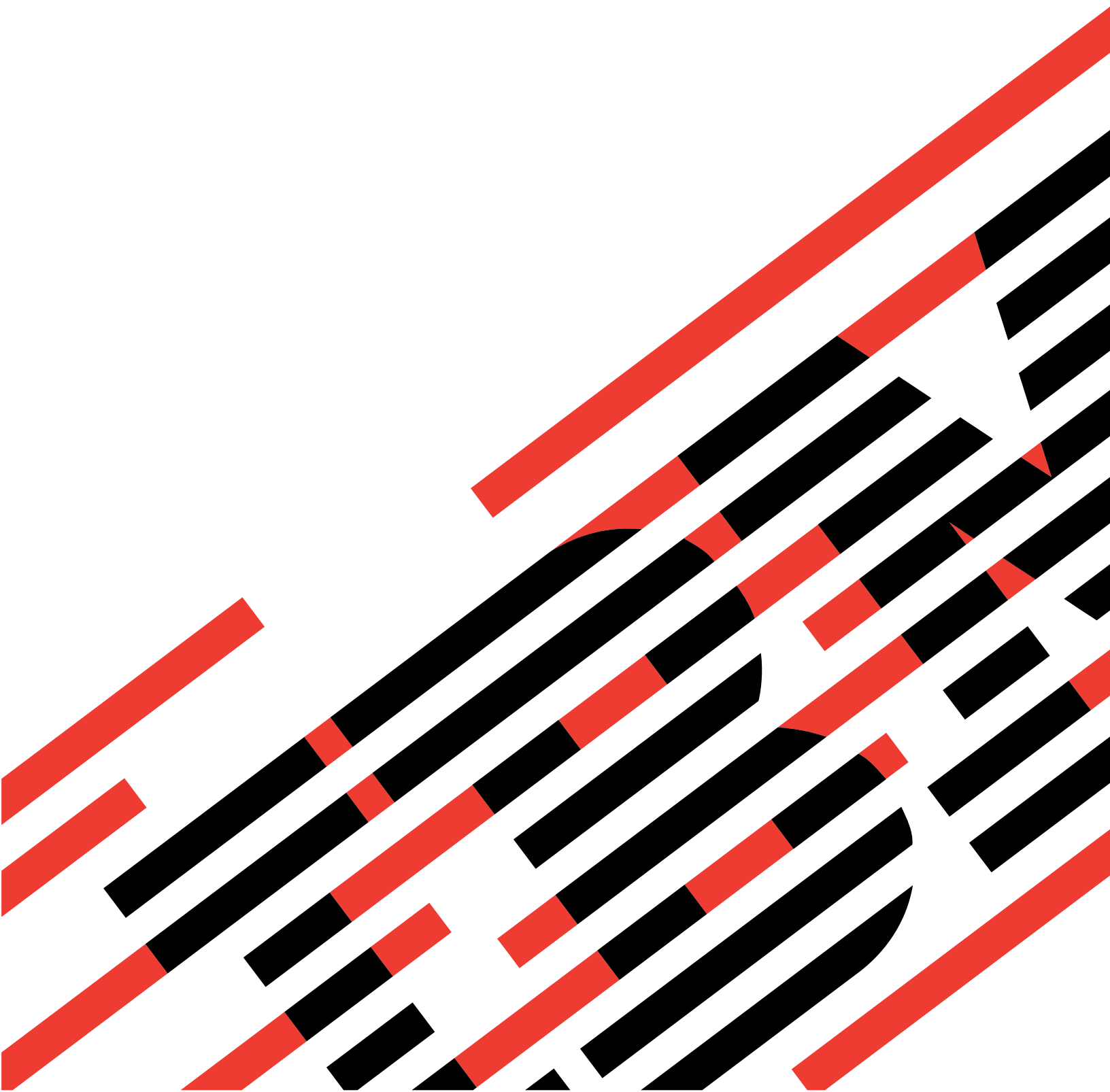# IBM

@server

pSeries 630 Model 6C4 and Model 6E4

Service Guide

SA38-0604-02

IBM

@server

pSeries 630 Model 6C4 and Model 6E4

Service Guide

SA38-0604-02

Contents

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
- 91
- 92
- 361
- 441

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
- 91
- 361

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`

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 630 Model 6C4 and Model 6E4, 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 630 Model 6C4 and Model 6E4 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.

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

Note: 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.

ISO 9000

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

Related Publications

The following publications provide additional information about your system:

- The *@server pSeries 630 Model 6C4 and Model 6E4 Installation Guide*, order number SA38-0605, contains information on how to set up and cable the system, install and remove options, and verify system operation.
- The *@server pSeries 630 Model 6C4 and Model 6E4 User's Guide*, order number SA38-0606, contains information to help users use the system, use the service aids, and solve minor problems.
- The *D20 I/O Drawer Installation Guide*, order number SA23-1296 contains information on how to set up, cