic controller and displays the online diagnostic menus.

Running the Online Diagnostics in Concurrent Mode

To run online diagnostics in concurrent mode, do the following:

1. Log in to the AIX operating system as root user, or use CE Login.
2. Enter the **diag** command.
3. When the DIAGNOSTIC OPERATING INSTRUCTIONS display, follow the instructions to check out the desired resources.
4. When testing is complete, use the F3 key to return to the DIAGNOSTIC OPERATING INSTRUCTIONS. Press the F3 key again to return to the AIX operating system prompt. Be sure to vary on any resource that you had varied to off.
5. Press Ctrl-D to log off from root user or CE Login.

Maintenance Mode

Maintenance mode runs the online diagnostics using the customer's version of the AIX operating system. This mode requires that all activity on the partition running the AIX operating system be stopped so that the online diagnostics have most of the resources available to check. All of the system resources, except the SCSI adapters, memory, processor, and the disk drive used for paging, can be checked.

Error log analysis is done in maintenance mode when you select the **Problem Determination** option on the DIAGNOSTIC MODE SELECTION menu.

Use the **shutdown -m** command to stop all activity on the AIX operating system and put the AIX operating system into maintenance mode. The **diag** command is then used to invoke the diagnostic controller so you can run the diagnostics. After the diagnostic controller is loaded, follow the normal diagnostic instructions.

Documentation for the AIX operating system is available from the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base. Select **AIX documentation**. The *AIX Documentation* CD contains the base set of publications for the operating system, including system-management and end-user documentation.

Running the Online Diagnostics in Maintenance Mode

To run the online diagnostics in maintenance mode, do the following:

1. Stop all programs running on the partition except the AIX operating system (if help is needed, see the system operator).
2. Log in to the AIX operating system as root user, or use CE Login.
3. Type the `shutdown -m` command.
4. When a message indicates the system is in maintenance mode, enter the **diag** command.

   Note: It might be necessary to set *TERM* type again.
5. When DIAGNOSTIC OPERATING INSTRUCTIONS screen displays, follow the displayed instructions to check out the desired resources.
6. When testing is complete, use the F3 key to return to DIAGNOSTIC OPERATING INSTRUCTIONS. Press the F3 key again to return to the AIX operating system prompt.
7. Press Ctrl-D to log off from root user or CE Login.

Standalone Diagnostic Operation

Use standalone diagnostics to test the system when the online diagnostics are not installed and as a method of testing the disk drives that cannot be tested by the online diagnostics.

Note: No error log analysis is done by the standalone diagnostics. The CD-ROM drive and the SCSI controller that controls it cannot be tested by the standalone diagnostics. Standalone diagnostics:

- Are resident on CD-ROM or a Network Installation Management (NIM) server
- Provide a method to test the system when the online diagnostics are not installed or cannot be loaded from the disk drive
- Allow testing of the disk drives and other resources that cannot be tested by the online diagnostics
- Do not have access to the AIX configuration data
- Do not have access to the AIX error log
- Do not allow for running of error log analysis

Considerations for Running Standalone Diagnostics from CD-ROM

Consider the following when you run standalone diagnostics:

- The diagnostic CD must remain in the CD-ROM drive for the entire time that diagnostics are running.
- The diagnostic CD cannot be ejected from the CD-ROM drive after the diagnostics have loaded. The CD can only be ejected after the system has been turned off and then turned on (standalone mode) or after the diagnostics program has terminated (online concurrent mode).
- The CD-ROM drive from which diagnostics were loaded cannot be tested.
- The SCSI adapter (or circuitry) controlling the CD-ROM drive from which diagnostics were loaded cannot be tested.

Loading the Standalone Diagnostics from CD-ROM Using an HMC

To run standalone diagnostics in service mode from CD-ROM, do the following:

1. Stop all programs including the AIX operating system (get help if needed).
2. Remove all tapes, diskettes, and CD-ROMs.
3. Power off the pSeries 615 (refer to Full System Management Tasks in the *IBM Hardware Management Console*, order number SA38-0590.
4. Right-click the mouse and select **Open Terminal Window**.
5. From the service processor menu on the VTERM, select option 2, **System Power Control Menu**.
6. Select option 6. Verify that the state changes to `currently disabled`. Disabling fast system boot automatically enables slow boot.
7. Select option 98 to exit the system power control menu.
8. Use the HMC to power on the managed server in a full system partition. Select the **Power on Diagnostic Default Boot List** (refer to Full System Management Tasks in the *IBM Hardware Management Console*, order number SA38-0590).
9. Insert the CD-ROM into the system's CD-ROM drive (not into the HMC's CD-ROM drive).

Running the Standalone Diagnostics with CD-ROM with No HMC Attached

To load **standalone diagnostics** from the default boot list, perform the following procedure:

1. Verify with the system administrator and users that all programs may be stopped, then do so.
2. Turn off the system.

   Note: If AIX is running, type the `shutdown` command. If Linux is running, type the `shutdown now -h` command.

3. Wait until the Power-on LED stops flashing and remains off, then press the power button to turn on the system.
4. Immediately insert the diagnostic CD-ROM into the CD-ROM drive.
5. When or after the word **keyboard** appears during startup, press the numeric 5 key on the keyboard.
6. Enter any requested passwords.

Running Standalone Diagnostics from a Network Installation Management (NIM) Server

A client system connected to a network with a Network Installation Management (NIM) server can boot standalone diagnostics from the NIM server if the client-specific settings on both the NIM server and client are correct.

Notes:

1. All operations to configure the NIM server require root user authority.
2. 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.
3. The **Cstate** for each standalone diagnostics client on the NIM server should be kept in the *diagnostic boot has been enabled* state.
4. 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 standalone 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.

NIM Server Configuration

Refer to the “Advanced NIM Configuration Tasks” chapter of the *AIX Installation Guide and Reference*, order number SC23-4389, for information on doing the following:

- Registering a client on the NIM server
- Enabling a client to run diagnostics from the NIM server

Documentation for the AIX operating system is available from the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base. Select **AIX documentation**. The *AIX Documentation* CD contains the base set of publications for the operating system, including system-management and end-user documentation.

To verify that the client system is registered on the NIM server and the diagnostic boot is enabled, run the command **lsnim -a Cstate -Z *ClientName*** from the command line on the NIM server. Refer to the following table for system responses.

Note: The *ClientName* is the name of the system on which you want to run standalone 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:BOS 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 lsnim: there is no NIM object` `named "ClientName"`	The client is not registered on the NIM server.

Booting Standalone Diagnostics from the NIM Server on a System with an HMC Attached

To run standalone diagnostics on a client from the NIM server, do the following:

1. Remove any removable media (tape or CD-ROM).
2. Stop all programs including the operating system (get help if needed).
3. If you will be running standalone diagnostics, verify with the system administrator and system users that the system unit can shut down. Stop all programs, including the operating system.
4. Power on the system to run standalone diagnostics.
5. When the keyboard indicator is displayed (the word **keyboard** on a 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.
6. Enter any requested passwords.
7. Select **Set Up Remote IPL** (Indicial Program Load).
8. Enter the client address, server address, gateway address (if applicable), and subnet mask.
9. 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. 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 “Boot Problems/Concerns” on page 155 and follow the steps for network boot problems.

To do a one-time boot of the network adapter attach to the NIM server network, do the following:

1. Exit to the SMS Main screen.
2. Select **Select Boot Options**.
3. Select **Install or Boot a Device**.
4. On the Select Device Type screen. select **Network**.
5. Set the network parameters for the adapter from which you want to boot.
6. Exit completely from SMS. The system starts loading packets while doing a **bootp** from the network.

Follow the instructions on the screen to select the system console.

- If `Diagnostics Operating Instructions Version x.x.x` displays, standalone diagnostics have loaded successfully.
- If the AIX login prompt displays, standalone diagnostics did not load. Check the following items:
  - The network parameters on the client may be incorrect.
  - Cstate on the NIM server may 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 “Boot Problems/Concerns” on page 155 and follow the steps for network boot problems.

Chapter 7. Using the Service Processor

Notes:

1. On some of the system management services (or service processor) screens, you will see the term *LPAR*, which is equivalent to the term *logical partition*. This system does not support logical partitions.
2. The information in this chapter regarding the configuring of serial ports, and modems attached to those serial ports, applies only to the serial ports (S1, S2 and S3) on the service processor (location U0.1-P1-X1). None of this information is applicable to the serial ports, or modems attached to those serial ports on the HMC.

The service processor runs on its own power boundary and continually monitors hardware attributes and the environmental conditions within the system. The service processor is controlled by firmware and does not require the operating system to be operational to perform its tasks.

The service processor menus allow you to configure service processor options, as well as enable and disable functions.

Service processor menus are available using an ASCII terminal or an HMC virtual terminal window when `0K` is displayed on the operator panel or when the service processor has detected a system problem (such as a surveillance failure).

Service Processor Menus

The service processor menus are divided into the following groups:

- General user menu - the user must know the general-access password.
- Privileged user menus - the user must know the privileged-access password.

If the system is powered off, the service processor menus can be accessed locally or remotely on the following:

- Serial port 1 (S1)
- Serial port 2 (S2)
- HMC

Accessing the Service Processor Menus Locally

Service processor menus can be accessed by opening a virtual terminal window on the HMC, or by attaching an ASCII terminal to serial port 1 (S1) or serial port 2 (S2). After `0K` displays in the operator panel, press any key on the keyboard to signal the service processor.

Notes:

1. The service processor menus cannot be accessed simultaneously on a virtual terminal window on the HMC and on an ASCII terminal. Accessing the menus on the HMC locks out access to the ASCII terminals and vice versa.
2. When the system is connected to an HMC and a virtual terminal window is open, providing a connection to the managed system, serial port 1 is used by the HMC and is not available to the functions that are normally provided by the service processor. Those functions include the ring-indicate power-on, console mirroring, serial port snooping and call-in/call-out.

When you gain access, the service processor prompts you for a password (if one is set), and when verified, displays the service processor menus.

The service processor menu prompt, represented by `0>` or `1>`, indicates the serial port to which the terminal is connected.

- An ASCII terminal can have the following prompts:

  - 0> indicates serial port 1 (S1)
  - 1> indicates serial port 2 (S2)
- The HMC always displays a prompt of 0>

Accessing the Service Processor Menus Remotely

If your system has a modem connected to serial port 1 or serial port 2 and is configured for call-in (see “Modem Configuration Menu” on page 245), the service processor menus can be accessed remotely as follows:

1. With the system powered off, call in from a remote terminal.
2. The service processor detects ring-indicate and prompts you for a password (if one is set). When verified, the service processor menus display remotely.

Saving and Restoring Service Processor Settings

All the settings that you make (except language) from the service processor menus can be backed up either for recovering from a fault that may corrupt these settings, or for replicating these settings to other servers that include a service processor.

The service aid, Save or Restore Hardware Management Policies, can be used to save your settings after initial setup or whenever the settings must be changed for system operation purposes.

It is strongly recommended that you use this service aid for backing up service processor settings to protect the usefulness of the service processor and the availability of the system. Refer to “Save or Restore Hardware Management Policies,” in the “Introduction to Tasks and Service Aids” section of the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.

Menu Inactivity

The service processor exits menu mode after ten minutes of inactivity and displays a message indicating that it has done so. Pressing any key on the virtual terminal window causes the main menu to display.

General User Menu

The menu options presented to the general user are a subset of the options available to the privileged user. The user must know the general-access password, if one is set, to access this menu.

```
       GENERAL USER MENU

 1. Power-on System

 2. Power-off System

 3. Read VPD Image from Last System Boot

 4. Read Progress Indicators from Last System Boot

 5. Read Service Processor Error Logs

 6. Read System POST Errors

99. Exit from Menus

 0>
```

- **Power-on System**

  Allows the user to start the system using the current virtual terminal window as the active console.
- **Power-off System**

  This option is not available on this system.
- **Read VPD Image from Last System Boot**

  Displays manufacturer vital product data, such as serial numbers, part numbers, and so on, that were stored from the system boot prior to the one in progress now, for the entire system.
- **Read Progress Indicators from Last System Boot**

  Displays a number of the boot progress indicators, which may include service processor checkpoints, IPL checkpoints, or AIX configuration codes, from the previous system boot. This information can be useful in diagnosing system faults.

  The progress indicator codes are listed from top (latest) to bottom (oldest).

  This information is not stored in nonvolatile storage. If the system is powered off using the power-on button on the operator panel, this information is retained. If the ac power is disconnected from the system, this information will be lost. For an example, refer to “LCD Progress Indicator Log” on page 262.
- **Read Service Processor Error Logs**

  Displays the service processor error logs. For an example, refer to “Service Processor Error Logs” on page 261.
- **Read System POST Errors**

  Displays additional error log information (this option is only for service personnel).
- **Exit from Menus**

  Selecting this option will exit the service processor menus. You can re-enter the menus by pressing any key on the console.

Privileged User Menus

The following menus are available to privileged users only. The user must know the privileged-access password, if one is set, to access these menus.

Main Menu

A listing at the top of the main menu contains the following:

- Your system's current firmware version
- The firmware copyright notice
- The system name given to your system during setup

You need the firmware version for reference when you either update or repair the functions of your service processor.

The system name, an optional field, is the name that your system reports in problem messages. This name helps your support team (for example, your system administrator, network administrator, or service representative) to more quickly identify the location, configuration, and history of your system. Set the system name, from the main menu, using option 6.

Note: When the system is connected to an HMC and a virtual terminal window is open, providing a connection to the managed system, serial port 1 is used by the HMC and is not available to the functions that are normally provided by the service processor. Those functions include the ring-indicate power-on, console mirroring, serial port snooping and call-in/call-out.

Note: The information under the Service Processor Firmware heading in the following Main Menu illustration is example information only.

```
        Service Processor Firmware
        VERSION: 1F030521
        Copyright 2003 IBM Corporation
             SYSTEM NAME


        MAIN MENU

 1. Service Processor Setup Menu

 2. System Power Control Menu

 3. System Information Menu

 4. Language Selection Menu

 5. Call-In/Call-Out Setup Menu

 6. Set System Name

99. Exit from Menus

 0>
```

- **Service Processor Setup Menu**
  See “Service Processor Setup Menu” on page 230 for more information.
- **System Power Control Menu**
  See “System Power Control Menu” on page 235 for more information.
- **System Information Menu**
  See “System Information Menu” on page 238 for more information.
- **Language Selection Menu**
  See “Language Selection Menu” on page 244 for more information.
- **Call-In/Call-Out Setup Menu**
  See “Call-In/Call-Out Setup Menu” on page 244 for more information.
- **Set System Name**
  Allows setting of the system name.

Service Processor Setup Menu

The following Service Processor Setup Menu is accessed from the Main Menu:

```
        SERVICE PROCESSOR SETUP MENU

  1. Change Privileged Access Password

  2. Change General Access Password

  3. Enable/Disable Console Mirroring:
      Currently Enabled

  4. Start Talk Mode

  5. OS Surveillance Setup Menu
   NOT supported in LPAR mode

  6. Reset Service Processor

  7. Reprogram Flash EPROM Menu

  8. Serial Port Snoop Setup Menu
  NOT supported in LPAR mode

  9. Scan Log Dump Setup Menu:
  Currently As Needed

 98. Return to Previous Menu

 99. Exit from Menus

 0>
```

Note: Unless otherwise stated in menu responses, settings become effective when a menu is exited using option 98 or 99.

Passwords

Passwords can be any combination of up to eight alphanumeric characters. You can enter longer passwords, but the entries are truncated to include only the first eight characters. The privileged-access password can be set from service processor menus or from System Management Services (SMS) utilities (see Chapter 8, “Using System Management Services,” on page 265). The general-access password can be set only from service processor menus.

For security purposes, the service processor counts the number of attempts to enter passwords. The results of not recognizing a password within this error threshold are different, depending on whether the attempts are being made locally (at the system) or remotely (through a modem). The error threshold is three attempts.

If the error threshold is reached by someone entering passwords at the system, the service processor commands the system to resume the initial program load (IPL). This action is taken based on the assumption that the system is in an adequately secure location with only authorized users having access. Such users must still successfully enter a login password to access the operating system.

If the error threshold is reached by someone entering passwords remotely, the service processor commands the system to power off to prevent potential security attacks on the system by unauthorized remote users. The following table lists what you can access with the privileged-access password and the general-access password.

Privileged Access Password	General Access Password	Resulting Menu
None	None	Service processor MAIN MENU displays.
Set	None	Users with the password see the service processor MAIN MENU. Users without password cannot log in.
Set	Set	Users see menus associated with the entered password.

If you *forget* the password, you must remove the battery for at least 30 seconds to disable the password.

- **Change Privileged-Access Password**

  Set or change the privileged-access password. It provides the user with the capability to access all service processor functions. This password is usually used by the system administrator or root user.
- **Change General-Access Password**

  Set or change the general-access password. It provides limited access to service processor menus, and is usually available to all users who are allowed to power on the system, especially remotely.

  Note: The general-access password can only be set or changed after the privileged-access password is set.
- **Enable/Disable Console Mirroring**

  Note: Console mirroring is not available on serial port 1 when the system is connected to an HMC and a virtual terminal window is open providing a connection to the managed system.

  Console mirroring is supported on serial port 1 (S1) and serial port 2 (S2). When console mirroring is enabled, the service processor sends information to all serial ports. The serial port from which console mirroring is enabled is referred to as the *active port*. The *mirror port* is determined when keyboard input is detected from one of the other ports. From this point on, the service processor sends information only to the active port and the mirror port. This capability can be enabled by local or remote users, providing local users with the capability to monitor remote sessions. Console mirroring can be enabled for the current session only. For more information, see “Console Mirroring” on page 260.
- **Start Talk Mode**

  In a console-mirroring session, it is useful for those who are monitoring the session to be able to communicate with each other. Selecting **Start Talk Mode** activates the keyboards and displays for such communications while console mirroring is established. This is a full duplex link, so message interference is possible. Alternating messages between users works best.
- **OS Surveillance Setup Menu**

  This menu can be used to set up operating system (OS) surveillance.

```
       OS Surveillance Setup Menu

 1. Surveillance:
      Currently Enabled

 2. Surveillance Time Interval:
      2 minutes

 3. Surveillance Delay:
      2 minutes


98. Return to Previous Menu

0>
```

  – **Surveillance**

    Can be set to Enabled or Disabled.

  – **Surveillance Time Interval**

    Can be set to any number from 2 through 255.

  – **Surveillance Delay**

    Can be set to any number from 0 through 255.

  For more information about surveillance, refer to “Service Processor System Monitoring - Surveillance” on page 257.

- **Reset Service Processor**

  If this option is selected, entering `Y` causes the service processor to reboot.
- **Reprogram Flash EPROM Menu**

  This option requires a diskette drive to be installed in the system. If this option is selected, and no diskette drive is present in the system, the service processor will indicate `Not Supported` on the screen.

  This option updates the system EPROMs. After entering `Y` to indicate that you want to continue, you are prompted to enter the update diskettes. Follow the instructions on the screen. When the update is complete, the service processor reboots.

  All system EPROMs that can be reprogrammed are updated at the same time and are as follows:
  - System power control network programming
  - Service processor programming
  - System firmware programming
  - Run-Time Abstraction Services
- **Serial Port Snoop Setup Menu**

  Note: Serial port snooping is not available when the system is connected to an HMC and a virtual terminal window is open providing a connection to the managed system.

  This menu can be used to set up serial port snooping, in which the user can configure serial port 1 as a ″catch-all″ reset device.

  From the service processor main menu, select option 1, service processor setup menu, then select option 8 (Serial Port Snoop Setup Menu).

```
        SERIAL PORT SNOOP SETUP MENU

  1. System reset string:
       Currently Unassigned

  2. Snoop Serial Port:
      Currently Unassigned

 98. Return to Previous Menu

1>
```

  Use the **Snoop Serial Port** option to select the serial port to snoop.

  Note: Only serial port 1 is supported.

  Use the system reset string option to enter the system reset string, which resets the machine when it is detected on the main console on Serial Port 1.

  After serial port snooping is correctly configured, at any point after the system is booted to the operating system, whenever the reset string is typed on the main console, the system uses the service processor reboot policy to restart.

  Because pressing Enter after the reset string is not required, make sure that the string is not common or trivial. A mixed-case string is recommended.
- **Scan Log Dump Policy**

  A scan dump is the collection of chip data that the service processor gathers after a system malfunction, such as a checkstop or hang. The scan dump data may contain chip scan rings, chip trace arrays, and SCOM contents.

The scan dump data are stored in the system control store. The size of the scan dump area is approximately 4 MB.

During the scan log dump, A8xx (in the range A810 to A8FF) displays in the operator panel. The xx characters will change as the scan log dump progresses. If the xx characters do not change after five minutes, the service processor is hung and must be reset.

When the scan log dump is complete, depending on how the reboot policy is set, the system will either:

– Go to the standby state (and the service processor menus will be available), indicated by OK or STBY in the operator panel

OR

– Attempt to reboot.

```
Scan Log Dump Setup Menu

      1.  Scan Log Dump Policy:
            Currently As Needed

      2.  Scan Log Dump Content:
            Currently As Requested

      3.  Immediate Dump

     98.  Return to Previous Menu

0> 1
   Select from the following options:
   (As Needed=2, Always=3)

   Enter New Option:

0>
```

The scan log dump policy can be set to the following:

2 = As Needed
The processor run-time diagnostics record the dump data based on the error type. This is the default value.

3 = Always
Selecting this option allows the service processor to record a scan log dump for all error types.

The scan log dump policy can also be set from the Tasks menu in the AIX diagnostic service aids.

Option 2 displays the following screen:

```
               Scan Log Dump Setup Menu

     1.  Scan Log Dump Policy:
           Currently As Needed

     2.  Scan Log Dump Content:
           Currently As Requested

     3.  Immediate Dump

    98.  Return to Previous Menu

0> 2
   Select from the following options:
   (As Requested=1, Optimum=2, Complete=3, Minimum=4)

   Enter New Option:

0>
```

The scan log dump content can be set to the following:

1 = As Requested
The processor run-time diagnostics will select the contents of the dump file based on the type of error that occurs. This is the default.

2 = Optimum
The dump will include the smallest amount of information to diagnose a hardware error.

3 = Complete
The dump will include as much information as possible to allow the complete analysis of hardware and software errors.

4 = Minimum
The dump will include the smallest amount of information possible (a minimum number of hardware scan log rings).

The complete dump will take the longest time to finish; it may take as long as 1.5 hours on a fully configured system.

Option 3, **Immediate Dump**, can only be used when the system is in the standby state with power on. It is used to dump the system data after a checkstop or machine check occurs when the system firmware is running, or when the operating system is booting or running.

The scan log dump content can also be set from the Tasks menu in the AIX diagnostic service aids.

If a valid dump file already exists, the dump control code will stop because the contents of the prior dump must be protected.

System Power Control Menu

This menu is used to set power control options. Other menus that control boot options are available from this menu.

```
       SYSTEM POWER CONTROL MENU

  1. Enable/Disable Unattended Start Mode:
        Currently Enabled

  2. Ring Indicate Power-On Menu

  3. Reboot/Restart Policy Setup Menu

  4. Power-On System

  5. Power-Off System

  6. Enable/Disable Fast System Boot
        Currently Fast Boot

  7. Boot Mode Menu

 98. Return to Previous Menu

 99. Exit from Menus

 0>
```

- **Enable/Disable Unattended Start Mode**

  Use this option to instruct the service processor to restore the power state of the system after a temporary power failure. Unattended start mode can also be set through the System Management Services (SMS) menus. This option is intended to be used on systems that require automatic power-on after a power failure. For more information, see “System Power-On Methods” on page 249.

- **Ring Indicate Power-On Menu**

```
       RING INDICATE POWER-ON MENU

 1. Ring indicate power-on :
     Currently Enabled

 2. Number of rings:
     Currently  3

30. Refresh Modem Settings

98. Return to Previous Menu
```

Note: Ring-indicate power-on is not available on serial port 1 when the system is connected to an HMC and a virtual terminal window is open providing a connection to the managed system.

Ring indicate power-on is enabled by default on both serial port 1 (S1) and serial port 2 (S2). When ring indicate power-on is enabled, call-in is disabled.

If ring indicate power-on is enabled and call-in is already enabled, you will be asked to confirm your choice. Refer to the message displayed on your screen.

If the ring indicate power-on setting is changed, you must select option 30, **Refresh Modem Settings** to update the modem settings. If **Refresh Modem Settings** is selected, and the modem(s) have not been configured, you will be asked to configure the modems first. See “Call-In/Call-Out Setup Menu” on page 244 for information on configuring modems.

Option 2 is used to set the number of rings.

- **Reboot/Restart Policy Setup Menu**

  The following menu controls the Reboot/Restart Policy:

```
       Reboot/Restart Policy Setup Menu

 1. Number of reboot attempts:
      Currently 1

 2. Use OS-Defined restart policy?
      Currently No

 3. Enable supplemental restart policy?
      Currently Yes

 4. Call-Out before restart:
      Currently Disabled

98. Return to Previous Menu

0>
```

Reboot is the process of bringing up the system hardware; for example, from a system reset or power on. *Restart* is activating the operating system after the system hardware is reinitialized. Restart must follow a successful reboot.

– **Number of reboot attempts** - If the system fails to successfully complete the boot process, it attempts to reboot the number of times specified. Entry values equal to or greater than 0 are valid. Only successive failed reboot/restart attempts are counted.

– **Use OS-Defined restart policy** - This allows the service processor to react in the same way that the operating system does to major system faults by reading the setting of the operating system parameter **Automatically Restart/Reboot After a System Crash**. This parameter might already be defined, depending on the operating system or its version or level. If the operating system automatic

restart setting is defined, it can be set to respond to a major fault by restarting or by not restarting. See your operating system documentation for details on setting up operating system automatic restarts. The default value is No.

– **Enable supplemental restart policy** - The default setting is Yes. When set to Yes, the service processor restarts the system when the system loses control as detected by service processor surveillance, and either:

  The **Use OS-Defined restart policy** is set to No.

  OR

  The **Use OS-Defined restart policy** is set to Yes, and the operating system has no automatic restart policy.

– **Call-Out before restart (Enabled/Disabled)** - If a restart is necessary due to a system fault, you can enable the service processor to call out and report the event. This option can be valuable if the number of these events becomes excessive, which might signal a bigger problem.

- **Power-On System**

  Allows immediate power-on of the system.

- **Power-Off System**

  This option is not available on this system.

- **Enable/Disable Fast System Boot**

  Allows the user to select the IPL type, mode, and speed of the system boot.

  Attention: Selecting the fast IPL results in several diagnostic tests being skipped and a shorter memory test being run.

- **Boot Mode Menu**

  The Boot Mode Menu allows you to select a boot mode.

```
       Boot Mode Menu

 1. Boot to SMS Menu:
      Currently Disabled

 2. Service Mode Boot from Saved List:
      Currently Disabled

 3. Service Mode Boot from Default List:
      Currently Disabled

 4. Boot to Open Firmware Prompt:
      Currently Disabled

98. Return to Previous Menu

0>
```

To select a boot mode, select a number and press Enter. The item corresponding to the selected number toggles between Disabled to Enabled. If a boot mode is Enabled, the boot mode selected is performed, and the Disabled/Enabled selection is reset to Disabled. The following describes each boot mode:

– **Boot to SMS Menu**

  When this selection is enabled, the system boots to the System Management Services (SMS) Menu.

– **Service Mode Boot from Saved List**

  This selection causes the system to perform a service mode boot using the service mode boot list saved in NVRAM. If the system boots AIX from the disk drive and AIX diagnostics are loaded on the disk drive, AIX boots to the diagnostics menu.

  Using this option to boot the system is the preferred way to run online diagnostics.

– **Service Mode Boot from Default List**

This selection is similar to *Service Mode Boot from Saved List*, except the system boots using the default boot list that is stored in the system firmware. This is normally used to try to boot customer diagnostics from the CD-ROM drive.

Using this option to boot the system is the preferred way to run standalone diagnostics.

– **Boot to Open Firmware Prompt**

This option should only be used by service personnel to obtain additional debug information. When this selection is enabled, the system boots to the open firmware prompt.

System Information Menu

This menu provides access to system configuration information, error logs, system resources, and processor configuration.

```
        SYSTEM INFORMATION MENU

 1. Read VPD Image from Last System Boot

 2. Read Progress Indicators from Last System Boot

 3. Read Service Processor Error Logs

 4. Read System POST Errors

 5. Read NVRAM

 6. Read Service Processor Configuration

 7. Processor Configuration/Deconfiguration Menu

 8. Memory Configuration/Deconfiguration Menu

 9. Power Control Network Utilities Menu

10. LED Control Menu

11. MCM/L3 Interposer Plug Count Menu
     Not Supported

12. Performance Mode Setup Menu

13. L3 Mode Menu
     Not Applicable

14. Remote I/O (RIO) Link Speed Set Up Menu

98. Return to Previous Menu

99. Exit from Menus

0>
```

- **Read VPD Image from Last System Boot**

  Displays manufacturer's vital product data (VPD), such as serial numbers, part numbers, and so on, that was stored from the system boot prior to the one in progress now. VPD from all devices in the system is displayed.

- **Read Progress Indicators from Last System Boot**

  Displays a number of the boot progress indicators, which may include Service Processor checkpoints, IPL checkpoints, or AIX configuration codes, from the previous system boot. This information can be useful in diagnosing system faults.

  The progress indicator codes are listed from top (latest) to bottom (oldest).

  This information is not stored in nonvolatile storage. If the system is powered off using the power-on button on the operator panel, this information is retained. If the ac power is disconnected from the system, this information will be lost. For an example, refer to "LCD Progress Indicator Log" on page 262.

- **Read Service Processor Error Logs**

  Displays error conditions detected by the service processor. Refer to “Service Processor Error Logs” on page 261 for an example of this error log.
- **Read System POST Errors**

  This option should only be used by service personnel to obtain additional debug information.
- **Read NVRAM**

  Displays Non Volatile Random Access Memory (NVRAM) content.
- **Read Service Processor Configuration**

  Displays current service processor configuration.
- **Processor Configuration/Deconfiguration Menu**

  Enable/Disable CPU Repeat Gard

  CPU repeat gard will automatically deconfigure a CPU during a system boot if a processor has failed BIST (built-in self-test), caused a machine check or check stop, or has reached a threshold of recoverable errors. The processor will remain deconfigured until repeat gard is disabled or the processor is replaced.

  The default is enabled.

  For more information, see “Configuring and Deconfiguring Processors or Memory” on page 257.

  Dynamic Processor Sparing

  This option is not available on this system.

  This menu allows the user to change the system processor configuration. If it is necessary to take one of the processors offline, use this menu to deconfigure a processor, and then reconfigure the processor at a later time. An example of this menu follows:

```
        PROCESSOR CONFIGURATION/DECONFIGURATION MENU

77. Enable/Disable CPU Repeat Gard: Currently Enabled
78. Enable/Disable Dynamic Processor Sparing (if available): Currently Disabled

 1.  0   3.0  (00)  Configured by system     2.  1   3.1  (00)  Deconfigured by system



98. Return to Previous Menu

0>
```

Note: This table is built from vital product data collected during the last boot sequence. The first time the system is powered on, or after the system’s nonvolatile RAM (NVRAM) has been erased, this table may be empty. The table is rebuilt during the next boot into AIX.

The fields of the previous table represent the following:

Column 1

(1.) Menu selection index.

Column 2

(0) Logical processor device number assigned by AIX. You can display these logical device numbers by issuing the following command on the AIX command line:

```
lsdev -C | grep proc
```

Column 3

(3.0) Processor address list used by the service processor.

Column 4

(00) Error status of the processors.

The error status of each processor is indicated by AB, where B indicates the number of errors and A indicates the type of error according to the following:

1. Bring-up failure
2. Run-time non-recoverable failure
3. Run-time recoverable failure
4. Group integrity failure
5. Non-repeat-gardable error. The resource may be reconfigured on the next boot.

A status of 00 indicates that the CPU has not had any errors logged against it by the service processor.

To enable or disable CPU repeat gard, use menu option 77. CPU repeat gard is enabled by default.

If CPU repeat gard is disabled, processors that are in the ″deconfigured by system″ state will be reconfigured. These reconfigured processors are then tested during the boot process, and if they pass, they remain online. If they fail the boot testing, they are deconfigured even though CPU repeat gard is disabled.

The failure history of each CPU is retained. If a processor with a history of failures is brought back online by disabling repeat gard, it remains online if it passes testing during the boot process. However, if repeat gard is enabled, the processor is taken offline again because of its history of failures.

Notes:

1. The processor numbering scheme used by the service processor is different from the numbering scheme used by AIX. Consult the AIX documentation before configuring or deconfiguring a processor to ensure that the correct processor is selected.
2. The number of processors available to AIX can be determined by issuing the following command on the AIX command line: `bindprocessor -q`

   Note: The number of processors available to Linux can be determined by issuing the following command on the Linux command line:

   ```
   cat /proc/cpuinfo | grep POWER
   ```

- **Memory Configuration/Deconfiguration Menu**

  Enable/Disable Memory Repeat Gard

  Memory repeat gard will automatically deconfigure a quad of memory during a system boot if a memory DIMM has failed BIST (built-in self-test), caused a machine check or check stop, or has reached a threshold of recoverable errors. The quad will remain deconfigured until repeat gard is disabled or the memory is replaced.

  The default is enabled.

  For more information, see “Configuring and Deconfiguring Processors or Memory” on page 257.

  Runtime Recoverable Error Repeat Gard

  The runtime recoverable error repeat gard flag controls the deallocation of the memory if a recoverable error occurs during runtime. If a recoverable memory error occurs, and runtime recoverable error repeat gard is disabled, the system will continue running with no change in the memory configuration. If a recoverable memory error occurs, and runtime recoverable error repeat gard is enabled, the memory quad in which the error occurred will be garded out (taken offline).

  The default is disabled.

These menus allow the user to change the system memory configuration. If it is necessary to take one of the memory DIMMs offline, this menu allows you to deconfigure a DIMM, and then reconfigure the DIMM at a later time.

When this option is selected, a menu displays. The following is an example of this menu:

```
       MEMORY CONFIGURATION/DECONFIGURATION MENU

77. Enable/Disable Memory Repeat Gard: Currently Enabled

78. Runtime Recoverable Error Repeat Gard: Currently Disabled

 1. Memory card

98. Return to Previous Menu
```

After you select the memory card option by entering 1, a menu displays, allowing the selection of a memory DIMM. The following is an example of this menu.

```
       MEMORY CONFIGURATION/DECONFIGURATION MENU


 1. 3.16(00)  Configured by system   2. 3.17(00) Configured by system
 3. 3.18(00)  Configured by system   4. 3.19(00) Configured by system
 5. 4.24(00)  Configured by system   6. 4.25(00) Configured by system
 7. 4.26(00)  Configured by system   8. 4.27(00) Configured by system


98. Return to Previous Menu
```

Note: This table is built from vital product data collected during the last boot sequence. The first time the system is powered on, or after the system's nonvolatile RAM (NVRAM) has been erased, this table may be empty. The table is rebuilt during the next boot into AIX.

The fields in the previous table represent the following:

Column 1
1. Menu selection index/DIMM number

Column 2
xx.xx : DIMM address used by service processor

Column 3
(00) Error status

The error status of the each memory DIMM is indicated by AB, where B indicates the number of errors and A indicates the type of error according to the following table:

1. Bring-up failure
2. Run-time non-recoverable failure
3. Run-time recoverable failure
4. Group integrity failure
5. Non-repeat-gardable error. The resource may be reconfigured on the next boot.

An error status of 00 (for example, `3.16(00)`) indicates that the memory DIMM has not had any errors logged against it by the service processor.

To change the memory configuration, select the number of the memory DIMM. The memory DIMM state will change from `configured` to `deconfigured` or from `deconfigured` to `configured`.

In the previous example menu, each line shows two DIMMs and indicates whether they are configured.

To enable or disable Memory Repeat Gard, use menu option 77 of the Memory Configuration/Deconfiguration Menu.

To enable or disable runtime recoverable error repeat gard, use option 78 of the Memory Configuration/Deconfiguration Menu.

The failure history of each DIMM is retained. If a DIMM with a history of failures is brought back online by disabling Repeat Gard, it remains online if it passes testing during the boot process. However, if Repeat Gard is enabled, the DIMM is taken offline again because of its history of failures.

- **Power Control Network Utilities Menu**

```
        POWER CONTROL NETWORK UTILITIES MENU

  1. Lamp Test for all Operator Panels

  2. Display I/O Type

  3. Change I/O Type

  4. Collect & Display SPCN Trace Data

  5. Start SPCN Flash Update

  6. Display Power Subsystem FRU Code Levels
        Not Applicable

  7. Power Subsystem Code Update  via the Power Control Network
        Not Applicable

 98. Return to Previous Menu

 0>
```

  - **Lamp Test for All Operator Panels**

    Selecting this option tests the media drawer operator panel's indicators by causing them to blink on and off for approximately 30 seconds.

  - **Display I/O Type**

    This option, when selected, will display the SPCN address of the CEC drawer and the I/O type of the service processor.

  - **Change I/O Type**

    Use this option to change the I/O type (if necessary) after a service action or configuration change. If either value is not valid, a failure message displays on the console. Press Enter to return to the Power Control Network Utilities Menu.

    Select the I/O type from this table based on the speed of the processors in the system:

Processor Speed	I/O Type
1-way and 2-way 1.20 GHz processor(s)	A8

    You will be asked to make the following entries:

    1. For the I/O drawer address, type 1.
    2. For the I/O type, type the appropriate value from the table above.

    If either value is not valid, a failure message displays on the console. Press Enter to return to the Power Control Network Utilities menu.

  - **Collect & Display SPCN Trace Data**

    This option is used by service personnel to dump the SPCN trace data from the system unit to gather additional debug information. If this option is selected, enter 1 when prompted for the SPCN drawer number and enter d0 when prompted for the unit address. The following is an example of this menu and its output:

```
Enter the SPCN drawer number:   0

Enter the Unit Address:  d0
```

The SPCN trace data will be displayed on the screen. The following is an example of this output:

```
 Please wait....

***** Power Trace Data Start *****   00000000ffffffffffff0006158800a000061574a00000
060200353700060210031300060242000000060241040b0006110a00400006110902000006110208040
000000000061102080b0006041000000006d0e385000006110300000006110902000006040200000006
040200010006041000010006d0e385010006041000020000000000006d0e385020006041000030006d0e
385030006158010000006154003180006101116000006101116010006158010010007158156a0000711
000010000000000009101200000009101200001
***** Power Trace data End *****

            (Press Return to Continue)
```

– **Start SPCN Flash Update**

  This option is not available on this system.

– **Display Power Subsystem FRU Code Levels**

  This option is not available on this system.

- **LED Indicator Menu**

  This menu displays the state of the processor subsystem disturbance/system attention LED. Use this menu to toggle the attention/fault LED between identify (blinking) and off. Option 1 is only available when the system is in the error state (the CEC is powered on and the service processor menus are available). It is not available when the system is in standby. An example of this menu follows:

```
         LED Indicator


   1. Set/Reset Identify LED state

   2. Clear System Attention Indicator

  98. Return to Previous Menu

   Enter LED index

0 >
```

  Option 2, Clear System Attention Indicator, clears the attention indicator on the operator panel.

  The processor subsystem disturbance/LED is on the operator panel.

- **MCM/L3 Interposer Plug Count Menu**

  This option is not available on this system.

- **Performance Mode Setup Menu**

  This option is not available on this system.

  Notes:

  1. Some processor card changes cause the default performance mode to change. This new setting is not reflected in the menu until after the system is rebooted with the new configuration.
  2. If the NVRAM has been cleared, the default performance mode and the current performance mode will indicate `uninitialized`.

  If you want to override the default setting, a brief description of each performance mode follows:

  – Large Commercial System Optimization is the setting for systems that do not fall into the other two categories, standard operation and turbo database mode. This setting provides the best performance for most applications.

– Standard Operation optimizes the system for large memory bandwidth applications where minimal sharing of data occurs and the likelihood of significant hardware data-prefetching exists.
– Turbo Database Mode optimizes system operation for environments where there is a large amount of data sharing among processes running concurrently on the system.

Language Selection Menu

The service processor menus and messages are available in various languages. This menu allows selecting languages in which the service processor and system firmware menus and messages are displayed.

```
       LANGUAGE SELECTION MENU

 1. English

 2. Francais

 3. Deutsch

 4. Italiano

 5. Espanol

98. Return to Previous Menu

99. Exit from Menus

0>
```

Note: Your virtual terminal window must support the ISO-8859 character set to correctly display languages other than English.

Call-In/Call-Out Setup Menu

Note: The information in this section regarding the configuring of serial ports, and modems attached to those serial ports, applies only to the serial ports (S1 and S2) on the system backplane (location U0.1-P1). These serial ports are normally used for call-in and call-out.

The call-out function is normally handled by the Service Focal Point application running on the HMC.

None of these menus are applicable to the serial ports, or modems attached to those serial ports, on the HMC.

Call-in/call-out is not available on serial port 1 when the system is connected to and HMC and a virtual terminal window is open providing a connection to the managed system.

```
       CALL-IN/CALL-OUT SETUP MENU

  1. Modem Configuration Menu

  2. Serial Port Selection Menu

  3. Serial Port Speed Setup Menu

  4. Telephone Number Setup Menu

  5. Call-Out Policy Setup Menu

  6. Customer Account Setup Menu

  7. Call-Out Test
  NOT supported in LPAR mode

 98. Return to Previous Menu

 99. Exit from Menus

 0>
```

- **Modem Configuration Menu**, see “Modem Configuration Menu.”
- **Serial Port Selection Menu**, see “Serial Port Selection Menu” on page 246.
- **Serial Port Speed Setup Menu**, see “Serial Port Speed Setup Menu” on page 246.
- **Telephone Number Setup Menu**, see “Telephone Number Setup Menu” on page 247.
- **Call-Out Policy Setup Menu**, see “Call-Out Policy Setup Menu” on page 248.
- **Customer Account Setup Menu**, see “Customer Account Setup Menu” on page 249.
- **Call-Out Test** tests the configuration after the modem is installed and configured correctly.

Modem Configuration Menu

Note: This option applies only to a modem attached to serial port 1 (S1) or serial port 2 (S2) on the CEC backplane.

The first two lines of the Modem Configuration Menu contain status of the current selections. Selections are made in the sections labeled Modem Ports and Modem Configuration File Name. Select the serial port that you want to activate and then select the modem configuration file for the modem on the port. If you want to set up all of the serial ports with modems, make your selections one port at a time.

```
        Modem Configuration Menu

   Port 1 Modem Configuration File Name:
   Port 2 Modem Configuration File Name:

To make changes, First select the port and then the configuration file
name

Modem Ports:
   1. Serial port 1
   2. Serial port 2

Modem Configuration File Name:
   5. none9. modem_z_sp
   6. modem_f_sp          10. modem_m1_sp
   7. modem_f0_sp         11. modem_m0_sp
   8. modem_f1_sp         12. modem_m1_sp

  30. Save configuration to NVRAM and Configure modem
  98. Return to Previous Menu

  0>
```

For information on choosing a modem configuration file, see “Sample Modem Configuration Files” on page 427 and “Transfer of a Modem Session” on page 433.

Serial Port Selection Menu

This menu allows you to enable or disable the call-in and call-out functions of each serial port in any combination.

```
        Serial Port Selection Menu

   1. Serial Port 1 Call-Out:
      Currently Disabled
    NOT supported in LPAR mode

   2. Serial Port 2 Call-Out:
        Currently Disabled
    NOT supported in LPAR mode

   3. Serial Port 1 Call-In:
        Currently Disabled

    4. Serial Port 2 Call-In:
        Currently Disabled
  98. Return to Previous Menu

 0>
```

Call-in and ring indicate power-on cannot be enabled at the same time. If ring-indicate power-on is already enabled and you try to enable call-in, a message prompts you for confirmation. Refer to the message displayed on the screen.

Serial Port Speed Setup Menu

This menu allows you to set serial port speed to enhance terminal performance or to accommodate modem capabilities.

```
       Serial Port Speed Setup Menu

  1. Serial Port 1 Speed:
       Currently 9600

  2. Serial Port 2 Speed:
       Currently 9600

 98. Return to Previous Menu

  0>
```

A serial port speed of 9600 baud or higher is recommended. The following are valid serial port speeds:

50	600	4800
75	1200	7200
110	1800	9600
134	2000	19200
150	2400	38000
300	3600	57600
		115200

Telephone Number Setup Menu

Note: These menus are available, however, the function of calling out to report a system failure is normally handled by the Service Focal Point application running on the HMC.

Use this menu to set or change the telephone numbers for reporting a system failure.

```
       Telephone Number Setup Menu

  1. Service Center Telephone Number:
      Currently Unassigned

  2. Customer Administration Center Telephone Number:
      Currently Unassigned

  3. Digital Pager Telephone Number:
      Currently Unassigned

  4. Customer Voice Telephone Number:
      Currently Unassigned

  5. Customer System Telephone Number:
      Currently Unassigned

 98. Return to Previous Menu

  0>
```

- **Service Center Telephone Number** is the number of the service center computer. The service center usually includes a computer that takes calls from servers with call-out capability. This computer is referred to as the *catcher*. The catcher expects messages in a specific format to which the service processor conforms.

  For more information about the format and catcher computers, refer to the readme file in the AIX **/usr/samples/syscatch** directory. Contact your service provider for the correct service center telephone number to enter. Until you have that number, leave this field unassigned.

- **Customer Administration Center Telephone Number** is the number of the System Administration Center computer (catcher) that receives problem calls from servers. Contact your system administrator for the correct telephone number to enter here. Until you have that number, leave this field unassigned.
- **Digital Pager Telephone Number** is the number for a numeric pager carried by someone who responds to problem calls from your system. Contact your administration center representative for the correct telephone number to enter. For test purposes, use a test number, which you can change later (see the note on page 259).
- **Customer Voice Telephone Number** is the telephone number of a phone near the system or answered by someone responsible for the system. This is the telephone number left on the pager for callback. For test purposes, use a test number, which you can change later.
- **Customer System Telephone Number** is the telephone number to which your system's modem is connected. The service or administrative center representatives need this number to make direct contact with your system for problem investigation. This is also referred to as the *call-in* phone number.

Call-Out Policy Setup Menu

Call out settings can be set using the following menu:

```
       CALL-OUT POLICY SETUP MENU

 1. Call-Out policy (First/All):
     Currently First

 2. Remote timeout, (in seconds):
     Currently 120

 3. Remote latency, (in seconds):
     Currently 2

 4. Number of retries:
     Currently 2

98. Return to Previous Menu

0>
```

- **Call-Out policy** can be set to `first` or `all`. If call-out policy is set to `first`, the service processor stops at the first successful call-out to one of the following numbers in the order listed:
  1. Service Center
  2. Customer Administrative Center
  3. Pager

  If call-out policy is set to `all`, the service processor attempts a call-out to all of the following numbers in the order listed:
  1. Service Center
  2. Customer Administrative Center
  3. Pager
- **Remote timeout** and **remote latency** are functions of your service provider's catcher computer. Either use the defaults or contact your service provider for recommended settings.
- **Number of retries** is the number of times you want the system to retry calls that failed to complete.

Customer Account Setup Menu

This menu allows users to enter information that is specific to their account.

```
       Customer Account Setup Menu

  1. Customer Account Number:
      Currently Unassigned

  2. Customer RETAIN Login userid:
      Currently Unassigned

  3. Customer RETAIN login password:
      Currently Unassigned

 98. Return to Previous Menu

 0>
```

- **Customer Account Number** is assigned by your service provider for record-keeping and billing. If you have an account number, enter it. Otherwise, leave this field unassigned.
- **Customer RETAIN Login User ID** and **Customer RETAIN Login Password** apply to a service function to which your service provider might have access. If your service provider does not use RETAIN, leave these fields unassigned.

Call-out Test Menu

Tests the configuration after the modem is installed and configured. In order for this test to execute successfully, at least one of the following numbers must be assigned:

- Service center telephone number
- Customer administration center telephone number
- Digital pager telephone number

Service Processor Parameters in Service Mode

When the system is in service mode, the following service-processor parameters are suspended:

- Unattended Start Mode
- Reboot/Restart Policy
- Call-Out
- Surveillance

When service mode is exited, the service processor functions are reactivated.

System Power-On Methods

This section discusses the following system power-on methods:

- Power-on Switch
- Service Processor Menus

  Privileged users can power on the system by selecting the **System Control Power Menu** option from the main menu and then selecting the **Power-on System** option from the System Power Control Menu. General users should select **Power-on System** on the General User Menu.
- Remote Power-on via Ring-Indicate Signal

  The system automatically powers on when it detects a ″ring indicate″ signal from a modem attached to serial port 1 (S1) or serial port 2 (S2).

  A remote user can call the system to activate ring detection by the modem. Listen for a few more rings than the threshold number for starting the system. The system powers on without answering the call.

- Unattended start mode - refer to **Enable/Disable Unattended Start Mode** on page 235.

  The service processor can be enabled to recover from the loss of ac power (see Enable/Disable Unattended Power-On Mode in the SYSTEM POWER CONTROL MENU). When ac power is restored, the system returns to the power state at the time ac loss occurred. For example, if the system was powered on when ac loss occurred, it reboots/restarts when power is restored. If the system was powered off when ac loss occurred, it remains off when power is restored.
- Timed power-on - refer to the **shutdown -t** command on servers using AIX.

  Working in conjunction with AIX, the service processor in your system can operate a timer, much like the wake-up timer on your clock radio. You can set the timer so that your system powers on at a certain time after shutting down. The timer is battery-operated, so power interruptions that occur while the system is off do not affect its accuracy. Refer to the AIX **shutdown -t** command for details on setting the timer.

  Note: If an ac power loss is in progress when the timed power-on attempt occurs, the system cannot power on when ac power is restored.
- Follow-up to a Failed Boot Attempt

  The service processor initiates a power-on sequence if a failed boot attempt is detected (due to a hardware or software failure).
- Fast or Slow Boot (IPL)

  Using the service processor menus, you can select the IPL type, mode, and speed of your system.

  Attention: Selecting fast IPL results in several diagnostic tests being skipped and a shorter memory test being run.

Service Processor Reboot/Restart Recovery

Reboot describes bringing the system hardware back up; for example, from a system reset or power-on. The boot process ends when control passes to the operating system process.

Restart describes activating the operating system after the system hardware is reinitialized. Restart must follow a successful reboot.

Boot (IPL) Speed

When the system enters reboot recovery, slow IPL is automatically started, which gives the POST an opportunity to locate and report any problems that might otherwise be unreported.

Failure During Boot Process

During the boot process, either initially after system power-on or upon reboot after a system failure, the service processor monitors the boot progress. If progress stops, the service processor can reinitiate the boot process (reboot) if enabled to do so. The service processor can re-attempt this process according to the number of retries selected in the Reboot/Restart Policy Setup Menu.

Failure During Normal System Operation

When the boot process completes and control transfers to the operating system (OS), the service processor can monitor operating system activity (see the Set Surveillance Parameters option in the SERVICE PROCESSOR SETUP MENU). If OS activity stops due to a hardware- or software-induced failure, the service processor can initiate a reboot/restart process based on the settings in the Service Processor Reboot/Restart Policy Setup Menu and the OS automatic restart settings (see the operating system documentation).

If you are using the AIX operating system, the menu item under SMIT for setting the restart policy is **Automatically Reboot After Crash**. The default is false. When the setting is true, and if the service

processor parameter ″Use OS-Defined Restart Policy″ is yes (the default), the service processor takes over for AIX to reboot/restart after a hardware or surveillance failure.

Service Processor Reboot/Restart Policy Controls

The operating system's automatic restart policy (see operating system documentation) indicates the operating system response to a system crash. The service processor can be instructed to refer to that policy by the Use OS-Defined Restart Policy setup menu.

If the operating system has no automatic restart policy, or if it is disabled, then the service processor-restart policy can be controlled from the service processor menus. Use the Enable Supplemental Restart Policy selection.

Use OS-Defined restart policy - The default setting is no. This causes the service processor to refer to the OS Automatic Restart Policy setting and take action (the same action the operating system would take if it could have responded to the problem causing the restart).

When this setting is no, or if the operating system did not set a policy, the service processor refers to enable supplemental restart policy for its action.

Enable supplemental restart policy - The default setting is yes. When set to yes, the service processor restarts the server when the operating system loses control and either:

The **Use OS-Defined restart policy** is set to No.

OR

The **Use OS-Defined restart policy** is set to Yes and the operating system has no automatic restart policy.

If set to Yes, the service processor restarts the system when the system loses control and it is detected by service processor surveillance. Refer to “Service Processor Reboot/Restart Recovery” on page 250.

The following table describes the relationship among the operating system and service processor restart controls:

OS Automatic reboot/restart after crash setting	Service processor to use OS-Defined restart policy?	Service Processor Enable supplemental restart policy?	System response
None	No[1]	No	
None	No[1]	Yes[1]	Restarts
None	Yes	No	
None	Yes	Yes[1]	Restarts
False[2]	No[1]	No	
False[2]	No[1]	Yes[1]	Restarts
False[2]	Yes	No	
False[2]	Yes	Yes[1]	
True	No[1]	No	
True	No[1]	Yes[1]	Restarts
True	Yes	No	Restarts
True	Yes	Yes[1]	Restarts

[1] Service processor default
[2] AIX default

System Firmware Updates

This section provides information and instructions for updating the system firmware. You may need to perform these steps if you are installing an option or if your support representative has instructed you to update your firmware.

Downloading the firmware update image and update instructions from the Web is preferred.

Always check the pSeries and RS/6000 Support Web site for the latest firmware images and update instructions. The Web address is: http://techsupport.services.ibm.com/server/mdownload2

If you cannot download from the Web, do the following:

- If the system is running, but access to the Web is not available, see “System Firmware Update Using a Locally Available Image” on page 254.
- If the system cannot be powered on, but the service processor menus are available, see “Updating System Firmware from the Service Processor Menus” on page 255.
- If the service processor programming has been corrupted, the service processor will automatically enter recovery mode when power is applied to the system. For more information about recovery mode, see “Recovery Mode” on page 255.

To check the level of firmware that is currently on the system, see “Determining the Level of Firmware on the System” on page 254.

General Information on System Firmware Updates

All the system firmware types that can be reprogrammed are updated at the same time. They are:

- System power control network programming
- Service processor programming
- IPL programming
- Run-time abstraction services

It is strongly recommended that you create a set of firmware update diskettes from the Web site as soon as possible after a system is installed. The diskette images can be downloaded to any personal computer, pSeries, or RS/6000 system with Internet access. This method and contacting your service representative are the only two ways to acquire a set of firmware update diskettes; they cannot be created by using the service processor menus or by using the operating system.

Retain and store the latest firmware diskettes each time the firmware gets updated in the event that the firmware becomes corrupted and must be reloaded.

Download the detailed instructions, as well as the latest flash images, from the following Web address: http://techsupport.services.ibm.com/server/mdownload2. Before doing a system firmware update, check the Web site for the latest code and images. Do not attempt a firmware update if you are unsure of the image you have, or of the procedure required for the update.

The images are available on the Web site in either DOS format or AIX (backup) format:

- If downloading to a PC, download the DOS image and follow the instructions. The diskettes that are created will be in AIX (backup) format.
- If downloading to a pSeries or RS/6000 system, follow the instructions to create an image on a disk drive or on diskettes.

Determining the Level of Firmware on the System

Note: This information may be superseded by information that is available on the following Web site. Always check the Web site for the latest images and instructions for checking the firmware level. The Web address is: http://www.rs6000.ibm.com/support/micro

The firmware level is denoted by vFyymmdd, where:

- v = version number
- F = the p615's firmware designation
- yy = year
- mm = month
- dd = day

of the release.

If the system is running AIX, the firmware level can be determined by either of the following methods:

- On the AIX command line, by typing:

  ```
  lscfg -vp|grep -p Platform
  ```

  A line that begins with `ROM level (alterable)..` displays the firmware level that is currently on the system.
- Looking at the top of the service processor main menu.

If the system is running Linux, the platform firmware level can be determined by the following methods:

- On the Linux command line, type:

  ```
  lscfg -vp | grep 3F
  ```

  A line similar to the following displays the firmware level that is currently on the system:

  ```
  Alterable ROM Level 1F030504
  ```
- Looking at the top of the service processor main menu.

System Firmware Update Using a Locally Available Image

To update the system firmware using a locally available image, perform the following steps:

1. Log in as root user.
2. If the **/tmp/fwupdate** directory does not exist, create it by issuing the following command:

   ```
   mkdir /tmp/fwupdate
   ```
3. The firmware update file must be downloaded or copied into the **/tmp/fwupdate** directory on the system. This can be done by using the **ftp** command to get the image from an ftp server or NFS-mounting the directory on the host system.

   The firmware updated file can also be transferred to the target system by backing up the image onto diskettes from another server and restoring it into the **/tmp/fwupdate** directory.

   After the firmware update file has been downloaded or copied into the **/tmp/fwupdate** directory, verify its existence by entering the following command:

   ```
   ls /tmp/fwupdate/1F*.img
   ```

   The update file will have the format 1Fyymmdd.img. The 1F indicates that this is an update image for your system: yy is the year, mm is the month, and dd is the day of the update file.
4. If the system is running AIX:
   After the firmware update file has been written to the **/tmp/fwupdate** directory, enter the following commands:

```
cd /usr/lpp/diagnostics/bin

./update_flash -f /tmp/fwupdate/1Fyymmdd.img
```

Attention: Do not overlook the periods (.) in the commands shown above. AIX commands are case-sensitive. Type them exactly as shown.

The firmware update is complete.

If the system is running Linux, refer to the detailed instructions with the latest image that are provided on CORE or the Web

You will be asked for confirmation to proceed with the firmware update and the required reboot. If you confirm, the system will apply the new firmware, reboot, and return to the AIX prompt. This may take up to ten minutes depending on the configuration of the system.

Attention: On some systems, the message `Wait for rebooting before stopping` may display on the system console. Do not turn off the system until the system has fully rebooted to the AIX login prompt. If a shutdown is necessary at that time, log in as root user and issue the **shutdown** command.

While the update is in progress, you will see `Rebooting...` on the display for several minutes.

The firmware update is complete.

Updating System Firmware from the Service Processor Menus

This procedure requires a diskette drive to be installed in the system. This procedure also requires a set of firmware update diskettes in backup format.

The service processor menus are available while the system is powered off. As a privileged user, from the service processor main menu, select **Service Processor Setup**, then select **Reprogram Flash EPROM Menu**. The update process requests update diskettes as needed.

Updating System Firmware from the AIX Service Aids

Note: This service aid is supported only in online diagnostics.

Refer to the detailed instructions that are provided on CORE or the web with the latest image.

Note: Because the system always reboots itself during this type of firmware update process, the update process can take from 20 to 60 minutes.

Updating System Firmware from the AIX Command Line

Refer to the detailed instructions that are provided on the Web site with the latest image.

Note: The update process can take up to 60 minutes, and the system reboots itself during the update process.

Updating System Firmware from a NIM Server

Refer to “Running Standalone Diagnostics from a Network Installation Management (NIM) Server” on page 223.

Recovery Mode

If the service processor detects that its programming has been corrupted when it is powering up to standby mode, it will enter recovery mode. In recovery mode, it will ask for the firmware update diskettes by putting eight-digit codes on the operator panel.

The eight-digit codes are as follows:

Code	Action
A1FD 0000	System firmware has been corrupted and must be reflashed.
A1FD 0001	Insert update diskette 1.
A1FD 0002	Insert update diskette 2.
A1FD 0003	Insert update diskette 3.
A1FD 000n	Insert update diskette n.

Notes:

1. If the wrong diskette is inserted at any time, or if the diskette is left in the drive after it has been read, `B1FD 001F` is displayed, indicating that the wrong diskette is in the drive.
2. If `B1FD 001A` is displayed at any time during the process, the service processor must be reset by activating the pinhole reset switch on the primary drawer operator panel.

After the update process is complete, the service processor resets itself and goes through a complete reboot.

Configuring and Deconfiguring Processors or Memory

All failures that crash the system with a machine check or check stop, even if intermittent, are reported as a diagnostic callout for service repair. To prevent the recurrence of intermittent problems and improve the availability of the system until a scheduled maintenance window, processors and memory DIMMs with a failure history are marked ″bad″ to prevent their being configured on subsequent boots. This function is called *repeat gard*.

A processor or memory DIMM is marked ″bad″ under the following circumstances:

- A processor or memory DIMM fails built-in self-test (BIST) or power-on self-test (POST) testing during boot (as determined by the service processor).
- A processor or memory DIMM causes a machine check or check stop during runtime, and the failure can be isolated specifically to that processor or memory DIMM (as determined by the processor runtime diagnostics in the service processor).
- A processor or memory DIMM reaches a threshold of recovered failures that results in a predictive callout (as determined by the processor run-time diagnostics in the service processor).

During boot time, the service processor does not configure processors or memory DIMMs that are marked “bad.”

If a processor or memory DIMM is deconfigured, the processor or memory DIMM remains offline for subsequent reboots until it is replaced or repeat gard is disabled. The repeat gard function also provides the user with the option of manually deconfiguring a processor or memory DIMM, or re-enabling a previously deconfigured processor or memory DIMM.

For information about configuring or deconfiguring a processor, see the Processor Configuration/Deconfiguration Menu on page 239. For information about configuring or deconfiguring a memory DIMM, see the Memory Configuration/Deconfiguration Menu on page 240. Both of these menus are submenus under the System Information Menu. You can enable or disable CPU Repeat Gard or Memory Repeat Gard using the Processor Configuration/Deconfiguration Menu.

Run-Time CPU Deconfiguration (CPU Gard)

L1 instruction cache recoverable errors, L1 data cache correctable errors, and L2 cache correctable errors are monitored by the processor run-time diagnostics (PRD) firmware running in the service processor. When a predefined error threshold is met, an error log with warning severity and threshold exceeded status is returned to AIX. At the same time, PRD marks the CPU for deconfiguration at the next boot. AIX will attempt to migrate all resources associated with that processor to another processor and then stop the defective processor.

Service Processor System Monitoring - Surveillance

Surveillance is a function in which the service processor monitors the system, and the system monitors the service processor. This monitoring is accomplished by periodic samplings called *heartbeats*.

Surveillance is available during the following phases:

- System firmware bringup (automatic)
- Operating system run-time (optional)

Note: Operating system surveillance is disabled in partitioned systems.

System Firmware Surveillance

System firmware surveillance is automatically enabled during system power-on. It cannot be disabled by the user, and the surveillance interval and surveillance delay cannot be changed by the user.

If the service processor detects no heartbeats during system IPL (for a set period of time), it cycles the system power to attempt a reboot. The maximum number of retries is set from the service processor menus. If the fail condition persists, the service processor leaves the machine powered on, logs an error, and displays menus to the user. If Call-out is enabled, the service processor calls to report the failure and displays the operating-system surveillance failure code on the operator panel.

Operating System Surveillance

Operating system surveillance provides the service processor with a means to detect hang conditions, as well as hardware or software failures, while the operating system is running. It also provides the operating system with a means to detect a service processor failure caused by the lack of a return heartbeat.

Operating system surveillance is not enabled by default, allowing you to run operating systems that do not support this service processor option.

You can also use service processor menus and AIX service aids to enable or disable operating system surveillance.

For operating system surveillance to work correctly, you must set these parameters:

- Surveillance enable/disable
- Surveillance interval

  The maximum time the service processor should wait for a heartbeat from the operating system before timeout.
- Surveillance delay

  The length of time to wait from the time the operating system is started to when the first heartbeat is expected.

Surveillance does not take effect until the next time the operating system is started after the parameters have been set.

If desired, you can initiate surveillance mode immediately from service aids. In addition to the three options above, a fourth option allows you to select immediate surveillance, and rebooting of the system is not necessarily required.

If operating system surveillance is enabled (and system firmware has passed control to the operating system), and the service processor does not detect any heartbeats from the operating system, the service processor assumes the system is hung and takes action according to the reboot/restart policy settings. See “Service Processor Reboot/Restart Recovery” on page 250.

If surveillance is selected from the service processor menus which are only available at system boot, then surveillance is enabled by default as soon as the system boots. From service aids, the selection is optional.

Call-Out (Call-Home)

Note: The call-out function is handled by the Service Focal point application on the Hardware Management Console (HMC).

The service processor can call out (call-home) when it detects one of the following conditions:

- System firmware surveillance failure
- Operating system surveillance failure (if supported by operating system)
- Restarts
- Critical hardware failure
- Abnormal operating system termination

To enable the call-out feature, do the following:

1. Connect a modem to any serial port.
2. Set up the following using the service processor menus or diagnostic service aids:
   - Enable call-out for the serial port where the modem is connected.

- Enter the modem configuration file name.
- Set up site-specific parameters (phone numbers for call-out, call-out policy, number of call-out retries, and so on).

3. To call out before restart, set **Call-out before restart** to ENABLED from the Reboot/Restart Policy Setup menu.

Note: Some modems, such as the IBM 7857-017, are not designed for the paging function. Although they can be used for paging, they will return an error message when they do not get the expected response from another modem. Therefore, even though the paging was successful, the error message will cause the service processor to retry, continuing to place pager calls for the number of retries specified in the call-out policy setup menu. These retries result in redundant pages.

Console Mirroring

Console mirroring allows a user on one serial port to monitor the service processor activities on another serial port. This can be done on the locally attached HMC virtual terminal window or windows remotely attached through modems. Console mirroring is supported on any combination of locally or remotely attached monitors.

The serial port from which console mirroring is enabled is called the *primary port*. The mirror port is determined when keyboard input is detected from one of the other two serial ports. From this point forward, the service processor sends information to the active port and the mirror port only. Console mirroring ends when the service processor releases control of the serial ports to the system firmware.

Console mirroring is supported on serial port 1 (S1), serial port 2 (S2), and serial port 3 (S3). Remote attachment through modem is supported on serial port 1 (S1) and serial port 2 (S2).

System Configuration

The following describes the configuration for console mirroring:

- Service processor
- Modem connected to one serial port and enabled for incoming calls
- Local HMC virtual terminal window connected to the other serial port. This local terminal can be connected directly to your system or connected through another modem.

Console mirroring can be started by either of the following methods:

- Remote session first, then local session added:
  1. Remote session is already in progress.
  2. Remote user uses service processor menus to enable console mirroring, allowing both consoles to be active.
- Local session first, then remote session added:
  1. Local session is already in progress.
  2. The service processor receives a call from the remote user.
  3. The local user selects the option to enable console mirroring. The service processor immediately begins mirroring service processor menus.

Service Processor Error Logs

The service processor error logs, an example of which follows, contain error conditions detected by the service processor.

```
                        Error Log

1. 11/30/99    19:41:56 Service Processor Firmware Failure
   B1004999

   Enter error number for more details.
   Press Return to continue, or 'x' to return to menu.
     Press "C" to clear error log, any other key to continue. >
```

Note: The time stamp in this error log is coordinated universal time (UTC), which is also referred to as Greenwich mean time (GMT). Operating system error logs have additional information available and can time stamp with local time.

Entering an error number provides nine words of system reference code (SRC) data; an example menu follows.

```
Detail:    6005

SRC
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
word11:B1004999      word12:0110005D      word13:00000000
word14:00000000      word15:00001111      word16:00000000
word17:B1004AAA      word18:0114005D      word19:A4F1E909

B1004999

   Press Return to continue, or 'x' to return to menu.
```

If Return is pressed, the contents of NVRAM will be dumped 320 bytes at a time, starting at address 0000.

LCD Progress Indicator Log

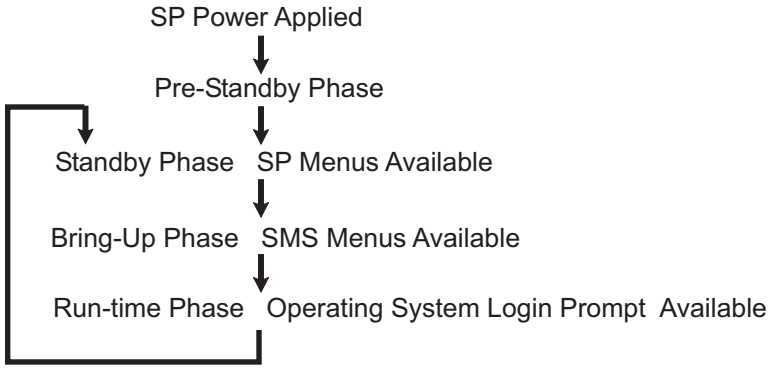
The following is an example of the LCD progress indicator log. It shows the types of entries that can appear in the log and is for example purposes only.

The progress indicator codes are listed from top (latest) to bottom (oldest).

```
                        LCD Progress Indicator Log
          B0FF
          0539..17
          0538..17
          0539..17
          0538..17
          0539..17
          0581
          0538..17
          0539..12
          0538..12
          0539..
          0821..01-K1-00
          0539..
          0728..01-R1-00-00
          0539..
          0664..40-60-00-1,0
          0539..
          0777..U0.1-P2-I1/E1
          0539..
          0742..U0.1-P2-I2/E1
          0539..
          0776..U0.1-P2-I3/T1
          E139
          E1FB
          E139
          E183
Press Return to continue, or 'x' to return to menu. >
          EAA1..U0.1-P1-I4
          E172..U0.1-P1
          E172..U0.1-P1-I4
          E172..U0.1-P1
          94BB
          9109
          9380
          9108
          9107
          9106
          9105
          9118
          9104
          9103
          9102
          90FD
```

Service Processor Operational Phases

This section provides a high-level flow of the phases of the service processor.



Pre-Standby Phase

This phase is entered when the system is connected to a power source. The system may or may not be fully powered on. This phase is exited when the power-on self-tests (POSTs) and configuration tasks are completed.

The pre-standby phase components are:

- Service Processor Initialization - Service processor performs any necessary hardware and software initialization.
- Service Processor POST - Service processor conducts Power-on self-tests on its various work and code areas.
- Service Processor Unattended Start Mode Checks - To assist fault recovery. If unattended start mode is set, the service processor automatically reboots the system. The service processor does not wait for user input or power-on command, but moves through the phase and into the bring-up phase. Access the SMS menus or the service processor menus to reset the unattended start mode.

Standby Phase

The standby phase can be reached in either of the following ways:

- With the system off and power connected (the normal path), recognized by `0K` in the LCD display.

  OR
- With the system on after an operating system fault, recognized by an 8-digit code in the LCD display.

In the standby phase, the service processor takes care of some automatic duties and is available for menus operation. The service processor remains in the standby phase until a power-on request is detected.

The standby phase components are as follows:

- Modem Configuration

  The service processor configures the modem (if installed) so that incoming calls can be received, or outgoing calls can be placed.
- Dial In

  Monitor incoming phone line to answer calls, prompt for a password, verify the password, and remotely display the standby menu. The remote session can be mirrored on the local HMC virtual terminal window if the system is so equipped and if the user enables this function.
- Menus

The service processor menus are password-protected. Before you can access them, you need either the general user-password or privileged-user password.

Service processor menus are available on ASCII terminals attached to the serial ports on the system, and on terminal emulators. On HMC-managed systems, service processor menus are also available on the HMC graphical user interface.

Bring-Up Phase

This phase is entered upon power-on, and exited upon loading of the operating system.

The bring-up phase components are as follows:

- Retry Request Check

  The service processor checks to see if the previous boot attempt failed. If the specified number of failures are detected, the service processor displays an error code and places an outgoing call to notify an external party if the user has enabled this option.
- Dial Out

  The service processor can dial a preprogrammed telephone number in the event of an IPL failure. The service processor issues an error report with the last reported IPL status indicated and any other available error information.
- Update Operator Panel

  The service processor displays operator panel data on the HMC virtual terminal window if a remote connection is active.
- Environmental Monitoring

  The service processor provides expanded error recording and reporting.
- System Firmware Surveillance (Heartbeat Monitoring)

  The service processor monitors and times the interval between system firmware heartbeats.
- Responding to System Processor Commands

  The service processor responds to any command issued by the system processor.

Runtime Phase

This phase includes the tasks that the service processor performs during steady-state execution of the operating system.

- Environmental Monitoring

  The service processor monitors voltages, temperatures, and fan speeds (on some servers).
- Responding to System Processor Commands

  The service processor responds to any command issued by the system processor.
- Run-Time Surveillance

  If the device driver is installed and surveillance enabled, the service processor monitors the system heartbeat. If the heartbeat times out, the service processor places an outgoing call. This is different from the bring-up phase scenario, where the specified number of reboot attempts are made before placing an outgoing call.
- HMC surveillance

  On an HMC-managed system, the service processor monitors the communication link between the managed system and the HMC. If the service processor detects that this communication link has been broken, it will post an error to the operating system running on the managed system.

Chapter 8. Using System Management Services

Use the system management services menus to view information about your system , and to perform tasks such as setting a password, changing the boot list, and setting the network parameters.

Note: On some of the system management services (or service processor) screens, you will see the term *LPAR* whidh is equivalent to the term *logical partition*. This system does not support logical partitions.

To start the system management services, do the following:

1. For a partitioned system, use the *Hardware Management Console for pSeries*(HMC) to restart the partition.

   For a full system partition, restart the system.
2. For a partitioned system, watch the virtual terminal window on the HMC.

   For a full system partition, watch the firmware console.
3. Look for the POST indicators **memory**, **keyboard**, **network**, **scsi**, **speaker**, which appear across the bottom of the screen.

   Press the numeric 1 key after the word **keyboard** appears, and before the word **speaker** appears.

   For more information on the POST indicator words, refer to “POST Indicators” on page 8.

After the system management services starts, the following screen displays:

```
Main Menu

 1   Select Language
 2   Change Password Options NOT available in LPAR mode
 3   View Error Log
 4   Setup Remote IPL (Initial Program Load)
 5   Change SCSI Settings
 6   Select Console NOT available in LPAR mode
 7   Select Boot Options


-------------------------------------------------------------------------------
Navigation keys:

                                                X = eXit System Management Services
-------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Note: The System Management Services can also be started using the Service Processor Boot Mode Menu. See page 237.

On all menus except the Main Menu, there are several navigation keys:

M Return to the main menu.

ESC Return to the previous menu.

X Exit the System Management Services and start the operating system.

If X is entered, you are asked to confirm your choice to exit the SMS menus and start the operating system.

When there is more than one page of information to display, there are two additional navigation keys:

N Display the next page of the list.

P Display the previous page of the list.

Note: The lowercase navigation key has the same effect as the uppercase key that is shown on the screen. For example, *m* or *M* returns you to the main menu.

On each menu screen, you are given the option of choosing a menu item and pressing enter (if applicable), or selecting a navigation key.

Select Language

Note: Your TTY must support the ISO-8859 character set to properly display languages other than English.

This option allows you to change the language used by the text-based System Management Services menus.

```
 SELECT LANGUAGE

  1.  English
  2.  Francais
  3.  Deutsch
  4.  Italiano
  5.  Espanol









-------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
-------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Change Password Options

The Change Password Options menu enables you to select from password utilities.

Note: This option is not available when the system is booted in LPAR mode.

```



Password Utilities

 1 Set Privileged-Access Password
 2 Remove Privileged-Access Password



-------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
-------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Set Privileged-Access Password

The privileged-access password protects against the unauthorized starting of the system programs.

Note: If the privileged-access password has been enabled, you are asked for the privileged-access password at startup every time you boot your system.

If you previously had set a privileged-access password and want to remove it, select **Remove Privileged-Access Password**.

View Error Log

Use this option to view or clear your system's error log. A menu similar to the following displays when you select this option.

```
 Error Log

          Date       Time       Error Code      Location
 Entry 1. 01/04/96   12:13:22   25A80011        00-00
 Entry 2. no error logged

1. Clear error log



-------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
-------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Note: The time stamp in his error log is coordinated universal time (UTC), which is also referred to as Greenwich mean time (GMT). Operating system error logs have more information available and can time stamp with your local time.

Setup Remote IPL (Initial Program Load)

This option allows you to enable and set up the remote startup capability of your system. A list of NIC (network interface card) adapters in the system displays first. The following is an example of this screen.

```
NIC Adapters
         Device                          Slot          Hardware Address
1.    10/100 Mbps Ethernet PCI Adapt     Integ:  U0.1-P1/E1     00096baeac10
2.    IBM 10/100/1000 Base-TX PCI        Integ:  U0.1-P1/E2     0009cbce0fde



-------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
-------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

When an adapter is selected, the network parameters menu displays:

```
Network Parameters
10/100 Mbps Ethernet PCI Adapter II:  U0.1-P1/E1
 1. IP Parameters
 2. Adapter Parameters
 3. Ping Test



-------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
-------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Selecting the IP (Internet Protocol) parameters option displays the following menu:

```
IP Parameters
10/100 Mbps Ethernet PCI Adapter II:  U0.1-P1/E1
 1. Client IP Address    [000.000.000.000]
 2. Server IP Address    [000.000.000.000]
 3. Gateway IP Address   [000.000.000.000]
 4. Subnet Mask          [255.255.255.000]




-------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
-------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

To change IP parameters, type the number of the parameters for which you want to change the value. Entering IP parameters on this screen will automatically update the parameters on the ping test screen.

Attention: If the client system and the server are on the same subnet, set the gateway IP address to [0.0.0.0].

Selecting **Adapter Configuration** allows the setting of the network speed, enabling or disabling spanning tree, and setting the protocol as shown in the following example menu :

```
 Adapter Configuration
 10/100 Mbps Ethernet PCI Adapter II:  U0.1-P1/E1
1.  Speed, Duplex
2.  Spanning Tree Enabled
3.  Protocol




--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Selecting the **Speed, Duplex** option allows you to set the interface speed at which the card will run at half versus full duplex. The current setting is indicated by ″<===″.

```
Adapter Configuration
10/100 Mbps Ethernet PCI Adapter II:  U0.1-P1/E1

1.  auto, auto
2.  10,half
3.  10,full
4.  100,half
5.  100,full




--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Selecting the **Spanning Tree Enabled** menu allows you to enable or disable the spanning tree flag. If this flag is enabled (because the network the system is being attached to supports spanning trees), the firmware will impose a waiting period of 60 seconds before the adapter is allowed to communicate with the network. If this flag is disabled, the network adapter will be able to access the network immediately after the system is connected.

```
Spanning Tree Enabled
10/100 Mbps Ethernet PCI Adapter II:  U0.1-P1/E1

1.  Yes  <===
2.  No




--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

The **Protocol** option allows you to set the appropriate protocol for your network as shown.

```
Protocol
10/100 Mbps Ethernet PCI Adapter II:  U0.1-P1/E1

 1. Standard  <===
 2. IEEE802.3



--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Select the **ping test** option from the network parameters menu to test an adapter's network connection to a remote system. After the ping test option is selected, the same series of screens will take you through setting up the IP parameters and the adapter configuration before attempting the ping test.

Notes:

1. After the ping test is initiated, it may take 60 seconds or longer to return a result.
2. If the ping test passes or fails, the firmware will stop and wait for a key to be pressed before continuing.

Change SCSI Settings

This option allows you to view and change the addresses of the SCSI controllers attached to your system.

```
SCSI Utilities

  1. Hardware Spin Up Delay
  2. Change SCSI Id




--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Select Console

The Select Console Utility allows the user to select which console the user would like to use to display the SMS menus. This selection is only for the SMS menus and does not affect the display used by the operating system.

Follow the instructions that display on the screen. The firmware automatically returns to the SMS main menu.

Note: This option is not available if an HMC is attached. A virtual terminal window on the HMC is the default firmware console if an HMC is attached.

Select Boot Options

Use this menu to view and set various options regarding the installation devices and boot devices.

```
  1. Select Install or Boot a Device
  2. Select Boot Devices
  3. Multiboot Startup




--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen              X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Option 1

Select Install or Boot a Device allows you to select a device to boot from or install the operating system from. This selection is for the current boot only.

Option 2

Select Boot Devices allows you to set the boot list.

Option 3

Multiboot Startup toggles the multiboot startup flag, which controls whether the multiboot menu is invoked automatically on startup.

If option 1 is selected, the following menu is displayed:

```
 Select Device Type
1.  Diskette
2.  Tape
3.  CD/DVD
4.  IDE
5.  Hard Drive
6.  Network
7.  None
8.  List All Devices




--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen              X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

If a device is selected that does not reside in the system, a menu with the following message displays:

```
        .-------------------------------------------------------.
        | THE SELECTED DEVICES WERE NOT DETECTED IN THE SYSTEM !  |
        | Press any key to continue.                             |
        `-------------------------------------------------------'
```

If hard drive is selected, the following menu displays:

```
 Select Hard Drive Type
1.  SCSI
2.  SSA
3.  SAN
4.  None
5.  List All Devices




--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

If **List All Devices** is selected, a menu similar to the following displays, depending on the devices that are installed in the system:

```
 Select Device
Device  Current  Device
Number  Position  Name
 1.        1      SCSI 18200 MB Harddisk (loc=U0.1-P2/Z1-A8,0)
 2.        -      SCSI 18200 MB Harddisk (loc=U0.1-P2/Z1-A9,0)
 3.        -      SCSI 18200 MB Harddisk (loc=U0.1-P2/Z1-Aa,0)
 4.   None
 5.  List all devices



--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

The appropriate device can then be selected for this boot or installation.

When a device is selected for installing the operating system, or to boot from, the Select Task menu allows you to get more information about the device, or to boot from that device in normal mode or service mode. The following is an example of this menu.

```
 Select Task

SCSI 18200 MB Harddisk (loc=U0.1-P2/Z1-A8,0)

 1.  Information
 2.  Normal Mode Boot
 3.  Service Mode Boot



--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

If either **Normal Mode Boot** or **Service Mode Boot** is selected, the next screen will ask, ″Are you sure?″. If you answer yes, the device will be booted in the appropriate mode. If you answer no, the firmware will return to the Select Task menu.

Select Boot Devices

Note: To keep the search time for bootable devices down, these menus follow a hierarchy of:

```
device type->bus type->adapter->devices attached to the adapter
```

To view all of the potentially bootable devices at one time rather than traversing down the hierarchy with the submenus, go to the Select Device Type menu or the Select Media Type menu and select the last option, List All Devices. The ″List All Devices″ function may take a long time on a large system with many I/O adapters and devices, such as large disk arrays.

Select this option to view and change the customized boot list, which is the sequence of devices read at startup.

```
 Configure Boot Device Order
 1.  Select 1st Boot Device
 2.  Select 2nd Boot Device
 3.  Select 3rd Boot Device
 4.  Select 4th Boot Device
 5.  Select 5th Boot Device
 6.  Display Current Setting
 7.  Restore Default Setting



--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

When any of the options 1-5 is selected, the Device Type screen will be displayed, which will be similar to the following.

```
 Select Device Type
 1.  Diskette
 2.  Tape
 3.  CD/DVD
 4.  IDE
 5.  Hard Drive
 6.  Network
 7.  None
 8.  List All Devices


--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

When a device type is selected, such as item 5, a Select Media Type menu is displayed. The following is an example of that menu.

```
 Select Media Type
 1.  SCSI
 2.  SSA
 3.  SAN
 4.  IDE
 5.  ISA
 7.  None
 8.  List All Devices


-------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
-------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

When the media type is selected, all adapters of that type are displayed on the Select Media Adapter menu. The following is an example of that menu for a SCSI media type.

```
 Select Media Adapter
 1.  U1.9-P1/Z1
 2.  U1.9-P1-I1/Z1
 3.  U1.9-P1-I1/Z2
 4.  None
 5.  List All Devices


-------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
-------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Each adapter must then be selected individually to see the devices tat are attached to it. An example of this menu for the first adapter in the previous example is as follows:

```
 Select Device
 Device   Current   Device
 Number   Position  Name
 1.          1      SCSI 18 GB Harddisk (loc=U1.9-P1/Z1-A8,0)
 2.          -      SCSI 18 GB Harddisk (loc=U0.9-P1/Z1-A9,0)
 3. None


-------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
-------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

If there are no devices of the type chosen earlier (on the Select Device Type menu) attached to the adapter that is specified, a message similar to the following displays:

```
-------------------------------------------------------------------------------
|   THE SELECTED DEVICES WERE NOT DETECTED IN THE SYSTEM                      |
|   Press any key to continue.                                                |
-------------------------------------------------------------------------------
```

When a device type is selected, such as item 1, a Select Task menu will be displayed. The following is an example of that menu for a hard disk.

```
 Select Task

SCSI 18 GB Harddisk (loc=U0.1-P1/Z1-A3,0)

 1.  Information
 2.  Set Boot Sequence: Configure as 1st Boot Device




-------------------------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                          X = eXit System Management Services
-------------------------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Selecting **Information** will display a menu similar to the following for a hard disk.

```
 Device Information
    /pci@3fffdf0a000/pci@2,4/scsi@1/sd@8,0
                  :  (Integrated)     (Bootable)
DEVICE            : SCSI 18200 MB Harddisk ( loc=U0.1-P2/Z1-A8,0)
NAME              : sd
DEVICE-TYPE       : block




-------------------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
-------------------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

The Set Boot Sequence option allows you to set the location of the device in the boot list.

Display Current Settings

This option displays the current setting of the customized boot list. An example of this menu, with one device in the boot list, follows.

```
 Current Boot Sequence
 1.  SCSI 18200 MB Harddisk (loc=U0.1-P1/Z1-A8,0)
 2.   None
 3.   None
 4.   None
 5.   None




--------------------------------------------------------------------------------
Navigation keys:
M = return to main menu
ESC key = return to previous screen                    X = eXit System Management Services
--------------------------------------------------------------------------------
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Restore Default Settings

This option restores the boot list to the default boot list. The default boot list will vary depending on the devices that are installed in the system.

The default boot list is:

1. Primary diskette drive (if installed)
2. CD-ROM drive (if installed)
3. Tape drive (in installed)
4. Hard disk drive (if installed)
5. Network adapter

Multiboot Startup

Multiboot Startup toggles the multiboot startup flag, which controls whether the multiboot menu is invoked automatically on startup.

Exiting System Management Services

After you have finished using the system management services, type **x** (for exit) to boot your system.

Chapter 9. Removal and Replacement Procedures

This chapter provides removal and replacement procedures for both the Model 6C3 rack-mounted system unit and the Model 6E3 deskside system unit.

Notes:

1. Servicing of the Model 6C3 is performed with the system in the rack and placed into the service position. The service position for the Model 6C3 is described in “Placing the Model 6C3 into the Service Position” on page 284. Servicing of the Model 6E3 can be performed with the system either in the vertical or horizontal position.
2. Before performing any of the removal or replacement procedures in this chapter, read the following danger and caution notices.
3. If one of the listed devices fails in your system, refer to Chapter 12, “Component and Attention LEDs,” on page 387. When you have determined that the device is the source of the problem, return to these procedures.

In the system you are about to set up or service:

- The ac power interface connector is considered the main power disconnection device.
- This system has redundant power supply capabilities, meaning that it has the ability to have two power supplies running simultaneously in the same system unit. When instructed to disconnect the power source, ensure that all power cables have been unplugged.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.
D05

CAUTION:
This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable with a properly grounded electrical outlet to avoid electrical shock.
C01

CAUTION:
This unit has more than one power supply cord. To reduce the risk of electrical shock, disconnect two power supply cords before servicing.
C21

Handling Static-Sensitive Devices

The following procedures describe how to handle static-sensitive devices.

Attention: Electronic boards, adapters, media drives, and disk drives are sensitive to static electricity discharge. These devices are wrapped in antistatic bags to prevent this damage.

Take the following precautions:

- If you have an antistatic wrist strap available, use it while handling the device.
- Do not remove the device from the antistatic bag until you are ready to install the device in the system.
- With the device still in its antistatic bag, touch it to the metal frame of the system.
- Grasp cards and boards by the edges. Hold drives by the frame. Avoid touching the solder joints or pins.
- If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system at the same time.
- Handle the devices carefully to prevent permanent damage.

Procedure List

Procedure	Procedure Name and Page Location
Adapters	“PCI Adapters” on page 293
Adapter Dividers and Light Pipes	“PCI Adapter Dividers and Light Pipes” on page 309
Battery	“Battery” on page 316
Bezels	“Bezels” on page 291
Bezel Door	“Bezel Door (Model 6E3)” on page 290
Cable Management Arm	“Installing the Cable-Management Arm” on page 411
Covers	“Covers” on page 288
Disk Drives	“Hot-Swap Disk Drives” on page 332
Disk Drive Backplane	“Disk Drive Backplane and Filler” on page 338
Disk Drive Bezels and Fillers	“Disk Drive Bezels and Fillers” on page 330
Fans	“Hot-Swap System Fans” on page 318
Fan Tray	“Fan Tray Assembly” on page 321
Media Drives	“Media Devices (Diskette, CD-ROM, DVD, DVD-RAM,or Tape Drive)” on page 325
Media bay chassis	“Media Bay Chassis” on page 344
Memory DIMMs	“Memory DIMMs” on page 354
Operating Position	“Returning the Model 6C3 to the Operating Position” on page 285
Operator Panel	“Operator Panel and Power Cable” on page 341
Power Supply	“Power Supply” on page 347
Rack Installation	“Model 6C3 Removal and Installation into a Rack” on page 408
Release Latch Brackets	“Drawer Release Latch Bracket (Model 6C3)” on page 287
Service Position	“Placing the Model 6C3 into the Service Position” on page 284
SCSI Media Device SCSI and Power Cable	“Removing SCSI Media-Device Cables” on page 328
Service Processor Assembly	“Service Processor Assembly” on page 312
Starting the System	“Starting the System” on page 283
Static-Sensitive Devices	“Handling Static-Sensitive Devices” on page 280
Stopping the System	“Stopping the System” on page 282
System Backplane	“System Backplane” on page 359
Rack Hardware	“Attach the Mounting Hardware to the Rack Enclosure” on page 402
Voltage Regulator Modules	“Voltage Regulator Modules” on page 356

Stopping the System

This section discusses the various ways to stop the system.

Attention: Using the power-on button on the operator panel or commands at the HMC to power off the system can cause unpredictable results in the data files. The next initial program load (IPL) will also take longer to complete if all applications are not stopped beforehand.

Stopping the System without a Hardware Management Console (HMC) Attached

Attention: When shutting down your system, shut down all applications first and then shut down the operating system. The system power turns off and the system goes into standby mode when the operating system is shut down. If you are shutting down your system due to an error or to make a repair, write down the information displayed on the operator panel before turning off the system power. Before removing power from the system, ensure that the shutdown process is complete. Failure to do so can result in the loss of data. Some option-installation procedures do not require the system to be stopped for installation. The option-installation procedures in this chapter will direct you here if stopping the system is required.

1. Log in to the system as root user.
2. Stop all applications that are running on the system.
3. At the command line, type one of the following commands:
   - If your system is running AIX, type `shutdown`
   - If your system is running Linux, type `shutdown now -h`
4. After you shut down the operating system, set the power switches of any attached devices to Off.

Stopping the System with an HMC Attached and AIX Installed

The HMC user interface provides a power-off function to turn off the power to the system.

AIX provides hot-swap procedures for adapters and devices that support hot-swap removal and installation. Individual power components and fans can be serviced with the power on for power systems equipped with redundant power and cooling. Before servicing the system, check removal, replacement, and installation procedures.

If the system is running AIX, typing the **shutdown** command causes the system to shut down and power off. Check with the system administrator before using this command. If you cannot use this method, you can power off the system by pressing the power-on button on the operator panel or typing the appropriate command at the HMC.

Stopping the System with an HMC Attached and Linux Installed

The HMC user interface provides a power-off function to turn off the power to the system.

Linux does not provide hot-swap procedures for adapter and device removal and installation. The system power must be turned off to service an adapter or device. Individual power components and fans may be serviced with power on for power systems equipped with redundant power and cooling. Before servicing this system, check removal and installation procedures.

If the system is operating under Linux, typing the **shutdown now -h** command causes the system to shut down and power off. Check with the system administrator before using this command. If you cannot use this method, you can power off the system by pressing the power-on button on the operator panel or typing the appropriate command at the HMC.

Starting the System

This section discusses the various ways to start the system.

Starting the System without a Hardware Management Console (HMC) Attached

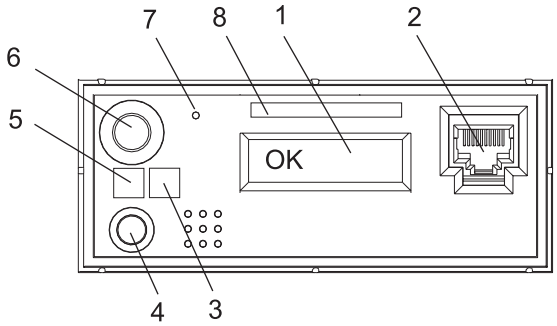
To start a system that does not use an HMC, do the following:

1. On a Model 6C3, open the front rack door.

   On a Model 6E3, open the bezel door.
2. Ensure that the power is connected to the system unit.

   Before you press the power-on button on the operator panel, observe the following:
   - The power LED is slowly blinking.
   - An 0K prompt is visible in the operator panel display.
3. Press the power-on button on the operator panel.

   After pressing the power-on button on the operator panel, observe the following:
   a. The power LED begins to blink visibly faster.
   b. The system cooling fans are activated after approximately 30 seconds and begin to accelerate to operating speed.
   c. There is approximately a 30-second transition period between the time the power button is pressed and the power LED remains on solid (no longer blinking). The power LED stays on solid and progress indicators, also referred to as *checkpoints*, are visible on the operator panel display.



1 Operator Panel Display
2 Front Serial Connector (FS1) (Model 6C3 Only)
3 Attention LED
4 System Reset Button
5 Power LED
6 Power-On Button
7 Service Processor Reset Switch (Pinhole)
8 Serial Number Label

Starting the System with an HMC Attached

After the required cables are installed and the power cables are connected, the HMC user interface provides a power-on function to turn on the power to the system. The power-on button on the operator panel can be pushed to initialize the system but the preferred method is to use the HMC. Progress indicators, also referred to as *checkpoints*, are visible on the operator panel display as the system power is turned on. The power LED on the system stops blinking and stays on, indicating the system power is on.

The system unit is powered on through an internal system power control network (SPCN). When power is applied, the power LEDs on the system unit go from blinking to continuous. This indicates that the system power levels are satisfactory.

Placing the Model 6C3 into the Service Position

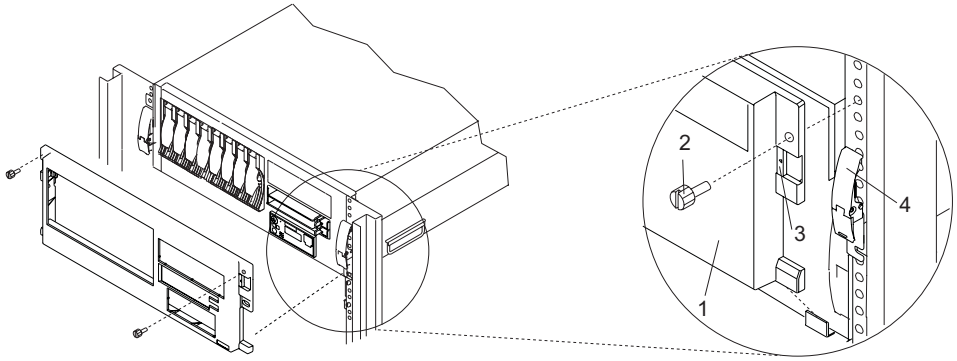
Attention: When placing the Model 6C3 into the service position, it is essential that all stability plates are firmly in position to prevent the rack from toppling (see the illustration on page 285). Ensure that only one system drawer is in the service position at a time.

Attention: Ensure that the cables at the rear of the system are placed in the cable management arm correctly. If the cables catch or bind as you are pulling the system forward in the rack, the power cable may be pulled out of its connector causing data to be lost if the system is on.

Note: Before doing any work inside the Model 6C3, place the system into the service position.

To place the Model 6C3 in to the service position, do the following:

1. Open the front rack door.
2. If your system is equipped with two thumbscrews securing it to the rack, remove the thumbscrews. The screws are located on the bezel, just above each system drawer release latch.



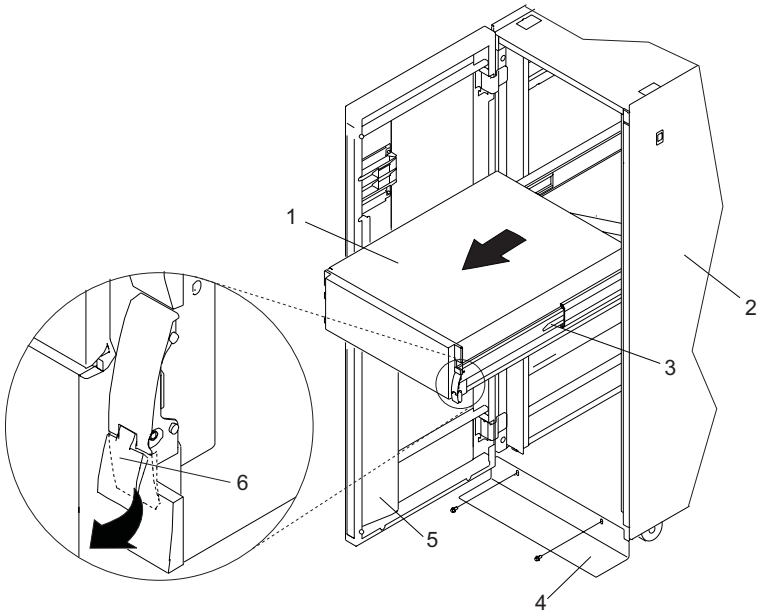
1 Model 6C3 Front Bezel
2 System-Retaining Thumbscrew
3 Bezel-Release Tab
4 System Drawer Release Latch

3. Release the system drawer release latches on both the left and right sides.
4. Pull the system drawer out from the rack until the rails are fully extended.

Notes:

1. Ensure that the cables at the rear of the system do not catch or bind as you pull the system drawer forward in the rack.
2. If the procedure you are performing requires you to unplug cables from the rear of the system, do so before you pull the system drawer out from the rack.

Note: When the system rails are fully extended, the rail safety latches on the slide rails lock into place. This action prevents the system from being pulled out too far and dropped. The following illustration shows a system drawer in the service position.



1 Model 6C3
2 19-Inch Rack
3 Rail Safety Latches
4 Stability Plate
5 Front Rack Door
6 System Drawer Release Latch

Returning the Model 6C3 to the Operating Position

To return the Model 6C3 to the operating position, do the following:

1. Press upward on both rail safety latches, located on each rail. See the illustration on page 285 for the location of the rail safety latches.
2. Push the system drawer back into the rack until both system drawer release latches have locked into position.

   Note: Ensure that the cables at the rear of the system do not catch or bind as you push the system drawer back in the rack.
3. If you removed two thumbscrews from the front bezel, replace them.
4. Close the front rack door.

Placing the Model 6E3 into the Service and Operating Position

So that you can work on the inside of the system unit, the Model 6E3 can be placed on its side. When you are finished working on the system, return it to the position in which it was placed for user operations.

Attention: The system weighs between 34 kg (75 pounds) and 41 kg (90 pounds). Do not try to lift the system by yourself.

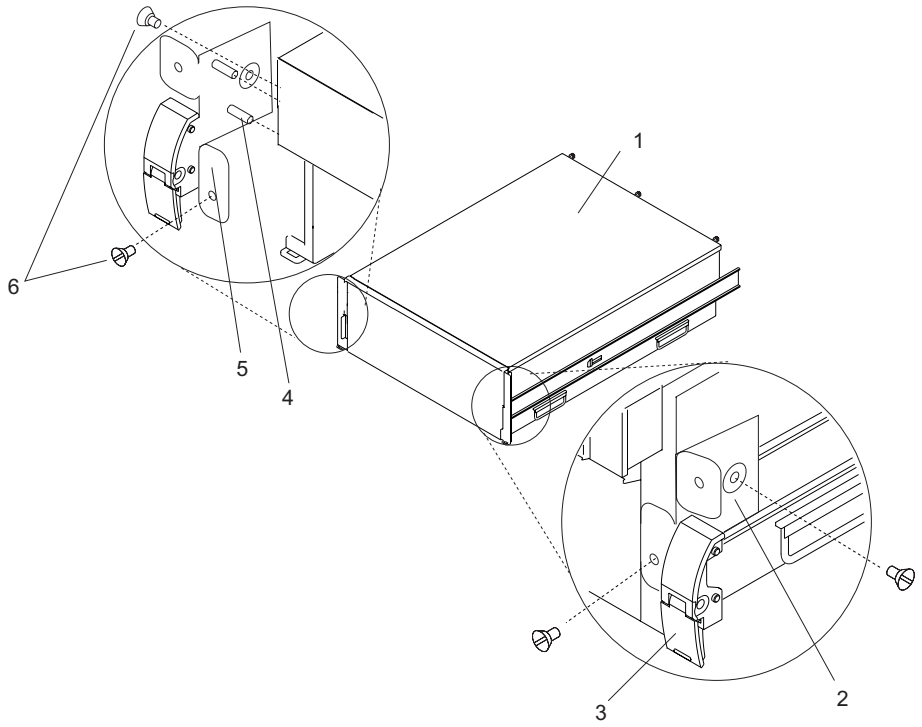
Drawer Release Latch Bracket (Model 6C3)

The following procedures describe the removal and replacement of the Model 6C3 drawer release latch bracket. Before performing the following procedures, read the “Safety Notices” on page xi.

Removing a Drawer Release Latch Bracket

To remove a Model 6C3 drawer release latch bracket, do the following:

1. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284.
2. Remove the front bezel as described in “Removing the Model 6C3 Front Bezel” on page 291.
3. Remove the retaining screws located on the front and side of the drawer release latch bracket.
4. Pull the drawer release latch bracket off of the system.



1 Model 6C3
2 Drawer Release Latch Bracket (Left)
3 Drawer Release Latch
4 Drawer Release Latch Bracket Post
5 Drawer Release Latch Bracket (Right)
6 Retaining Screws

Replacing a Drawer Release Latch Bracket

To replace a Model 6C3 drawer release latch bracket, do the following:

1. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284.
2. Align the drawer release latch bracket posts with the holes in the system. Push the drawer release latch bracket into place on the side of the system.
3. Secure the drawer release latch bracket into place with two retaining screws.
4. Replace the front bezel as described in “Replacing the Model 6C3 Front Bezel” on page 291.
5. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285.

Covers

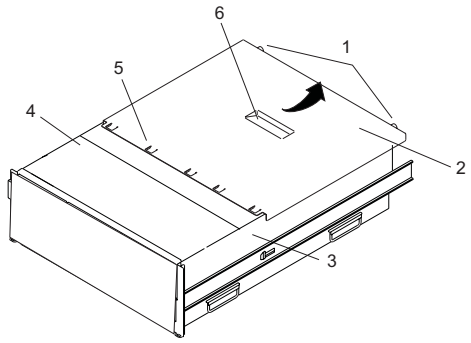
The following procedures describe the removal and replacement of the system's service access cover. Before performing the following procedures, read the "Safety Notices" on page xi.

Removing the Model 6C3 Service Access Cover

To remove the service access cover, do the following:

1. Place the system into the service position as described in "Placing the Model 6C3 into the Service Position" on page 284.
2. Loosen the two captive thumbscrews located on the rear of the cover. See the following illustration for thumbscrew locations.
3. Using the access cover handle, slide the cover toward the rear of the system drawer. After the front of the service access cover has cleared the upper chassis ledge, lift the cover up and off the system drawer.

Attention: For proper cooling and airflow, replace the cover before turning on the system. Operating the system for extended periods of time (over 30 minutes) with the cover removed might damage the system components.



1 Thumbscrews
2 Service Access Cover
3 Model 6C3
4 Upper Chassis Ledge
5 Access Cover Tabs
6 Service Access Cover Handle

Replacing the Model 6C3 Service Access Cover

To replace the service access cover, do the following:

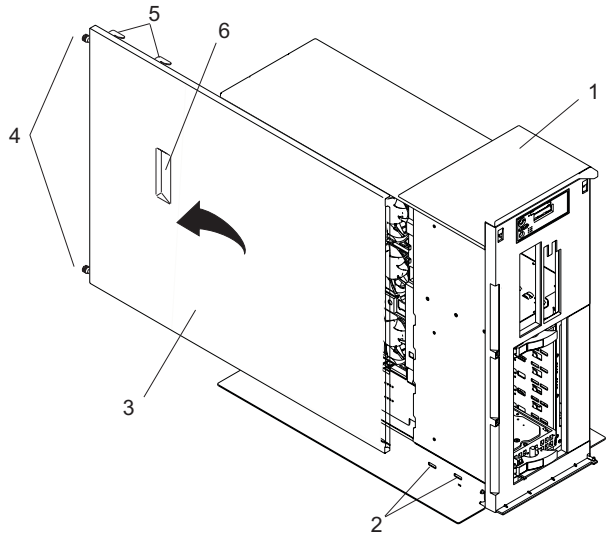
1. Place the service access cover on the top of the system, approximately 25 mm (1 inch) from the front of the system.
2. Hold the service access cover against the system drawer, and slide it toward the front of the system. Ensure that the fan LED cables do not get caught on the front edge of the service access cover as you move it forward. The tabs on the service access cover slide beneath the upper chassis ledge, and the two thumbscrews align with the screw holes on the rear of the system chassis.
3. Tighten the thumbscrews located on the rear of the cover.
4. Return the system to the operating position as described in "Returning the Model 6C3 to the Operating Position" on page 285 or "Placing the Model 6E3 into the Service and Operating Position" on page 286.

Removing the Model 6E3 Service Access Cover

To remove the service access cover, do the following:

1. Loosen the two captive thumbscrews located on the rear of the cover. See the following illustration for thumbscrew locations.
2. Using the access cover handle, slide the cover toward the rear of the system. After the front of the service access cover has cleared the front chassis ledge, lift the cover off the system unit.

   Attention: For proper cooling and airflow, replace the cover before turning on the system. Operating the system for extended periods of time (over 30 minutes) with the cover removed might damage system components.



1 System Unit
2 Service Access Cover Pin Slots
3 Service Access Cover
4 Thumbscrews
5 Service Access Cover Pins
6 Service Access Cover Handle

Replacing the Model 6E3 Service Access Cover

To replace the service access cover, do the following:

1. Align the service access cover pins with the slots in the the system. The flanges on the top and bottom of the cover wrap around the system chassis.
2. Hold the service access cover against the system drawer and slide it toward the front of the system.
3. Tighten the two captive thumbscrews located on the rear of the cover.

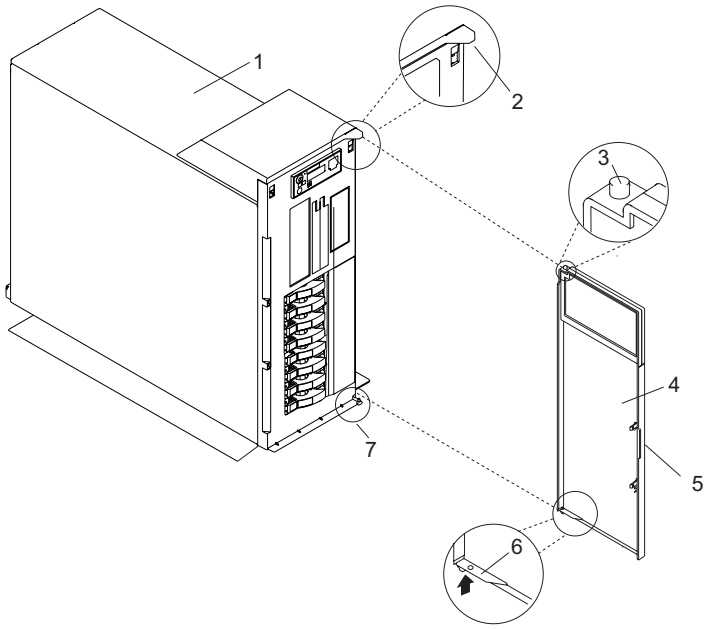
Bezel Door (Model 6E3)

The following procedures describe the removal and replacement of the bezel door.

Removing the Bezel Door

To remove the bezel door, do the following:

1. Open the bezel door by grasping the bezel door handle. Pull the bezel door out and away from the system.
2. Press down on the top back edge of the door.
3. Gently swivel the top back edge of the door forward, out past the top of the system.
4. Lift the door up to release it from the lower retaining post.



1 Model 6E3
2 Bezel Door Post Hole
3 Bezel Door Top Retaining Post
4 Bezel Door
5 Bezel Door Handle
6 Bezel Door Release Tab
7 Bezel Door Lower Retaining Post

Replacing the Bezel Door

To replace the bezel door, do the following:

1. Set the bezel door on the lower retaining post. See the preceding illustration.
2. Rotate the bezel door toward the top of the system.
3. Press down on the back edge of the bezel door, and seat the top post into its mating hole.
4. Close the bezel door.

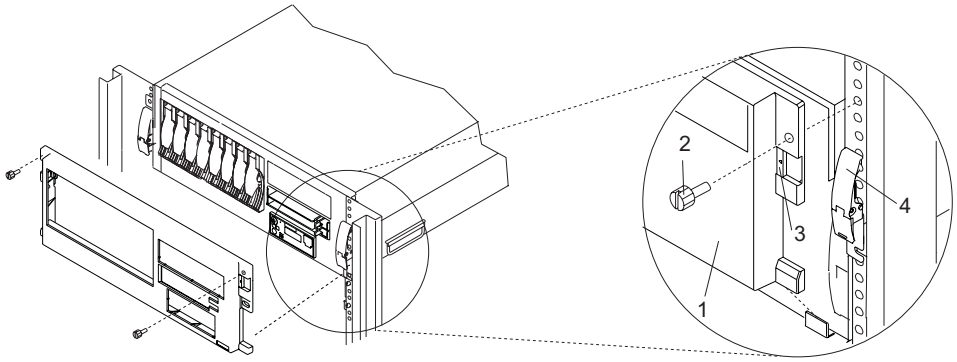
Bezels

The following procedures describe the removal and replacement of the system bezel. Before performing the following procedures, read “Safety Notices” on page xi.

Removing the Model 6C3 Front Bezel

To remove the front bezel, do the following:

1. Open the front rack door.
2. Press in on both bezel-release tabs at the same time.
3. Tip the bezel forward and gently pull the bezel up and away from the system.



1 Model 6C3 Front Bezel
2 System-Retaining Thumbscrew
3 Bezel-Release Tab
4 System Drawer Release Latch

Replacing the Model 6C3 Front Bezel

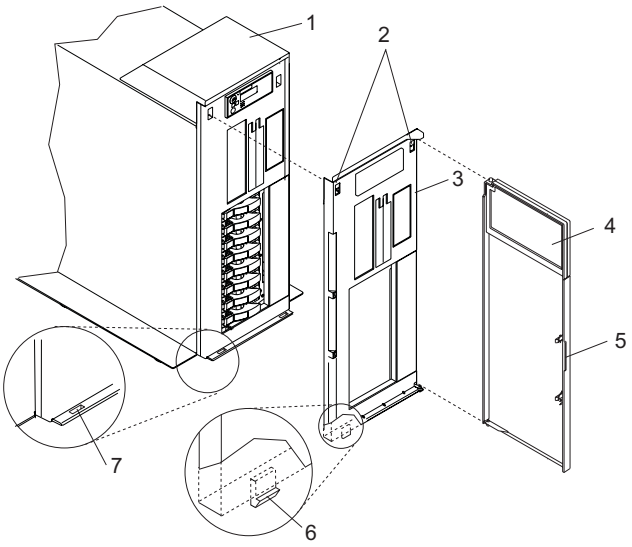
To replace the front bezel, do the following:

1. Open the rack front door.
2. Seat the two tabs located on the bottom edge of the bezel into their mating slots located on the bottom edge of the system.
3. Pivot the bezel up, aligning the release tabs to the mating slots located on the front of the system.
4. Gently push the tabs into the slots until the bezel seats against the front of the system.
5. Close the front rack door.

Removing the Model 6E3 Front Bezel

To remove the front bezel, do the following:

1. Remove the bezel door as described in “Bezel Door (Model 6E3)” on page 290.
2. Press down on the two bezel-release levers.
3. Pull the top of the bezel out and away from the system.
4. Gently pull the bezel up and off the base, releasing the lower bezel locking tabs.



1 Model 6E3
2 Bezel-Release Levers
3 Front Bezel
4 Front Door
5 Bezel Door Handle
6 Lower Bezel Locking Tab (Quantity 2)
7 Lower Bezel Retaining Slots (Quantity 2)

Replacing the Model 6E3 Front Bezel

To replace the front bezel, do the following:

1. Place the two lower bezel locking tabs into the retaining slots located on the system base.
2. Rotate the bezel up toward the top of the system, ensuring that the aligning pins are aligned with their mating holes located on the system.
3. Gently push the bezel in until the two bezel release levers are seated in their respective slots.
4. Replace the bezel door as described in “Bezel Door (Model 6E3)” on page 290.

PCI Adapters

The following procedures describe the removal, replacement, and installation of PCI adapters. Before performing the following procedures, read the “Safety Notices” on page xi.

Notes:

1. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support along the back edge of the card. To use adapters of this type in this system, you *must* remove the blue handle or support from the card.
2. With this system, you can install some PCI adapters with the power on. These adapters are referred to as *hot-pluggable* PCI adapters. Some adapters are not hot-pluggable, and the system must be powered off for this type of adapter installation.
3. If the PCI adapter dividers are removed, note their location so that they can be returned to the same place in the system.

Before you install the adapter, determine if the PCI adapter you are installing is hot-pluggable. See the *RS/6000 & pSeries PCI Adapter Placement Reference*, order number SA38-0538.

Removing a Non-Hot-Pluggable PCI Adapter

To remove a non-hot-pluggable PCI adapter, do the following:

1. Stop the system as described in “Stopping the System” on page 282.
2. Disconnect the power source to the system.

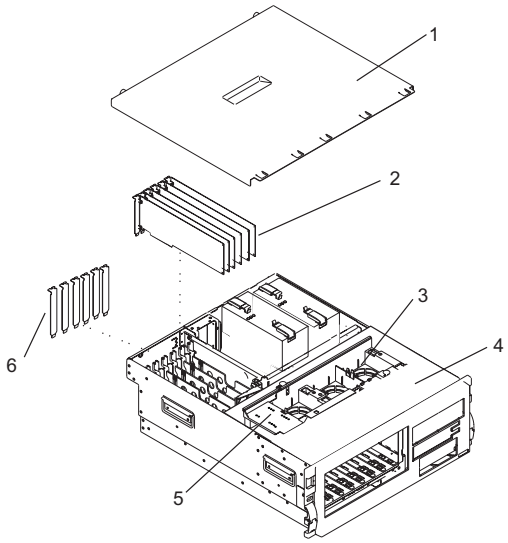
   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the system power source is completely disconnected.
3. Disconnect any cables connected to the PCI adapter at the rear of the system.
4. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
5. On a Model 6C3, open the rear rack door.
6. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289. See the following illustration.
7. Determine which adapter you plan to remove, then label and disconnect all cables attached to that adapter.
8. Record the slot number and location of each adapter being removed.

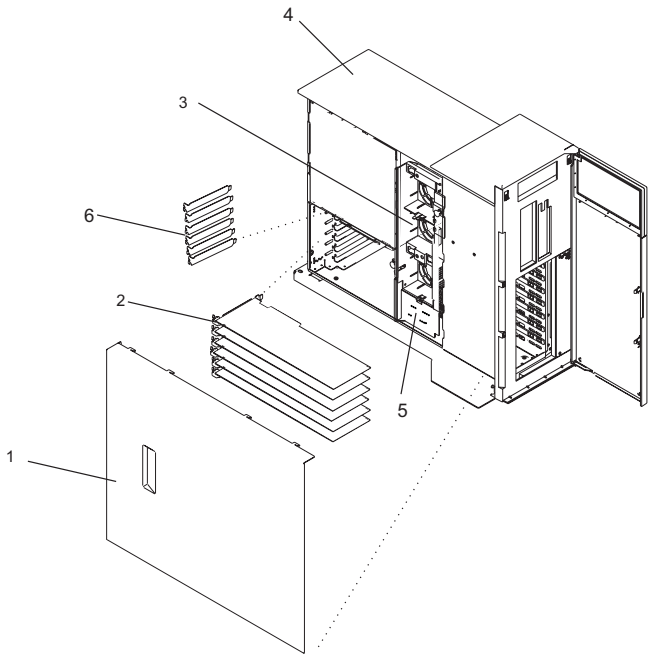
   Note: Adapter slots are numbered on the rear of the system.
9. Before handling any card, board, or memory DIMM, refer to “Handling Static-Sensitive Devices” on page 280.
10. If you are removing a short adapter, continue to the next step.

    If you are removing a long adapter, do the following:

    a. Unlatch and open the PCI adapter light-pipe plate attached to the fan tray.

    b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.



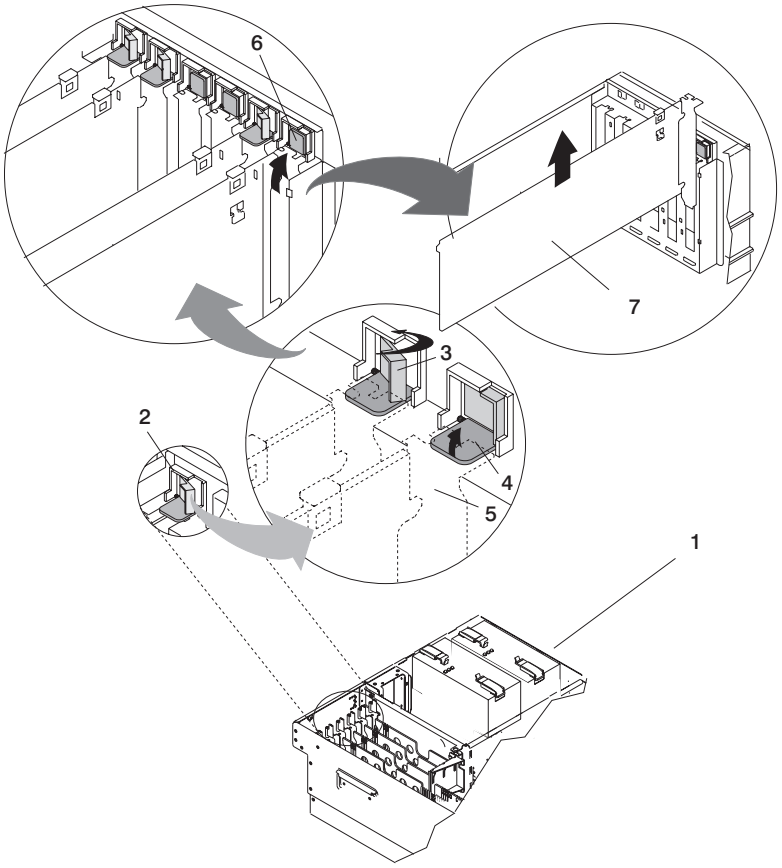


1 Service Access Cover

4 System

2 PCI Adapters
3 Fan Tray
5 Light-Pipe Plate
6 Adapter Slot Shields

11. Rotate the adapter locking latch counterclockwise, as shown in the following illustration.
12. Lift the black tab attached to the adapter retainer assembly, and keep the black tab in a vertical position.



1 Model 6C3 or Model 6E3
2 Adapter Retainer Assembly
3 Adapter Retainer Assembly (retainer seat down and the locking latch in the locked position)
4 Adapter Retainer Assembly (retainer seat down and the locking latch in the unlocked position)
5 PCI adapter faceplate (dotted lines)
6 Adapter Retainer Assembly (in the unlocked position)
7 PCI Adapter

13. Carefully grasp the PCI adapter by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.
14. If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
15. If you do not plan to install another adapter into the vacated slot, seal the adapter slot using an adapter-slot cover. If you are installing another adapter, go to “Replacing or Installing a Non-Hot-Pluggable PCI Adapter” on page 296.
16. If you have other options to install, refer to the procedures for that option. If you do not have other options to install, continue to the next step.
17. Connect the adapter cables.

18. On a Model 6C3, route the cables through the cable-management arm.
19. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288 or “Replacing the Model 6E3 Service Access Cover” on page 289.
20. Reconnect any cables connected to the PCI adapter at the rear of the system.
21. Reconnect the power source to the system.
22. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
23. On a Model 6C3, close the rear rack door.
24. Start the system as described in “Starting the System” on page 283.

Replacing or Installing a Non-Hot-Pluggable PCI Adapter

To replace or install an non-hot-pluggable adapter, do the following:

1. Stop the system as described in “Stopping the System” on page 282.
2. Disconnect the power source to the system.

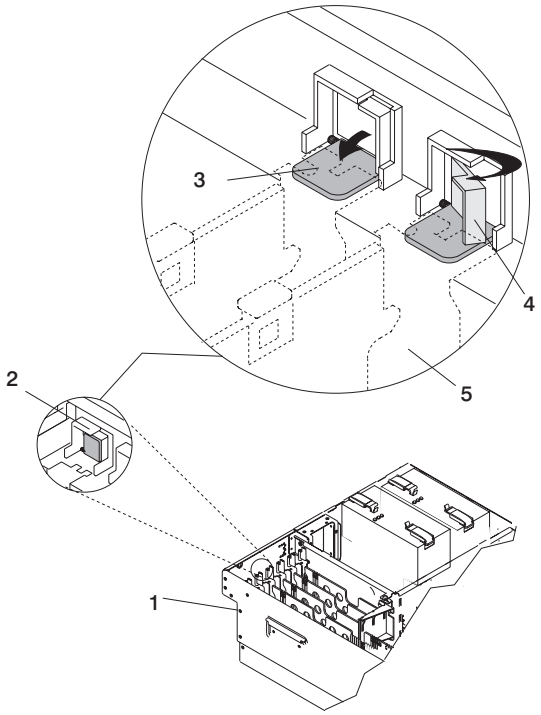
   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the system has been completely disconnected from its power source.
3. If necessary, disconnect any cables connected to the PCI adapter at the rear of the system.
4. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
5. On a Model 6C3, open the rear rack door.
6. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
7. Refer to the *RS/6000 & pSeries PCI Adapter Placement Reference*, order number SA38-0538, for information regarding slot restrictions for adapters that can be used in this system.
8. If necessary, remove the adapter slot shield.
9. Before handling any card, board, or memory DIMM, refer to “Handling Static-Sensitive Devices” on page 280.
10. If necessary, remove the adapter from the antistatic package.

    Attention: Avoid touching the components and gold-edge connectors on the adapter.
11. Place the adapter, component-side up, on a flat, static-protective surface.
12. Set any jumpers or switches as instructed by the adapter’s manufacturer.
13. Carefully grasp the adapter by its top edge, and align the adapter with the adapter slot and its connector on the system backplane.
14. Press the adapter *firmly* into its connector.

    Attention: When you install an adapter into the system, be sure that it is completely and correctly seated in its connector.
15. If you are replacing or installing a short adapter, continue to the next step.

    If you are replacing or installing a long adapter, do the following:
    a. Close and latch the PCI adapter light-pipe plate attached to the fan tray.
    b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.

16. Lower the tab onto the PCI adapter faceplate. Rotate the adapter locking latch clockwise until it covers the tab at approximately a 45-degree angle. See the following illustration.



1 Model 6C3 or Model 6E3

2 Adapter Retainer Assembly (in the unlocked position)

3 Adapter Retainer Assembly (retainer seat down and the locking latch in the unlocked position)

4 Adapter Retainer Assembly (retainer seat down and the locking latch in the locked position)

5 PCI adapter faceplate (dotted lines)

17. Connect the adapter cables.
18. If you are servicing a Model 6C3, route the cables through the cable-management arm.
19. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288 or “Replacing the Model 6E3 Service Access Cover” on page 289.
20. Reconnect any cables that were connected to the PCI adapter at the rear of the system.
21. Reconnect the power source to the system.
22. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
23. On a Model 6C3, close the rear rack door.
24. Start the system as described in “Starting the System” on page 283.

Removing a Hot-Pluggable PCI Adapter

Attention: The Linux operating system does not support these hot-pluggable procedures. Also, Linux does not support hot-swaping any hot-pluggable PCI adapters. A system with Linux installed must be shut down and powered off before installing any PCI adapter. Use the non-hot-pluggable adapter procedures when removing a PCI adapter with the Linux operating system installed.

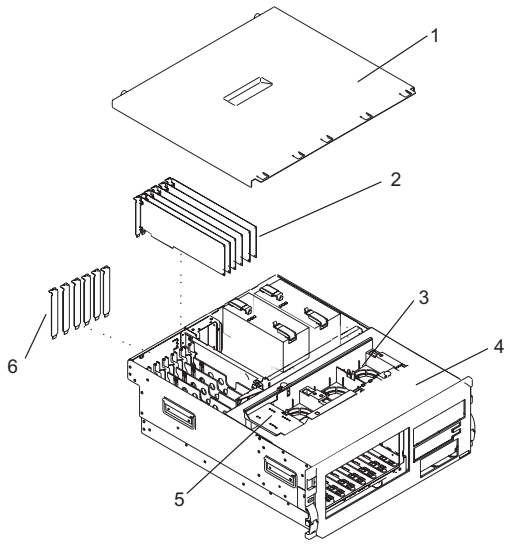
Note: Removing a hot-pluggable PCI adapter requires the system administrator to take the PCI adapter offline before performing any PCI adapter hot-swap procedures. Before taking an adapter offline, the devices attached to the adapter must also be taken offline. This action prevents a service representative or user from causing an unexpected outage for system users.

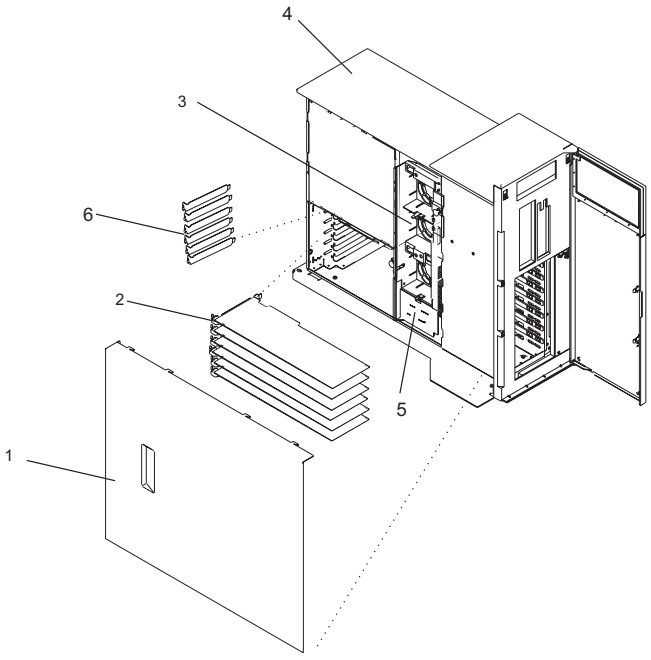
To remove a hot-pluggable PCI adapter, do the following:

1. On a Model 6C3, open the rear rack door.
2. Disconnect any cables connected to the PCI adapter at the rear of the system.
3. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
4. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
5. Determine which adapters you want to remove.
6. Record the slot number and location of each adapter being removed.

   Note: Adapter slots are numbered on the rear of the system.
7. Ensure that any processes or applications that might use the adapter are stopped.
8. Refer to “Accessing the PCI Hot-Swap Manager” on page 307, and follow those steps to select **PCI Hot Swap Manager**. Then return here to continue.
9. Select **Unconfigure a Device** and press Enter.
10. Press F4 to display the Device Names menu.
11. Select the adapter you are removing.
12. Use the Tab key to answer NO to **Keep Definition** and YES to **Unconfigure Child Devices**. Press Enter.
13. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfiguration is indicated by the `OK` message displayed next to the **Command** field at the top of the screen.
14. Press F3 to return to the PCI Hot-Swap Manager menu.
15. Select **List PCI Hot-Swap Slots**.
16. Move the cursor to select the adapter that you are removing and press Enter. (The description entry displays as `unknown`).
17. Press the Tab key until the entry field displays the remove operation and then press Enter. Follow the instructions that display on the screen until you are instructed to remove the adapter.
18. When you are instructed to remove the adapter from the adapter slot, disconnect any cables that are connected to the adapter being removed.
19. Before handling any card, board, or memory DIMM, refer to “Handling Static-Sensitive Devices” on page 280.
20. If you are removing a short adapter, continue to the next step.

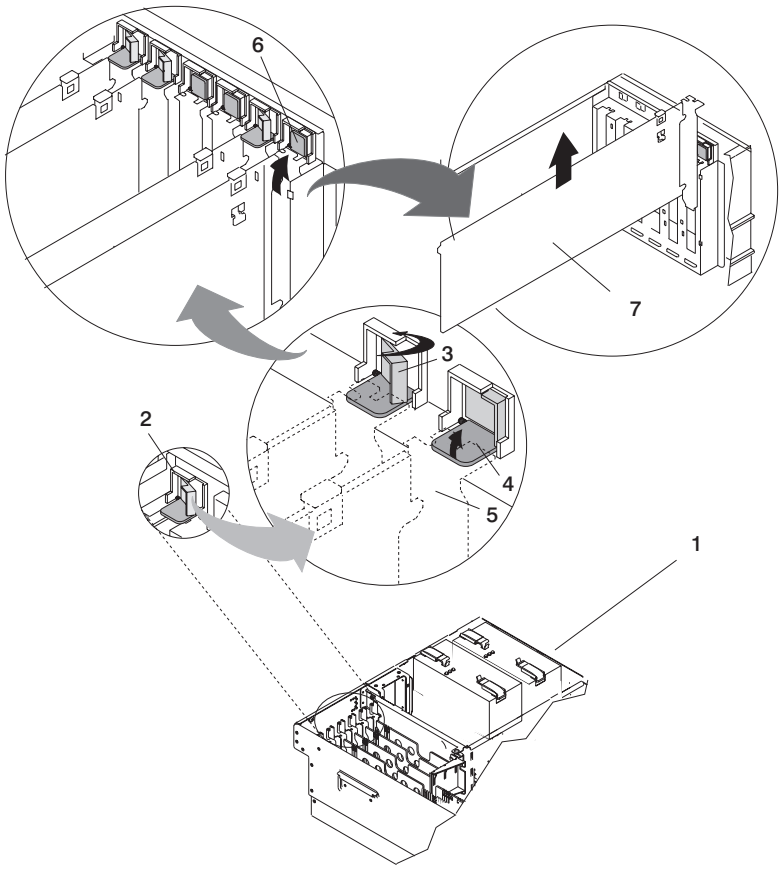
    If you are removing a long adapter, do the following:
    a. Unlatch and open the PCI adapter light-pipe plate attached to the fan tray.
    b. Note the guide grooves located towards the front of the system in the disk drive backplane, and align the adapter properly.





1 Service Access Cover
2 PCI Adapters
3 Fan Tray
4 System
5 Light-Pipe Plate
6 Adapter Slot Shields

21. Turn the locking latch, and lift the plastic retainer seat off the adapter.



1 Model 6C3 or Model 6E3
2 Adapter Retainer Assembly
3 Adapter Retainer Assembly (retainer seat down and the locking latch in the locked position)
4 Adapter Retainer Assembly (retainer seat down and the locking latch in the unlocked position)
5 PCI adapter faceplate (dotted lines)
6 Adapter Retainer Assembly (in the unlocked position)
7 PCI Adapter

22. Carefully grasp the adapter by the edges and pull it straight out from the system.
23. If you are not installing another adapter in this slot, place an adapter slot cover in the adapter slot opening.
24. Lower the plastic retainer seat over the PCI adapter faceplate.
25. Rotate the locking latch clockwise until it clicks into the locked position.
26. Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the OK message displayed next to the **Command** field at the top of the screen.
27. If you do not have other adapters to remove, continue with the next step.

    OR

    If you have other adapters to remove, press F3 to return to the PCI Hot-Swap Manager menu and then return to step 15 on page 298.
28. Press F10 to exit the Hot-Swap Manager.

29. Run the **diag -a** command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
30. If you have other options to install, refer to the procedures for that option. If you do not have other options to install, continue to the next step.
31. Reconnect the adapter cables at the rear of the system.
32. On a Model 6C3, route the cables through the cable-management arm.
33. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288 or “Replacing the Model 6E3 Service Access Cover” on page 289.
34. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
35. On a Model 6C3, close the rear rack door.

Replacing a Hot-Pluggable PCI Adapter

Attention: The Linux operating system does not support these hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters. A system with Linux installed must be shut down and powered off before installing any PCI adapter. Use the non-hot-pluggable adapter procedures when replacing a PCI adapter with the Linux operating system installed.

Notes:

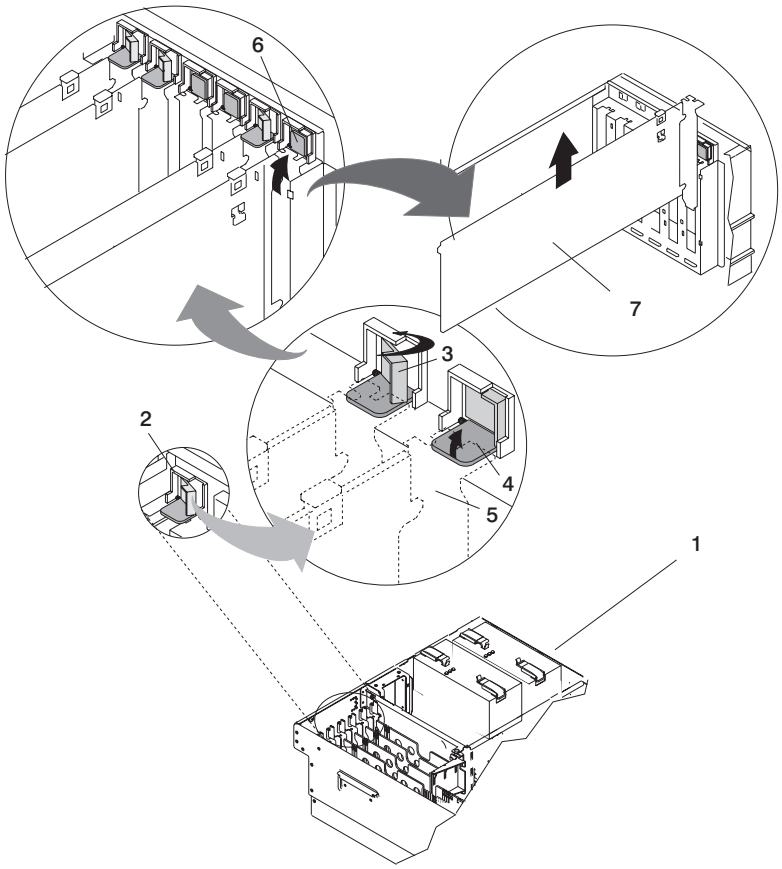
1. Use this procedure only when you are replacing an adapter with an identical adapter. If you are replacing an adapter with an adapter that is not identical to the adapter removed, go to “Removing a Hot-Pluggable PCI Adapter” on page 298 and afterwards, “Installing a Hot-Pluggable PCI Adapter” on page 304.
2. Replacing a hot-pluggable PCI adapter might require the system administrator to take the PCI adapter offline before performing any PCI adapter hot-plug procedures. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

To replace a hot-pluggable PCI adapter, do the following:

1. On a Model 6C3, open the rear rack door.
2. Disconnect any cables connected to the PCI adapter at the rear of the system.
3. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
4. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
5. Before handling any card, board, or memory DIMM, refer to “Handling Static-Sensitive Devices” on page 280.
6. Determine which adapters you want to remove.
7. Ensure that any processes or applications that might use the adapter are stopped.
8. Refer to “Accessing the PCI Hot-Swap Manager” on page 307, and follow those steps to select **PCI Hot-Swap Manager**. Then return here to continue.
9. Select **Unconfigure a Device** and press Enter.

   Note: If the adapter or device has a problem that prevents it from being replaced by hot-swap, it must be replaced by shutting down the system. Go to “Replacing or Installing a Non-Hot-Pluggable PCI Adapter” on page 296.
10. Press F4 to display the Device Names menu.
11. From the menu, select the adapter you are removing.

12. Use the tab key to answer YES to **Keep Definition** and YES to set **Unconfigure Child Devices**. Press Enter.
13. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfiguration is indicated by the `OK` message displayed next to the **Command** field at the top of the screen.
14. Press F3 to return to the PCI Hot-Swap Manager menu.
15. Press F3 to cancel.
16. Select **Replace/Remove a PCI Hot-Swap Adapter** and press Enter. The Replace/Remove a PCI Hot-Swap Adapter menu displays.
17. Move the cursor to select the adapter that you are replacing, and press Enter.
18. Press the Tab key until the entry field displays the replace operation, and then press Enter. Follow the instructions that display on the screen until you are instructed to remove the adapter.
19. When you are instructed to remove the adapter from the adapter slot, disconnect any cables that are connected to the adapter being removed.
20. Turn the locking latch, and lift the plastic stop for the adapter.
21. Carefully grasp the adapter by the edges, and pull it straight out from the PCI adapter slot connector.



1 Model 6C3 or Model 6E3
2 Adapter Retainer Assembly
3 Adapter Retainer Assembly (retainer seat down and the locking latch in the locked position)
4 Adapter Retainer Assembly (retainer seat down and the locking latch in the unlocked position)
5 PCI adapter faceplate (dotted lines)
6 Adapter Retainer Assembly (in the unlocked position)
7 PCI Adapter

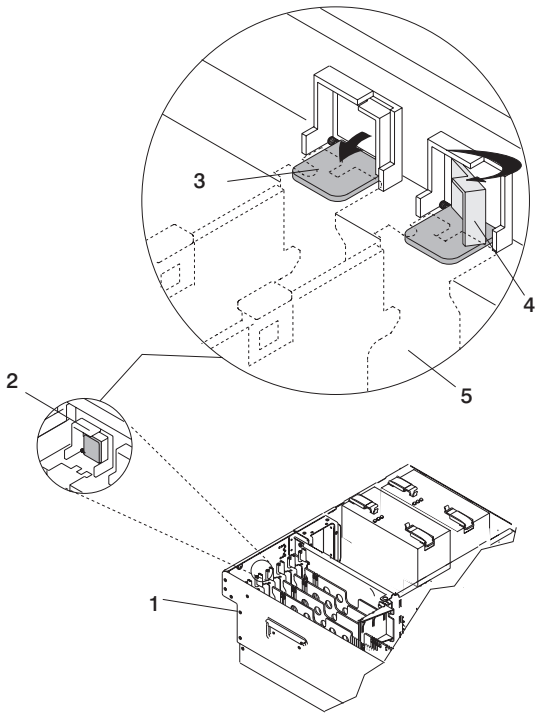
22. Remove the replacement adapter from the antistatic package.

    Attention: Avoid touching the components and gold-edge connectors on the adapter.
23. Place the adapter, component-side up, on a flat, static-protective surface.
24. Set any jumpers or switches as instructed by the adapter manufacturer.
25. Replace the adapter into the adapter slot. Carefully grasp the adapter by the edges and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector.
26. If you are replacing or installing a short adapter, continue to the next step.

    If you are replacing or installing a long adapter, do the following:

    a. Close and latch the PCI adapter light-pipe plate attached to the fan tray.

    b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.
27. Lower the plastic retaining seat over the PCI adapter faceplate (dotted lines). Rotate the locking latch clockwise until it clicks into the locked position.



1 Model 6C3 or Model 6E3

2 Adapter Retainer Assembly (in the unlocked position)

3 Adapter Retainer Assembly (retainer seat down and the locking latch in the unlocked position)

4 Adapter Retainer Assembly (retainer seat down and the locking latch in the locked position)

5 PCI adapter faceplate (dotted lines)

28. Connect appropriate cables and devices to the adapter.
29. Continue to follow the screen instructions until you receive a message that the replacement is successful. Successful replacement is indicated by the OK message displayed next to the **Command** field at the top of the screen.
30. Press F3 to return to the PCI Hot-Swap Manager menu.

31. Select **Install/Configure Devices Added After IPL** and press Enter. Follow the instructions on the screen. Successful replacement is indicated by the `OK` message displayed next to the **Command** field at the top of the screen.

    Do not use **Install/Configure Devices Added After IPL** if your system is set up to run HACMP clustering. To determine the correct method to configure the replacement device, consult with your system administrator or software support.
32. If you do not have other adapters to replace, continue with the next step.

    OR

    If you have other adapters to replace, press F3 to return to the PCI Hot-Swap Manager menu and then return to step 16 on page 302.
33. Press F10 to exit the Hot-Swap Manager.

    If you have added, removed, or replaced any adapters, run the **diag -a** command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
34. Reconnect the adapter cables at the rear of the system.
35. On a Model 6C3, route the cables through the cable-management arm.
36. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288 or “Replacing the Model 6E3 Service Access Cover” on page 289.
37. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
38. On a Model 6C3, close the rear rack door.

Installing a Hot-Pluggable PCI Adapter

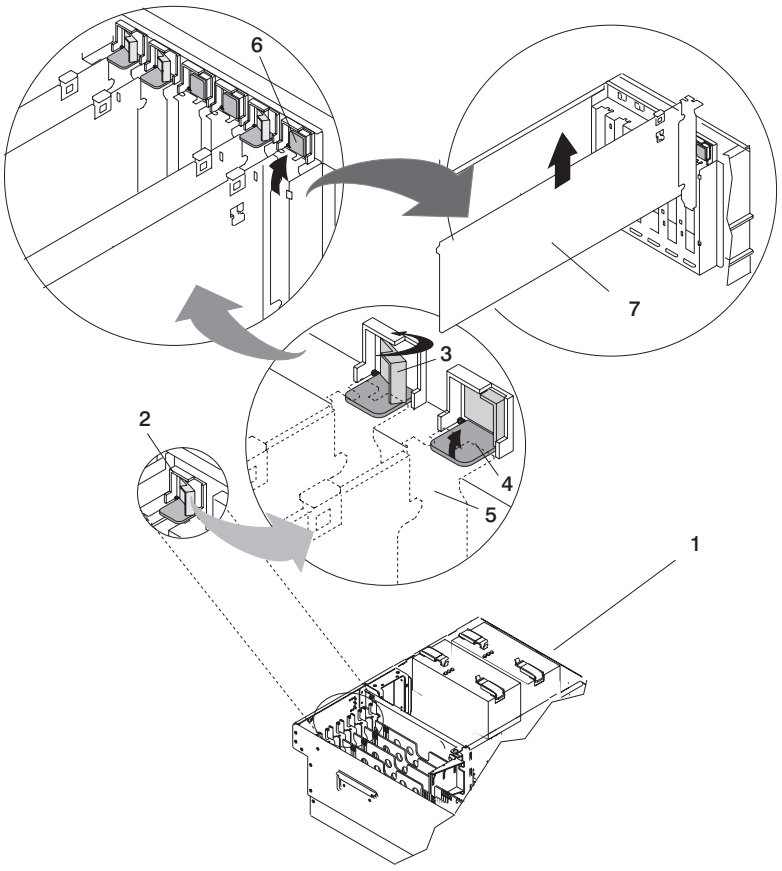
Attention: The Linux operating system does not support these hot-pluggable procedures. Also, Linux does not support hot-swapping any hot-pluggable PCI adapters. A system with Linux installed must be shut down and powered off before installing any PCI adapter. Use the non-hot-pluggable adapter procedures when replacing a PCI adapter with the Linux operating system installed.

Note: This system supports PCI hot-pluggable adapters, so the system does not need to be shut down and the power cables removed before adding or replacing an adapter.

To install an adapter, do the following:

1. Reconnect the adapter cables at the rear of the system.
2. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
3. On a Model 6C3, open the rear rack door.
4. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
5. Refer to the *RS/6000 & pSeries PCI Adapter Placement Reference*, order number SA38-0538, for information regarding slot restrictions for adapters that can be used in this system, and for adapter-placement information.
6. Before handling any card, board, or memory DIMM, refer to “Handling Static-Sensitive Devices” on page 280.
7. Refer to “Accessing the PCI Hot-Swap Manager” on page 307, and follow the steps in the access procedure to select **PCI Hot Swap Manager**. Then return here to continue.
8. From the PCI Hot-Swap Manager menu, select **Add a PCI Hot-Swap Adapter** and press Enter. The Add a PCI Hot-Swap Adapter window opens.
9. Select the appropriate empty PCI slot from the ones listed on the screen, and press Enter.

10. Rotate the locking locking latch, lift the plastic stop, and remove the adapter slot cover.



1 Model 6C3 or Model 6E3
2 Adapter Retainer Assembly
3 Adapter Retainer Assembly (retainer seat down and the locking latch in the locked position)
4 Adapter Retainer Assembly (retainer seat down and the locking latch in the unlocked position)
5 PCI adapter faceplate (dotted lines)
6 Adapter Retainer Assembly (in the unlocked position)
7 PCI Adapter

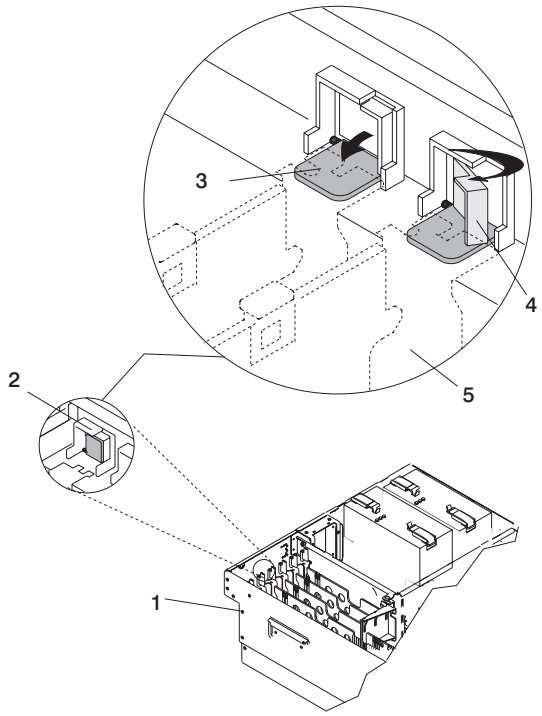
11. Follow the instructions displayed in the Add a PCI Hot-Swap Adapter window to install the adapter until the LED for the specified PCI slot is set to the *Action* state.
12. If necessary, remove the adapter from the antistatic package.

    Attention: Avoid touching the components and gold-edge connectors on the adapter.
13. Place the adapter, component-side up, on a flat, static-protective surface.
14. Set any jumpers or switches as described by the adapter's manufacturer.
15. If you are installing a short adapter, continue to the next step.

    If you are installing a long adapter, do the following:

    a. Unlatch and open the PCI adapter light-pipe plate attached to the fan tray.
    b. Note the guide grooves located towards the front of the system in the disk drive backplane, and align the adapter properly.

16. When you are instructed to install the adapter in the adapter slot, carefully grasp the adapter by the edges and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full-length adapter, ensure that both ends of the adapter engage the card guides.
17. Lower the tab onto the PCI adapter faceplate. Rotate the adapter locking latch clockwise until it covers the tab at approximately a 45-degree angle. See the following illustration.



1 Model 6C3 or Model 6E3

2 Adapter Retainer Assembly (in the unlocked position)

3 Adapter Retainer Assembly (retainer seat down and the locking latch in the unlocked position)

4 Adapter Retainer Assembly (retainer seat down and the locking latch in the locked position)

5 PCI adapter faceplate (dotted lines)

18. If you are installing a short adapter, continue to the next step.

    If you are installing a long adapter, do the following:

    a. Close and latch the PCI adapter light-pipe plate attached to the fan tray.

    b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter properly.
19. Connect the adapter cables.
20. On a Model 6C3, route the cables through the cable-management arm.
21. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288 or “Replacing the Model 6E3 Service Access Cover” on page 289.
22. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
23. On a Model 6C3, close the rear rack door.

24. Select **Install/Configure Devices Added After IPL** and press Enter. Follow the instructions on the screen. Successful replacement is indicated by the `OK` message displayed next to the **Command** field at the top of the screen.

    Do not use **Install/Configure Devices Added After IPL** if your system is set up to run HACMP clustering. To determine the correct method to configure the replacement device, consult with your system administrator or software support.

Accessing the PCI Hot-Swap Manager

The installation instructions for hot-pluggable PCI adapters refer you to these procedures when it is appropriate to perform them.

Attention: The Linux operating system does not support these hot-pluggable procedures. Also, Linux does not support hot-swapping any hot-pluggable PCI adapters. The system with Linux installed must be shut down and powered off before replacing any PCI adapter. Follow the non-hot-pluggable adapter procedures when replacing a PCI adapter in a system with the Linux operating system installed.

Note: A PCI adapter is only hot-pluggable if the PCI adapter is supported for hot-swap applications. See the *RS/6000 & pSeries PCI Adapter Placement Reference*, order number SA38-0538, for complete information regarding your PCI adapter.

Accessing PCI Hot-Swap Management Functions

Note: Removing or installing a hot-pluggable PCI adapter requires the system administrator to take the PCI adapter offline prior to performing the operation. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

For additional information about taking an adapter offline or removing it from the system configuration, see the *AIX System Management Guide: Operating System and Devices*.

Documentation for the AIX operating system is available from the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base. Select **AIX documentation**. The *AIX Documentation* CD contains the base set of publications for the operating system, including system-management and end-user documentation.

This publication is also contained on the AIX Documentation CD. The documentation is made accessible by loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.

To access the hot-swap manager menus, do the following:

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **Devices**.
4. Select **PCI Hot Swap Manager** and press Enter.
5. The PCI Hot-Swap Manager menu displays. The following section describes the menu options.
6. If you were directed here from a hot-swap procedure in this book, return to the procedure.

Using the PCI Hot-Swap Manager Menu

The following options are available from the PCI Hot Swap Manager menu:

Note: For information about the PCI slot LED states, see Chapter 12, “Component and Attention LEDs,” on page 387.

List PCI Hot-Swap Slots

Provides a descriptive list of all slots that support PCI hot-swap capability. If the listing for a slot indicates it holds an unknown device, select the **Install/Configure Devices Added after IPL** to configure the adapter in that slot.

Add a PCI Hot-Slot Adapter

Allows the user to add a new PCI hot-swap-capable adapter to the slot with the system turned on. You will be asked to identify the PCI slot that you have selected prior to the actual operation. The selected PCI slot will go into the *Action* state and finally into the *On* state.

Note: The system will indicate the slot holds an unknown device until you perform the **Install/Configure Devices Added After IPL** option to configure the adapter.

Replace/Remove a PCI Hot-Swap Adapter

Allows the user to remove an existing adapter, or replace an existing adapter with an identical one. Before performing this task, the adapter must be in the *Defined* state (see the **Unconfigure a Device** option).

You will be asked to identify the PCI slot prior to the actual operation. The selected PCI slot will go into the *Action* state.

Identify a PCI Hot-Swap Slot

Allows the user to identify a PCI slot. The selected PCI slot will go into the *Identify* state.

Unconfigure a Device

Allows the user to put an existing PCI adapter into the *Defined* state if the device is no longer in use.

This step must be completed successfully before starting any removal or replacement operation. If this step fails, you must take action to release the device.

Configure a Defined Device

Allows a new PCI adapter to be configured into the system if software support is already available for the adapter. The selected PCI slot will go into the *On* state.

Install/Configure Devices Added After IPL

The system attempts to configure any new devices and tries to find and install any required software from a user-selected source.

The add, removal, and replacement functions return information to the user indicating whether the operation was successful. If additional instructions are provided on the screen, complete the recommended actions. If the instructions do not resolve the problem, do the following:

- If the adapter is listed as Unknown, perform the **Install/Configure Devices Added After IPL** option to configure the adapter.
- If you receive a warning indicating that needed device packages are not installed, the system administrator must install the specified packages before you can configure or diagnose the adapter.
- If you receive a failure message indicating a hardware error, the problem might be either the adapter or the PCI slot. Isolate the problem by retrying the operation in a different PCI slot, or trying a different adapter in the slot. If you determine that you have failing hardware, call your service representative.
- *Do not* use **Install/Configure Devices Added After IPL** if your system is set up to run HACMP clustering. To determine the correct method to configure the replacement device, consult with your system administrator or software support.

PCI Adapter Dividers and Light Pipes

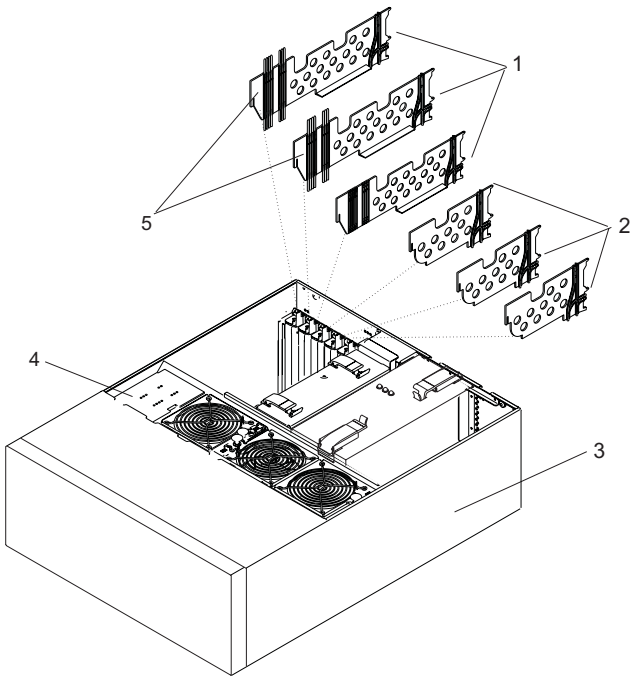
The following procedures describe the removal and replacement of PCI adapter dividers and light pipes. Before performing the following procedures, read the “Safety Notices” on page xi.

Removing a PCI Adapter Divider

To remove a PCI adapter divider, do the following:

1. Stop the system as described in “Stopping the System” on page 282.
2. Disconnect the power source to the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the system power source is completely disconnected.
3. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
4. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289. See the following illustration.
5. Because the PCI adapter dividers are near to the PCI adapters, refer to “Handling Static-Sensitive Devices” on page 280. If the PCI adapter divider you are removing has PCI adapters adjacent to it, remove the adjacent PCI adapters as described in “Removing a Non-Hot-Pluggable PCI Adapter” on page 294
6. Locate the PCI adapter divider you want to remove.
7. If you are removing a short adapter divider, continue to the next step. If you are removing a long adapter divider, do the following:
   a. Unlatch and open the PCI adapter light-pipe plate attached to the fan tray.
   b. Note the guide grooves located toward the front of the system in the disk drive backplane for correct alignment.
8. Lift the PCI adapter divider from the system.
9. If you are removing a long PCI adapter divider that contains light pipes, do the following:
   a. Note the location of each light pipe.
   b. Carefully remove the light pipes from the long PCI adapter divider.



1 PCI Adapter Dividers (Long)
2 PCI Adapter Dividers (Short)
3 System in Service Position
4 Fan Tray Light-Pipe Plate
5 Light Pipes

Replacing a PCI Adapter Divider

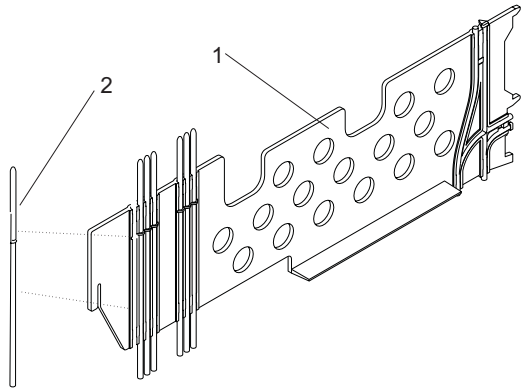
To replace an adapter divider, do the following:

1. If you are replacing a long PCI adapter divider that should contain light pipes, do the following:
   a. Identify the correct slots for the light pipes on long PCI adapter divider.
   b. Carefully place the light pipes into the correct slots of the long PCI adapter divider.
2. Locate the PCI adapter divider slot you want to use.
3. Carefully grasp the adapter divider by its top edge, and align the adapter divider with the grooves at the front and rear of the system.
4. Press the adapter divider into place.
5. If necessary, replace the PCI adapter cards as described in “Replacing or Installing a Non-Hot-Pluggable PCI Adapter” on page 296.
6. If you are replacing or installing a short adapter divider, continue to the next step. If you are replacing or installing a long adapter, do the following:
   a. Close and latch the PCI adapter light-pipe plate attached to the fan tray.
   b. Note the guide grooves located toward the front of the system in the disk drive backplane, and align the adapter divider correctly.
7. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288 or “Replacing the Model 6E3 Service Access Cover” on page 289.
8. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
9. Reconnect the power source to the system.
10. Start the system as described in “Starting the System” on page 283.

Removing the PCI-Adapter-Divider Light Pipes

To remove a PCI-adapter-divider light pipe, do the following:

1. Remove the PCI adapter divider as described in “Removing a PCI Adapter Divider” on page 309.
2. Locate the light pipe you want to remove and note the location.
3. Pull the light pipe out of the PCI adapter divider.



1 PCI Adapter (Long)

2 Light Pipe

Replacing the PCI-Adapter-Divider Light Pipes

To replace an PCI-adapter-divider light pipe, do the following:

1. Locate the light-pipe slot in the PCI adapter divider you want to use.
2. Place the light pipe into the slot, and press it into place.
3. Replace the PCI adapter divider as described in “Replacing a PCI Adapter Divider” on page 310.

Service Processor Assembly

The following procedures describe the removal and replacement of the service processor assembly. Before performing the following procedures, read “Safety Notices” on page xi.

Before You Begin

Read the following notes before you begin any removal or replacement actions.

Notes:

1. Check the system firmware level prior to replacing this part. For information on checking and updating firmware levels, see “System Firmware Updates” on page 253. If the new part is at an older firmware level than the system firmware level, update the system to the latest firmware code level after you replace the service processor.
2. If you are replacing a service processor assembly, the service processor settings will need to be reloaded. Locate the backup copy of the service processor settings. If the service processor settings were backed up, the backup copy would be stored to a file on a disk drive in the system.

   If a backup copy is not available, use the “Save or Restore Hardware Management Policies” in the “Introduction to Tasks and Service Aids” section of the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, to back-up the service processor settings saved in NVRAM.
3. If you cannot find or create a backup copy of the service processor settings as described in the previous notes, the service processor settings must be saved manually so that they can be restored manually after the service processor/PCI backplane is replaced. If you need to save the settings manually, follow the procedure under “Save the Service Processor Settings Manually.”

Save the Service Processor Settings Manually

To save the customer’s service processor settings, do the following:

1. Turn off power as described in “Stopping the System” on page 282.
2. At the Service Processor Main Menu, select option 3, **System Information Menu**.
3. At the System Information Menu, select option 6, **Read Service Processor Configuration**. This dumps all of the service processor settings to the screen.
4. Manually record the settings.
5. To record the bootlist, boot to the SMS Main Menu.
6. Select option 7, **Select Boot Options**.
7. On the Boot Mode Menu, select option 2, **Select Boot Devices**.
8. On the Configure Boot Device Order menu, selection option 6, **Display Current Setting**.
9. Record the boot list and continue with “Removing the Service Processor Assembly.”

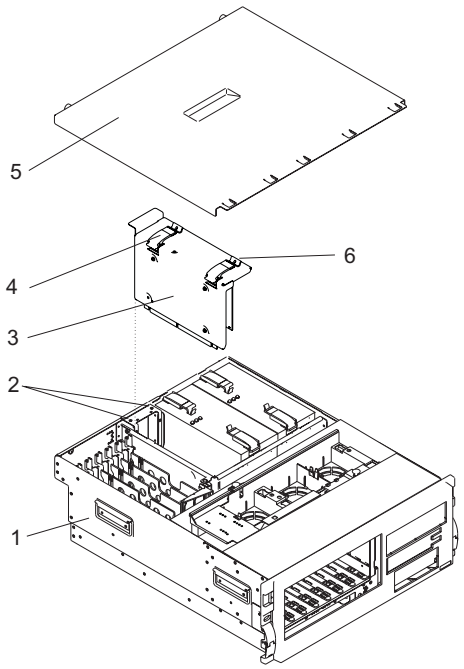
Removing the Service Processor Assembly

To remove the service processor assembly, do the following:

1. Stop the system as described in “Stopping the System” on page 282.
2. Disconnect the power source from the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.
3. Label and disconnect all cables connected to the service processor assembly.
4. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
5. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.

6. Before handling any card, board, or memory DIMM, refer to “Handling Static-Sensitive Devices” on page 280.
7. Locate the service processor assembly as shown in the following illustration.
8. Grasp the ends of the service processor assembly handles, and press the retractable spring-activated portion of each handle. This action releases the spring latch located on the bottom side of each handle.
9. Lift the service processor assembly handles until they are perpendicular (90 degrees) to the top of the assembly. By placing the handles perpendicular to the top of the service processor assembly, the base or hinged portion of each handle acts as a cam and helps pry the service processor assembly from its connector located on the system backplane.
10. Place the service processor assembly in a safe place.



1 Model 6C3

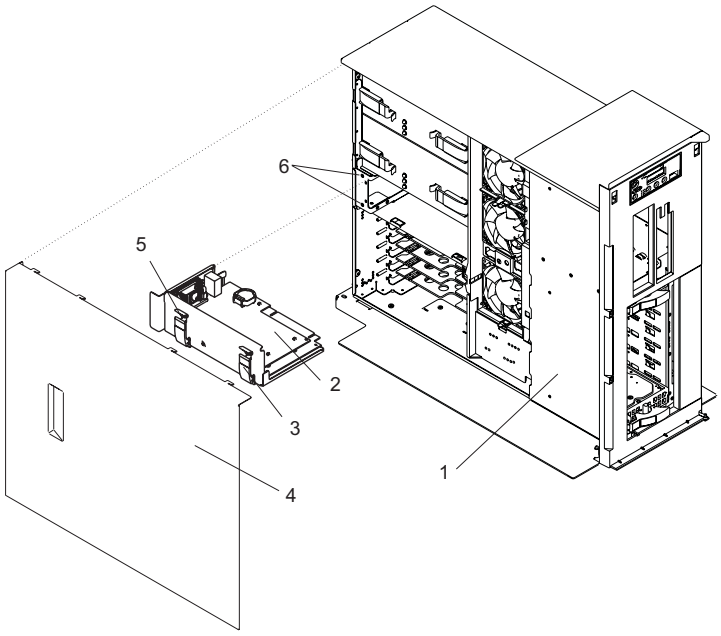
2 Service Processor Assembly Alignment Pin Holes

3 Service Processor Assembly

4 Service Processor Assembly Handle (2)

5 Service Access Cover

6 Spring Latch



1 Model 6E3

2 Service Processor Assembly

3 Service Processor Assembly Handle (2)

4 Service Access Cover

5 Spring Latch

6 Service Processor Assembly Alignment Pin Holes

Replacing the Service Processor Assembly

To replace the service processor assembly, do the following:

1. Before handling any card, board, or memory DIMM, refer to “Handling Static-Sensitive Devices” on page 280.
2. Grasp the service processor assembly handles located on top of the new service processor assembly. Pivot the service processor handles upward to 90 degrees. This action puts the handle cams into the correct position to help seat the assembly into its connector.
3. Align the service processor assembly with the slot in the system chassis.
4. While holding the service processor assembly by the handles, lower the service processor assembly into place.

   Note: Ensure that the two pins on the top flange of the service processor assembly align with the corresponding service processor assembly alignment pin holes in the rear bulkhead while you press the service processor assembly into place.
5. Press firmly on the top of the service processor assembly until you feel it lock into place.
6. Rotate the service processor assembly handles downward until they lock into place.
7. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288.
8. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
9. Reconnect cables to the service processor assembly.
10. Reconnect all system power cables.
11. Start the system as described in “Starting the System” on page 283.

    Notes:

    1. If you are replacing a service processor assembly on a system running AIX, set the time and date using the operating system date command or **smitty**.
    2. To restore the service processor settings and to set the date and time using the service processor (if the system is running Linux use this method), see “Saving and Restoring Service Processor Settings” on page 226.
12. If the service processor assembly was replaced, locate the backup copy of the service processor settings. Use the “Save or Restore Hardware Management Policies,” in the “Introduction to Tasks and Service Aids” section of the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, to restore the service processor settings saved in NVRAM. If you cannot run the appropriate task, or the service processor settings were not backed up, the service processor settings must be entered manually. See Chapter 7, “Using the Service Processor,” on page 225 for more information about entering service processor settings manually.

Battery

The following procedures describe the removal and replacement of the system battery. Before performing the following procedures, read the “Safety Notices” on page xi.

CAUTION:
A lithium battery can cause fire, explosion, or a severe burn. Do not recharge, disassemble, heat above 100 degrees C (212 degrees F), solder directly to the cell, incinerate, or expose cell contents to water. Keep away from children. Replace only with the part number specified for your system. Use of another battery may represent a risk of fire or explosion.

The battery connector is polarized; do not attempt to reverse the polarity.

Dispose of the battery according to local regulations.
C9

Before Replacing the Battery

Do the following before you begin any battery removal or replacement actions.

Notes:

1. If the battery needs to be replaced, the service processor settings will need to be reloaded. Locate the backup copy of the service processor settings. If the service processor settings were backed up, the backup copy would be stored to a file on a disk drive in the system.

   If a backup copy is not available, use the “Save or Restore Hardware Management Policies” in the “Introduction to Tasks and Service Aids” section of the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, to back-up the service processor settings saved in NVRAM.
2. If you cannot find or create a backup copy of the service processor settings as described in the previous notes, the service processor settings must be saved manually so that they can be restored manually after the battery is replaced. If you need to save the settings manually, follow the procedure under “Save the Service Processor Settings Manually” on page 312.

Save the Service Processor Settings Manually

To save the customer’s service processor settings, do the following:

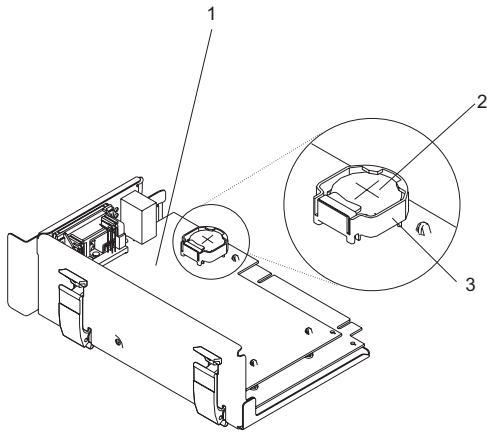
1. Turn off the power as described in “Stopping the System” on page 282.
2. At the Service Processor Main Menu, select option 3, **System Information Menu**.
3. At the System Information Menu, select option 6, **Read Service Processor Configuration**. This dumps all of the service processor settings to the screen.
4. Manually record the settings.
5. To record the bootlist, boot to the SMS Main Menu.
6. Select option 7, **Select Boot Options**.
7. On the Boot Mode Menu, select option 2, **Select Boot Devices**.
8. On the Configure Boot Device Order menu, selection option 6, **Display Current Setting**.
9. Record the boot list and continue with “Removing and Replacing the Battery.”

Removing and Replacing the Battery

To remove and replace the battery, do the following:

1. Remove the service processor assembly as described in “Removing the Service Processor Assembly” on page 312.
2. Locate the battery on the service processor assembly.

3. Use your fingernail to pry the battery out of its plastic mount. After the bottom of the battery has cleared the top edge of the plastic mount, pull the battery up and away from the plastic mount.



1 Service processor assembly
2 Battery
3 Battery plastic mount

4. Replace the battery with the correct part. For the battery part number, see “System Parts” on page 364.
5. When installing the new battery, ensure that the battery polarity is correct. For this system, the positive (+) side of the battery should be facing up in its plastic mount.
6. Gently insert the new battery into its plastic mount.
7. Replace the service processor assembly in the system unit as described in “Replacing the Service Processor Assembly” on page 315.The system may stop and restart in order to reboot.
8. If you are running AIX, the **bootlist** command may need to be run while logged in as root user. This action rebuilds the customized boot list. IP (Internet protocol) parameters may also need to be reentered.
9. Start the system as described in “Starting the System” on page 283.

   Notes:

   1. If you are replacing a service processor assembly on a system running AIX , set the time and date using the operating system date command or **smitty**.
   2. To restore the service processor settings and to set the date and time using the service processor (if the system is running Linux use this method), see “Saving and Restoring Service Processor Settings” on page 226.
10. Because the battery was replaced, the service processor settings need to be reset. Locate the backup copy of the service processor settings. Use the “Save or Restore Hardware Management Policies,” in the “Introduction to Tasks and Service Aids” section of the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, to restore the service processor settings. If you cannot run the appropriate task, or the service processor settings were not backed up, the service processor settings must be entered manually. See Chapter 7, “Using the Service Processor,” on page 225 for more information about entering service processor settings manually.

Hot-Swap System Fans

The following procedures describe the removal and replacement of the hot-swap system fans. Before performing the following procedures, read the “Safety Notices” on page xi.

This system supports hot-swap and redundant cooling. The system electronics are cooled with three system cooling fans.

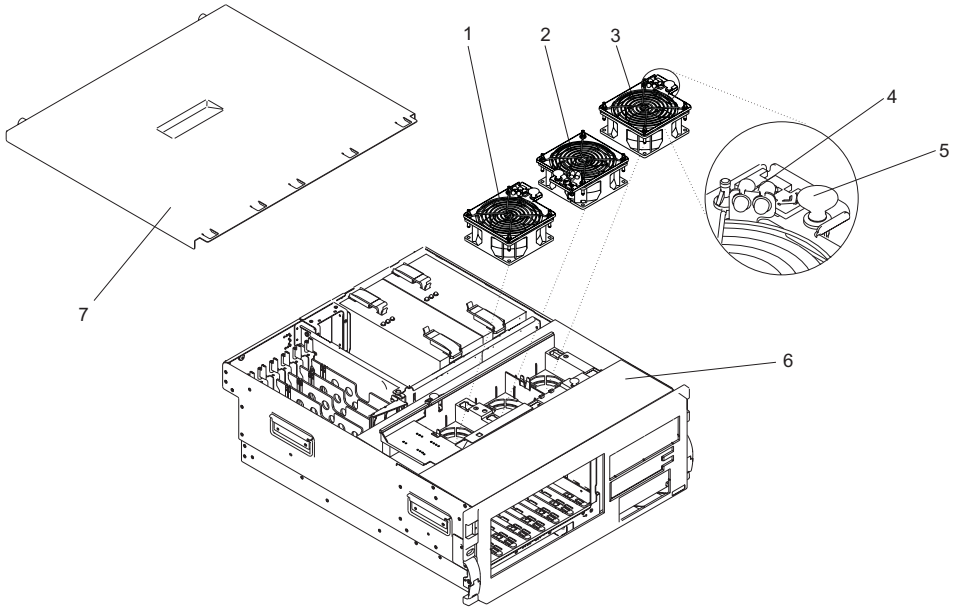
Note: Each fan unit has two LEDs on the top cover. The green LED indicates the fan is operating properly. The amber LED indicates a fan failure.

Attention: The Linux operating system does not support these hot-pluggable procedures. A system with Linux installed must be shut down and powered off before removing or replacing a fan.

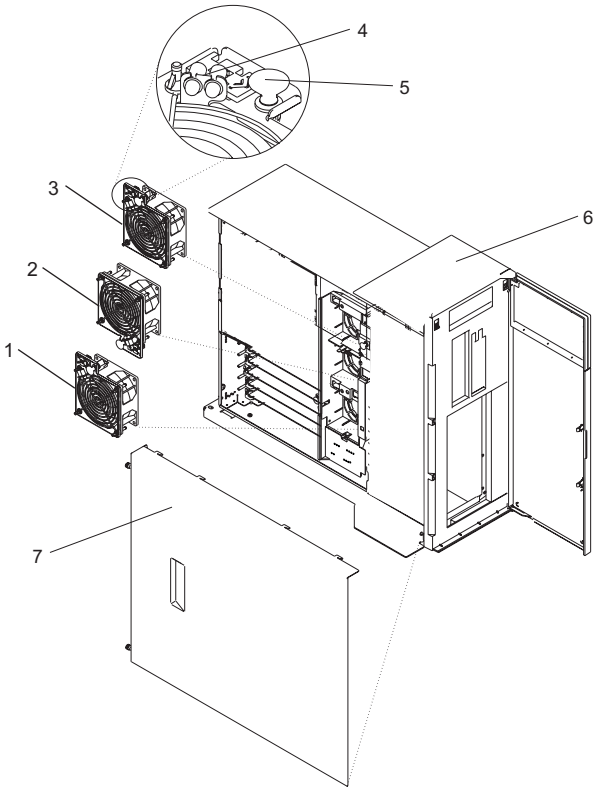
Removing a Hot-Swap System Fan

To remove a hot-swap system fan, do the following:

1. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
2. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288, or “Removing the Model 6E3 Service Access Cover” on page 289
3. Locate the system fans, as shown in the following illustration.
4. Pull on the orange locking knob of the failing fan until you feel it unlock.
5. Press and hold the plastic tab attached to the fan tray away from the system fan.
6. Pull on the locking knob of the failing fan again until you feel the fan pull away from its connector.
7. Lift the failing fan unit out of the fan tray.



1 System Fan 1
2 System Fan 2
3 System Fan 3
4 System Fan LEDs
5 Orange Locking Knob
6 Model 6C3
7 Service Access Cover



1 System Fan 1
2 System Fan 2
3 System Fan 3
4 System Fan LEDs
5 Orange Locking Knob
6 Model 6E3
7 Service Access Cover

Replacing a Hot-Swap System Fan

Notes:

1. The Linux operating system does not support these hot-pluggable procedures. A system with Linux installed must be shut down and powered off before installing a fan.
2. This note applies only to systems running the AIX operating system. If a fan assembly is being replaced for a redundant failure, after the service repair action is completed, check the **crontab** file for any power/cooling warning messages. When a power or cooling error is encountered, AIX adds an entry to the **crontab** file to ″wall″ a warning message every 12 hours, to alert or remind the customer of the problem. Replacing the faulty part does not clear this **crontab** entry, so unless the **crontab** file is edited to remove this entry, the customer continues to be reminded of the failure despite its having been repaired. Use the **crontab -l** command to read the **crontab** file to determine if an entry exists. Use the **crontab -e** command to edit the file.

To replace a hot-swap system fan, do the following:

1. Pull up on the orange locking knob on the replacement fan to ensure that it is in the unlocked position.
2. Align the fan with the slot in the fan tray assembly with the fan power plug over the connector.
3. Place the fan into the fan tray.
4. Press down on the fan to ensure that the power plug is connected.

   Note: The fan starts to run when the power plug connects.
5. Press the locking knob down until you feel it lock into place.

6. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288 or “Replacing the Model 6E3 Service Access Cover” on page 289.
7. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.

Fan Tray Assembly

The following procedures describe the removal and replacement of the fan tray assembly. Before performing the following procedures, read the “Safety Notices” on page xi.

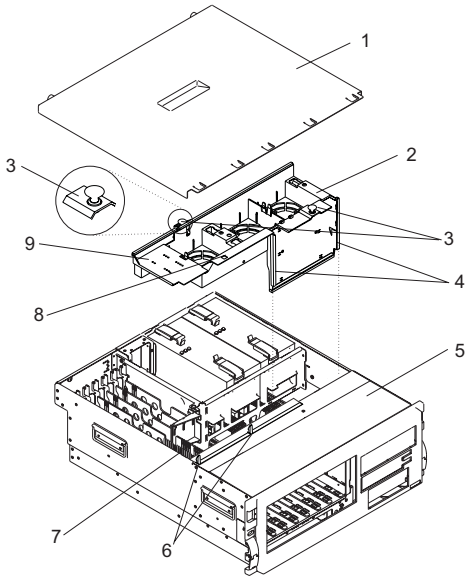
The three system cooling fans rest in a fan tray. The fans can remain in the tray while the tray is removed or replaced.

Removing the Fan Tray Assembly

To remove the fan tray assembly, do the following:

1. Stop the system as described in “Stopping the System” on page 282.
2. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
3. Disconnect the power source from the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system is completely disconnected.
4. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
5. If your system does not contain a SCSI media device in the SCSI media-device bay, go to the next step. To identify the SCSI media device locations, see “System Locations” on page 9. If your system does contain SCSI media device, do the following:
   a. Remove the front bezel as described in “Removing the Model 6C3 Front Bezel” on page 291 or “Removing the Model 6E3 Front Bezel” on page 292.
   b. Press the blue media-bay-chassis latches and pull the media bay chassis forward in the system chassis but do not remove it from the system chassis. To identify the media-bay-chassis latches, see the illustrations in “Removing the Media Bay Chassis” on page 344.
6. Locate the fan tray, as shown in the following illustration.
7. Release the LED light-pipe plate attached to the fan tray by pressing the latch attached to the disk drive backplane and rotating the plate up and off of the LED light pipes.
8. Pull up on the two blue locking knobs located at either end of the fan tray until you feel them unlock.
9. While holding the blue plastic latch on the back of the disk drive backplane, lift up on the end of the fan tray that is next to the latch until it clears the latch.
10. Using the two blue locking knobs at either end of the fan tray assembly, lift it straight up and out of the system unit.
11. If you are removing the fan tray as part of another procedure, return to that procedure. If you are removing the fan tray because the fan tray itself is damaged or failing to operate correctly, remove the three hot-swap system fans from the fan tray as described in “Removing a Hot-Swap System Fan” on page 318.



1 Service Access Cover

2 Fan Tray

3 Blue Locking Knobs

4 Fan Tray Guides

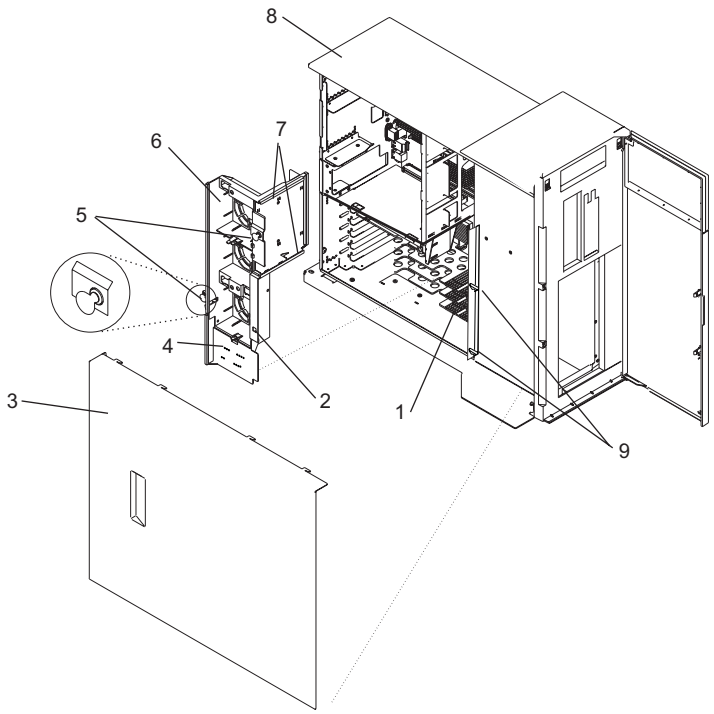
5 Model 6C3 (Shown Without a SCSI Media Device)

6 Latches (Attached to Disk Drive Backplane or Disk Drive Backplane Filler)

7 LED Light Pipes

8 Disk Drive Backplane Latch Hole

9 Fan Tray Light-Pipe Plate



1 LED Light Pipes
2 Disk Drive Backplane Latch Hole
3 Service Access Cover
4 Fan Tray Light-Pipe Plate
5 Blue Locking Knobs
6 Fan Tray
7 Fan Tray Guides
8 Model 6E3 (Shown Without a SCSI Media Device)
9 Latches (Attached to Disk Drive Backplane or Filler)

Replacing the Fan Tray Assembly

To replace the fan tray, do the following:

1. If you are placing the fan tray assembly into the system as part of another procedure, continue to the next step. If you are replacing a failing or damaged fan tray with a new fan tray, place the three hot-swap system fans into the fan tray as described in “Replacing a Hot-Swap System Fan” on page 319 before you continue to the next step.
2. Confirm that the blue locking knobs on the fan tray are in the unlocked position.
3. Align the guides on the front of the fan tray with the guide rails in the system chassis.
4. Lower the fan tray into the system, with the LED light-pipe cover plate toward the LED light pipes, and press it down into place.
5. Press the blue locking knobs down until you feel them lock.
6. Press the LED light-pipe cover plate down over the latch and LED light pipes until you feel it lock into place. Ensure the LED light pipes align with the appropriate holes in the LED light-pipe plate.
7. If your system does not contain a SCSI media device, go to the next step. If your system does contain SCSI media device, do the following:
   a. Press the media bay chassis back into place until you feel the latches lock (see the illustrations in “Removing the Media Bay Chassis” on page 344 to identify the media-bay-chassis latches).
   b. Replace the front bezel as described in “Replacing the Model 6C3 Front Bezel” on page 291 or “Replacing the Model 6E3 Front Bezel” on page 292
8. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288.

9. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
10. Start the system as described in “Starting the System” on page 283.

Media Devices (Diskette, CD-ROM, DVD, DVD-RAM,or Tape Drive)

The following procedures describe the removal and replacement of the media devices. Before performing the following procedures, read the “Safety Notices” on page xi.

Notes:

1. The two Slimline media bays can be used to house a CD-ROM, DVD-ROM, or diskette device. For the location of the two media bays, see “System Locations” on page 9. However, if your system has a CD-ROM device, place it in media bay 3. The optional media device bay can house a SCSI media device, such as a DVD-RAM or tape drive.
2. Hot-swap devices are not supported in the media device bays.

Before performing this procedure, read the following:

- “Safety Notices” on page xi
- “Laser Safety Information” on page xiii

Slimline Media Devices

The following procedures describe the removal and replacement of the Slimline media devices.

If the Slimline media device is a DVD-RAM, then a single-ended cable will be connected to the rear of the media-bay-chassis backplane and routed through the system to a single-ended (SE) SCSI adapter. See the following illustrations.

Notes:

1. If a Slimline diskette device is installed, it must be placed in the lower device slot on the Model 6C3 or in the right device slot on the Model 6E3. Having two diskette devices installed will result in an error.
2. Slimline media devices are not hot-swappable.

Removing a Slimline Media Device

To remove a Slimline media device, do the following:

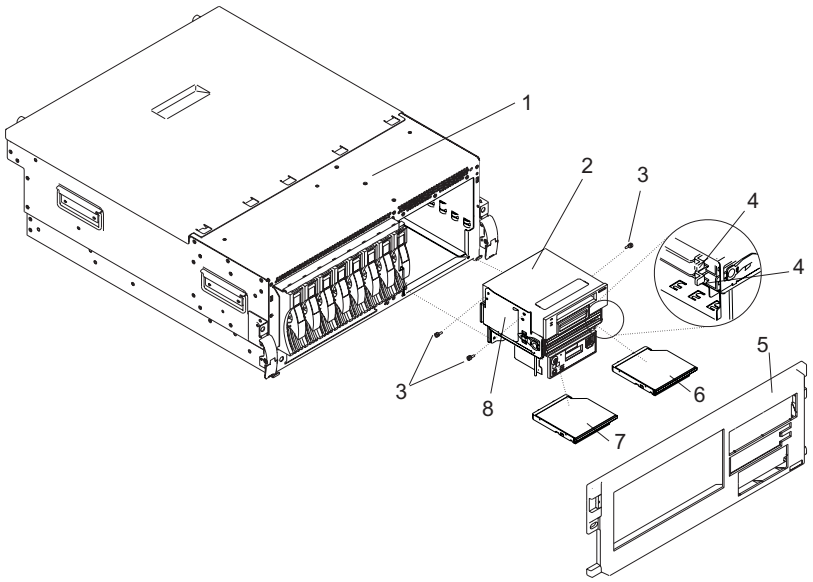
1. Stop the system as described in “Stopping the System” on page 282.
2. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
3. Disconnect the power source from the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system is completely disconnected.
4. Remove the front bezel as described in “Removing the Model 6C3 Front Bezel” on page 291 or “Removing the Model 6E3 Front Bezel” on page 292.
5. Push the blue plastic retaining tab away from the Slimline media device.
6. While holding the blue plastic retaining tab, grasp the device and pull it out of the system.

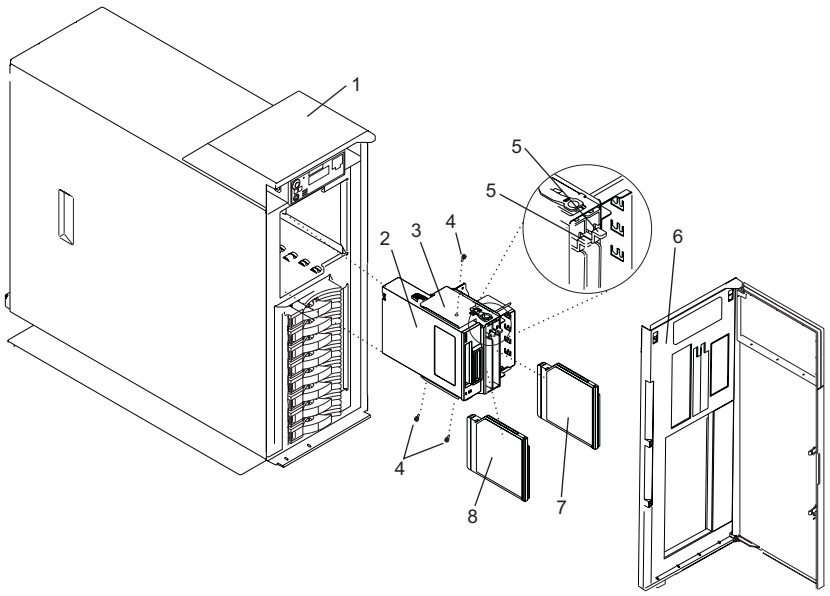
Replacing or Installing a Slimline Media Device

To replace or install a Slimline media device, do the following:

1. If necessary, while holding the blue plastic retaining tab, pull the filler panel out of the system.
2. Align the device with the Slimline media bay and push it into the system.
3. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
4. Replace the front bezel as described in “Replacing the Model 6C3 Front Bezel” on page 291 or “Replacing the Model 6E3 Front Bezel” on page 292.
5. Start the system as described in “Starting the System” on page 283.



1 Model 6C3
2 Optional SCSI Media Device (Shown in Media Bay Chassis)
3 Optional SCSI Media Device Screw (3)
4 Blue Retaining Tab (For Slimline Devices)
5 Front Bezel
6 Slimline Optical Device
7 Slimline Diskette or Optical Device
8 Media Bay Chassis



1 Model 6E3
2 Optional SCSI Media Device (Shown in Media Bay Chassis)
3 Media Bay Chassis
4 Optional SCSI Media Device Screw (3)
5 Blue Retaining Tab (For Slimline Devices)
6 Front Bezel
7 Slimline Diskette or Optical Device
8 Slimline Optical Device

SCSI Media Devices

A SCSI media device can be placed in the SCSI media-device bay. If a SCSI media device is installed in the system, then a power cable and a SCSI cable will be connected to the rear of the SCSI media device and routed to the appropriate connectors on the rear of the media-bay-chassis backplane or PCI adapter. If the SCSI media device is connected to a audio card, then a cable will be connected to the rear of the SCSI media device and routed through the system to the audio card. If the SCSI media device is a DVD-RAM, then a single-ended cable will be connected to the rear of the DVD-RAM and routed through the system to a single-ended (SE) SCSI adapter. See the illustration on page 329.

Removing a SCSI Media Device

To remove a SCSI media device, do the following:

1. Shut down the system as described in “Stopping the System” on page 282.
2. Disconnect the power source from the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.
3. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
4. Remove the front bezel as described in “Bezels” on page 291.
5. Remove the media bay chassis as described in “Media Bay Chassis” on page 344.

   Note: Look to see if any cables that are routed into the system are plugged into the connectors on the media bay chassis. If present, unplug the cables.

6. Unplug the SCSI cable and power cable from the rear of the SCSI media device and the backplane at the rear of the media bay chassis. If necessary, unplug any other cables from the rear of the SCSI media device or media bay chassis. To see the location and routing of the SCSI media-device cables, go to page 329.
7. Detach the SCSI media device from the media bay chassis by removing the SCSI media-device screws (see the illustrations on page"" on page 326).
8. Put the media device in a safe place.

Replacing or Installing a SCSI Media Device

To replace or install a SCSI media device, do the following:

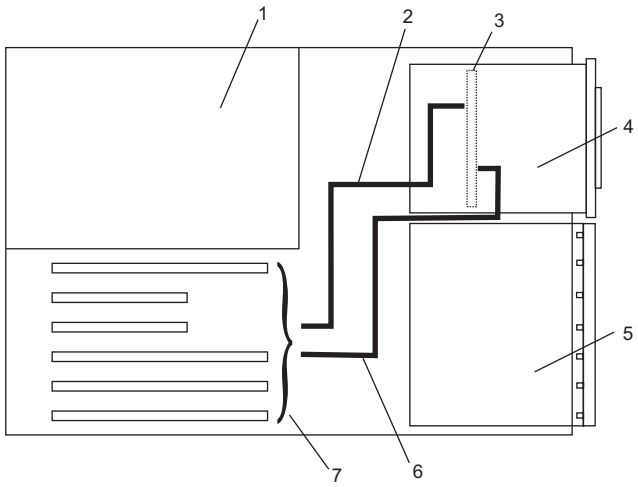
1. Refer to "Removing a SCSI Media Device" on page 327 if a SCSI media device is present in the SCSI media-device bay.
2. Before handling any card, board, or memory DIMM, refer to "Handling Static-Sensitive Devices" on page 280.
3. Attach the SCSI media device to the media bay chassis using the SCSI media-device screws (see the illustrations on page"" on page 326).
4. Plug the SCSI cable and the power cable into rear of the SCSI media device and into the media bay-chassis backplane. If necessary, plug the audio card cable into the rear of the SCSI media device. To see the location and routing of the SCSI media-device cables, go to page 329.
5. Replace the media bay chassis as described in "Media Bay Chassis" on page 344.

   Note: Reconnect the cables that are routed into the system that were plugged into the connectors on the media bay chassis when it was removed.
6. Replace the bezel as described in "Replacing the Model 6C3 Front Bezel" on page 291 or "Replacing the Model 6E3 Front Bezel" on page 292.
7. Reconnect the power source to the system.
8. Return the system to the operating position as described in "Returning the Model 6C3 to the Operating Position" on page 285 or "Placing the Model 6E3 into the Service and Operating Position" on page 286.
9. Start the system as described in "Starting the System" on page 283.

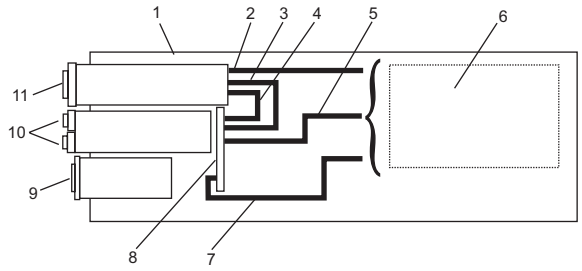
Removing SCSI Media-Device Cables

To remove a SCSI media-device cable, do the following:

1. Remove the media bay chassis as described in "Removing the Media Bay Chassis" on page 344.
2. Identify the cable you want to remove. See the following illustrations.
3. Unplug the cable from its connectors on the SCSI media device and on the media bay chassis or audio card. If you are removing a audio-card cable, note how the cable is routed through the system so that you can replace it correctly.
4. Remove the cable from the media bay chassis or the system.



1 System Unit - Top View in Service Position
2 SCSI Single-Ended Cable
3 Media-Bay-Chassis Backplane
4 SCSI Media Device
5 Disk Drive Bay
6 Audio Card Cable
7 PCI Adapter Slots



1 System Unit (Side View in Service Position)
2 DVD-RAM Cable (SCSI Media-Device)
3 SCSI Media-Device Power Cable
4 SCSI Media-Device SCSI Cable
5 DVD-RAM Cable (Slimline Media-Device)
6 PCI Adapter Slots
7 Audio-Card Cable
8 Media Bay-Chassis Backplane
9 Operator Panel or Filler
10 Slimline Media Devices
11 SCSI Media Device

Replacing SCSI Media-Device Cables

To replace a SCSI media-device cable, do the following:

1. Identify the cable you want to replace.
2. Plug the cable into the appropriate connectors on the SCSI media device and on the media bay chassis or audio card. If you are replacing the audio-card cable, ensure that the cable is routed through the system properly.
3. Replace the SCSI media device as described in “Replacing the Media Bay Chassis” on page 345.

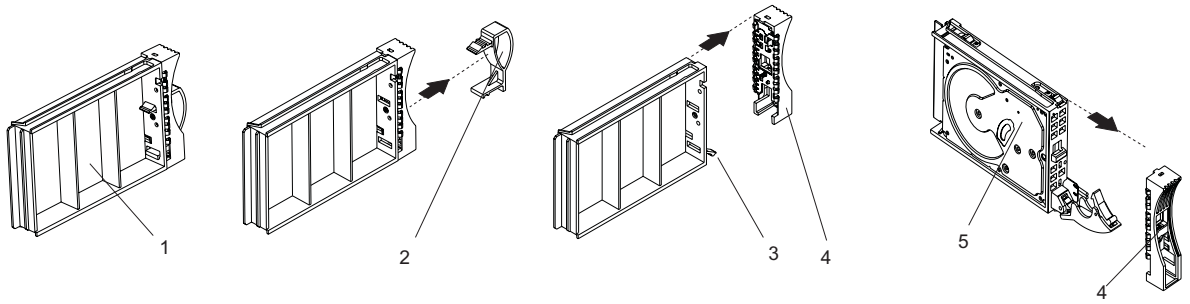
Disk Drive Bezels and Fillers

The following procedures describe the removal and replacement of disk drive bezels. Before performing the following procedures, read the “Safety Notices” on page xi. Each disk drive slot in the system must contain either a disk drive or the appropriate filler panel.

Removing a Disk Drive Bezel from a Disk Drive or Disk Drive Filler

To remove a disk drive bezel from a disk drive or filler, do the following:

1. Remove the filler panel from the disk drive slot, or follow the procedures for removing a disk drive described in “Hot-Swap Disk Drives” on page 332.
2. Remove the disk drive bezel from the front of the filler panel or disk drive. See the following illustration.
3. Attach the disk drive bezel to the front edge of the filler panel or replacement disk drive.
4. Place the filler panel in the empty disk drive slot, or follow the procedures for adding a disk drive as described in “Hot-Swap Disk Drives” on page 332.

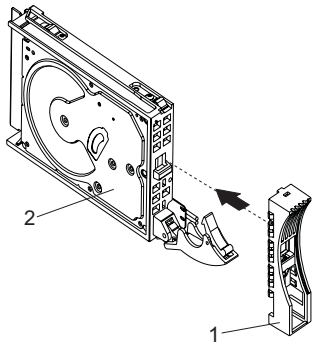


1 Disk Drive Filler Panel, Upside Down with Bezel Attached
2 Disk Drive Bezel Handle
3 Disk Drive Filler Panel Release Tab
4 Disk Drive Bezel
5 Disk Drive

Replacing or Installing a Disk Drive Bezel onto a Disk Drive

To replace or install a disk drive bezel onto a disk drive or filler, do the following:

1. Remove the disk drive filler panel from the slot you want to use by pressing the filler release tab located at the top front edge of the filler panel and pulling the filler out of the system.
2. Remove the disk drive bezel plug from the front of the filler panel.
3. Remove the disk drive bezel from the front edge of the filler panel.
4. Attach the disk drive bezel to the front of the disk drive.
5. Follow the procedures for adding a disk drive as described in “Hot-Swap Disk Drives” on page 332.



1 Disk Drive Bezel **2** Disk Drive

Hot-Swap Disk Drives

The following procedures describe the removal, replacement, and installation of hot-swap disk drives. Before performing the following procedures, read the “Safety Notices” on page xi.

Note: You do not have to power off the system to remove a hot-swap disk drive. Before you perform these procedures, ensure that you have taken the appropriate actions to back up the data for the drive you are removing, and that the drive has been removed from the configuration. Physically removing a hot-swap disk drive from the system before it has been removed from the system configuration can cause unrecoverable data corruption.

Attention: The Linux operating system does not support these hot-swappable procedures. Also, Linux does not support hot-swapping any hot-swappable disk drives. A system with Linux installed must be shut down and powered off before installing any disk drives. Use the procedures described in “Removing a Hot-Swap Disk Drive with the System Power Off” on page 337 and “Replacing or Installing a Hot-Swap Disk Drive with the System Power Off” on page 337 when replacing a disk drive with the Linux operating system installed.

Deconfiguring a Disk Drive for Removal

Before a disk is removed from a volume group, all data should be backed up and the data removed from the disk to be replaced. Use AIX Logical Volume Manager to perform this task.

Before removing a disk drive from a volume group, do the following:

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **System Storage Manager (Physical and Logical Storage)** and press Enter.
4. Select **Logical Volume Manager** and press Enter.
5. Select **Volume Groups** and press Enter.
6. Select **Set Characteristics of a Volume Group** and press Enter.
7. Select **Remove a Physical Volume from a Volume Group**.
8. Press F4 to list the available volume groups, then select the volume group name and press Enter.
9. Press F4 to select a physical volume, and follow the instructions on the screen to select the physical volume. Press Enter.
10. Press F3 enough times to return to the first smitty menu. Select **System Storage Management (Physical and Logical Storage)**.
11. Select **Removable Disk Management**.
12. Select **Remove a Disk**.
13. Select the desired disk from the list on the screen and press Enter.
14. Follow the instructions on the screen to remove the drive.
15. When you are asked ″Are you sure?″, press Enter. The power LED on the drive that you selected will remain on.
16. Remove the disk drive by pulling the disk drive lever toward you until it is completely open (see the illustration in “Removing a Hot-Swap Disk Drive” on page 334). Then remove the disk drive from the slot. The LED on the top of the slot will turn off when the disk drive is removed.
17. Press F10 to exit smitty.

Configuring a Disk Drive after Replacement or Installation

To configure a disk drive, do the following:

1. Log in as root user.
2. At the command line, type `smitty`.

3. Select **Devices**.
4. Select **Install/Configure Devices Added After IPL** and press Enter. Successful configuration is indicated by the OK message displayed next to the **Command** field at the top of the screen.
5. Press F3 to go back to the first menu and select **System Storage Management (Physical and Logical Storage)** and press Enter.
6. Select **Logical Volume Manager** and press Enter.
7. Select **Volume Groups** and press Enter.
8. Select **Set Characteristics of a Volume Group** and press Enter.
9. Select **Add a Physical Volume to a Volume Group**.
10. Fill in the fields for the drive you are adding to the system. Press F4 for a list of selections.
11. See the *AIX System Management Guide: Operating System and Devices* to finish the drive configuration.
12. Press F10 to exit smitty.

Removing a Hot-Swap Disk Drive

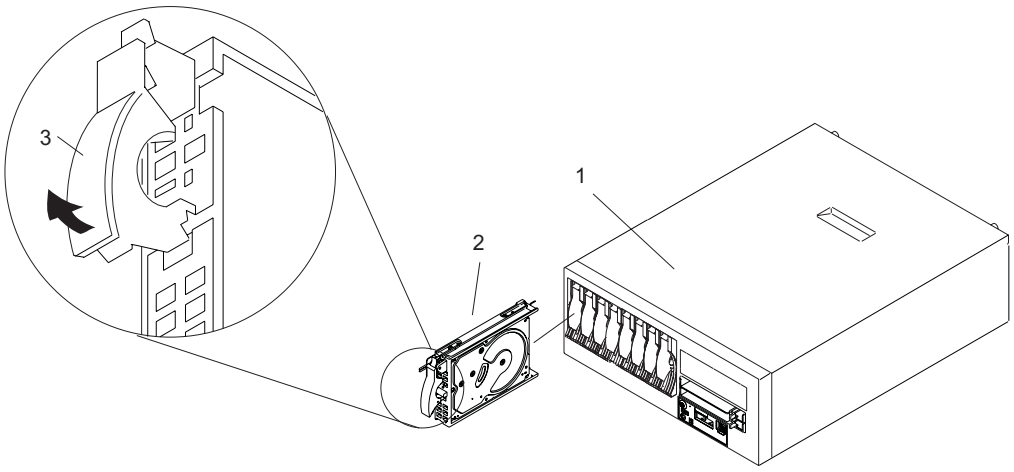
Attention: Before you perform the following procedure, back up the data for the drive you are removing, and ensure that the drive has been removed from the configuration. Physically removing a hot-swap drive from the system before it has been removed from the system configuration can cause unrecoverable data corruption. Refer to “Deconfiguring a Disk Drive for Removal” on page 332.

Attention: The Linux operating system does not support these hot-swappable procedures. Also, Linux does not support hot-swapping any hot-swappable device. A system with Linux installed must be shut down and powered off before replacing any disk drive. Use the non-hot-swappable procedures when replacing a disk drive with the Linux operating system installed.

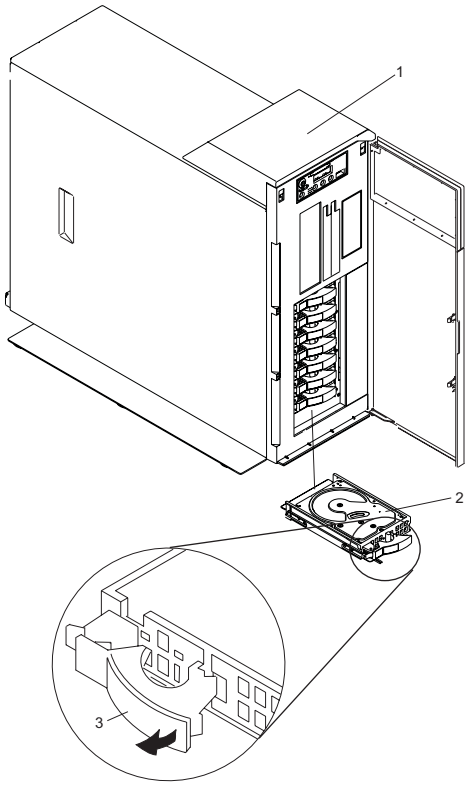
To remove a hot-swap disk drive, do the following:

1. Before removing the disk, ensure all data has been saved.
2. On a Model 6C3, open the rack front door.

   On a Model 6E3, open the front bezel door.
3. Locate the hot-swap disk drive you want to remove. Note the disk drive’s bay location so that it can be replaced in the same slot. If you are removing a faulty disk drive, a lit amber LED located at the front of each disk drive will help you isolate the faulty drive.
4. Deconfigure and remove the drive as described in “Deconfiguring a Disk Drive for Removal” on page 332.



1 Model 6C3
2 Disk Drive
3 Disk Drive Release Handle



1 Model 6E3
2 Disk Drive
3 Disk Drive Release Handle

5. Press F10 to exit smitty.

Replacing or Installing a Hot-Swap Disk Drive

Attention: Before you perform the following procedure, back up the data for the drive you are removing and remove the drive from the configuration. Physically removing a hot-swap drive from the system before it has been removed from the system configuration can cause unrecoverable data corruption. Refer to “Deconfiguring a Disk Drive for Removal” on page 332.

If your system is set up to run HACMP clustering, *do not* use **Install/Configure Devices Added After IPL**. To determine the correct configuration method to use for the replacement disk, consult with your system administrator or software support representative.

Attention: The Linux operating system does not support these hot-swappable procedures. Also, Linux does not support hot-swapping any hot-swappable device. A system with Linux installed must be shut down and powered off before replacing any disk drive. Use the non-hot-swappable procedures when replacing a disk drive with the Linux operating system installed.

To replace or install a hot-swap disk drive, see the illustration on page 335 and do the following:

1. Install the disk-drive bezel as described in “Disk Drive Bezels and Fillers” on page 330.
2. Ensure the handle on the front of the disk drive is open (perpendicular to the drive).
3. Align the drive assembly so that it engages the guide rails in the bay.
4. Push the drive assembly into the bay until the drive handle engages the lock mechanism.
5. Push the disk drive handle in until it locks. The LED on the disk drive will turn on.
6. Configure the disk drive as described in “Configuring a Disk Drive after Replacement or Installation” on page 332.
7. On a Model 6C3, close the rack doors.

   On a Model 6E3, close the bezel door.

Removing a Hot-Swap Disk Drive with the System Power Off

A hot-swap disk drive is removed from the system with the system power off when the system is running Linux or a system failure has occurred.

Attention: Before you perform the following procedure, if your system is operational, back up the data for the drive you are removing, and ensure that the drive has been removed from the configuration. Physically removing a hot-swap drive from the system before it has been removed from the system configuration can cause unrecoverable data corruption. Refer to “Deconfiguring a Disk Drive for Removal” on page 332.

To remove a hot-swap disk drive with the system power off, see the illustration on page 335 and do the following:

1. If the system is operational, stop the system as described in “Stopping the System” on page 282. If the system is not operational, go to step 3.
2. Ensure all data on the disk has been saved.
3. On a Model 6C3, open the rack front door.

   On a Model 6E3, open the front bezel door.
4. Locate the hot-swap disk drive you want to remove. Note the disk drive’s bay location so that it can be replaced in the same slot.
5. Remove the disk drive by placing the disk drive release handle into the open position (perpendicular to the drive) and pulling the hot-swap disk drive away from the bay. See the illustration on page 335

Replacing or Installing a Hot-Swap Disk Drive with the System Power Off

A hot-swap disk drive is replaced or installed into the system with the system power off when the system is running Linux or a system failure has occurred.

To replace or install a hot-swap disk drive with the system power off, see the illustration on page 335 and do the following:

1. Install the disk-drive bezel as described in “Disk Drive Bezels and Fillers” on page 330.
2. Ensure the handle on the front of the disk drive is open (perpendicular to the drive).
3. Align the drive assembly so that it engages the guide rails in the bay.
4. Push the drive assembly into the bay until the drive handle engages the lock mechanism.
5. Push the disk drive handle in until it locks.
6. If the system is operational, start the system as described in “Starting the System” on page 283.
7. On a Model 6C3, close the rack doors.

   On a Model 6E3, close the bezel door.

Disk Drive Backplane and Filler

The following procedures describe the removal and replacement of the disk drive backplane and filler. Before performing the following procedures, read the “Safety Notices” on page xi.

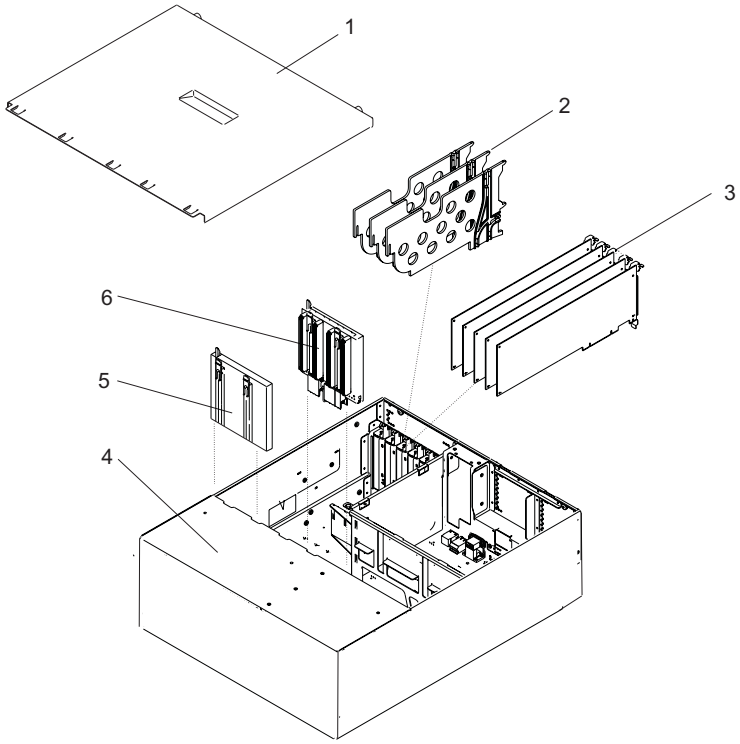
If you are servicing a Model 6E3, it is strongly recommended that the system be placed on its side, on a flat and stable surface. To avoid potential breakage, the system front foot must not be resting on the surface.

Removing the Disk Drive Backplane or Filler

To remove the disk drive backplane, do the following:

1. Stop the system as described in “Stopping the System” on page 282.
2. Disconnect the power source from the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.
3. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
4. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
5. Remove the fan tray assembly as described in “Removing the Fan Tray Assembly” on page 321.
6. Before handling any card, board, or DIMM, be sure to use your electrostatic discharge strap to minimize static-electric discharge. Refer to “Handling Static-Sensitive Devices” on page 280.
7. If you are removing the disk drive backplane behind disk drive slots 1, 2, 3, and 4, go to the next step. If you are removing the disk drive backplane or filler behind disk drive slots 5, 6, 7, and 8, do the following:
   a. Record the slot number and location of each PCI adapter.
   b. Remove and label the PCI adapter cables.
   c. Remove the PCI adapters as described in “Removing a Non-Hot-Pluggable PCI Adapter” on page 294.
   d. Remove the PCI adapter dividers.
8. Disconnect the disk drives by placing the disk drive handle into the open position (perpendicular to the drive) and pulling the hot-swap disk drive forward in, but not out of the bay. Pull the disk drive fillers forward in the bay.
9. Squeeze the blue latch tabs on the top edge of the the disk drive backplane or disk drive backplane filler and pull it upwards to free it from the connector. Tip the disk drive backplane or filler away from the chassis hooks on the wall of the chassis, and lift it out of the system.



1 Service Access Cover
2 PCI Adapter Dividers
3 PCI Adapters
4 System Unit in Service Position
5 Disk Drive Backplane Filler Panel (Shown Behind Disk Drive Slots 5, 6, 7, and 8)
6 Disk Drive Backplane (Shown Behind Disk Drive Slots 1, 2, 3, and 4)

Replacing the Disk Drive Backplane or Filler

To replace the disk drive backplane, do the following:

1. Before handling any card, board, or memory DIMM, be sure to use your electrostatic discharge strap to minimize static-electric discharge. Refer to “Handling Static-Sensitive Devices” on page 280.
2. If necessary, remove the disk drive backplane or filler from the antistatic package.
3. If necessary, remove the disk drive backplane filler from the slot in the system you wish to use.
4. Carefully grasp the disk drive backplane or filler by the top edge.
5. Insert the disk drive backplane or filler into the system chassis at an angle to the chassis hooks and align the hooks with the blue guides on the disk drive backplane.
6. Tip the disk drive backplane or filler forward onto the chassis hooks, then firmly press the disk drive backplane or filler into the connector until you feel the latch tabs lock into place.
7. Press the disk drives back into place and close the the handle. Press any disk drive fillers back into place.
8. If you are replacing the disk drive backplane behind disk drive slots 1, 2, 3, and 4, go to the next step. If you are replacing or installing the disk drive backplane behind disk drive slots 5, 6, 7, and 8, do the following:
   a. Replace the PCI adapter dividers.
   b. Replace the PCI adapters as described in “Replacing or Installing a Non-Hot-Pluggable PCI Adapter” on page 296.
   c. Reconnect all adapter cables, located at the rear of the system unit.

9. Replace the fan tray assembly as described in “Fan Tray Assembly” on page 321
10. Reconnect the power source to the system.
11. Replace the service access cover as described in “Covers” on page 288.
12. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
13. Start the system as described in “Starting the System” on page 283.

Operator Panel and Power Cable

The following procedures describe the removal and replacement of the operator panel and power cable. Before performing the following procedures, read the “Safety Notices” on page xi.

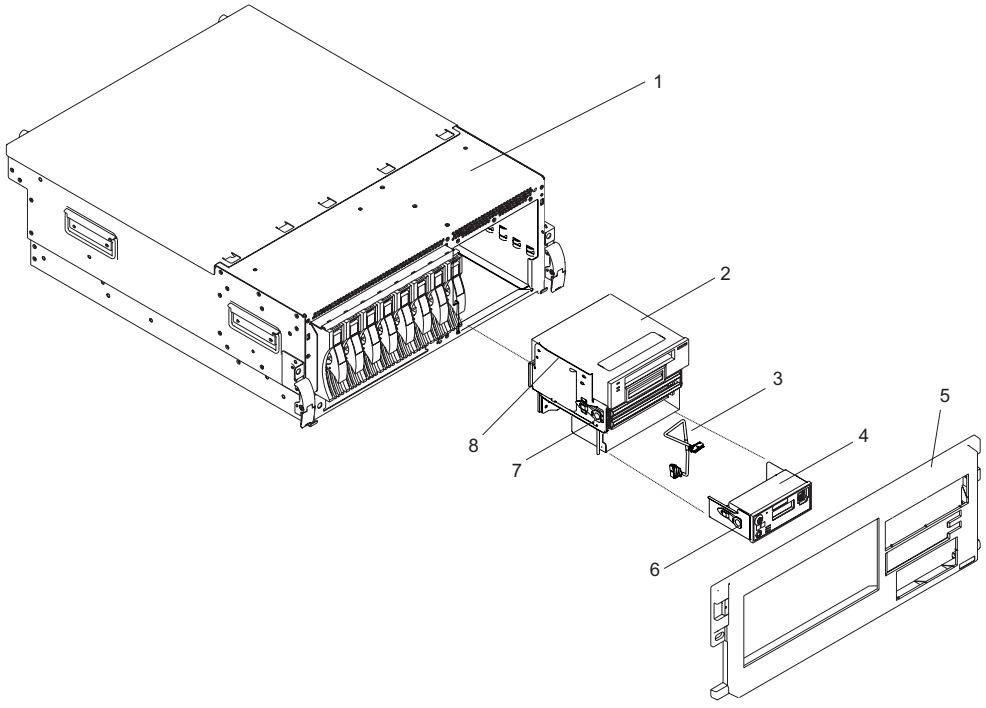
Note: If the operator panel is disconnected from the system while the system is connected to the power source, the operator panel will show a scrolling icon and will not boot when it is reconnected to the system. Ensure the system is disconnected from the power source when the operator panel is connected to the system.

Removing the Operator Panel

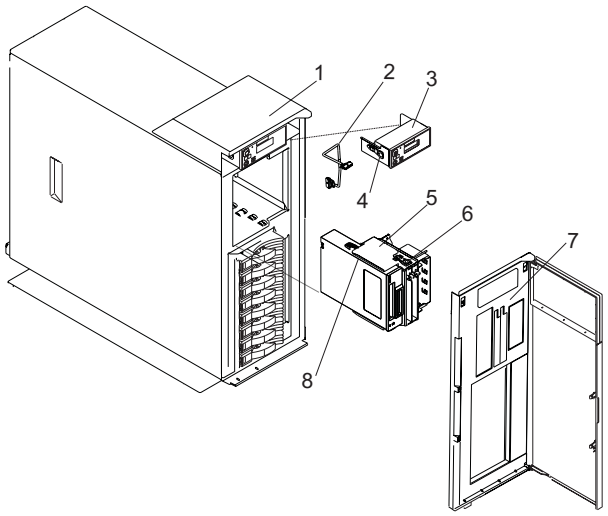
To remove the operator panel, do the following:

1. Stop the system as described in “Stopping the System” on page 282.
2. Disconnect the power source from the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.
3. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
4. Remove the front bezel as described in “Bezels” on page 291.
5. Locate the operator panel, as shown in the following illustrations.
6. Remove the operator panel by pressing the locking tabs located on either side of the panel, grasping the edges of the panel, and pulling it out of its bay.
7. Disconnect the operator panel power cable from the back of the operator panel.



1 Model 6C3
2 Operator Panel
3 Front Bezel
4 Operator Panel Locking Tabs
5 Operator Panel Power Cable



1 Model 6E3
2 Operator Panel
3 Front Bezel
4 Operator Panel Locking Tabs
5 Operator Panel Power Cable

Replacing the Operator Panel

Attention: Licensed programs frequently rely on system information that is stored in the vital product data (VPD) module on the operator panel. If you replace the operator panel, the system VPD information (for example the machine type and serial number) is restored to the new VPD module in the new operator panel. Do not attempt to move the old VPD module to the new operator panel.

To replace the operator panel, do the following:

1. Remove the new operator panel from its packaging. If there are operator panel overlays included with the new operator panel, install the appropriate overlay on the operator panel.

   Note: If you are replacing an operator panel in a Model 6C3 use the overlay that allows access to the front serial port 1 connector. If you are replacing the operator panel in a Model 6E3 use the overlay that covers the front serial port 1 connector.
2. Connect the operator panel power cable to the connector on the rear of the operator panel.
3. Carefully slide the operator panel into the operator panel bay until you feel the locking tabs lock in place.
4. Replace the front bezel as described in “Bezels” on page 291.
5. Reconnect all system power cables.
6. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
7. Start the system as described in “Starting the System” on page 283.

Removing the Operator Panel Power Cable

To remove the operator panel power cable, do the following:

1. Remove the operator panel as described in “Removing the Operator Panel” on page 341.
2. Disconnect the the operator panel power cable from the media bay. See the illustrations on page 341 and page 342. If you are servicing the Model 6E3, note how the operator panel power cable is routed through the system chassis.

3. Pull the operator panel power cable out of the system.

Replacing the Operator Panel Power Cable

To replace the operator panel power cable, do the following:

1. Place the operator panel power cable into the system. If you are servicing the Model 6E3, note how the operator panel power cable is routed through the system chassis.
2. Connect the the operator panel power cable to the media bay.
3. Replace the operator panel as described in “Replacing the Operator Panel” on page 342.

Media Bay Chassis

The following procedures describe the removal and replacement of the media bay chassis. Before performing the following procedures, read the “Safety Notices” on page xi.

Note: If the operator panel is disconnected from the system while the system is connected to the power source, the operator panel will show a scrolling icon and will not boot when it is reconnected to the system. Ensure the system is disconnected from the power source when the operator panel is connected to the system.

Removing the Media Bay Chassis

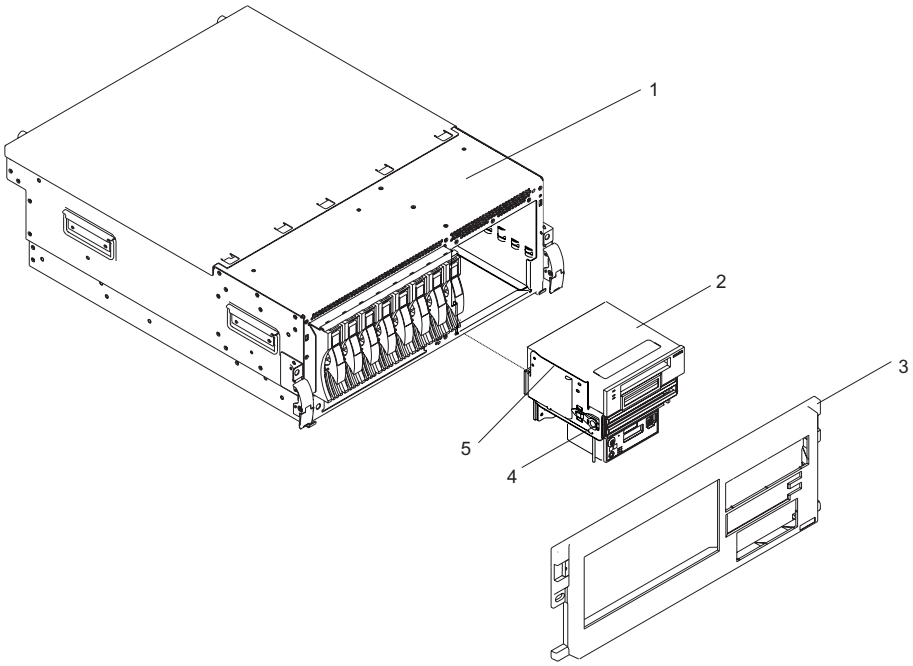
To remove the media bay chassis, do the following:

1. Stop the system as described in “Stopping the System” on page 282.
2. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
3. Disconnect the power source from the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.
4. Remove the front bezel as described in “Bezels” on page 291.
5. Press the media bay chassis latches, and pull the bay chassis out of the system chassis.

   Note: If there is a SCSI media device installed in the SCSI media-device bay, a sound cable might be connected to the rear of SCSI media device. Look for the cable as you remove the media bay from the system chassis. If the cable is present, unplug it from the rear of the SCSI media device. For more information, see “Media Devices (Diskette, CD-ROM, DVD, DVD-RAM,or Tape Drive)” on page 325.
6. If you are servicing a Model 6E3, unplug the operator panel cable from the media bay chassis as you remove the media bay chassis from the system chassis. If you are servicing a Model 6C3, the operator panel will remain in the media bay chassis as it is being removed.

The following illustration shows the Model 6C3 media bay chassis.



1 Model 6C3

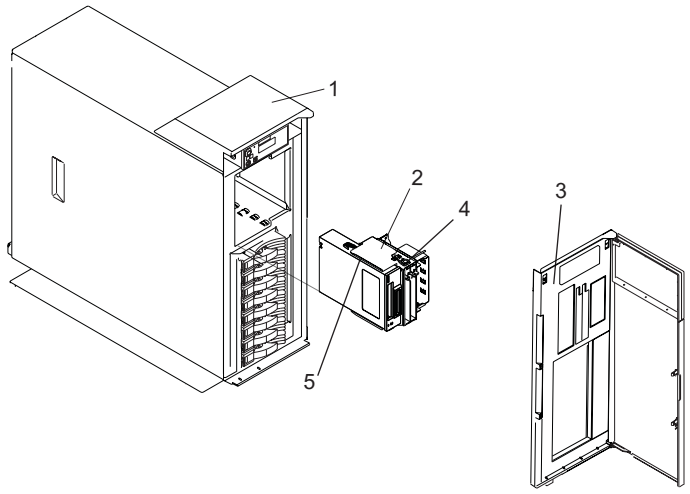
2 Media Bay Chassis (Drives Installed)

3 Front Bezel

4 Media Bay Chassis Latch (One on Each Side)

5 Guide Rails

The following illustration shows the Model 6E3 media bay chassis.



1 Model 6E3

2 Media Bay Chassis (Drives Installed)

3 Front Bezel

4 Media Bay Chassis Latch (One on Each Side)

5 Guide Rails

Replacing the Media Bay Chassis

To replace the media bay chassis, do the following:

1. If you are servicing a Model 6C3, plug the operator panel cable into the media bay chassis as you replace the media bay chassis in the system chassis.

   Note: If a sound cable is present, plug it into the appropriate connector at the rear of the SCSI media device. For more information, see “Media Devices (Diskette, CD-ROM, DVD, DVD-RAM,or Tape Drive)” on page 325.
2. Align the media bay chassis with the chassis opening and press into place until you feel the latches lock.
3. Replace the front bezel as described in “Bezels” on page 291.
4. Reconnect all system power cables.
5. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
6. Start the system as described in “Starting the System” on page 283.

Power Supply

The following procedures describe the removal, replacement, and installation of the power supply. This system can have up to two power supplies. The system power can remain on under the following conditions:

- When installing a second power supply.
- When one of the two power supplies present in the system is replaced.

Before performing the following procedures, read the “Safety Notices” on page xi.

Use one of the following procedures to remove, replace, or install a power supply:

- If you are installing an option that requires removal of the power supplies, go to “Removing a Power Supply with the System Power Off.”
- If you are replacing the primary power supply, and it is the only power supply present in the system, go to “Removing a Power Supply with the System Power Off.”
- If you are installing a second power supply, or replacing one of two power supplies present in the system, go to “Installing or Replacing a Power Supply with the System Power On” on page 351.

DANGER

Do not attempt to open the covers of the power supply. Power supplies are not serviceable and are to be replaced as a unit.
D02

Power Supply LEDs

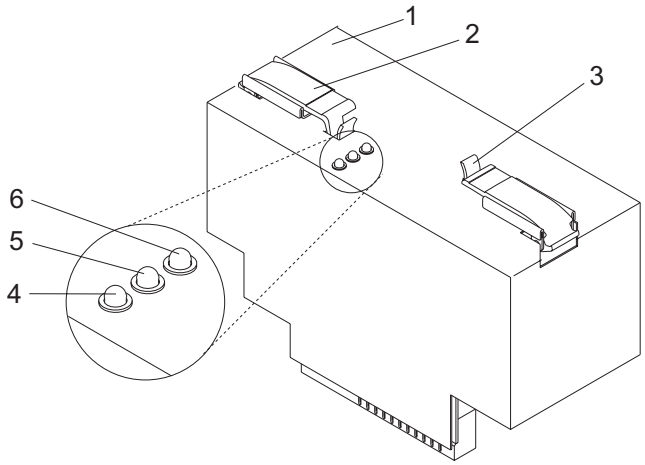
The power supply has three LEDs; two green LEDs (ac power good and dc power good), and one amber LED, which indicate the power supply status. If both of the green LEDs are on solid (not blinking) and the amber LED is off, then the power supply is operating correctly. If the ac power good LED is on, the dc power good LED is blinking, and the amber LED is off, then the system is turned off, but the power supply is still connected to the power source. If the amber LED is active, then the power supply is not operating correctly.

Removing a Power Supply with the System Power Off

Before performing the following procedure, read and understand all of the safety notices beginning with “Safety Notices” on page xi.

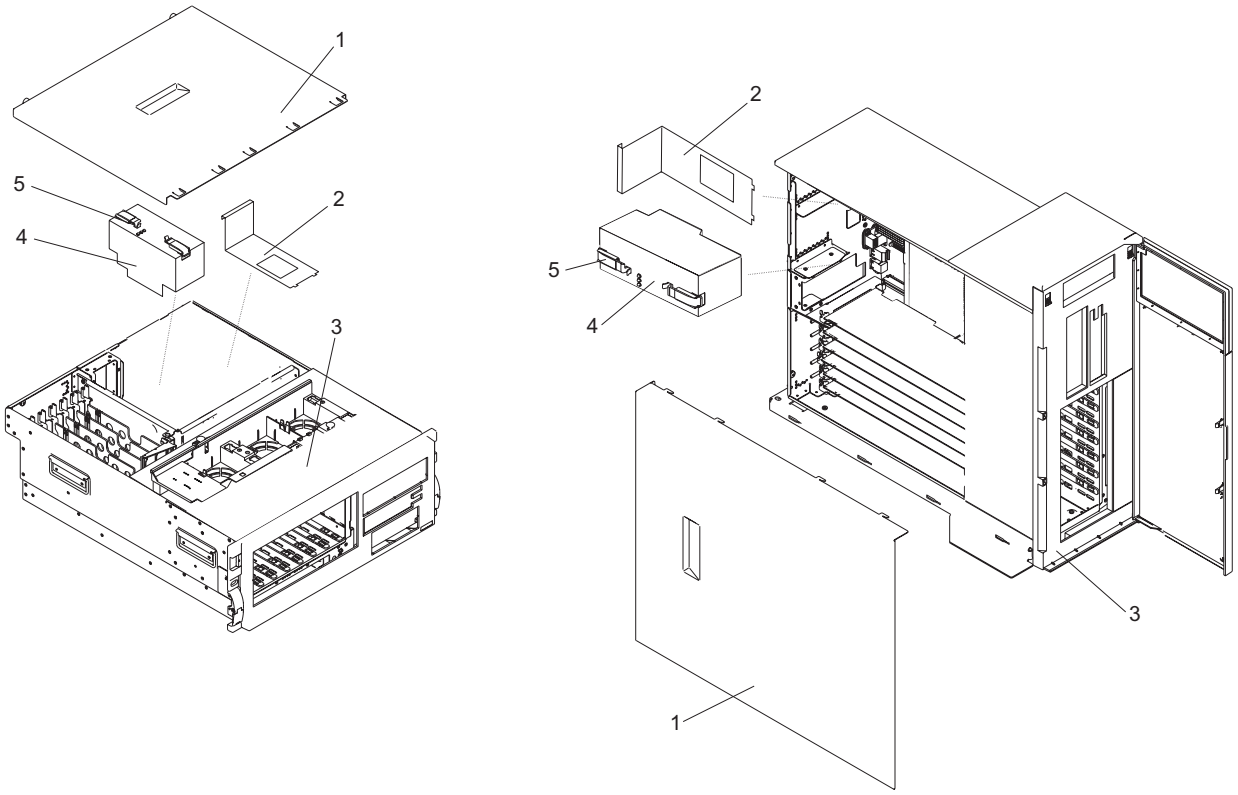
To remove a power supply with the system power off, do the following:

1. If necessary, stop the system as described in “Stopping the System” on page 282.
2. On a Model 6C3, open the rear rack door.
3. Disconnect the power cable from the rear of the power supply you want to remove.
4. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
5. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
6. Wait at least 10 seconds before performing the next step.
7. Grasp the ends of the power supply handles, and press the retractable spring-activated portion of each handle. This action releases the spring latch located on the bottom side of each handle. See the following illustration.



1 Power supply
2 Power supply handle (2)
3 Spring Latch (2)
4 Fault LED (Amber)
5 DC Good LED (Green)
6 AC Good LED (Green)

8. Lift the power supply release handles until they are perpendicular (90 degrees) to the top of the power supply. By placing the handles perpendicular to the top of the power supply, the base or hinged portion of each handle acts as a cam and helps pry the power supply from its connector located on the system backplane.



1 Service Access Cover
2 Power Supply Filler Panel
3 System
4 Power Supply #1 (Primary)
5 Power Supply Release Handle

9. After the power supply is released from its connector, pull the power supply straight out from the system.

Replacing a Power Supply with the System Power Off

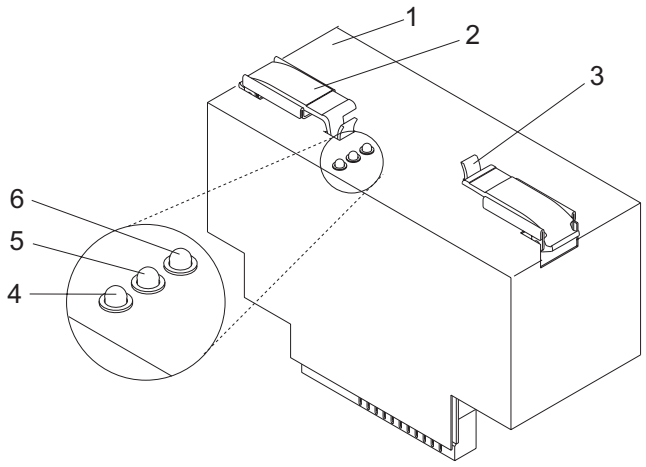
Before performing the following procedure, read and understand all of the safety notices beginning with “Safety Notices” on page xi.

Notes:

1. Do not connect the power cables to the power source until you are instructed to do so.
2. During normal operation, the secondary power-supply bay must have either a power supply or filler panel installed for proper cooling.

To replace a power supply, do the following:

1. Ensure the system is in the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
2. Ensure the service access cover has been removed as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
3. Grasp the power supply handles located on top of the new power supply. Pivot the power supply handles upward to 90 degrees. This action puts the handle cams into the correct position to help seat the power supply into its connector.
4. Carefully insert the new power supply into the power supply bay.
5. Lower the power supply handles, carefully pressing the power supply into the connector. The spring latch located on the underside of each handle will snap into place, indicating that the power supply is seated correctly and locked into position.



1 Power supply
2 Power supply handle (2)
3 Spring Latch (2)
4 Fault LED (Amber)
5 DC Good LED (Green)
6 AC Good LED (Green)

6. Reconnect the power cable at the rear of the power supply.
7. Note the state of the LEDs on the top of the power supply. If the LEDs indicate the power supply is operating normally, continue to the next step. If not, remove the power supply from the system and repeat the procedure starting with step 3. If, after repeating the procedure, the power supply in not operating normally, contact your service representative.
8. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288 or “Replacing the Model 6E3 Service Access Cover” on page 289.

   If you are working on a Model 6E3, go to step 10 on page 351.

   If you are working on a Model 6C3, continue to the next step.
9. Ensure the system cables are routed through the cable-management arm correctly.

10. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
11. Start the system as described in “Starting the System” on page 283.

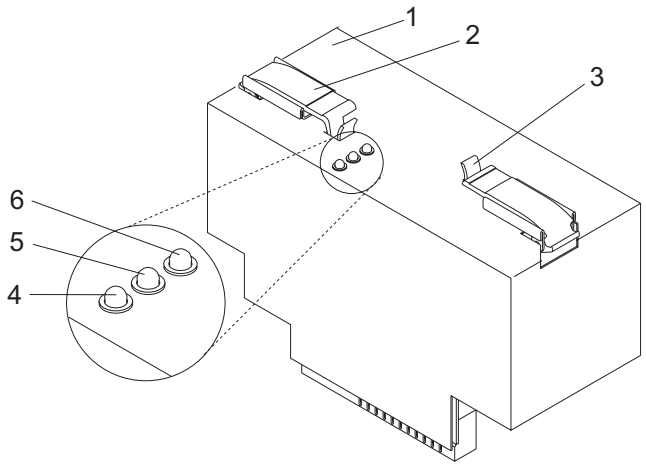
Installing or Replacing a Power Supply with the System Power On

The system power can remain on when a second power supply installed or when one of the two power supplies present in the system is replaced.

To install a second power supply, or to replace a failing power supply when two are present in the system, do the following:

1. On a Model 6C3, open the rear rack door.
2. If a failing power supply is present, disconnect the power cable from the failing power supply at the rear of the system.
3. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
4. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
5. Ensure the power supply bay is empty by doing one of the following:
   a. Remove the power supply filler by grasping the handle and pulling the filler inward and then up and out of the system.
   b. Remove a failing power supply by doing the following:
      1) Grasp the ends of the power supply handles, and press the retractable spring-activated portion of each handle. This action releases the spring latch located on the bottom side of each handle. See the following illustration.
      2) Lift the power supply release handles until they are perpendicular (90 degrees) to the top of the power supply. By placing the handles perpendicular to the top of the power supply, the base or hinged portion of each handle acts as a cam and helps pry the power supply from its connector located on the system backplane.
      3) After the power supply is released from its connector, pull the power supply straight out from the system.
6. Grasp the power supply handles located on top of the new power supply. Pivot the power supply handles upward to 90 degrees. This action puts the handle cams into the correct position to help seat the power supply into its connector.
7. Carefully insert the new power supply into the power supply bay.

8. Lower the power supply handles, carefully pressing the power supply into the connector. The spring latch located on the underside of each handle will snap into place, indicating that the power supply is seated correctly and locked into position.



1 Power supply
2 Power supply handle (2)
3 Spring Latch (2)
4 Fault LED (Amber)
5 DC Good LED (Green)
6 AC Good LED (Green)

9. If you are installing a second power supply option, plug the second power cable into the rear of the new power supply.
10. Connect the power source to the system. If you have just replaced a power supply, reconnect the power cable to the new power supply.
11. Note the state of the LEDs on the top of the power supply. If the LEDs indicate the power supply is operating normally, continue to the next step. If not, remove the power supply from the system and repeat the procedure starting with step 7 on page 351. If, after repeating the procedure, the power supply in not operating normally, contact your service representative.
12. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288 or “Replacing the Model 6E3 Service Access Cover” on page 289. If you are servicing a Model 6E3, go to step 14.

    If you are servicing a Model 6C3, continue to the next step.
13. Route the cables through the cable-management arm.
14. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
15. Reconnect the cables at the rear of the system.
16. On a Model 6C3, close the rear rack door.
17. Start the system as described in “Starting the System” on page 283.

Memory DIMMs

The following procedures describe the removal, replacement, and installation of memory DIMMs. Before performing the following procedures, read the “Safety Notices” on page xi.

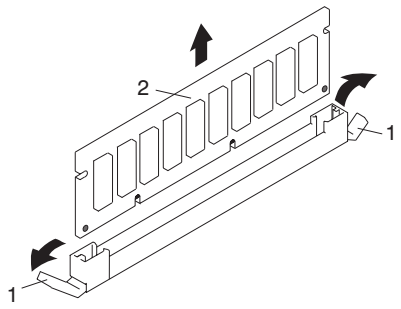
Removing Memory DIMMs

To remove the memory DIMMs, do the following:

1. Using the procedures in Chapter 12, “Component and Attention LEDs,” on page 387, locate the memory DIMMs, and determine which DIMM you want to remove.

   Attention: To prevent damage to the memory DIMM and the memory DIMM connectors, open or close the retention latches at the same time.
2. Stop the system as described in “Stopping the System” on page 282.
3. Disconnect the power source from the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.
4. If necessary to access DIMM positions on the system backplane, disconnect the cables from the power supplies or service processor assembly at the rear of the system.
5. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
6. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
7. Remove the fan tray assembly as described in “Removing the Fan Tray Assembly” on page 321.
8. If necessary to access DIMM positions on the system backplane, remove the power supply and power supply filler (or both power supplies if a secondary supply is installed), as described in “Removing a Power Supply with the System Power Off” on page 347.
9. If necessary to access DIMMs on the system backplane, remove the service processor assembly as described in “Service Processor Assembly” on page 312.
10. Before handling any card, board, or memory DIMM, touch any metal surface of the chassis with one hand to minimize static electricity discharge. Refer to “Handling Static-Sensitive Devices” on page 280.
11. Remove the memory DIMM by pushing the tabs out and then down. The tabs’ lever action forces the memory DIMM out of the connector.
12. Pull the memory DIMM out of the connector as shown in the following illustration.



1 Connector Tabs (unlocked position)
2 Memory DIMM

Replacing or Installing Memory DIMMs

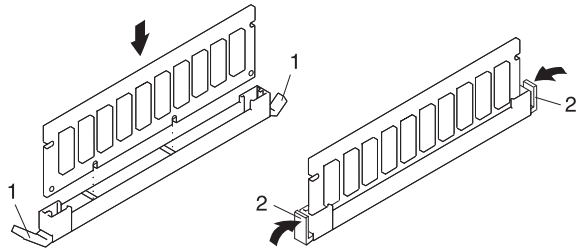
To replace a memory DIMM, do the following:

1. Before handling any card, board, or memory DIMM, touch any metal surface of the chassis with one hand to minimize static electricity discharge. Refer to “Handling Static-Sensitive Devices” on page 280.
2. If necessary, remove the memory DIMM from its antistatic package.
3. Ensure that the connector locking tabs are pushed out in the unlocked position before installing a new memory DIMM, as shown in the following illustration.

   Notes:

   1. Memory DIMMs must be installed in quads (groups of 4) and in the correct slots. The only two valid slot combinations that you can use are 2, 4, 5, and 7 OR 1, 3, 6, and 8. See the illustration in “Memory DIMM Locations” on page 17.
   2. Memory DIMMs are keyed to prevent a DIMM from being installed improperly. Note the locations of the key tabs within the DIMMS connector before attempting to install the DIMM.
4. Carefully grasp the memory DIMM along two edges and align the connector.
5. Insert the memory card firmly into the connector.
6. Secure the memory DIMM with the locking tabs located at each end of the DIMM connector, as shown in the following illustration.

   Note: Memory DIMMs must be installed in quads (groups of 4) and in the correct slot. The only two valid slot combinations that you can use are 1, 3, 6, and 8 AND 2, 4, 5, and 7. See the illustration in “Memory DIMM Locations” on page 17.



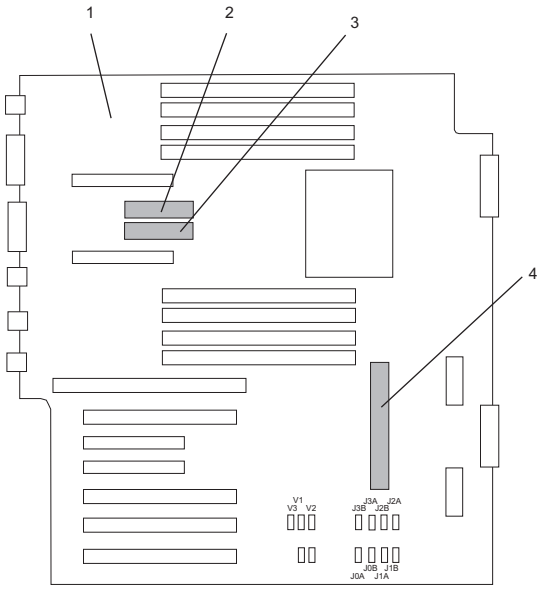
1 Locking Tabs (unlocked position)
2 Locking Tabs (locked position)

7. Replace the service processor assembly as described in “Service Processor Assembly” on page 312.
8. Replace the power supply and the power supply filler (or both power supplies if a secondary supply is installed), as described in “Replacing a Power Supply with the System Power Off” on page 350.
9. Replace the fan tray assembly as described in “Replacing the Fan Tray Assembly” on page 323.
10. Replace the service access cover as described in “Replacing the Model 6C3 Service Access Cover” on page 288.
11. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
12. Reconnect all power and signal cables to their respective connectors.
13. Start the system as described in “Starting the System” on page 283.

Voltage Regulator Modules

The following procedures describe the removal and replacement of the voltage regulator modules. Before performing the following procedures, read the “Safety Notices” on page xi.

The system backplane for the Model 6C3 and Model 6E3 contains three voltage regulator modules: a 1.2V VRM, a 2.5V VRM, and a 1.8V VRM. See the following figure for the location of each module.



1 System Backplane
2 1.8V Voltage Regulator Module
3 2.5V Voltage Regulator Module
4 1.2V Voltage Regulator Module

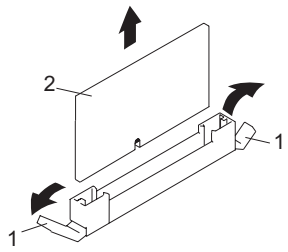
Removing Voltage Regulator Modules

To remove a voltage regulator module, do the following:

1. Shut down the system as described in “Stopping the System” on page 282.
2. Disconnect the power source from the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.
3. If you are removing the 1.8V or 2.5V module, disconnect the power cables from the primary power supply and secondary power supply if present.
4. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
5. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
6. Before handling any card, board, or memory DIMM, be sure to use your electrostatic discharge strap to minimize static-electric discharge. Refer to “Handling Static-Sensitive Devices” on page 280.
7. To access the voltage regulator module, do one of the following:
   a. If you are removing the 1.8V or 2.5V module, remove the primary power supply and secondary power supply or power supply filler as described in “Removing a Power Supply with the System Power Off” on page 347.
   b. If you are removing the 1.2V module, remove the fan tray assembly as described in “Removing the Fan Tray Assembly” on page 321.

8. Locate the voltage regulator module you wish to remove.
9. Remove the voltage regulator module by pushing the connector tabs out and then down. The tabs act as cams, forcing the voltage regulator module out of the connector.
10. Pull the voltage regulator module out of the connector as shown in the following illustration.

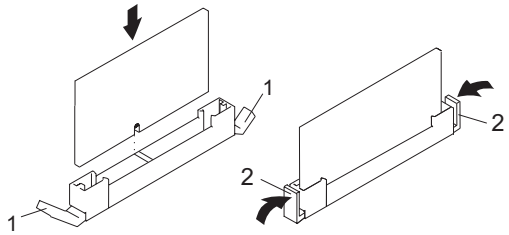


1 Connector Tabs (unlocked position)
2 Voltage Regulator Module

Replacing Voltage Regulator Modules

To replace a voltage regulator module, do the following

1. Before handling any card, board, or memory DIMM, touch any metal surface of the chassis with one hand to minimize static electricity discharge. Refer to “Handling Static-Sensitive Devices” on page 280.
2. If necessary, remove the voltage regulator module from its antistatic package.
3. Ensure that the connector tabs are pushed out in the unlocked position before installing a new voltage regulator module, as shown in the following illustration.
4. Carefully grasp the voltage regulator module along two edges and align it with the connector.
5. Insert the voltage regulator module into the connector.
6. Secure the voltage regulator module with the connector tabs located at each end of the module connector, as shown in the following illustration.



1 Connector Tabs (unlocked position)
2 Connector Tabs (locked position)

7. Do one of the following:
   a. If you removed the fan tray assembly, replace it as described in “Replacing the Fan Tray Assembly” on page 323.
   b. If you removed the primary power supply and secondary power supply or power supply filler, replace them as described in “Replacing a Power Supply with the System Power Off” on page 350.
8. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
9. If necessary, reconnect the system power cables.
10. Reconnect the system to the power supply.
11. Start the system as described in “Starting the System” on page 283.

System Backplane

The following procedures describe the removal and replacement of the system backplane. Before performing the following procedures, read the “Safety Notices” on page xi.

If you are servicing a Model 6C3, it is strongly recommended that the system drawer be removed from the rack. If you are servicing a Model 6E3, it is strongly recommended that the system be placed on its side, on a flat and stable surface. To avoid potential breakage, the system front foot must not be resting on the surface.

Removing the System Backplane

Attention: Before you remove or disconnect any components, note where they are connected or installed in system.

To remove the system backplane, do the following:

1. Shut down the system as described in “Stopping the System” on page 282.
2. Disconnect the power source from the system.

   Note: This system may be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.
3. Label and disconnect all other cables located at the rear of the system.
4. Place the system into the service position as described in “Placing the Model 6C3 into the Service Position” on page 284 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
5. Remove the service access cover as described in “Removing the Model 6C3 Service Access Cover” on page 288 or “Removing the Model 6E3 Service Access Cover” on page 289.
6. Before handling any card, board, or memory DIMM, be sure to use your electrostatic discharge strap to minimize static-electric discharge. Refer to “Handling Static-Sensitive Devices” on page 280.
7. Record the slot number and location of each adapter being removed.
8. Remove the PCI adapters as described in “Removing a Non-Hot-Pluggable PCI Adapter” on page 294.
9. Remove the PCI adapter dividers as described in “Removing a PCI Adapter Divider” on page 309.
10. Remove both power supplies, if two are present in the system, or remove the power supply and filler as described in “Removing a Power Supply with the System Power Off” on page 347.
11. Remove the service processor assembly as described in “Service Processor Assembly” on page 312.
12. Remove the media bay chassis as described in “Removing the Media Bay Chassis” on page 344.

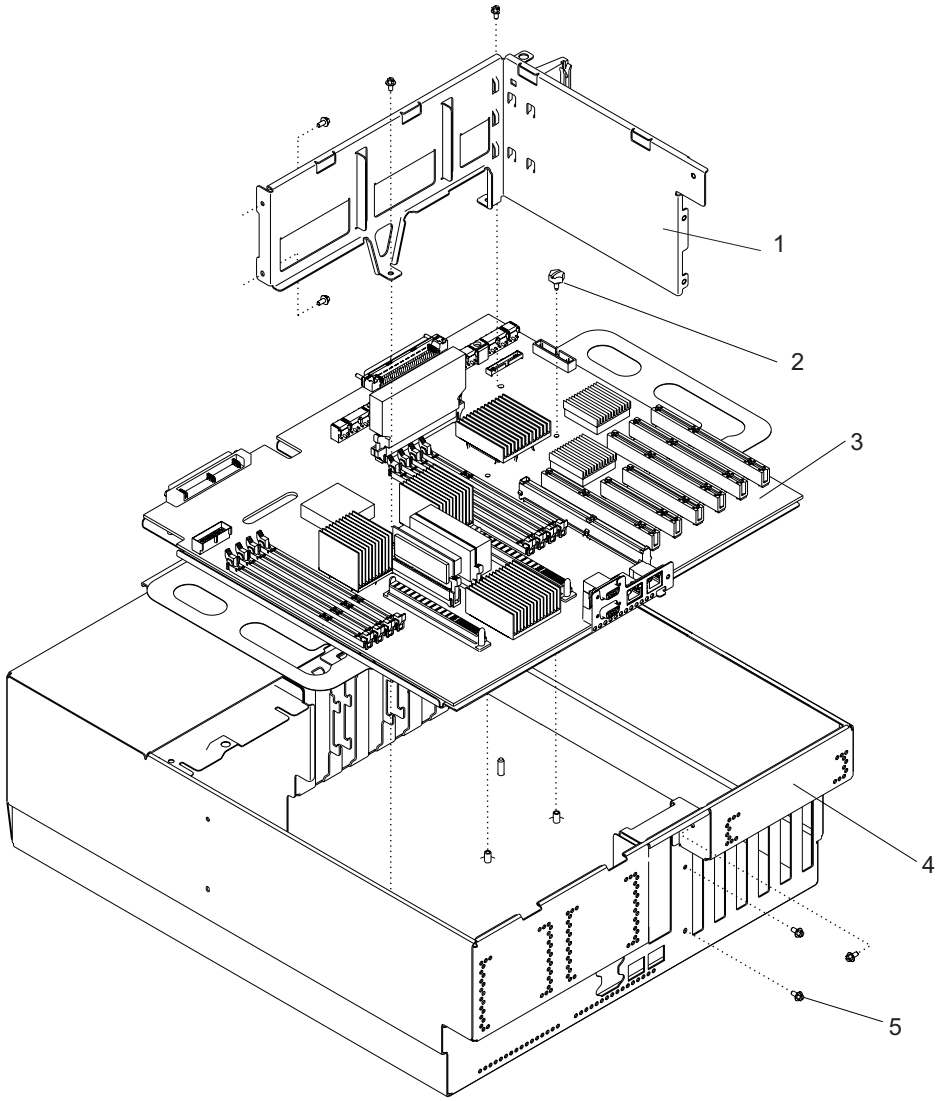
    Note: For the Model 6E3, unplug the operator panel from the media bay chassis as you remove it. For the Model 6C3, the operator panel will remain in the media bay chassis.
13. Remove the disk drives as described in “Hot-Swap Disk Drives” on page 332.
14. Remove the fan tray as described in “Removing the Fan Tray Assembly” on page 321.
15. Remove the disk drive backplane as described in “Removing the Disk Drive Backplane or Filler” on page 338.
16. Remove the memory DIMMs as described in “Removing Memory DIMMs” on page 354.
17. Remove the the voltage regulator modules as described in “Removing Voltage Regulator Modules” on page 356.
18. Remove the 7 hex-head screws holding the power supply bay chassis bracket as shown in the following figure. Remove the power supply bay chassis bracket.
19. Remove the blue thumbscrew holding the system backplane to the chassis.

Note: The blue thumbscrew is the only screw to be removed in order to release the backplane from the chassis. No other screws should be removed from the backplane.

20. To remove the system backplane from the chassis, lift it by the attached mylar handles located on the sides of the backplane. Pull the system backplane towards the front of the system. Lift the system backplane up and out of the system chassis.

    Note: Care should be taken when removing the system backplane. Do not lift the system backplane by any of the attached modules.

21. Place the system backplane in a safe place.



1 Power Supply Bay Chassis Bracket
2 Blue Thumbscrew
3 System Backplane (Shown with Voltage Regulator Modules Attached)
4 System Chassis (Shown in Service Position)
5 Hex-Head Screw (7)

Replacing the System Backplane

To replace the system backplane (system board), do the following:

1. Before handling any card, board, or memory DIMM, be sure to use your electrostatic discharge strap to minimize static-electric discharge. Refer to “Handling Static-Sensitive Devices” on page 280.
2. If necessary, remove the system backplane from the antistatic package.
3. Carefully grasp the system backplane by the attached mylar handles.
4. Lower the system backplane at an angle, with the rear of the backplane connecting with the system chassis first.
5. Slide the system backplane towards the rear of the system chassis, and align it with the alignment pins on the chassis floor.

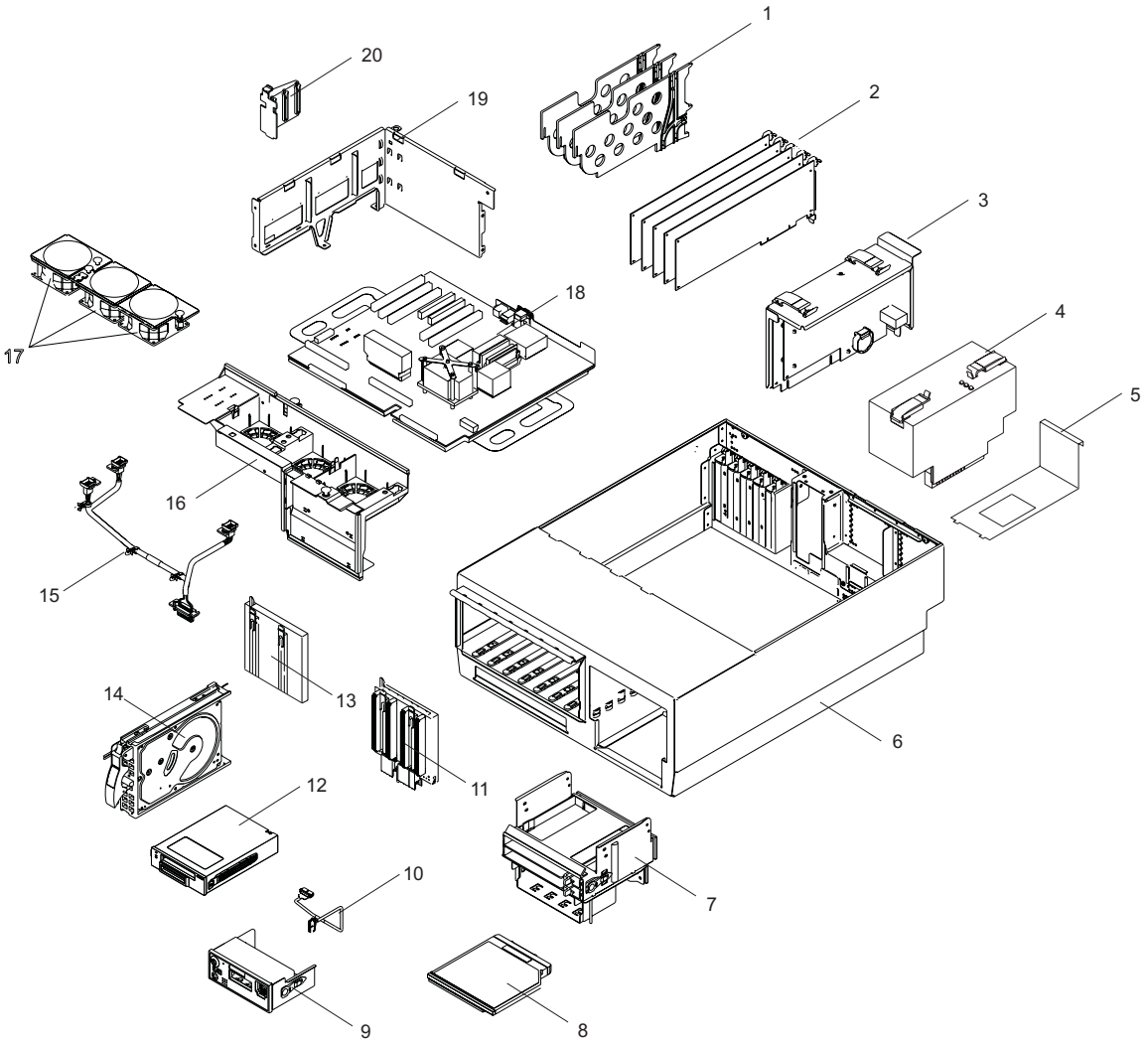
Note: Care should be taken when replacing the system backplane. Ensure that you hold the backplane by the attached mylar handles.

6. Replace the thumbscrew that secures the system backplane to the system chassis.
7. Replace the power supply bay chassis bracket. Insert and tighten the 7 hex-head screws.
8. Replace the the voltage regulator modules as described in “Replacing Voltage Regulator Modules” on page 358.
9. Replace the memory DIMMs as described in “Replacing or Installing Memory DIMMs” on page 354.
10. Replace the disk drive backplane as described in “Replacing the Disk Drive Backplane or Filler” on page 339.
11. Replace the fan tray as described in “Replacing the Fan Tray Assembly” on page 323.
12. Replace the disk drives as described in “Hot-Swap Disk Drives” on page 332.
13. Replace the media bay chassis as described in “Replacing the Media Bay Chassis” on page 345.
14. Replace the service processor assembly as described in “Service Processor Assembly” on page 312.
15. Replace both power supplies, if two were present in the system, or replace the power supply and filler as described in “Replacing a Power Supply with the System Power Off” on page 350.
16. Replace the PCI adapter dividers as described in “Replacing a PCI Adapter Divider” on page 310.
17. Replace the PCI adapters.
18. Replace the service access cover, as described in “Replacing the Model 6C3 Service Access Cover” on page 288.
19. Return the system to the operating position as described in “Returning the Model 6C3 to the Operating Position” on page 285 or “Placing the Model 6E3 into the Service and Operating Position” on page 286.
20. Reconnect all signal and power cables to the rear of the system.
21. Reconnect the power source to the system.
22. Start the system as described in “Starting the System” on page 283.
23. If you are running AIX, the **bootlist** command may need to be run while logged in as root user. This rebuilds the customized boot list. Internet protocol (IP) parameters may also need to be reentered.
24. Check the firmware level on the new backplane; see “Determining the Level of Firmware on the System” on page 254. If the firmware is down-level, down load the latest firmware from CORE or the Web (See “System Firmware Updates” on page 253).
25. Work with the system administrator to ensure that passwords, time, date, and service processor settings are restored.

Chapter 10. Parts Information

This chapter contains parts information for the pSeries 615 Model 6C3 and Model 6E3.

System Parts

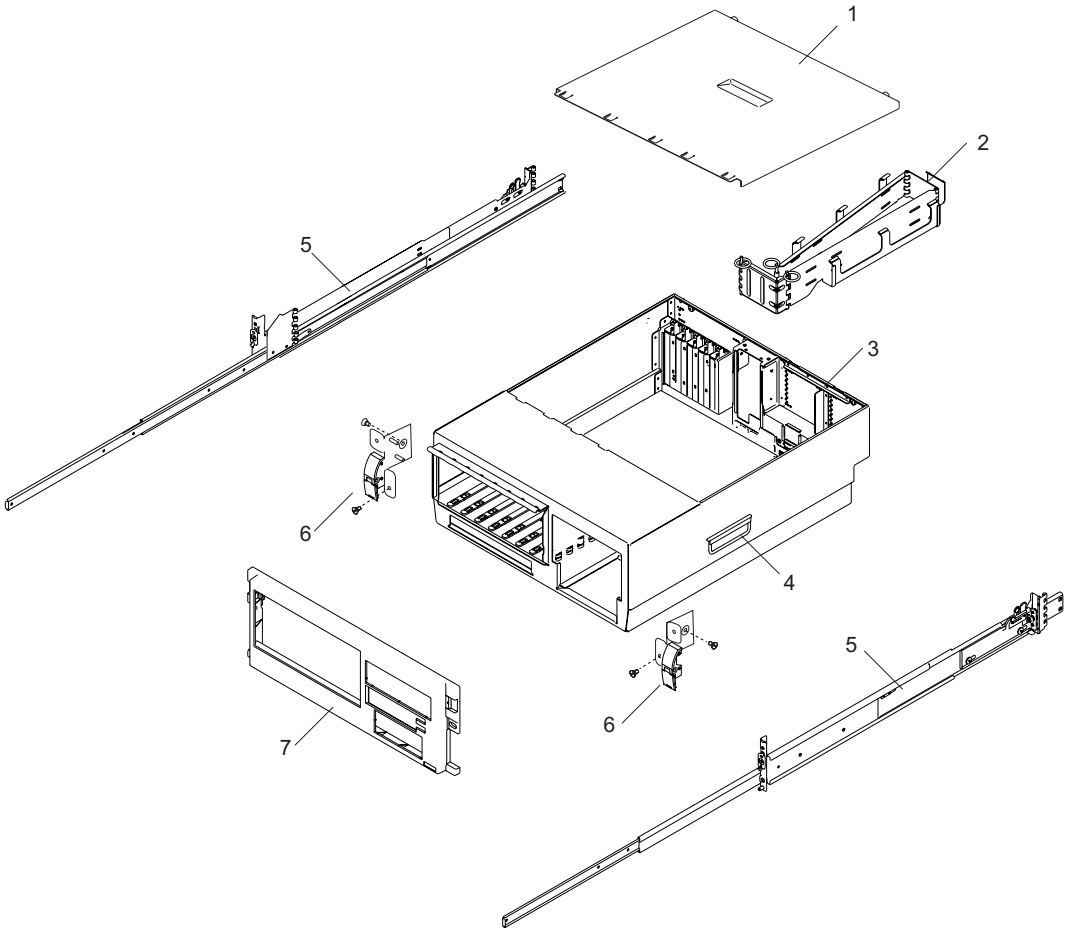


Index Number	FRU Part Number	Units Per Assembly	Description
1	53P4325	3	PCI Divider
	See note 1	Up to 4	PCI Plastic Light Pipe and Airflow Separators
	See note 1	Up to 6	PCI Card Lock
2	See note 2		PCI Adapters
3	80P2388	1	Service Processor Assembly
	16G8095	1	Battery
4	53P5617	Up to 2	AC Power Supply
	53P5617	Up to 2	AC Power Supply (Redundant Power Supply is Optional)
Not Shown	42F6841	Up to 2	AC Power Cable (Power distribution bus to AC power supply, Model 6C3 only)
5	See note 1	1	Power Supply Filler
6	See note 1	1	System Chassis assembly
	90H9196	3	Handle
7	97P2313	1	Media Bay Chassis (Media Backplane Attached)
8	See note 1		Slimline Media Device
	00P4775	Up to 2	Slimline DVD ROM
	27L4378	1	Slimline Diskette Device
	53P5867	1	Slimline Device Filler
9	97P2000	1	Operator panel
10	97P3715	1	Operator panel cable
11	00P5684	Up to 2	Disk Drive Backplane
12	See note 1	1	Optional SCSI Media Device
13	See note 1		Disk Drive Backplane Filler
14	See note 2	8	Disk drives
15	53P4483	1	Fan tray cable
16	97P2304	1	Fan tray
17	53P4612	3	Fan
	97P3153		Quiet Fan
18	See note 1	1	System backplane
	80P2408		1-way 1.2 GHz system backplane
	80P2401		2-way 1.2 GHz system backplane
	08L0358	1	System backplane screw
	53P4414	1	Card assembly gasket
	00P5765	Up to 8	256 MB DIMM
	00P5767	Up to 8	512 MB DIMM
	00P5769	Up to 8	1024 MB DIMM
	00P5771	Up to 8	1 GB DIMM
	00P5773	Up to 8	2 GB DIMM
	44H8167		DIMM Filler
	53P5621	1	1.2 V Voltage Regulator Module
	24P6892	1	1.8 V Voltage Regulator Module
	53P5623	1	2.5 V Voltage Regulator Module
19	53P3935	1	Power supply mounting
	09P3744	7	Power supply mounting screw
20	53P4521	1	PCI mounting/divider

Notes:

1. For reference only.
2. See *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* for part numbers.

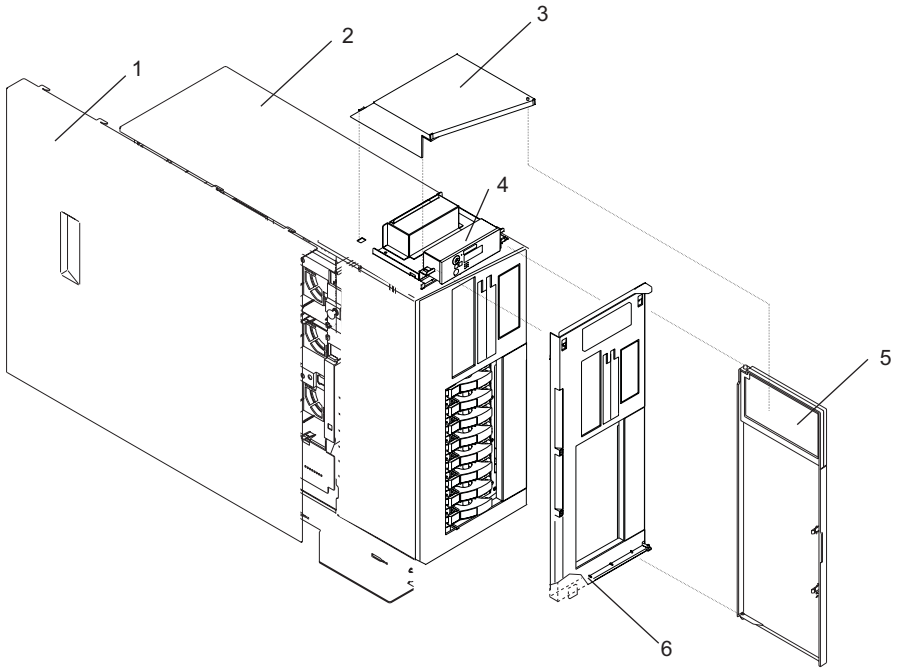
Model 6C3Parts



Index Number	FRU Part Number	Units Per Assembly	Description
1	53P4402	1	Service Access Cover
2	97P2958	1	Cable Management Arm
3	53P4606	1	System Chassis
	90H9196	3	System Handle
4		2	System Rails
	97P2529	2	Rail Kit
	97P3022		Right Rail Assembly
	97P3021		Left Rail Assembly
	7P28097		Guide Assembly
	0P25175		Slide Assembly
	97P2959		Rail Hardware
5		2	Rack Latch Bracket Assembly
	53P4517	1	Left Latch Bracket
	53P4519	1	Right Latch Bracket
6	53P4500	1	Front Cover

Note: See *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* for part numbers.

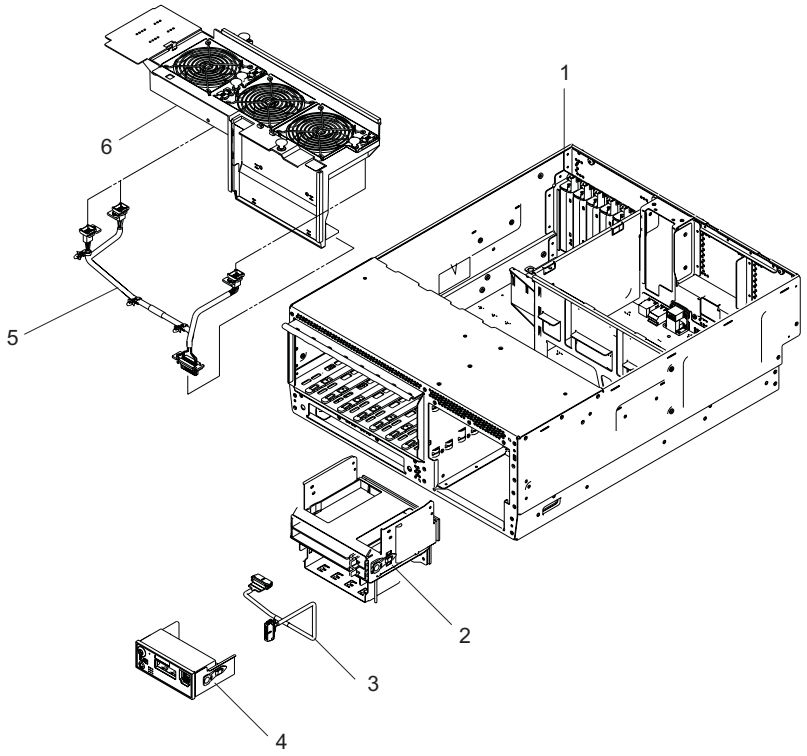
Model 6E3 Parts



Index Number	FRU Part Number	Units Per Assembly	Description
1	53P4402	1	Service Access Cover
2			Model 6E3
3	53P6139	1	Top Access Cover
4	53P6230	1	Operator Panel
5	53P6136	1	Front Bezel Door
6	53P6133	1	Front Bezel

Internal Cables

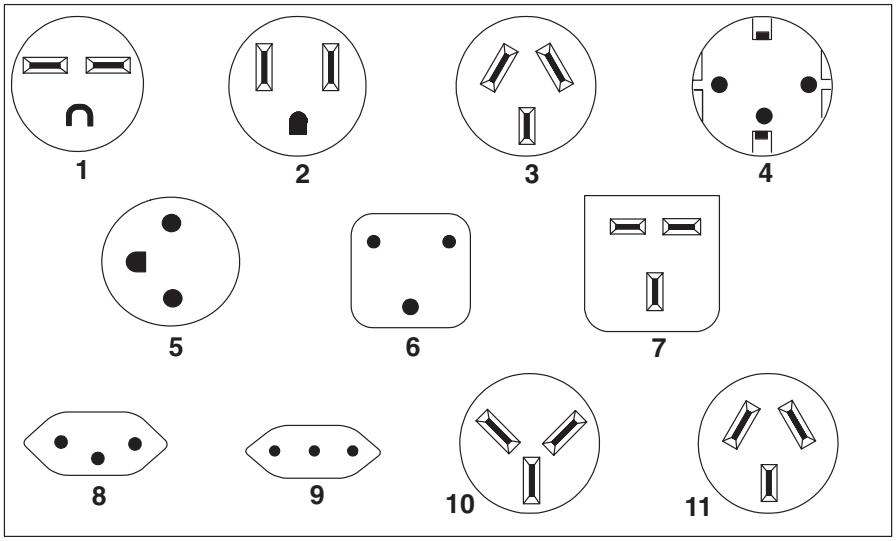
The following diagram shows the system cable connections.



Index Number	FRU Part Number	Units Per Assembly	Description
1			System Unit
2	97P2313	1	Media Bay Chassis (Media Backplane Attached)
3	53B4483	1	Operator Panel Power Cable
4	53P6230	1	Operator Panel
5	97P2342	1	Fan Cable
6	97P2304	1	Fan Tray

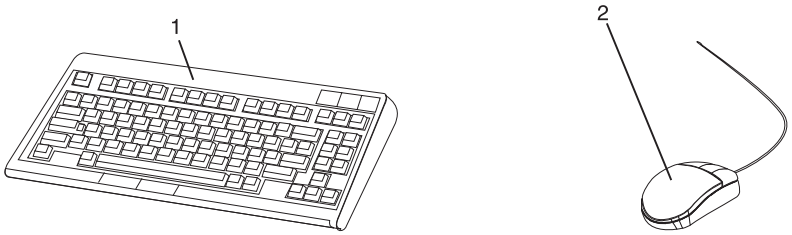
Note: See *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* for part numbers.

Power Cable



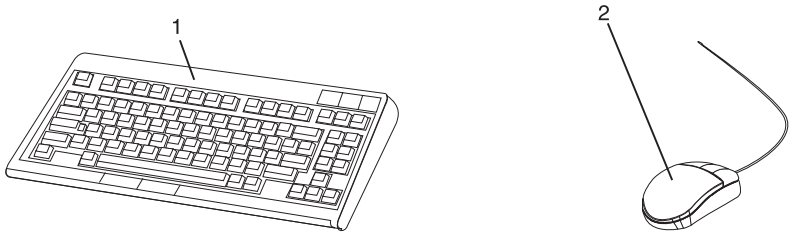
Index	Part Number	Country or Region
1	1838574	Bahamas, Barbados, Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Philippines, Taiwan, Thailand, Trinidad, Tobago, U.S.A. (except Chicago), Venezuela
2	86G7648	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Puerto Rico, Saudi Arabia, Suriname, Trinidad, Taiwan, U.S.A. (except Chicago), Venezuela
2	62X1045	Chicago, U.S.A.
3	6952311	Argentina, Australia, New Zealand
4	13F9979	Abu Dhabi, Austria, Belgium, Bulgaria, Botswana, China (Macau S.A.R), Egypt, Finland, France, Germany, Greece, Iceland, Indonesia, Korea (South), Lebanon, Luxembourg, Netherlands, Norway, Portugal, Saudi Arabia, Spain, Sudan, Sweden, Turkey, Yugoslavia
5	13F9997	Denmark
6	14F0015	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka
7	14F0033	Bahrain, Bermuda, Brunei, Channel Islands, China (Hong Kong S.A.R), Cyprus, Ghana, India, Iraq, Ireland, Jordan, Kenya, Kuwait, Malawi, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Arab Emirates (Dubai), United Kingdom, Zambia
8	14F0051	Liechtenstein, Switzerland
9	14F0069	Chile, Ethiopia, Italy
10	14F0087	Israel
11	6952291	Paraguay, Colombia, Uruguay
	42F6841	AC Power Cable, (Power distribution bus to AC power supply, Model 6C3 only)

Keyboards and Mouse (White)



Index Number	FRU Part Number	Units Per Assembly	Description
1	93H8120	1	Keyboard, 101 United States English (ID 103P)
	93H8123	1	Keyboard, 102 Spanish (ID 171)
	93H8125	1	Keyboard, 102 Arabic (ID 238)
	08L0904	1	Keyboard, 102 Belgium French (ID 120)
	08L0905	1	Keyboard, 102 Belgium (ID 120)
	08L0906	1	Keyboard, 102 Danish (ID 159)
	08L0908	1	Keyboard, 102 French (ID 189)
	08L0909	1	Keyboard, 102 German (ID 129)
	93H8134	1	Keyboard, 102 Greek (ID 319)
	93H8135	1	Keyboard, 101 Hebrew (ID 212)
	08L0911	1	Keyboard, 102 Italy (ID 142)
	08L0912	1	Keyboard, 102 Norwegian (ID 155)
	93H8143	1	Keyboard, 101 Russian (ID 443)
	08L0914	1	Keyboard, 102 Spanish (ID 172)
	08L0915	1	Keyboard, 102 Sweden/Finland (ID 153)
	08L0916	1	Keyboard, 105 Swiss F/G (ID 150)
	08L0917	1	Keyboard, 102 UK English (ID 166)
	93H8153	1	Keyboard, US English ISO9995 (ID 103P)
	93H8154	1	Keyboard, 106 Japan (ID 194)
	93H8155	1	Keyboard, 101 Chinese/US (ID 467)
	93H8156	1	Keyboard, 103 Korea (ID 413)
2	76H5084	1	Three Button Mouse

Keyboards and Mouse (Black)



Index Number	FRU Part Number	Units Per Assembly	Description
1	07L9446	1	Keyboard, 101 United States English (ID 103P)
	07L9447	1	Keyboard, 102 Canada French (ID 058)
	07L9448	1	Keyboard, 102 Canada French (ID 445)
	07L9449	1	Keyboard, 102 Spanish (ID 171)
	07L9450	1	Keyboard, 104 Brazil Portuguese (ID 275)
	07L9451	1	Keyboard, 102 Arabic (ID 238)
	07L9452	1	Keyboard, 102 Belgium French (ID 120)
	07L9453	1	Keyboard, 102 Belgium (ID 120)
	07L9454	1	Keyboard, 102 Bulgarian (ID 442)
	07L9455	1	Keyboard, 102 Czech (ID 243)
	07L9456	1	Keyboard, 102 Danish (ID 159)
	07L9457	1	Keyboard, 102 Dutch (ID 143)
	07L9458	1	Keyboard, 102 French (ID 189)
	07L9459	1	Keyboard, 102 German (ID 129)
	07L9460	1	Keyboard, 102 Greek (ID 319)
	07L9461	1	Keyboard, 101 Hebrew (ID 212)
	07L9462	1	Keyboard, 102 Hungarian (ID 208)
	07L9463	1	Keyboard, 102 Iceland (ID 197)
	07L9464	1	Keyboard, 102 Italy (ID 142)
	07L9465	1	Keyboard, 102 Norwegian (ID 155)
	07L9466	1	Keyboard, 102 Polish (ID 214)
	07L9467	1	Keyboard, 102 Portuguese (ID 163)
	07L9468	1	Keyboard, 102 Romainian (ID 446)
	07L9469	1	Keyboard, 101 Russian (ID 443)
	07L9470	1	Keyboard, 102 Serbian (ID 118)
	07L9471	1	Keyboard, 102 Slovak (ID 245)
	07L9472	1	Keyboard, 102 Spanish (ID 172)
	07L9473	1	Keyboard, 102 Sweden/Finland (ID 153)
	07L9474	1	Keyboard, 105 Swiss F/G (ID 150)
	07L9475	1	Keyboard, 102 Turkish (ID 179)
	07L9476	1	Keyboard, 102 Turkish (ID 440)
	07L9477	1	Keyboard, 102 UK English (ID 166)
	07L9478	1	Keyboard, 102 Latvia (ID 234)
	07L9479	1	Keyboard, US English ISO9995 (ID 103P)
	07L9480	1	Keyboard, 106 Japan (ID 194)
	07L9481	1	Keyboard, 101 Chinese/US (ID 467)
	07L9482	1	Keyboard, 103 Korea (ID 413)
	07L9483	1	Keyboard, 101 Thailand (ID 191)
2	08L0362	1	Three Button Mouse (Black)
	09P4455	1	Three Button Mouse (Black)

Chapter 11. SRNs for Linux

The **x** in the following group of SRNs is encoded as follows:

```
8  4  2  1
|  |  |  |
|  |  |  Replace all FRUs listed
|  |  Hot swap supported
|  Software might be the cause
Reserved
```

Note: Some SRNs in this chapter may have 4 rather than 3 digits after the dash (-).

Use the physical location codes and FRU numbers listed on the diagnostics Problem Report Screen.Failing Function Codes (FFCs) are not used in this group of SRNs. For more detailed information refer to “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
651-88x	The CEC or SPCN reported an error. Action: Refer to the entry MAP in this system unit’s system service guide, with the 8 digit error and location codes, for the necessary repair action. If the 8 digit error and location codes were NOT reported, then call support.
651-89x	The CEC or SPCN reported an error. Action: Refer to the entry MAP in this system unit’s system service guide, with the 8 digit error and location codes, for the necessary repair action. If the 8 digit error and location codes were NOT reported, then call support.
652-88x	The CEC or SPCN reported a non-critical error. Action: Schedule deferred maintenance. Refer to the entry MAP in this system unit’s system service guide, with the 8 digit error and location codes, for the necessary repair action. If the 8 digit error and location codes were NOT reported, then call support.
652-89x	The CEC or SPCN reported a non-critical error. Action: Schedule deferred maintenance. Refer to the entry MAP in this system unit’s system service guide, with the 8 digit error and location codes, for the necessary repair action. If the 8 digit error and location codes were NOT reported, then call support.
A00-FF0	Description: Error log analysis is unable to determine the error. The error log indicates the following physical FRU locations as the probable causes. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A01-00x	Description: Error log analysis indicates an error detected by the CPU, but the failure could not be isolated. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A01-01x	Description: CPU internal error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A01-02x	Description: CPU internal cache or cache controller error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A01-03x	Description: External cache parity or multi-bit ECC error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A01-04x	Description: External cache ECC single-bit error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A01-05x	Description: System bus time-out error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A01-06x	Description: Time-out error waiting for I/O. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A01-07x	Description: System bus parity error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A01-08x	Description: System bus protocol/transfer error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-00x	Description: Error log analysis indicates an error detected by the memory controller, but the failure could not be isolated. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-01x	Description: Uncorrectable Memory Error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-02x	Description: ECC correctable error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-03x	Description: Correctable error threshold exceeded. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-04x	Description: Memory Control subsystem internal error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-05x	Description: Memory Address Error (invalid address or access attempt). Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-06x	Description: Memory Data error (Bad data going to memory). Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-07x	Description: Memory bus/switch internal error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-08x	Description: Memory time-out error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-09x	Description: System bus parity error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-10x	Description: System bus time-out error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-11x	Description: System bus protocol/transfer error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-12x	Description: I/O Host Bridge time-out error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-13x	Description: I/O Host Bridge address/data parity error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-15x	Description: System support function error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A02-16x	Description: System bus internal hardware/switch error.
A03-00x	Description: Error log analysis indicates an error detected by the I/O device, but the failure could not be isolated. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-01x	Description: I/O Bus Address parity error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-02x	Description: I/O Bus Data parity error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A03-03x	Description: I/O bridge/device time-out, access or other error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-04x	Description: I/O bridge/device internal error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-05x	Description: I/O Error on non-PCI bus. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-06x	Description: Mezzanine bus address parity error.
A03-07x	Description: System bus address parity error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-08x	Description: Mezzanine bus data parity error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-09x	Description: System bus data parity error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-10x	Description: Mezzanine bus time-out, transfer or protocol error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-11x	Description: System bus time-out error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-12x	Description: Error on System bus. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-13x	Description: I/O Expansion bus parity error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-14x	Description: I/O Expansion bus time-out error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-15x	Description: I/O Expansion bus connection failure. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A03-16x	Description: I/O Expansion unit not in an operating state. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-00x	Description: Error log analysis indicates an environmental and power warning, but the failure could not be isolated. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-01x	Description: Sensor indicates a fan has failed. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-02x	Description: System shutdown due to a fan failure. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-03x	Description: Sensor indicates a voltage outside normal range. Action: Use “MAP 1520: Power” on page 98.
A05-04x	Description: System shutdown due to voltage outside normal range. Action: Use “MAP 1520: Power” on page 98.

Service Request Number	Description and Action
A05-05x	Description: Sensor indicates an abnormally high internal temperature. Action: Verify that: 1. The room ambient temperature is within the system operating environment. 2. There is unrestricted air flow around the system. 3. All system covers are closed. 4. There are no fan failures. If none of these problems exist, then proceed with “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-06x	Description: System shutdown due to abnormally high internal temperature. Action: Verify that: 1. The room ambient temperature is within the system operating environment. 2. There is unrestricted air flow around the system. 3. All system covers are closed. 4. There are no fan failures. If none of these problems exist, then proceed with “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-07x	Description: Sensor indicates a power supply has failed. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-08x	Description: System shutdown due to power supply failure. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-09x	Description: Sensor detected a FRU that has failed. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-10x	Description: System shutdown due to FRU that has failed. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-14x	Description: System shutdown due to power fault with an unspecified cause. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-16x	Description: System shutdown due to internal power supply failure. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-19x	Description: System shutdown due to Fan failure. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-21x	Description: System shutdown due to Over temperature condition. Action: Verify the following: • The room ambient temperature is within the system operating environment. • There is unrestricted air flow around the system. • All system covers are closed. If all conditions are met, then use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-22x	Description: System shutdown due to over temperature and fan failure. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A05-24x	Description: Power Fault specifically due to internal battery failure. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-00x	Description: Error log analysis indicates an error detected by the Service Processor, but the failure could not be isolated. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A0D-01x	**Note:** Ensure that the system IPLROS and Service Processor are at the latest firmware level before removing any parts from the system. Description: Time-out communication response from Service Processor. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-02x	Description: I/O (I2C) general bus error. **Note:** If you are servicing a 9076/Nxx system, go to the Service Processor Error Log (SVP). Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-03x	Description: Secondary I/O (I2C) general bus error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-04x	Description: Internal Service Processor memory error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-05x	Description: Service Processor error accessing special registers. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-06x	Description: Service Processor reports unknown communication error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-07x	Description: Internal service processor firmware error or incorrect version. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-08x	Description: Other internal Service Processor hardware error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-09x	Description: Service Processor error accessing Vital Product Data EEPROM. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-10x	Description: Service Processor error accessing Operator Panel. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-11x	Description: Service Processor error accessing Power Controller. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-12x	Description: Service Processor error accessing Fan Sensor. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-13x	Description: Service Processor error accessing Thermal Sensor. **Note:** If you are servicing a 9076/Nxx system, go to the Service Processor Error Log (SVP).Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-14x	Description: Service Processor error accessing Voltage Sensor. **Note:** If you are servicing a 9076/Nxx system, go to the Service Processor Error Log (SVP).Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-17x	Description: Service Processor error accessing serial port. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-18x	Description: Service Processor detected NVRAM error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-19x	Description: Service Processor error accessing Real Time Clock/Time-of-Day Clock. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-20x	Description: Service Processor error accessing scan controller/hardware. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-21x	Description: Service Processor detect error with Time-of-Day Clock backup battery. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-23x	Description: Loss of heart beat from Service Processor. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A0D-24x	Description: Service Processor detected a surveillance time-out. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-25x	Description: Power Control Network general connection failure. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-26x	Description: Power Control Network node failure. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-29x	Description: Service Processor error accessing Power Control Network. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-30x	Description: Non-supported hardware. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-31x	Description: Error detected while handling an attention/interrupt from the system hardware. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-33x	Description: Array of Logic Built in Self Test Error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-34x	Description: Wire Test Error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-35x	Description: Mainstore or Cache IPL Diagnostic Error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-36x	Description: Other IPL Diagnostic Error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-37x	Description: Clock or PLL Error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-38x	Description: Hardware Scan or Initialization Error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-39x	Description: Chip ID Verification Error. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A0D-40x	Description: FRU Presence/Detect Error (Mis-Plugged). Action: Use“MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A10-100	Description: The resource is unavailable due to an error. System is operating in degraded mode. Action: Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A10-200	Description: The resource was marked failed by the platform. The system is operating in degraded mode. Action: Schedule maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A10-210	Description: The processor has been deconfigured. The system is operating in degraded mode. Action: Schedule maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-00x	Description: A non-critical error has been detected. Error log analysis indicates an error detected by the CPU, but the failure could not be isolated. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-01x	Description: A non-critical error has been detected, a CPU internal error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-02x	Description: A non-critical error has been detected, a CPU internal cache or cache controller error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A11-03x	Description: A non-critical error has been detected, an external cache parity or multi-bit ECC error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-04x	Description: A non-critical error has been detected, an external cache ECC single-bit error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-05x	Description: A non-critical error has been detected, a system bus time-out error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-06x	Description: A non-critical error has been detected, a time-out error waiting for an I/O device. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-07x	Description: A non-critical error has been detected, a system bus parity error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-08x	Description: A non-critical error has been detected, a system bus protocol/transfer error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-50x	Description: Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error. Action: If repair is not immediately available, reboot and the resource will be deconfigured. Then operations can continue in a degraded mode. To repair use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-510	Description: Resource has been deconfigured and is no longer in use due to a trend toward an unrecoverable error. Action: The system is operating in a degraded mode. Schedule maintenance. To repair use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-520	Description: Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error. Action: Try removing the processes from the failing processor and retry the deconfiguration, use the **ha_star -C** command. An alternative is reboot, and the processor will be deconfigured. Then the system can continue in a degraded mode. To repair use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-530	Description: Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error. Run-time processor deconfiguration can be enabled to deconfigure the processor. Action: To enable run-time processor deconfiguration, use the **chdev -a cpuguard=enable -l sys0** command. Then to retry the deconfiguration, use the **ha_star -C** command. An alternative is reboot, and the processor will be deconfigured. Then the system can continue in a degraded mode. To repair use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-540	Description: Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error. Action: If repair is not immediately available, reboot and the resource will be deconfigured. Then operations can continue in a degraded mode. To repair use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A11-550	Description: Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error. Action: If repair is not immediately available, reboot and the resource will be deconfigured. Then operations can continue in a degraded mode. To repair use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A11-560	Description: Recoverable errors on a resource indicate a potential for unrecoverable errors. The resource cannot be deconfigured and is still in use. The problem may be corrected by array bit steering. Use “MAP 1235: System Array Self-Repair Problem Resolution for Linux” on page 76.
A11-570	Description: A processor has been deconfigured due to a trend toward an unrecoverable error. The system is operating in a degraded mode. The problem may be corrected by array bit steering. Use “MAP 1235: System Array Self-Repair Problem Resolution for Linux” on page 76.
A11-580	Description: Recoverable errors on a processor indicate a potential for an unrecoverable error. The resource cannot be deconfigured and is still in use. The problem may be corrected by array bit steering. Use “MAP 1235: System Array Self-Repair Problem Resolution for Linux” on page 76.
A12-00x	Description: A non-critical error has been detected. Error log analysis indicates an error detected by the memory controller, but the failure could not be isolated. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-01x	Description: A non-critical error has been detected, an uncorrectable memory error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-02x	Description: A non-critical error has been detected, an ECC correctable error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-03x	Description: A non-critical error has been detected, a correctable error threshold exceeded. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-04x	Description: A non-critical error has been detected, a memory control subsystem internal error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-05x	Description: A non-critical error has been detected, a memory address error (invalid address or access attempt). Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-06x	Description: A non-critical error has been detected, a memory data error (bad data going to memory). Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-07x	Description: A non-critical error has been detected, a memory bus/switch internal error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-08x	Description: A non-critical error has been detected, a memory time-out error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-09x	Description: A non-critical error has been detected, a system bus parity error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A12-10x	Description: A non-critical error has been detected, a system bus time-out error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-11x	Description: A non-critical error has been detected, a system bus protocol/transfer error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-12x	Description: A non-critical error has been detected, an I/O host bridge time-out error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-13x	Description: A non-critical error has been detected, a I/O host bridge address/data parity error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-15x	Description: A non-critical error has been detected, a system support function error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-16x	Description: A non-critical error has been detected, a system bus internal hardware/switch error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A12-50x	Description: Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error. Action: If repair is not immediately available, reboot and the resource will be deconfigured. Then operations can continue in a degraded mode. To repair use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-00x	Description: A non-critical error has been detected, a error log analysis indicates an error detected by the I/O device, but the failure could not be isolated. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-01x	Description: A non-critical error has been detected, an I/O bus address parity error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-02x	Description: A non-critical error has been detected, an I/O bus data parity error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-03x	Description: A non-critical error has been detected, an I/O bus time-out, access or other error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-04x	Description: A non-critical error has been detected, an I/O bridge/device internal error. Action: Schedule deferred maintenance. Use v.
A13-05x	Description: A non-critical error has been detected, an I/O error on non-PCI bus. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-06x	Description: A non-critical error has been detected, a mezzanine bus address parity error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-07x	Description: A non-critical error has been detected, a system bus address parity error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-08x	Description: A non-critical error has been detected, a mezzanine bus data parity error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A13-09x	Description: A non-critical error has been detected, a system bus data parity error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-10x	Description: A non-critical error has been detected, a mezzanine bus time-out error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-11x	Description: A non-critical error has been detected, a system bus time-out error Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-12x	Description: A non-critical error has been detected, an error on system bus. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-13x	Description: A non-critical error has been detected, an I/O expansion bus parity error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-14x	Description: A non-critical error has been detected, an I/O expansion bus time-out error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-15x	Description: A non-critical error has been detected, an I/O expansion bus connection failure. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-16x	Description: A non-critical error has been detected, an I/O expansion unit not in an operating state. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A13-50x	Description: Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error. Action: If repair is not immediately available, reboot and the resource will be deconfigured. Then operations can continue in a degraded mode. To repair use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-01x	Description: Sensor indicates a fan is turning too slowly. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-03x	Description: Sensor indicates a voltage outside normal range. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-05x	Description: Sensor indicates an abnormally high internal temperature. Action: Verify that: 1. The room ambient temperature is within the system operating environment. 2. There is unrestricted air flow around the system. 3. All system covers are closed. 4. There are no fan failures. If none of these problems exist, then proceed with “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-07x	Description: Sensor indicates a power supply has failed. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-09x	Description: Sensor indicates a FRU has failed. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-11x	Description: Sensor detected a redundant fan failure. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A15-12x	Description: Sensor detected redundant power supply failure. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-13x	Description: Sensor detected a redundant FRU that has failed. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-14x	Description: Power fault due to unspecified cause. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-16x	Description: Internal power supply failure. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-17x	Description: Internal redundant power supply failure. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-19x	Description: Fan failure. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-20x	Description: Non-critical cooling problem, loss of redundant fan. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-21x	Description: Over temperature condition. Action: Verify the following: • The room ambient temperature is within the system operating environment. • There is unrestricted air flow around the system. • All system covers are closed. If all conditions are met, then use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-22x	Description: Fan failure and Over temperature condition. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-23x	Description: Non-critical power problem, loss of redundant power supply. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-24x	Description: Power Fault specifically due to internal battery failure. Action: Schedule deferred maintainence. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A15-50x	Description: Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error. Action: If repair is not immediately available, reboot and the resource will be deconfigured. Then operations can continue in a degraded mode. To repair use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-00x	Description: A non-critical error has been detected. Error log analysis indicates an error detected by the Service Processor, but the failure could not be isolated. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-01x	**Note:** Ensure that the system IPLROS and Service Processor are at the latest firmware level before removing any parts from the system. Description: A non-critical error has been detected. Time Out communication response from Service Processor Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-02x	Description: A non-critical error has been detected, an I/O (I2C) general bus error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-03x	Description: A non-critical error has been detected, a secondary I/O (I2C) general bus error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A1D-04x	Description: A non-critical error has been detected, an internal service processor memory error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-05x	Description: A non-critical error has been detected, a service processor error accessing special registers. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-06x	Description: A non-critical error has been detected, a service processor reports unknown communication error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-07x	Description: A non-critical error has been detected,: Internal service processor firmware error or incorrect version. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-08x	Description: A non-critical error has been detected, an other internal service processor hardware error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-09x	Description: A non-critical error has been detected, a service processor error accessing vital product data EEPROM. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-10x	Description: A non-critical error has been detected, a service processor error accessing operator panel. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-11x	Description: A non-critical error has been detected, a service processor error accessing power controller. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-12x	Description: A non-critical error has been detected, a service processor error accessing fan sensor. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-13x	Description: A non-critical error has been detected, a service processor error accessing a thermal sensor. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-14x	Description: A non-critical error has been detected, a service processor error accessing voltage sensor. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-17x	Description: A non-critical error has been detected, a service processor error accessing serial port. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-18x	Description: A non-critical error has been detected, a service processor detected NVRAM error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-19x	Description: A non-critical error has been detected, a service processor error accessing real time clock/time-of-day clock. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-20x	Description: A non-critical error has been detected: Service processor error accessing scan controller/hardware. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-21x	Description: A non-critical error has been detected, a service processor detected error with time-of-day clock backup battery. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Service Request Number	Description and Action
A1D-23x	Description: A non-critical error has been detected: Loss of heart beat from Service Processor. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-24x	Description: A non-critical error has been detected, a service processor detected a surveillance time-out. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-25x	Description: A non-critical error has been detected, a power control network general connection failure. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-26x	Description: A non-critical error has been detected, a power control network node failure. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-29x	Description: A non-critical error has been detected, a service process error accessing power control network. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-30x	Description: A non-critical error has been detected: Non-supported hardware. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-31x	Description: A non-critical error has been detected: Error detected while handling an attention/interrupt from the system hardware. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-33x	Description: A non-critical error has been detected: Array of Logic Built in Self Test Error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-34x	Description: A non-critical error has been detected: Wire Test Error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-35x	Description: A non-critical error has been detected: Mainstore or Cache IPL Diagnostic Error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-36x	Description: A non-critical error has been detected: Other IPL Diagnostic Error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-37x	Description: A non-critical error has been detected: Clock or PLL Error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-38x	Description: A non-critical error has been detected: Hardware Scan or Initialization Error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-39x	Description: A non-critical error has been detected: Chip ID Verification Error. Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.
A1D-40x	Description: A non-critical error has been detected: Presence/Detect Error (Mis-Plugged). Action: Schedule deferred maintenance. Use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

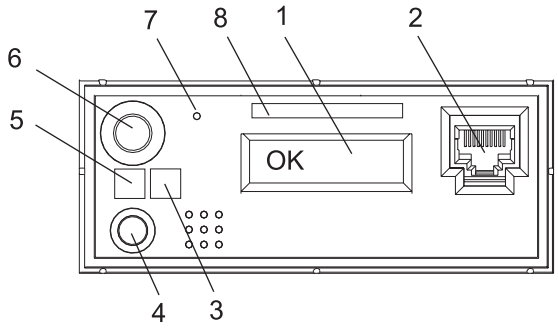
Service Request Number	Description and Action
A1D-50x	Description: Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error. Action: If repair is not immediately available, reboot and the resource will be deconfigured. Then operations can continue in a degraded mode. To repair use “MAP 1230: Linux Platform Error Problem Resolution” on page 71.

Chapter 12. Component and Attention LEDs

This chapter contains information about component and attention LEDs, which assist in identifying failing components in your system.

Operator Panel Display

If a failing component is detected in your system, an amber-colored attention LED is turned on solid (not blinking).



Number	Component Name	Component Description
1	Operator Panel Display	Displays current status of system startup, or diagnostic information in the event of a hardware problem.
2	Front Serial Connector (FS1) (Model 6C3 Only)	Serial port uses RJ-45 connector. Use to plug in external devices at the front of the system unit.
3	Attention LED	Normal State - LED is off
4	System Reset Button	Resets the system
5	Power LED	Blinking - When connected to the power source (System is in standby mode). Solid - When power button has been pressed. **Note:** There is approximately a 30-second transition period from the time the power-on button is pressed to when the power LED goes from blinking to on solid. During the transition period, you may observe the blinking intervals speed up.
6	Power-On Button	Turns the system power on and off.
7	Service Processor Reset Switch (Pinhole)	Service Personnel Use
8	Serial Number Label	Displays the system serial number

Component LEDs

Individual LEDs are located on or near the failing components. The LEDs are located either on the component itself or on the carrier of the component (for example, memory card, fan, memory module, CPU). LEDs are either green or amber.

Green LEDs indicate either of the following:

- Electrical power is present.
- Activity is occuring on a link. (The system could be sending or receiving information.)

Amber LEDs indicate a fault or identify condition. If your system or one of the components in your system has an amber LED turned on or blinking, identify the problem and take the appropriate action to restore the system to normal.

The following table identifies the location, color and status of your system component LEDs.

Unit (FRU)	LED Function	Location	Viewable Location	LED Color	OFF	ON	Blink
Power and Packaging LEDs							
System	Attention	Operator Panel and Rear	External Front and Rear	Amber	Normal	Fault	Identify
	Power[1]			Green	No ac	System On	Standby
Fan	Identify[1]	Part	Internal	Amber	Normal	N/A	Identify
Power Supply	AC Input Good[1]	Part	External	Green	No Input	Input Good	N/A
	Fault[1] /Identify	Part	External	Amber	Normal	Fault	1. Identify 2.Comm. Fault
	DC Output Good	Part	External	Green	All Pwr Sup Outs Off	All PS Outputs On	Blinj if PS micro or comm link failed
Disk Drives (DASD)	Power[1]	DASD Cage	Chassis	Green	Off	Power	N/A
	Activity[1]	DASD can	Chassis	Green	No Activity	N/A	Activity
	Activity Repl	DASD can	Chassis	Amber	Meets RPA Hot-Swap Requirement		

Unit (FRU)	LED Function	Location	Viewable Location	LED Color	OFF	ON	Blink
CARD LEDs							
PCI Slots	Power[1]	Socket	External	Green	PCI Hot-Swap Standards		
	Identify	Socket	External [3]	Amber	PCI Hot-Swap Standards		
RIO-G	Identify	Socket	External	Amber	Normal	N/A	Identify
Memory DIMMs	Identify	Memory Connector	Internal Only	Amber	Normal	N/A	Identify
System Backplane	Identify	Planar	Internal Only	Amber	Normal	N/A	Identify
DASD Backplane	Identify	Card	Internal	Amber	Normal	N/A	Identify
Media Backplane	Identify	Card	Internal	Amber	Normal	N/A	Identify
Service Processor Card	Identify	Card	Internal	Amber	Normal	N/A	Identify
Voltage Regulator Module	Identify	Card	Internal	Amber	Normal	N/A	Identify
RAID Daughter Card	Identify	Card	External	Amber	Normal	N/A	Identify

Appendix A. Environmental Notices

Product Recycling and Disposal

This unit contains materials such as circuit boards, cables, electromagnetic compatibility gaskets and connectors which may contain lead and copper/beryllium alloys that require special handling and disposal at end of life. Before this unit is disposed of, these materials must be removed and recycled or discarded according to applicable regulations. IBM offers product-return programs in several countries. For country specific instructions refer to the following web site: http://www.ibm.com/ibm/environment/products/prp.phtml

This product may contain a 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, contact your local waste disposal facility.

In the United States, IBM has established a collection 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, please contact IBM at 1-800-426-4333. Have the IBM part number listed on the battery available prior to your call.

Environmental Design

The environmental efforts that have gone into the design of this system signify IBM's commitment to improve the quality of its products and processes. Some of these accomplishments include the elimination of the use of Class 1 ozone-depleting chemicals in the manufacturing process and reductions in manufacturing wastes. For more information, contact an IBM account representative.

Acoustical Noise Emissions

The equivalent continuous A-weighted sound pressure level at workstations (emission sound pressure level at the 1-meter bystander positions) does not exceed 70 dB(A).

Declared Acoustical Noise Emissions

Product Configuration	Declared A-Weighted Sound Power Level, *LWAd* (B)	
	Operating	Idling
6E3 (Deskside)	6.0	5.9
6C3 (Rack Drawer)	6.1	6.0

Notes:

1. ^{LWAd} is the declared (upper limit) sound power level for a random sample of machines. (1B = 10dB)
2. ^{LpAm} is the mean value of the A-weighted sound pressure level at the 1-meter bystander positions for a random sample of machines.
3. All measurements made in conformance with ISO 7779 and declared in conformance with ISO 9296.

Appendix B. Notices

This information was developed for products and services offered in the U.S.A.

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

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Appendix C. Service Processor Setup and Test

Attention: This procedure applies to modems attached to the serial ports (S1, S2, and S3) on the pSeries 630 Model 6C4 and Model 6E4 systems. It does not affect the operation of the modem attached to the Hardware Management Console (HMC).

If an HMC is attached, the call-out function is normally handled by the Service Focal Point application running on the HMC.

For your convenience, an example of a basic service processor setup checklist is included here. Your setup may include more or fewer of the available features, so you can adjust this checklist for your own application so that it is helpful to you.

Service Processor Setup Checklist

1. Unplug the power cord from the system.
2. Attach a local terminal for this setup procedure.
3. Plug in the system and power on the local terminal.

   Attention: Make sure that system power remains off.
4. Start the service processor menus. See Chapter 7, “Using the Service Processor,” on page 225.
5. Set the system name. See “Privileged User Menus” on page 227.
6. Enable surveillance. See “Service Processor System Monitoring - Surveillance” on page 257.
7. Configure Call-In/Call-Out. See “Call-In/Call-Out Setup Menu” on page 244.
8. Exit the service processor menus.
9. Unplug the power cord(s) from the system.
10. Attach modems (if needed). See “Accessing the Service Processor Menus Remotely” on page 226.
11. Plug in the system.

    Attention: Make sure that the system power remains off.
12. Test both of the following:
    - Call-In, see “Testing Call-In” on page 394
    - Call-Out, see “Testing Call-Out” on page 394
13. Use the “Save or Restore Hardware Management Policies,” in the “Introduction to Tasks and Service Aids” section of the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* to back up the service processor settings.

    Note: This step is strongly recommended to protect the usefulness of the service processor and the availability of the system.

Your service processor is now ready for use.

Testing the Setup

This section contains sample testing procedures to help ensure that your setup is working.

These tests include communicating with the system operating system. Before you start, ensure that the necessary serial port(s) is configured. If you need assistance, refer to “Serial Port Configuration.”

The system should be powered off as a result of the “Service Processor Setup Checklist” on page 393.

Testing Call-In

1. At your remote terminal, call in to your system. Your system answers and offers you the Service Processor Main Menu after requesting your privileged access password.
2. Select **System Power Control**.
3. Select **Power-On System**.

   When you are asked if you wish to continue powering on the system, type **Y**.
4. After the system firmware and operating system have initialized the system, the login prompt displays at your remote terminal if you set up Seamless Modem Transfer (refer to “Transfer of a Modem Session” on page 433 for more information). This may take several minutes. When the login prompt displays, you have successfully called the service processor.
5. Type `logout` to disconnect from the operating system. The message `No Carrier` displays on your remote terminal.
6. Call your system again. The operating system answers and offers you the login prompt. If these tests are successful, call-in is working.
7. Log in and type `shutdown` to shut down your system.
8. The message `No Carrier` displays on your remote terminal.

Testing Call-Out

During the setup, you entered your phone numbers for the pager (on page 248) and customer voice (on page 248). These numbers are used for this test.

1. Your remote terminal is disconnected as a result of the Call-In test.
2. Call your system again.
3. At the service processor main menu, select **Call-In/Call-Out Setup** menu, then select **Call-Out** test. This action causes a simulated error condition for the purposes of this test.
4. After a few moments, a message displays, regarding an illegal entry. Press Enter to clear the message and return to the main menu.
5. When your telephone rings, answer the call. You should hear the sound of a telephone being dialed. Your computer is trying to page you.

If this test is successful, call-out is working correctly.

Return to the “Telephone Number Setup Menu” on page 247 to enter the actual telephone numbers your system will use for reporting problems.

Serial Port Configuration

To configure the serial port on an AIX system, run the following from an AIX console:

1. Log in as `root` user.
2. To determine if you have any serial ports already configured, type:

   ```
   lsdev -Cc tty
   ```

If no serial ports are configured, none are listed. If you want to configure serial ports that are not listed, continue with the remaining steps.

3. Identify the serial port(s) with the modem(s).
4. Type `smit tty`
5. Select **add tty**
6. Select **RS232**
7. Select **Baud rate 9600** or higher.
8. Select **login enable** and set the flow control to RTS.
9. Commit the selections and set up any other needed serial ports.
10. Exit SMIT.

Appendix D. Setting Up the System Rack

Before setting up a rack, check through the following specifications and clearances, then go to “Model 6C3 Rack Installation Inventory” on page 399.

Rack Specifications

This section contains specifications for the system rack.

7014 Model T00 and T42 Rack

The mechanical packaging, cooling, power supply, and environmental specifications for the rack are shown in the following table:

Dimensions				
Height	1804 mm 71.0 in.			
Capacity	36 EIA Units			
With PDP - DC only	1926 mm 75.8 in.			
Width without side panels	623 mm 24.5 in.			
With side panels	644 mm 25.4 in.			
Depth with rear door	1042 mm 41.0 in.			
RS/6000 T00 with both doors	1098 mm 43.3 in.			
pSeries T00 with both doors	1147 mm 45.2 in.			
Weight				
Base Rack	244 kg 535 lbs			
Full Rack[1]	816 kg 1795 lbs.			
Electrical[2]	(sum specified values for drawers or enclosures in rack)			
AC Rack				
Power source loading maximum in kVA (per PDB)[4]	4.8			
Voltage range (V ac)	200 to 240			
Frequency (hertz)	50 or 60			
Temperature Requirements	(see specifications for drawers or enclosures)			
Humidity Requirements	(see specifications for drawers or enclosures)			
Noise Emissions	(see specifications for drawers or enclosures)			
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper airflow.			
Service	915mm(36 in)	915mm(36 in)	915mm(36 in)	915mm(36 in)

1. Configuration dependent, base rack weight plus the weight of the drawers mounted in the rack. The rack can support up to a maximum weight of 35 lbs/EIA Unit.
2. The total rack power should be derived from the sum of the power used by the drawers in the rack.
3. Each AC Power Distribution Bus (PDB) can supply 4.8 kVA. A rack can have up to four PDB’s as required by the drawers mounted in the rack.

Noise Emission Notes

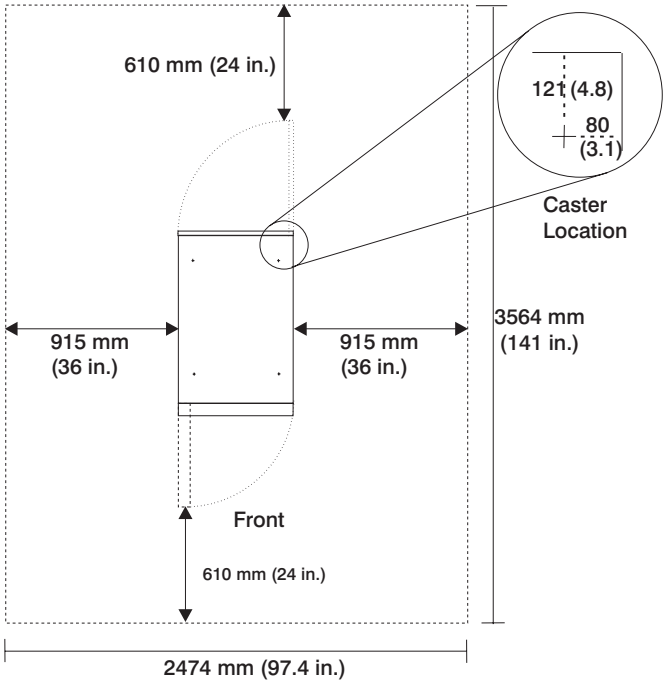
1. L_{WAd} is the declared (upper limit) sound power emission level for a production series of machines.
2. L_{pAm} is the mean value of the A-weighted sound pressure emission levels at the operator position (if any) for a production series of machines.
3. $<L_{pA}>_m$ is the mean value of the space-averaged A-weighted sound pressure emission levels at the one-meter positions for a production series of machines.
4. N/A = Not Applicable (no operator position).
5. All measurements are made in accordance with ISO DIS 779 and reported in conformance with ISO DIS 7574/4.

System Service Clearances

The amount of space needed by the units during service is indicated by the dotted line in the following figure. The figure shows the minimum space required.

For multiple racks placed side by side, the left and right clearances apply only to the leftmost and rightmost rack.

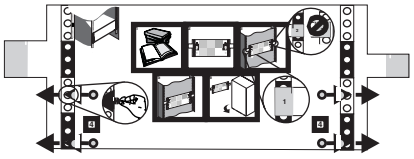
Rack Configuration



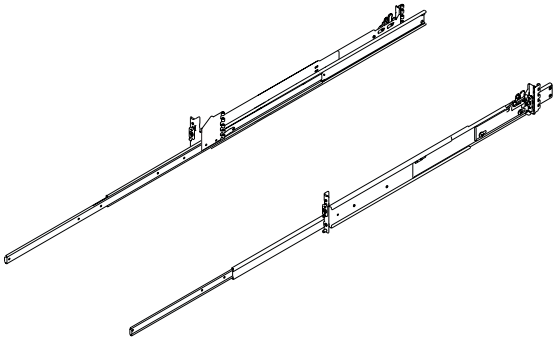
Note: Rack units are large and heavy and are not easily moved. Because maintenance activities require access at both the front and back, allow for extra room. The footprint shows the radius of the swinging doors on the rack.

Model 6C3 Rack Installation Inventory

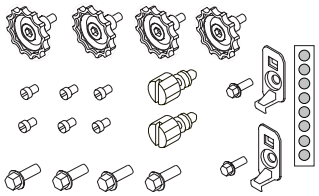
☐ Rack-Mounting Template



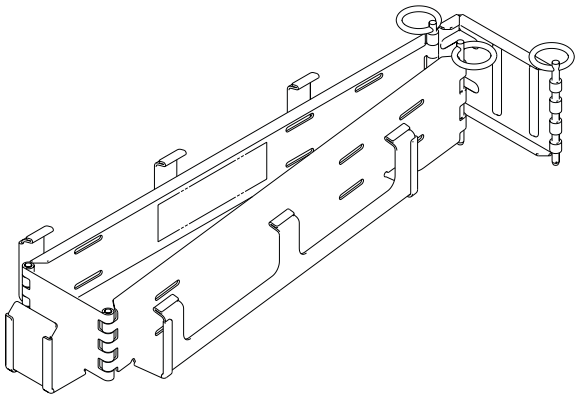
☐ 2 Slide Rail Assemblies



☐ Rack-Mounting Kit contains:
4 blue wheel-shaped knobs
6 system to rail screws
4 rail to rack screws
2 latch-mounting brackets
2 latch-mounting bracket rack screws
2 system-retaining thumbscrews
1 strip of self-adhesive placement dots



☐ Cable Management Arm



Read the Rack Safety Instructions

Review the following instructions for mounting the system drawer into the rack.

Rack Safety Instructions

- Do not install this unit in a rack where the ambient temperatures will exceed 35 degrees C.
- Do not install this unit in a rack where the airflow is compromised. Any side, front or back of the unit used for air flow through the unit must not be in indirect contact with the rack.
- Ensure that a hazardous condition is not created due to uneven mechanical loading when installing this unit in a rack. If the rack has a stabilizer it must be firmly attached before installing or removed this unit.
- Consider the connection of the equipment to the supply circuit so that the overloaded circuits do not compromise the supply wiring or over-current protection.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

When installing the Model 6C3, you will need the following items:

- Rack-Mounting Template
- 2 Slide Rail Assemblies
- Cable Management Arm
- Rack-Mounting Kit Envelope
- Screwdriver or similar tool if available

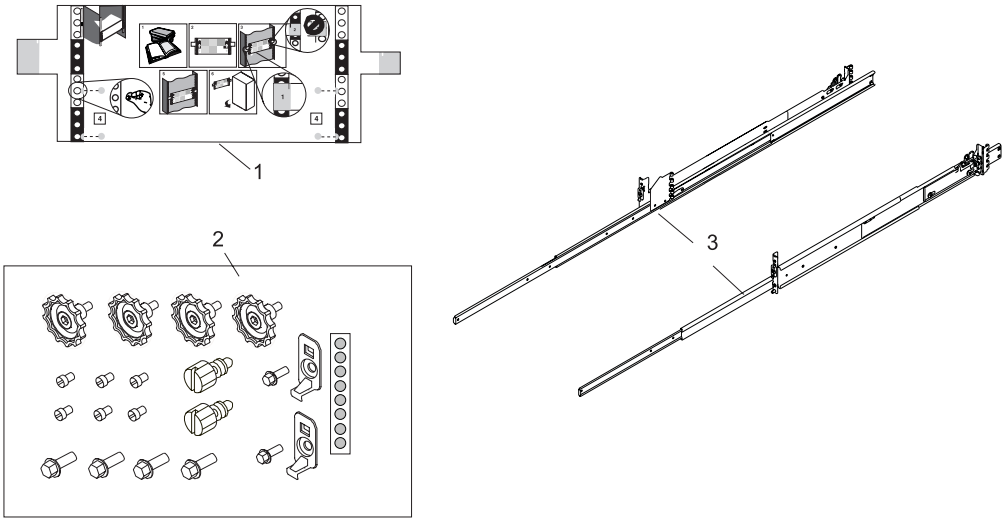
Attach the Mounting Hardware to the Rack Enclosure

Before performing this procedure, read through each step and study the illustrations.

Attention: Mounting the rails is a complex procedure. To install the rack rails correctly, you must read, and then perform each procedure step in the order given. Failure to perform each step in the order given may cause rail failure.

To install the rack-mounting hardware into the rack, do the following:

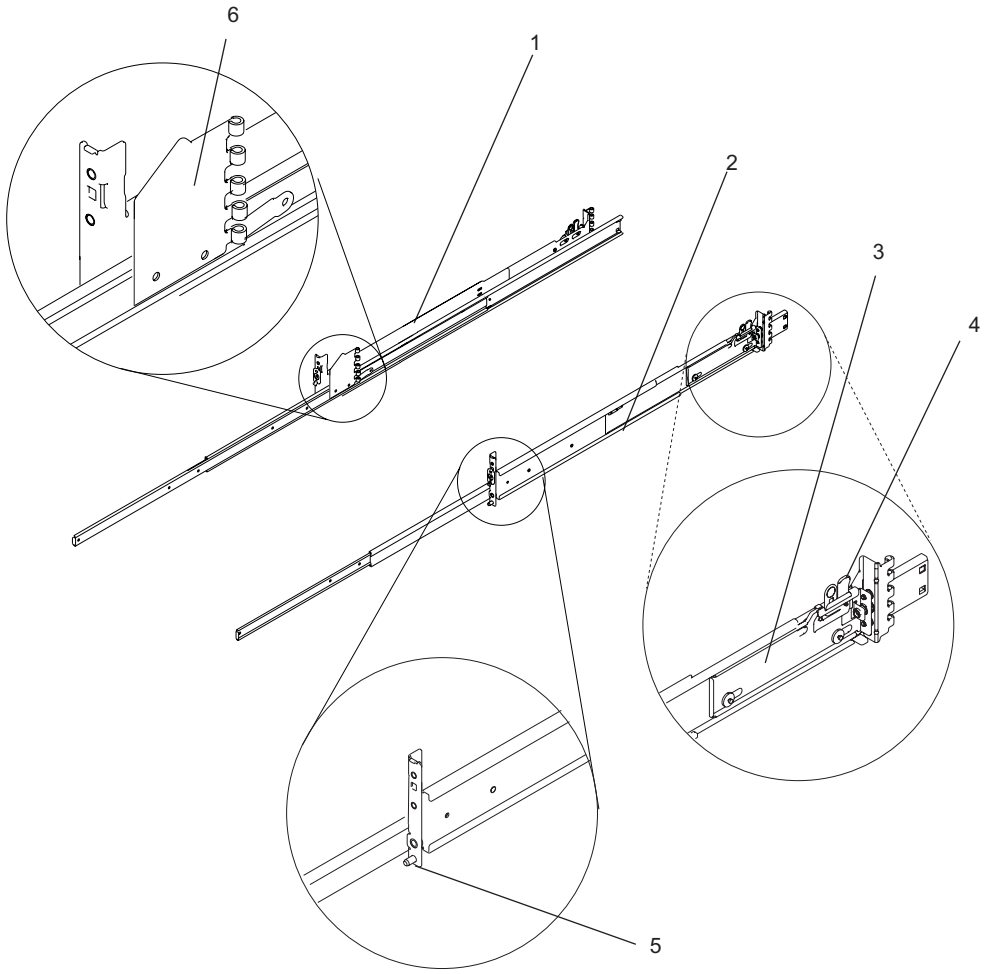
1. Locate the rack-mounting hardware kit, rack-mounting template, and the system rails that were shipped with your system.



1 Rack-Mounting Template
2 Rack-Mounting Hardware Kit
3 System Rail Assemblies

Notes:

1. The system rails are front-to-back and left-to-right side dependent when you are standing in the front of and facing the rack. The rails can be identified by the two large latch assemblies on the rear of each rail. See the following illustration to orient yourself to the left and right rail assemblies.



1 Left rail assembly
2 Right rail assembly
3 Rail-mounting latch assembly, rear
4 Rail-mounting latch release tab, rear
5 Rail-mounting hardware, front right
6 Cable-management arm flange

2. Remove the front and rear rack doors if necessary. For 7014 Model T00 and T42 racks, refer to *7014 Model T00 and T42 Rack Installation and Service Guide*, order number SA38-0577, for information about removing the rack doors.
3. Locate the rack-mounting template. If you do not have a rack-mounting template, go to substep 6.
4. Using the rack-mounting template, determine where in the rack to place the system. Make note of the Electronics Industries Association (EIA) location number.

   Note: The rack-mounting template has printed illustrations located on the front of the template. Each illustration is designed to aid in identifying the EIA location holes used when planning to populate your rack. *Do not* use the rack-mounting template without reading and understanding the following substeps. Each step must be completed in its entirety.
5. Note the following when using the rack-mounting template:
   - Each black or white unit on the template is equal to 1 EIA unit.
   - Each EIA unit consists of three holes.
   - The EIA units illustrated on the template must be aligned with the EIA units located on the rack.

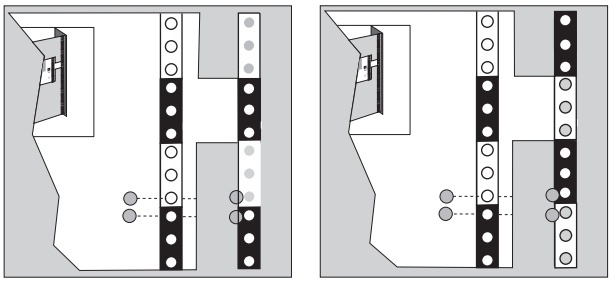
- It is not necessary to align like-colored EIA units. For example, a black EIA unit illustrated on the rack-mounting template does not have to be aligned with a black EIA unit located on the rack. A black EIA unit on the rack-mounting template can be aligned with a white EIA unit located on the rack. See the following illustration.

To use the rack-mounting template, do the following:

a. Remove the protective coating from each adhesive strip located on the back of the rack-mounting template. Lightly press the template into position on the rack. Ensure that both the left and right sides are at the corresponding EIA locations.

   Note: The tabs on each side of the template show a notch to indicate the proper spacing between the front flanges.

b. Locate the four dots, two printed on each side of the template. Place a self-adhesive dot directly across from the template's printed dots on or near the rack's EIA numbering strip. You will be using these dots to aid in correctly positioning the rail-alignment pins located on the front of each rail. See the following illustration.



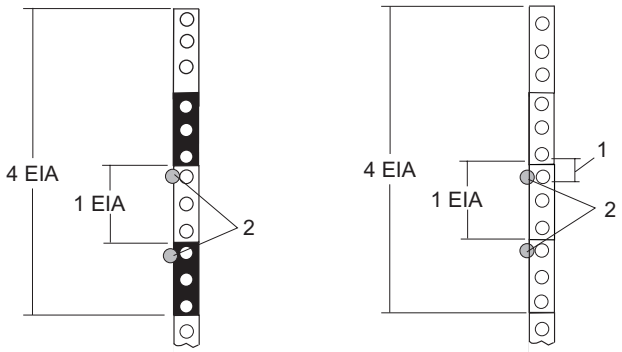
c. Remove the rack-mounting template from the front of the rack. The front of your rack should now contain four self-adhesive dots.

d. Mount the rack-mounting template to the rack's rear EIA flange. Place the rack-mounting template at the same EIA-numbered location that was used on the front of the rack.

e. Wrap a self-adhesive dot directly across from the template's printed dots. Ensure that a portion of the self-adhesive dot wraps around the rack's flange so that it can be seen from the front of the rack.

f. Remove the rack-mounting template from the rear of the rack. The rear of your rack should now contain four self-adhesive dots that have been partially wrapped around the rack's rear flanges.

The following illustration shows one EIA unit and four EIA units. Depending on the rack manufacturer, the EIA units may be separated either by color or by a line. Note the holes along the rail are not evenly spaced. If your rack has no color or line separation between EIA units, assume that each EIA unit begins where the hole spacing is closest together.



1 EIA Unit Hole Spacing **2** Self-Adhesive Dot Placement

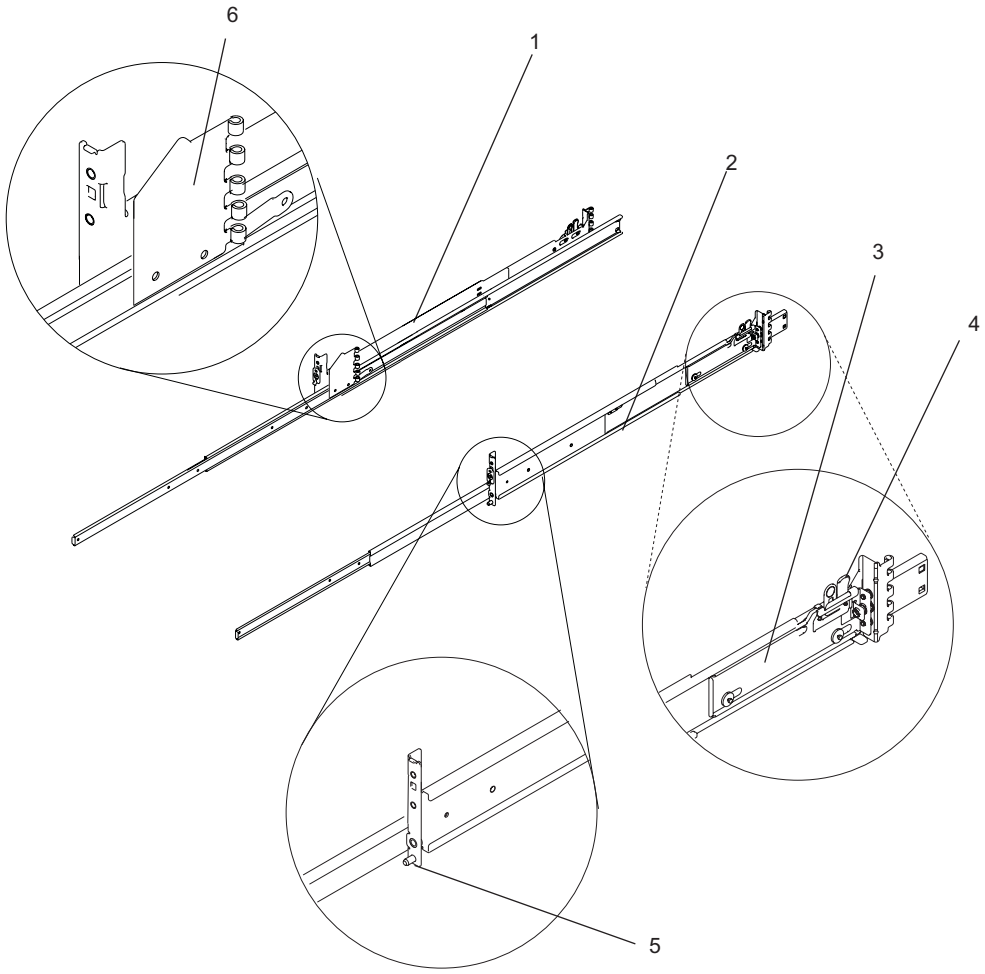
6. If you do not have a rack-mounting template, do the following:
   a. Determine where in the rack to place the system. The system you are about to install measures 4 EIA units high. Make note of the EIA location number.

      Note: An EIA unit on your rack consists of a grouping of three holes. See the previous figure.
   b. Facing the front of the rack and working from the right side, place a supplied self-adhesive dot next to the top hole of the bottom EIA unit.

      Note: The self-adhesive dots are used to aid in identifying locations on the rack. If you no longer have any of the dots, use some other form of marking tool to aid you in identifying hole locations (for example, tape, a marker, or pencil).
   c. Place another self-adhesive dot next to the top hole of the above EIA unit.

      Note: If you are counting the holes, begin with the hole identified by the first dot and count up four holes. Place the second dot next to the fourth hole.
   d. Repeat substeps 6a through 6d for the corresponding holes located on the left side of the rack.

7. Before installing the system rail assemblies into your rack, you must first preset the rails to allow correct assembly with the rack and system unit. Do the following:
   a. Unpack the system rail assemblies.
   b. Fully extend each rail assembly.
   c. Lock the rear latch assemblies to the open position using the latch release tab.



1 Left rail assembly
2 Right rail assembly
3 Rail-mounting latch assembly, rear
4 Rail-mounting latch assembly release tab, rear
5 Rail-mounting hardware, front right
6 Cable-management arm flange

8. Position yourself at the front of the rack.
9. Facing the rack, insert the rail's rear-alignment pins into the rack's rear flange holes identified by the self-adhesive placement dots previously installed.
10. Press the release tab. This action will cause the rear latch assembly to close on the flange. Ensure that the pins have passed through the proper holes in the rear flange to verify proper alignment.
11. Insert the rail's front-alignment pin into the rack front flange hole identified by the self-adhesive placement dot previously installed. Ensure that the EIA location is the same from front to back and the rails are level from front to rear.
12. Loosely thread one of the rail-retaining screws into the rail's front screw hole. The screw hole is located one position above the front-alignment pin.

13. Position yourself at the rear of the rack. Loosely thread one of the rail-retaining screws into the rail's rear screw hole. The screw hole is located between the two rear alignment pins. Return to the front of the rack.
14. Attach the drawer latch bracket by doing the following:
    a. Locate a drawer latch bracket and its screw.
    b. Align the square peg on the back of the bracket with the square hole in the front rail assembly.
    c. Place the hole in the bracket over the screw hole and loosely thread the screw into place. The screw hole is located one position above the front rail-retaining screw.
15. Before continuing to the next step, be sure to read and understand the following caution notices:

    Attention: Mounting the rails is a complex procedure. To install the rack rails correctly, you must read, and then perform each procedure step in the order given. Failure to perform each step in the order given may cause rail failure.

    CAUTION:
    The stabilizer must be firmly attached to the bottom rear of the rack to prevent the rack from turning over when the drawers are pulled out of the rack. Do not pull out or install any drawer or feature if the stabilizer is not attached to the rack.
    C17

    CAUTION:
    This unit weighs between 32 kg (70.5 pounds) and 55 kg (121.2 pounds). Three persons are required to safely move it. Using less than three persons to move it can result in injury.
    C05

Model 6C3 Removal and Installation into a Rack

Before performing these procedures, read “Safety Notices” on page xi.

System Drawer Removal

CAUTION:
This unit weighs between 32 kg (70.5 pounds) and 55 kg (121.2 pounds). Three persons are required to safely move it. Using fewer than three persons to move it can result in injury.

CAUTION:

- **Removing the system drawer requires three people.**
- ***Do not* place more than one drawer in the service position at one time.**
- **Ensure that the system cables are not tangled and will not bind when placing the system drawer into the service or operating positions.**

To remove the system drawer from the rack, do the following:

1. If you have not already done so, shut down the system as described in “Stopping the System” on page 282.
2. Open the front and rear rack doors.
3. Disconnect all cables from the rear of the system drawer.
4. Disconnect the cable-management arm by pulling out the two captive snap buttons from the rear of the system drawer.
5. From the front of the system drawer, lift the lower section of the system drawer release latches, which are located on each side of the system drawer. The system drawer release latch clicks as it is put into the release position.
6. Grasp the top section of both latches, and slowly pull the system drawer out into the service position.
7. Depress both safety release tabs located on each inner rail, and pull the system drawer out approximately 2 inches.
8. Put the system drawer into the service position.
9. Using three persons, grasp the system drawer handles located on each side of the system.
10. Depress the safety latches located on each rail.
11. Remove the system by pulling it completely out and away from the rack and outer rack rails.
12. Push the extended outer rails carefully back into the rack.

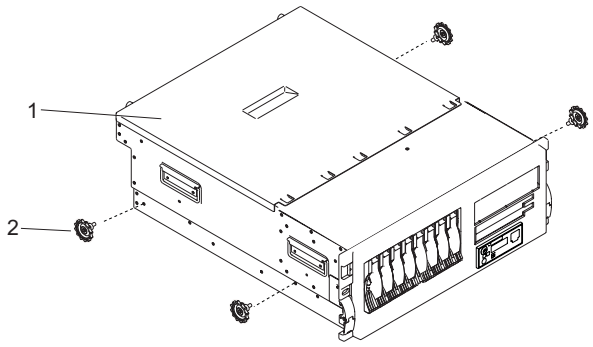
    Note: There is a gravity-activated locking tab at the back of each extended outer rail. The locking tab locks the outer rails into their fully extended position and is unlocked by the action of the inner rail being pushed back into the rack. To compensate for the separation of the inner rail from the outer rail, center the lock tab with your hand, then push the outer rail back into its retracted position.
13. Close the front and rear rack doors.

Installing the Model 6C3 into the Rack Enclosure

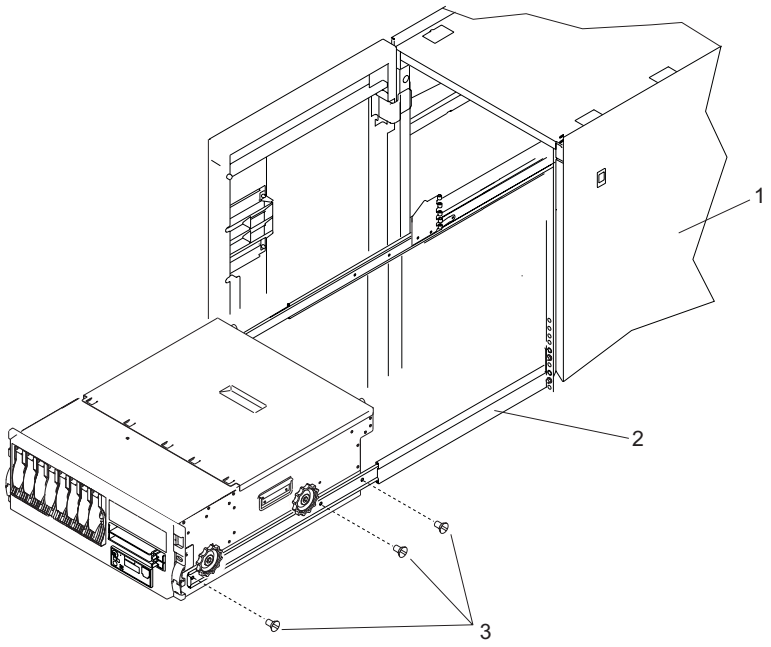
CAUTION:
When installing this system drawer into a rack, ensure that a hazardous condition is not created due to uneven mechanical loading. If your rack uses a stabilizer bar, it must be firmly attached before installing or removing this system.

To install the Model 6C3 onto a system rail assembly (type 2), do the following:

1. Attach the four blue wheel-shaped knobs at the points indicated in the following figure:



2. Using three persons, grasp the handles located on each side of the system drawer, and lift the system drawer onto the extended rails. Align the three screw holes in the inner rails with the screw holes in the sides of the system drawer.
3. Using the six rail-to-system retaining screws, three on each side, mount the inner rails to each side of the system drawer. Tighten each of the screws with a screwdriver or similar tool.



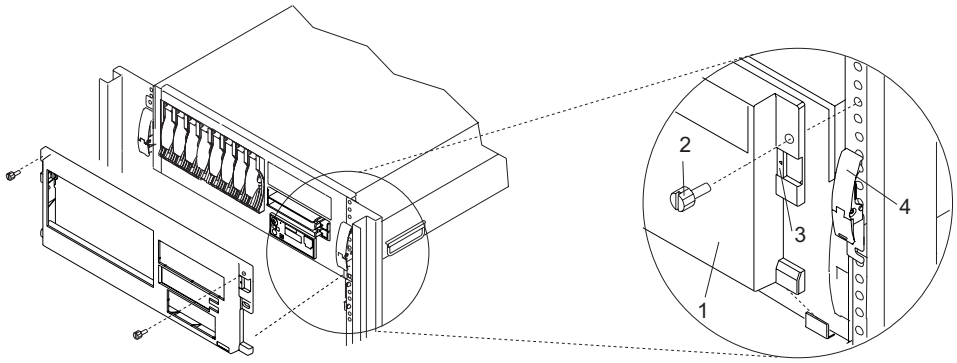
1 Rack Enclosure
2 System Rail Assembly
3 Rail-to-system retaining screws

4. Simultaneously depress the safety latches, located on each system rail assembly, and push the system into the rack.

5. Slide the system drawer in and out of the rack two or three times. This action aligns the system drawer to the rails. The system drawer should glide on the rails.
6. Push the system drawer back into the rack. Using a screwdriver or similar tool, tighten the two rear retaining screws that secure the slide rails to the rack's rear flange.
7. Slide the system drawer about halfway out of the rack.
8. Using a screwdriver or similar tool, tighten the front four retaining screws that secure the slide rails to the rack's front flange.

   Note: After the system rails are installed, do not extend them past their safety latches. The safety release latches stop the rails from overextending and separating. This action prevents the system drawer from being accidentally pulled out too far and dropped.

   Attention: If any binding is detected, loosen the six rail-retaining screws (front and rear), and repeat substeps 4 through 7.
9. For additional stability needed when transporting the rack, fasten the system drawer to the rack enclosure by inserting the two system-retaining thumbscrews through the bezel and chassis bracket, and screwing them into the rack flange.

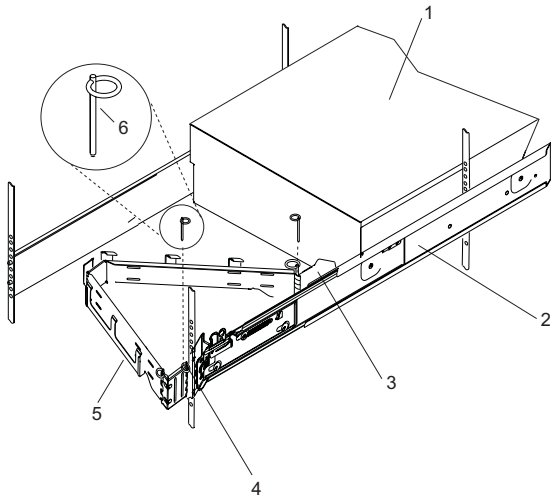


1 Model 6C3 Front Bezel
2 System-Retaining Thumbscrews for System Drawer Transport

Installing the Cable-Management Arm

To install the Model 6C3 cable management arm, do the following:

1. From the rear of the rack unit, locate the cable management arm flange located on the fixed rear portion of the left system rail assembly.
2. Pin the cable management arm to the flange as shown in the following figure.
3. Pin the other end of the cable management arm to the flange attached to the sliding portion of the left system rail assembly.



1 Model 6C3
2 System Rail Assembly
3 Cable Management Arm
4 Cable Management Arm Pin

Note: To avoid any binding of the cable management arm, ensure that the cable management arm is level.

Appendix E. Install a Hardware Management Console (HMC)

The Hardware Management Console (HMC) user interface provides the functions needed to create and maintain a single or multiple-partitioned environment.

Note: This section refers to systems capable of running multiple partitions. The Model 6C3 and Model 6E3 cannot run multiple partitions. However, your system is considered a full system partition, and a full system partition allows you to connect to an HMC and use programs such as Service Focal Point and Inventory Scout Services. When one of the following procedures in this section asks you to select a partition from a list of partitions, or to configure additional partitions, the only partition that you are concerned with is the one you are working on.

Position the HMC and Monitor

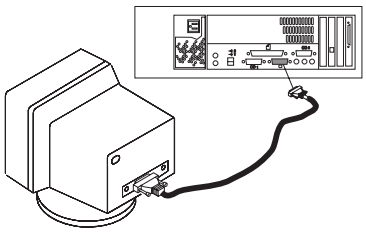
Position the HMC and monitor at or near their desired location.

- The HMC weighs between 34 kg (75 pounds) and 41 kg (90 pounds). Do not try to lift the HMC by yourself.
- Monitors can weigh as much as 35 kg (77 pounds). Use caution when lifting or moving the monitor.
- Leave enough space around the HMC to safely and easily complete the setup procedures.
- Observe standard ergonomic guidelines while arranging your system unit so that you can work comfortably and safely. For more information on arranging your workstation, visit the Healthy Computing Web address at: http://www.pc.ibm.com/us/healthycomputing.
- Be sure to maintain at least 51 mm (2 inches) of space on the sides of the system unit and 152 mm (6 inches) at the rear of the system unit to allow the system unit to cool properly. The front of the system requires a minimum of 76 mm (3 inches) of space. Blocking the air vents can cause overheating, which might result in a malfunction or permanent damage to the system unit.
- Place the HMC in a location where all necessary power outlets and network connections can safely be reached.
- Place the display in a stable and sturdy location.

Connect the Cables

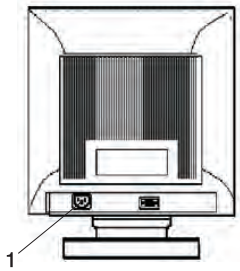
Use the following steps to connect the cables to your HMC. Look for the small icons on the back of your HMC, that show where to attach the keyboard, mouse, and display cables.

1. Attach the monitor cable to the monitor connector and tighten the screws.

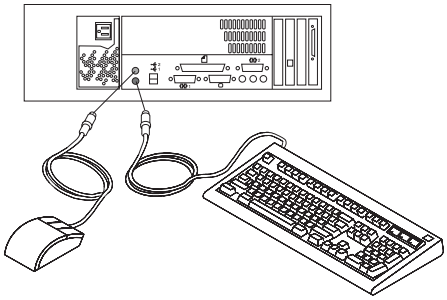


2. If a label for the monitor was shipped with your system, attach the label to the bottom right corner of the monitor.
3. Attach the power cables to the monitor (item 1 in illustration on page 414). If the HMC has a voltage switch, ensure that it is in the correct position for the supply voltage.

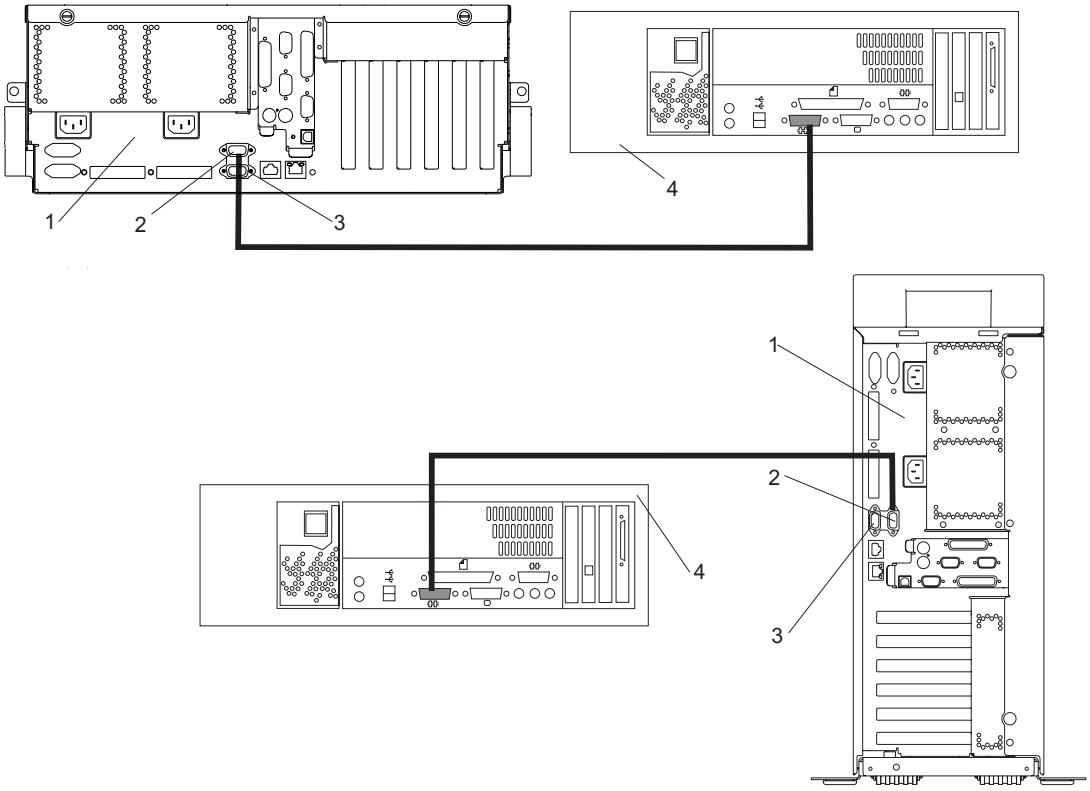
   Attention: *Do not* plug the power cables into an electrical outlet at this point.



4. Connect the mouse and keyboard to their connectors as shown in the following illustration.



5. Connect the HMC serial cable into the HMC1 connector located on the rear of your system unit. For two HMCs, connect the redundant HMC serial cable into the HMC2 connector located on the rear of your system unit. The following illustration shows the location of the serial ports on the rear of the HMC, as well as HMC1 and HMC2 connectors located on rear of your system unit.



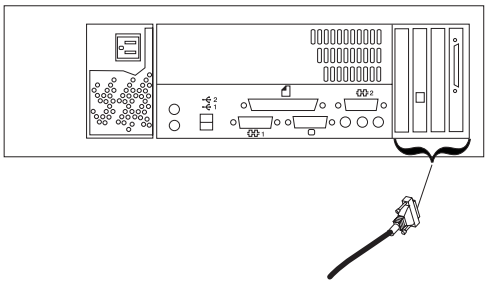
1 Model 6C3 or Model 6E3
2 HMC1 Connector
3 HMC2 Connector
4 Hardware Management Console (HMC)

The cable part numbers used for connecting the pSeries 630 Model 6C4 and Model 6E4 to the HMC serial cables are as follows:

11P3955 6m cable	9Pos to 9Pos
11P3956 15m cable	9Pos to 9Pos
31L7196 15m cable	9Pos to 25Pos

Connect the 8-Port Adapter Cables

If you are using any optional 8-port adapters, connect the cables to the appropriate connectors in slots 1 through 4.

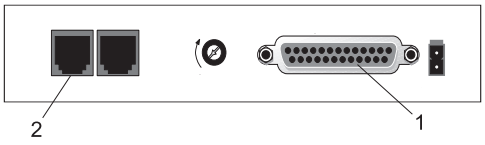


Connect the External Modem

The external modem is used in conjunction with the HMC's Service Agent and Call Home features. To properly service your machine, it is important that you configure the Service Agent feature correctly the first time. For more information about configuring the modem and the Service Agent feature, see "Configure the Service Agent" on page 420.

To connect the external HMC modem, do the following:

1. Connect the modem cable to the external HMC modem (1).
2. Connect the other end of the modem cable to serial port 2.
3. Connect the phone cable line port of the external modem (2).
4. Connect the other end of the phone cable to the analog jack on your wall.



1 External HMC Modem
2 External Modem Connector

Check the Microswitch Setting on the Modem

Check the microswitch settings on the modem. The settings should be set as follows:

Switch	Position	Function
1	Up	Force DTR
2	Up	Flow Control &E4
3	Down	Result Codes Enabled
4	Up	Modem Emulation Disabled
5	*Down	Auto Answer Enabled
6	Up	Maximum Throughput Enabled
7	Up	RTS Normal Functions
8	Down	Enable Command Mode
9	Down	Remote Digital Loopback Test Enabled
10	Up	Dial-Up Line Enabled
11	Down	AT Responses Enabled (Extended Responses Disabled)
12	*Down	Asynchronous Operation
13	UP	28.8KB Line Speed
14	Up	
15	Up	CD and DSR Normal Functions
16	Up	2-Wire Leased Line Enabled
Note: * Only switches 5 and 12 are changed from the factory default settings.		

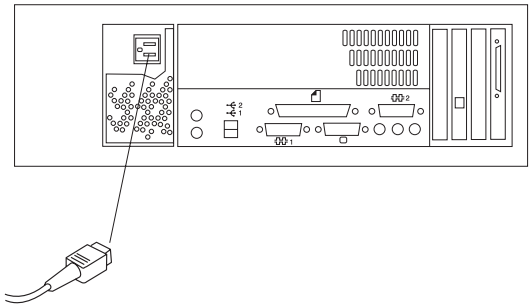
Connect the LAN Cable (If Applicable)

The LAN cable is recommended because an active partition reports errors to the HMC's Service Focal Point application through the LAN network. The HMC must be attached to the system's LAN, and a partition should have a LAN adapter assigned as a resource.

Connect the LAN to the adapters assigned to the partition and to the LAN connection on the HMC system hardware.

Plug in the HMC Power Cable

1. Plug in the power cable as shown in the following illustration.



2. Plug in the power cables for the monitor, HMC, and modem into electrical outlets.

Configure the Network

To configure the network, do the following:

1. Log in to the (HMC) using the user ID `hscroot` and password `abc123`.

   Note: User IDs and passwords are case-sensitive. Enter the user ID and password exactly as shown.
2. Select the **System Configuration** Application in the Navigation area.
3. Select **Customize Network Settings** in the Contents area.
4. Type the appropriate network information in the IP Address, Name Services, and Routing tabs on the Network Configuration window.
5. Select **OK**.

For more information on configuring the network, refer to the *Hardware Management Console Installation and Operations Guide*, order number SA38-0590.

Configure Inventory Scout Services

Inventory Scout Services is an AIX tool that surveys managed systems for hardware and software information.

To set up Inventory Scout Services for each system managed by the HMC, and for the partition running an instance of AIX, the partition must be configured in order to conduct microcode surveys or collect Vital Product Data (VPD).

To set up Inventory Scout Services for each managed system and partition, you must be a member of one of the following roles:

- System Administrator
- Advanced Operator
- Service Representative

Refer to the *IBM Hardware Management Console* for more information on the previous roles.

Notes:

1. The Inventory Scout listening port is set by starting the **invscoutd** daemon on the AIX images. This port will default to 808.
2. If a system has been powered on using the Full System Partition power-on option, you must configure the Full System Partition to use Inventory Scout Services.

To set up Inventory Scout Services, do the following:

1. In the Navigation area, double-click the **Inventory Scout Services** icon.
2. In the Contents area, select **Inventory Scout Profile Configuration.**
3. From the list, select a managed system.
4. Select **Next**.
5. From the list, select the partition you want to configure.
6. Select **Next**.
7. The next window identifies the selected partition. Type the following:
   - Partition password (Use the Inventory Scout user ID password)
   - Inventory Scout listening port
   - IP address of the AIX partition

Click **Finish** if you have completed configuration of all partitions.

OR

Click **Back** to continue to configure additional partitions until all are configured.

Collect Vital Product Data Information

Use this task to collect the Vital Product Data (VPD) for the specified managed system into a file.

To collect the managed system's VPD, you must be a member of one of the following roles:

- System Administrator
- Advanced Operator
- Service Representative

To collect the managed systems VPD, do the following:

1. In the Navigation area, double-click the **Inventory Scout Services** icon.
2. In the Contents area, select **Collect VPD Information**.
3. From the list, select the name of the managed system for which you want to collect the Vital Product Data.
4. Select **Next**.
5. The wizard requests confirmation about the managed system, and then prompts you to insert a blank, DOS-formatted diskette into the HMC diskette drive.
6. Click **Finish**. This file is then copied to the diskette in the specified drive.

To conduct a microcode survey, refer to the *Hardware Management Console Installation and Operations Guide*, order number SA38-0590.

Configure the Service Agent

Note: You must configure the network before you configure the Service Agent.
To start the Service Agent, click on the **Service Agent** icon on the HMC virtual terminal window.

If you are configuring Service Agent for the first time, select **Start Service Agent Processes** to start the service agent processes. Select **Service Agent UI**. You are prompted to type specific information or parameters pertinent to Service Agent.

To configure the Service Agent, do the following:

1. Read and accept the License Agreement.
2. For the initial password prompt, type:

   `password`

   The word `password` is the default password that has been supplied.

   Note: User IDs and passwords are case-sensitive. Enter the user ID and password exactly as shown.
3. Type the information as follows:

   Customer Contact Name
   The person that IBM can reach when an error is reported to IBM by the Service Agent.

   Customer Phone Number
   The phone number associated with the person whose name is placed in the **Customer Contact Name** field.

   Customer Email
   The e-mail address of the person whose name is placed in the **Customer Contact Name** field.

   Queue Country/Region
   The country or region in which the HMC is located. Click the drop-down list to expand the country or region choices. Type the first letter of the desired country or region to move to the first occurrence of a country or region whose first letter matches your choice.

   Gateway Type
   The machine type of the processor subsystem.

   Gateway Serial Number
   The serial number of the processor subsystem that you designate to be the machine to send Service Agent information to IBM.

   Gateway Model Number
   The model number of the processor subsystem that you designate to be the machine to send Service Agent information to IBM.
4. Select **Continue**. The Service Agent interface displays.
5. Select **Network**. Fill in the appropriate information.

   Note: Some of the fields are prefilled with information taken from the Service Agent initial configuration panel.
6. Select **OK**.
7. Expand the contents of the Gateway category by clicking the key next to your Gateway machine.
8. Select **Dialer**.
9. Select **Location**. Select the location phone number closest to your physical location. Several of the fields are then completed by Service Agent based on the location phone number you selected.

10. Select **Modem**. Select the modem that you will use for Service Agent communications. After your selection, several of the remaining fields are filled in by Service Agent.
11. Select **OK** to save the Dialer configuration.
12. Expand the contents of the Administration category by clicking the key to its left.
13. Select **Register**.
14. Select your Gateway machine by clicking it.
15. Select **Register**. The ″Would you like to IGN now″ window displays.
16. Select **Yes**. The Service Agent is now attempting to connect to the IBM Service Agent server, using the modem you have selected.
17. Select **CallLog**. Check the details pane to view the status of the just-attempted call. To determine the success or failure of the connection attempt, examine the Description column.

For more information on the Service Agent, refer to the *Hardware Management Console Installation and Operations Guide*, order number SA38-0590.

Appendix F. General Attributes Required When Using a TTY Terminal

The following general attributes are the default settings for the diagnostic programs. Be sure your terminal is set to these attributes.

Note: Set these attributes before the diagnostic programs are loaded.

General Setup Attributes	3151 /11/31/41 Settings	3151 /51/61 Settings	3161 /3164 Settings	Description
Machine mode	3151	3151 PC	3161 or 3164	The diagnostic programs are set to emulate use of the 3161 ASCII Display Terminal. If your terminal can emulate a 5085, 3161 or 3164 terminal, use these attribute settings. Otherwise, refer to your operator's manual, compare the attribute descriptions with those of your terminal, and set your attributes accordingly.
Generated Code Set		ASCII		
Screen	Normal	Normal		Uses the EIA-232 interface protocol.
Row and Column	24 x 80	24 x 80		Uses the EIA-232 interface protocol.
Scroll	Jump	Jump	Jump	When the last character on the bottom line is entered, the screen moves down one line.
Auto LF	Off	Off	Off	For the ″On″ setting, pressing the Return key moves the cursor to the first character position of the next line. For the ″Off″ setting, pressing the Return key moves the cursor to the first character position of the current line. The CR and LF characters are generated by the New line setting.
CRT saver	Off	Off	10	The ″10″ setting causes the display screen to go blank if there is no activity for 10 minutes. When the system unit sends data or a key is pressed, the screen contents display again.
Line wrap	On	On	On	The cursor moves to the first character position of the next line in the page after it reaches the last character position of the current line in the page.
Forcing insert	Off	Off		
Tab	Field	Field	Field	The column tab stops are ignored, and the tab operation depends on the field attribute character positions.
Trace			All	Both inbound data (data to the system unit) and outbound data (data from the system unit) to and from the main port can be transferred to the auxiliary port without disturbing communications with the system unit when the Trace key is pressed.

Additional Communication Attributes

The following communication attributes are for the 3151, 3161, and 3164 terminals.

Communication Setup Attributes	3151/11 /31/41) Settings	3151 /51/61, Settings	3161 /3164 Settings	Description
Operating mode	Echo	Echo	Echo	Data entered from the keyboard on the terminal is sent to the system unit for translation and then sent back to the display screen. Sometimes called *conversational mode.*
Line speed	9600 bps	9600 bps	9600 bps	Uses the 9600 bps (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).
Turnaround character	CR	CR	CR	Selects the carriage return (CR) character as the line turnaround character.
Interface	EIA-232	EIA-232	EIA-232	Uses the EIA-232 interface protocol.
Line control	IPRTS	IPRTS	IPRTS	Uses the 'permanent request to send' (IPRTS) signal to communicate with system unit.
Break signal (ms)	500	500	500	The terminal sends a break signal to the system unit within 500 ms after the Break key is pressed.
Send null suppress	On	On		Trailing null characters are not sent to the system unit.
Send null			On	Trailing null characters are sent to the system unit.
Response delay (ms)	100	100	100	The terminal waits for 100 ms for the system unit to respond.

Additional Keyboard Attributes

The following keyboard attributes are for the keyboard attached to the 3151, 3161, and 3164 terminals.

Keyboard Setup Attributes	3151/11 /31/41 Settings	3151 /51/61 Settings	3161 /3164 Settings	Description
Enter	Return	Return	Return	The Enter key functions as the Return key.
Return	New line	New line	New line	The cursor moves to the next line when the Return key is pressed.

Keyboard Setup Attributes	3151/11 /31/41 Settings	3151 /51/61 Settings	3161 /3164 Settings	Description
New line	CR	CR	CR	The Return key generates the carriage return (CR) and the line feed (LF) characters. The line turnaround occurs after the CR and LF characters are generated.
Send	Page	Page	Page	The contents of the current page are sent to the system unit when the Send key is pressed.
Insert character	Space	Space	Space	A blank character is inserted when the Insert key is pressed.

Additional Printer Attributes

The following printer attributes are for a printer attached to the 3151, 3161, and 3164 terminals.

Printer Setup Attributes	3151/11 /31/41 Settings	3151 /51/61 Settings	3161 /3164 Settings	Description
Line speed	9600	9600	9600	Uses 19200 or 9600 bps (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	Even	Even	No	
Stop bit	1	1	1	Places a bit after a data word (byte).
Characters	ALL	ALL		
Line end			CR-LF	
Print			View port	
Print EOL			Off	
Print null			Off	

Appendix G. Modem Configurations

Attention: This appendix applies only to modems attached to serial ports S1 and S2 located on the CEC backplane (location U0.1-P1).

The service processor is designed to place little demand on an attached modem, thereby increasing the setup and connection success rates.

Sample Modem Configuration Files

This appendix contains information about several sample modem configuration files that either work directly with your modem or provide a good starting point for a custom setup.

The sample modem configuration files are located in your service processor firmware in the **/usr/share/modems** subdirectory (if your system / server is running AIX) with the following names. A listing of each specific file is included in this appendix.

Generic Modem Configuration Files

AIX File Name	Service Processor Firmware File Name
modem_z.cfg	modem_z_sp
modem_z0.cfg	modem_z0_sp
modem_f.cfg	modem_f_sp
modem_f0.cfg	modem_f0_sp
modem_f1.cfg	modem_f1_sp

Specific Modem Configuration Files

AIX File Name	Service Processor Firmware File Name
modem_m0.cfg	modem_m0_sp
modem_m1.cfg	modem_m1_sp

Use the following selection procedures and your modem manual to determine which of the configuration files is suitable for your use.

Configuration File Selection

Use the following steps to select a configuration file:

1. Is your modem an IBM 7852-400?

   If Yes, use modem configuration file **modem_m0.cfg** and go to step 7.

   Note: The IBM 7852-400 modem has DIP switches on the right side of the unit. See “IBM 7852-400 DIP Switch Settings” on page 431 for the correct switch settings.

   If No, continue with step 2.
2. Is your modem an IBM 7857-017?

   If Yes, use modem configuration file **modem_m1.cfg** and go to step 7.

   Note: The IBM 7857-017 modem has two telephone line connections on the back of the unit. One is marked **LL** (for Leased Line), and the other is marked **PTSN** (for Public Telephone Switched Network). The service processor expects to use the modem on the public network, so the telephone line should attach to the PTSN connector.

   If No, continue with step 3.
3. Does your modem respond to the extended command set (prefixed with &)?

   If Yes, go to step 5.
   If No, continue with step 4.
4. Does your modem respond to:
   - ATZ reset command

     or
   - ATZ*n* reset commands, where *n* can be 0, 1, and so on?

     If ATZ, configuration file **modem_z.cfg** is recommended.
     If ATZ*n*, configuration file **modem_z0.cfg** is recommended.

   Go to step 7.
5. Does your modem command set include a test for V.42 error correction at the remote modem (often called “Auto-Reliable Mode”)?

   If Yes, disable this test. You can use sample configuration files **/usr/share/modem_m0.cfg** or **/usr/share/modem_m1.cfg** as models to help you create a file for your particular modem. See “Customizing the Modem Configuration Files” on page 430 for more information. Go to step 7.

   If No, go to step 6.
6. Does your modem respond to:
   - AT&F reset command

     or
   - AT&F*n* reset commands, where *n* can be 0, 1, and so on?

   If AT&F, configuration file **modem_f.cfg** is recommended.
   If AT&F*n*, configuration file **modem_f0.cfg** or **modem_f1.cfg** is recommended, depending on which provides the hardware flow control profile.
7. You have completed selection of the configuration file.

   If your modem configuration selection is not available in the Service Processor Modem Configuration Menu, you must access it through the Configure Remote Maintenance Policy Service Aid.

   If you find it necessary to adjust any of these configuration files, use the manual provided with your modem to accomplish that task. It is recommended you select settings that enable hardware flow control and respond to DTR.

Note: Some older modems do not respond to the **X0** or **&R1** commands. Edit out these commands from the modem configuration file if yours is such a modem. See your modem manual for more information.

Some modems, such as the IBM 7857-017, are not designed for the paging function. Although they can be used for paging, they return an error message when they do not get the expected response from another modem. Therefore, even though the paging was successful, the error message causes the service processor to retry, continuing to place pager calls for the number of retries specified in the Call-Out Policy Setup Menu. These retries result in redundant pages.

Examples for Using the Generic Sample Modem Configuration Files

The following table contains information to help you determine which modem configuration file to use with various modems.

Modem	Setup Z	Setup Z0 (Rare)	Setup F	Setup F0	Setup F1
AT&T DataPort 2001 (Ring interrupt only on first ring)				X	
Bocamodem 1440E			X		
Hayes Smart Modem 300	X				
IBM 5841	X				
IBM 5843	X				
IBM 7851				X	
IBM 7852-10				X	
IBM 7855					X
USRobotics 36.6K Sportster					X
Zoom V.32			X		

Customizing the Modem Configuration Files

You can create your own modem configuration files or modify the samples provided. After you customize your modem configuration files, you *must* access them through the Configure Remote Maintenance Policy Service Aid rather than from the service processor menus.

Note: If you have already set up your serial ports, line speeds, authorizations, and telephone numbers from the service processor menus, use the service aid to specify your customized modem configuration files.

If you have not already set up your serial ports, line speeds, authorizations, and telephone numbers from the service processor menus, use the service aids to set them while you specify your customized modem configuration files.

To disable Auto-Reliable Mode testing of the remote modem, use the sample modem configuration file **/usr/share/modems/modem_f.cfg** as a model that you can modify, as follows:

1. Find the necessary command in your modem manual.
2. Copy the **/usr/share/modems/modem_f.cfg** file to a new file with a different name (for example, **modem_fx.cfg**).
3. In the new file (**modem_fx.cfg**), change the line `Send "ATE0T\r"` to `Send "ATcccE0T\r"` where ccc is the added command as specified in your modem manual, as follows:

   Change the third line of each of the following stanzas:
   - `condout`
   - `condin`
   - `ripo`
4. Save the changes.

IBM 7852-400 DIP Switch Settings

If you are using a 7852-400 modem to enable service processor communications, for proper operation, the dual inline package (DIP) switches must be set according to the following table:

Switch	Position	Function
1	Up	Force DTR
2	Up	Flow Control &E4
3	Down	Result Codes Enabled
4	Down	Modem Emulation Disabled
5	Up	Auto Answer Enabled
6	Up	Maximum Throughput Enabled
7	Up	RTS Normal Functions
8	Down	Enable Command Mode
9	Down	Remote Digital Loopback Test Enabled
10	Up	Dial-Up Line Enabled
11	*Up	AT Responses Enabled (Extended Responses Disabled)
12	*Down	Asynchronous Operation
13	Up	28.8KB Line Speed
14	Up	
15	Up	CD and DSR Normal Functions
16	Up	2-Wire Leased Line Enabled

* Only switches 11 and 12 are changed from the factory default settings.

Xon/Xoff Modems

Some early modems assume software flow control (Xon/Xoff) between the computer and the modem. Modems with this design send extra characters during and after the transmitted data. The service processor cannot accept these extra characters. If your configuration includes such a modem, your functional results may be unpredictable.

The sample modem configuration files included in this appendix do not support these modems, so custom configuration files are necessary. Anchor Automation 2400E is an example of such a modem.

If you experience unexplainable performance problems that may be due to Xon/Xoff characters, it is recommended that you upgrade your modem.

Ring Detection

Most modems produce an interrupt request each time they detect a ring signal. Some modems generate an interrupt only on the first ring signal that they receive. AT&T DataPort 2001 is an example of such a modem.

The service processor uses the ring interrupt request to count the number of rings when Ring Indicate Power-On (RIPO) is enabled. If your modem produces an interrupt on only the first ring, set Ring Indicate Power-On to start on the first ring. Otherwise, you can choose to start Ring Indicate Power-On on any ring count.

Terminal Emulators

The service processor is compatible with simple ASCII terminals, and therefore compatible with most emulators. When a remote session is handed off from the service processor to the operating system, agreement between terminal emulators becomes important.

The server's operating system will have some built-in terminal emulators. You may also have a commercially available terminal emulation. It is important that the local and host computers select the same or compatible terminal emulators so that the key assignments and responses match, ensuring successful communications and control.

For best formatting, choose line wrap in your terminal emulator setup.

Recovery Procedures

Situations such as line noises and power surges can sometimes cause your modem to enter an undefined state. When it is being used for dial-in, dial-out or ring indicate power-on, your modem is initialized each time one of these actions is expected. If one of these environmental conditions occur after your modem has been initialized, it might be necessary to recover your modem to a known state.

If your modem communicates correctly with remote users, it is probably in control. It may be wise to occasionally change some of the functional settings and then change them back, just for the sense of security that the modem is communicating, and to ensure it has been initialized recently.

If your system is particularly difficult to access physically, another strategy is to protect it with an Uninterruptible Power Source (UPS) and a phone-line surge protector.

In case recovery becomes necessary, shut down your system using established procedures. Disconnect the power cable and press the power button to drain capacitance while power is disconnected. Disconnect and reconnect modem power, and then reconnect system power to completely reinitialize your system.

Transfer of a Modem Session

Because many modem command variations exist, the sample modem configuration files located at the end of this appendix have been written to capture the largest number of workable modem settings.

The modem command **&Dn** (where *n* is a number) generally sets the modem response to the Data Terminal Ready (DTR) signal from the server's serial port. The desired response is that the modem will hold a connection while DTR is enabled, and drop the connection when DTR is released. Using this mechanism, the server hangs up on a connection under normal conditions.

Consult your modem manual for its specific response scheme for the **&Dn** command.

Two strategies are available for dealing with the modem's response to DTR:

- Recovery
- Prevention

Before you use one of these strategies, determine if your server's modem is set up correctly to respond to DTR.

With the remote terminal connected to serial port 1 and defined as the Primary Console Device, there are two tests you can perform:

1. Will the modem drop the connection after the `System initialization complete` message displays at the remote terminal?

   If Yes, the modem is set up correctly.

   If No, try another **&Dn** setting for your server's modem. See your modem manual for this information. The **&Dn** command appears in three places each in three of the sample modem configuration files, as follows:

2. Will the server's modem disconnect when the power drops? You can make this observation at the remote terminal by commanding your server to shut down and power off. (Use the AIX command **shutdown -F**.) Watch for the message `NO CARRIER` on your remote terminal.

   If Yes, this is the correct response. The modem is set up correctly.

   If No, try another **&Dn** setting for your server's modem. See your model manual for this information. The **&Dn** command appears in three places each in three of the sample modem configuration files. Only the following sample modem configuration files contain the **&Dn** command (in three places each):
   - modem_f.cfg
   - modem_f0.cfg
   - modem_f1.cfg

   If you are using modem_z.cfg or modem_z0.cfg, you cannot control DTR response. If your remote terminal does not disconnect after logging off, you must command the remote terminal emulator to hang up. This then breaks the connection.

Recovery Strategy

The recovery strategy consists of making two calls to establish a remote session. This solution is the easiest to implement and allows more freedom for configuring your server's serial ports.

To set up a remote terminal session, dial into the service processor and start the system. After the operating system is loaded and initialized, the connection will be dropped. At this point, call the server back and the operating system will answer and offer you the login prompt.

Prevention Strategy

The disconnect is caused by the operating system when it initializes the Primary Console. The tests listed in "Transfer of a Modem Session" on page 433 are conducted with the remote terminal selected as the primary console to manifest the modem's response to DTR transitions.

- If a local ASCII terminal or a graphics console is to be a permanent part of your server, then make one of them the primary console. Your remote terminal will no longer experience the connection loss.
- If a local console is not a permanent part of your server, you can still assign either the unused graphics console or the unused serial port as the primary console. This gives you the desired seamless connection at your remote terminal.
- If you choose to use the unused serial port as the primary console, some initialization traffic will be sent to any serial device attached to that port. As a result, that serial device's connection and function could be affected. These impacts may make that port unattractive for devices other than a temporary local ASCII terminal.

Modem Configuration Sample Files

Sample File modem_m0.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP: modem_m0
#
# FUNCTIONS: Modem configuration file specifically for IBM 7852-400
#  modem with Auto-Reliable feature.  This feature must be turned off
#  for Catcher calls.  This example uses the AT&F reset command to
#  choose the factory defaults.
#
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# disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
#
#
# The modem has configuration switches.  They should be set to the
# factory default settings, except switches 11 and 12.  These must be
# to UP ("AT" responses) and DOWN (Asynchronous operation), respectively.

ICDelay 1
DefaultTO 10
CallDelay 120
#
#  %N  Call-Out phone number    %R   Return phone number
#
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "AT&F&E2E0T\r"                 # Reset to factory defaults
                                                # Reliable mode
                                                # Echo off
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT&E12&E14\r"                 # Disable pacing
                                                # Disable data compression
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            send "AT&SF1&S0S9=1\r"              # DSR independent of CD
                                                # Force DSR on.
                                                # CD respond time=100ms
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            send "ATV0S0=0\r"                   # Numeric response code
                                                # Auto-Answer off
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.
                                                # Expect a connection response.
            expect "33\r" or "31\r" or "28\r" or "26\r" or "24\r" or "21\r" or
"19\r" or "13\r" or "12\r" or "1\r" busy "7\r"
            timeout 60
            done

retry:      send "A/"                           # Repeat the previous command.
                                                # Expect a connection response.
            expect "33\r" or "31\r" or "28\r" or "26\r" or "24\r" or "21\r" or
```

```
"19\r" or "13\r" or "12\r" or "1\r" busy "7\r"
            timeout 60
            done

 disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

 condin:    send "AT&F&E2E0T\r"                 # Reset to factory defaults.
                                                # Reliable mode
                                                # Echo off
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT&E12&E14\r"                 # Disable pacing
                                                # Disable data compression
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful
            send "AT&SF1&S0S9=1\r"              # DSR independent of CD.
                                                # Force DSR on.
                                                # CD respond time=100ms
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            send "ATV0S0=2\r"                   # Numberic response code
                                                # Answer on 2nd ring
            expect "0\r" timeout 2              # Confirm commands successful.
            done

 waitcall:  ignore "2\r" timeout 1              # Ignore first ring.
            expect "2\r" timeout 10             # Pickup 2nd ring or timeout
                                                # Expect a connection response.
            expect "33\r" or "31\r" or "28\r" or "26\r" or "24\r" or "21\r" or
"19\r" or "13\r" or "12\r" or "1\r" busy "7\r"
            timeout 60
            done

 page:      send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number
            expect "0\r" timeout 60             # Confirm successful command.
            delay 2                             # Wait before hanging up.
            send "ATH0\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

 ripo:      send "AT&F&E2E0T\r"                 # Reset to factory defaults.
                                                # Reliable mode
                                                # Echo off
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT&E12&E14\r"                 # Disable pacing
                                                # Disable data compression
            expect "0\r" or "OK\r\n" timeout 2  # Confirm successful command.
            send "AT&SF1&S0S9=1\r"              # DSR independent of CD.
                                                # Force DSR on.
                                                # CD respond time=100ms
```

```
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            send "ATV0S0=0\r"                   # Numeric response code
                                                # Auto Answer OFF
            expect "0\r" timeout 2              # Confirm commands successful.
            done                                #

error:                                          # Handle unexpected modem
                                                # responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

Sample File modem_m1.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP modem_m1
#
# FUNCTIONS: Modem configuration file specifically for IBM 7857-017 modem with
#  Auto-Reliable feature.  This feature must be turned off for Catcher calls.
#  This example uses the AT&F reset command to choose the factory defaults.
#
#  To allow dial commands for digital pagers, it is necessary to reduce
#  the number of characters in the dial command.  Each comma (delay) has
#  been set to 6 seconds (S8=6) for that reason.
#
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#

ICDelay 1
DefaultTO 10
CallDelay 120
#
#  %N  Call-Out phone number    %R   Return phone number
#
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "AT&F*E0E0\r"                 # Reset to factory defaults.
                                               # *E0=data compression disabled
                                               # E0=echo disabled
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT#F0*Q2S8=6\r"               # Trellis modulation disabled
                                               # Retrain with adaptive rate
                                               # Set ,=6second
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful
            send "ATV0X0S0=0\r"                 # Numeric response code
                                               # AT compatible messages
                                               # Auto-Answer disabled
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            done

connect:    send "ATDT%N\r"                    # Tone dialing command.
                                               # %N from Call Home setup.
            expect "1\r" busy "7\r" timeout 60  # Expect a connection response.
            done

retry:      send "A/"                          # Repeat the previous command.
            expect "1\r" busy "7\r" timeout 60  # Expect a connection response.
            done

disconnect:
            delay 2                            # Separate from previous data.
            send "+++"                         # Assure command mode.
            delay 2                            # Allow mode switching delay.
            send "ATH0\r"                      # Set modem switch-hook down
                                               #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
```

```
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "AT&F*E0E0\r"                  # Reset to factory defaults.
                                                # *E0=data compression disabled
                                                # E0=echo disabled
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT#F0*Q2\r"                   # Trellis modulation disabled
                                                # Retrain with adaptive rate
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful
            send "ATV0X0S0=2\r"                 # Numeric response code
                                                # AT compatible messages
                                                # Answer on 2nd ring
            expect "0\r" timeout 2              # Confirm commands successful.
            done

waitcall:   ignore "2\r" timeout 1              # Ignore first ring.
            expect "2\r" timeout 10             # Pick up second ring
                                                #  or timeout.
                                                # Expect a connection response.
            expect "1\r" timeout 60
            done

page:       send "ATD%N,%R\r"                   # %N = pager call center number
                                                # commas=6sec wait time to
                                                #   enter paging number.
                                                # %R = return number
            expect "0\r" or "3\r" timeout 30    # Confirm successful command.
            delay 2                             # Wait before hanging up.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "AT&F*E0E0\r"                  # Reset to factory defaults.
                                                # *E0=data compression disabled
                                                # E0=echo disabled
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT#F0*Q2\r"                   # Trellis modulation disabled
                                                # Retrain with adaptive rate
            expect "0\r" or "OK\r\n" timeout 2  # Confirm successful command.
            send "ATV0X0S0=0\r"                 # Numeric response code
                                                # AT compatible messages
                                                # Auto-Answer disabled
            expect "0\r" timeout 2              # Confirm commands successful.
            done                                #

error:                                          # Handle unexpected modem
                                                #  responses.
            expect "8\r" or "7\r" or "4\r" or "3\r"
            delay 2
            done
```

Sample File modem_z.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP Z
#
# FUNCTIONS: Modem configuration file for many early Hayes* compatible modems.
#  This example uses the ATZ reset command to choose the factory defaults.
#  This setup will work for many modems, but it is required for early vintage
#  modems which respond to neither the ATZ0 reset command nor the extended (&)
#  commands.  Refer to your modem manual.
#
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#
#
# If the modem has configuration switches, they should be set to the
# factory default settings.

ICDelay 1
DefaultTO 10
CallDelay 120
#  AT  Attention Code             ,   Inserts delay in dialing commands
#  Z   Reset to factory defaults Q0   Turn on responses
#  E0  Turn echo off             Q1   Turn off responses
#  V0  Use numeric responses     S0=0 Automatic answer inhibit
# +++  Escape to command mode    S0=2 Answer on second ring
#  H0  Hang-up                   T =  Tone mode.  When used as T\r, it is a
#                                     no op to maintain program synchronization
#                                     when modem may/will echo the commands.
#
#  %N  Call-Out phone number    %P   Paging phone number
#  %S  Modem speed (available to users)
#
# Following are common responses from a wide range of modems:
# 16, 15, 12, 10, 5 and 1 are connection responses.  Add others as required.
# 7=busy; 6=no dial tone; 4=error; 3=no carrier; 2=ring; 0=OK
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "ATZQ0T\r"                     # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0T\r"                    #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
```

```
            done

retry:      send "A/"                           # Repeat the previous command.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "ATZQ0T\r"                     # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0T\r"                    #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=2\r"                     # Set AutoAnswer ON
            expect "0\r" timeout 2              # Confirm command successful.
            done

waitcall: ignore "2\r" timeout 1                # Ignore first ring.
          expect "2\r" timeout 10               # Pick up second ring
                                                #  or timeout.
                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r"
 timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number

                                                # Confirm successful command.
            expect "0\r" timeout 60
            delay 2                             # Wait before hanging up.
            send "ATH0T\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "ATZQ0T\r"                     # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0T\r"                    #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            done                                # RI Power On enabled.
```

```
error:                                          # Handle unexpected modem
                                                #  responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

Sample File modem_z0.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP Z0
#
# FUNCTIONS: Modem configuration file for some early Hayes* compatible modems.
#  This example uses the ATZ0 reset command to choose the factory defaults.
#  This setup is recommended for modems that will respond to the ATZ0 command
#  and which do not respond to the extended (&) commands.  Refer to your modem
#  manual.
#
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#
#
# If the modem has configuration switches, they should be set to the
# factory default settings.

ICDelay 1
DefaultTO 10
CallDelay 120
#  AT  Attention Code            ,   Inserts delay in dialing commands
#  Z0  Reset. Restore Profile 0 Q0   Turn on responses
#  E0  Turn echo off            Q1   Turn off responses
#  V0  Use numeric responses    S0=0 Automatic answer inhibit
# +++  Escape to command mode   S0=2 Answer on second ring
#  H0  Hang-up                  X0=0 Limit modem response codes
#                               T =  Tone mode.  When used as T\r, it is a
#                                    no op to maintain program synchronization
#                                    when modem may/will echo the commands.
#
#  %N  Call-Out phone number    %P   Paging phone number
#  %S  Modem speed (available to users)
#
# Following are common responses from a wide range of modems:
# 16, 15, 12, 10, 5 and 1 are connection responses.  Add others as required.
# 7=busy; 6=no dial tone; 4=error; 3=no carrier; 2=ring; 0=OK
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "ATZ0Q0T\r"                    # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
```

```
 timeout 60
            done

retry:      send "A/"                           # Repeat the previous command.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "ATZ0Q0T\r"                    # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=2\r"                     # Set AutoAnswer ON
            expect "0\r" timeout 2              # Confirm command successful.
            done

waitcall: ignore "2\r" timeout 1                # Ignore first ring.
          expect "2\r" timeout 10               # Pick up second ring
                                                #  or timeout.
                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r"
 timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number

                                                # Confirm successful command.
            expect "0\r" timeout 60
            delay 2                             # Wait before hanging up.
            send "ATH0T\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "ATZ0Q0T\r"                    # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
```

```
            done                                # RI Power On enabled.

error:                                          # Handle unexpected modem
                                                #  responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

Sample File modem_f.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP F
#
# FUNCTIONS: Modem configuration file for many recent Hayes* compatible modems.
#  This example uses the AT&F reset command to choose the factory defaults.
#  This set up is preferred for modems with extended (&) commands.  For early
#  vintage modems, setup Z or Z0 is recommended.  If your modem responds to
#  the extended (&) commands and to factory default choices (&Fn), setup file
#  F0 or F1 is recommended.
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#
#
# If the modem has configuration switches, they should be set to the
# factory default settings.

ICDelay 1
DefaultTO 10
CallDelay 120
#  AT  Attention Code            ,   Inserts delay in dialing commands
#  &F  Reset to default profile Q0   Turn on responses
#  E0  Turn echo off            Q1   Turn off responses
#  V0  Use numeric responses    S0=0 Automatic answer inhibit
# +++  Escape to command mode   S0=2 Answer on second ring
#  H0  Hang-up                  X0=0 Limit modem response codes
#                               T =  Tone mode.  When used as T\r, it is a
#                                    no op to maintain program synchronization
#                                    when modem may/will echo the commands.
#
# &C1  Detect CD                &D2  Respond to DTR (often the default)
#
#  %N  Call-Out phone number    %P   Paging phone number
#  %S  Modem speed (available to users)
#
# Following are common responses from a wide range of modems:
# 16, 15, 12, 10, 5 and 1 are connection responses.  Add others as required.
# 7=busy; 6=no dial tone; 4=error; 3=no carrier; 2=ring; 0=OK
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "AT&FQ0T\r"                    # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2\r"                   # Detect carrier and DTR.
            expect "0\r" timeout 2              # Confirm command successful.
            done
```

```
connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

retry:      send "A/"                           # Repeat the previous command.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "AT&FQ0T\r"                    # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=2\r"                     # Set AutoAnswer ON
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2\r"                   # Detect carrier and DTR.
            expect "0\r" timeout 2              # Confirm command successful.
            done

waitcall: ignore "2\r" timeout 1                # Ignore first ring.
          expect "2\r" timeout 10               # Pick up second ring
                                                #  or timeout.
                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r"
 timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number

                                                # Confirm successful command.
            expect "0\r" timeout 60
            delay 2                             # Wait before hanging up.
            send "ATH0T\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "AT&FQ0T\r"                    # Reset to factory defaults.
```

```
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2\r"                   # Detect carrier and DTR.
            expect "0\r" timeout 2              # Confirm command successful.
            done                                # RI Power On enabled.

error:                                          # Handle unexpected modem
                                                #  responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

Sample File modem_f0.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP F0
#
# FUNCTIONS: Modem configuration file for many recent Hayes* compatible modems.
#  This example uses the AT&F0 reset command to choose the factory defaults.
#  This set up is preferred for modems with extended (&) commands.  For early
#  vintage modems, setup Z or Z0 is recommended.  If your modem responds to
#  the extended (&) commands and to factory default choices (&Fn), but doesn't
#  work properly with this setup file, setup F1 is recommended.
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#
#
# If the modem has configuration switches, they should be set to the
# factory default settings.

ICDelay 1
DefaultTO 10
CallDelay 120
#  AT  Attention Code             ,   Inserts delay in dialing commands
# &F0  Reset. Restore profile 0 Q0   Turn on responses
#  E0  Turn echo off            Q1   Turn off responses
#  V0  Use numeric responses    S0=0 Automatic answer inhibit
# +++  Escape to command mode   S0=2 Answer on second ring
#  H0  Hang-up                  X0=0 Limit modem response codes
#                               T =  Tone mode.  When used as T\r, it is a
#                                    no op to maintain program synchronization
#                                    when modem may/will echo the commands.
#
# &C1  Detect CD                &D2  Respond to DTR (often the default)
# &R1  Ignore RTS (CTS)
#
#  %N  Call-Out phone number    %P   Paging phone number
#  %S  Modem speed (available to users)
#
```

```
# Following are common responses from a wide range of modems:
# 16, 15, 12, 10, 5 and 1 are connection responses.  Add others as required.
# 7=busy; 6=no dial tone; 4=error; 3=no carrier; 2=ring; 0=OK
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "AT&F0Q0T\r"                   # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

retry:      send "A/"                           # Repeat the previous command.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "AT&F0Q0T\r"                   # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=2\r"                     # Set AutoAnswer ON
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
            done

waitcall: ignore "2\r" timeout 1                # Ignore first ring.
```

```
          expect "2\r" timeout 10              # Pick up second ring
                                               #  or timeout.
                                               # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r"
 timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"             # %N = pager call center number
                                               # Add enough commas to wait for
                                               #  time to enter paging number.
                                               # %R = paging number

                                               # Confirm successful command.
            expect "0\r" timeout 60
            delay 2                            # Wait before hanging up.
            send "ATH0T\r"                      # Hang up.
            expect "0\r" timeout 2             # Confirm successful command.
            done

ripo:       send "AT&F0Q0T\r"                  # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                     # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                 #  Limit response codes.
            expect "0\r" timeout 2             # Confirm commands successful.
            send "ATS0=0\r"                    # Set AutoAnswer OFF
            expect "0\r" timeout 2             # Confirm command successful.
            send "AT&C1&D2&R1\r"               # Detect carrier and DTR,
                                               #  Ignore RTS.
            expect "0\r" timeout 2             # Confirm command successful.
            done                               # RI Power On enabled.

error:                                         # Handle unexpected modem
                                               #  responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

Sample File modem_f1.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP F1
#
# FUNCTIONS: Modem configuration file for many recent Hayes* compatible modems.
#  This example uses the AT&F1 reset command to choose the factory defaults.
#  This set up is for modems with extended (&) commands and which do not work
#  properly with setup F0.  For early vintage modems, setup Z or Z0 is
#  recommended.
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#
#
# If the modem has configuration switches, they should be set to the
# factory default settings.
```

```
ICDelay 1
DefaultTO 10
CallDelay 120
#  AT  Attention Code            ,   Inserts delay in dialing commands
# &F1  Reset. Restore profile 1 Q0   Turn on responses
#  E0  Turn echo off            Q1   Turn off responses
#  V0  Use numeric responses    S0=0 Automatic answer inhibit
# +++  Escape to command mode   S0=2 Answer on second ring
#  H0  Hang-up                  X0=0 Limit modem response codes
#                               T =  Tone mode.  When used as T\r, it is a
#                                    no op to maintain program synchronization
#                                    when modem may/will echo the commands.
#
# &C1  Detect CD                &D2  Respond to DTR (often the default)
# &R1  Ignore RTS (CTS)
#
#  %N  Call-Out phone number    %P   Paging phone number
#  %S  Modem speed (available to users)
#
# Following are common responses from a wide range of modems:
# 16, 15, 12, 10, 5 and 1 are connection responses.  Add others as required.
# 7=busy; 6=no dial tone; 4=error; 3=no carrier; 2=ring; 0=OK
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "AT&F1Q0T\r"                   # Reset modem. Select profile 1
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

retry:      send "A/"                           # Repeat the previous command.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
```

```
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "AT&F1Q0T\r"                   # Reset modem. Select profile 1
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=2\r"                     # Set AutoAnswer ON
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
            done

waitcall: ignore "2\r" timeout 1                # Ignore first ring.
          expect "2\r" timeout 10               # Pick up second ring
                                                #  or timeout.
                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r"
 timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number

                                                # Confirm successful command.
            expect "0\r" timeout 60
            delay 2                             # Wait before hanging up.
            send "ATH0T\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "AT&F1Q0T\r"                   # Reset modem. Select profile 1
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
            done                                # RI Power On enabled.

error:                                          # Handle unexpected modem
                                                #  responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

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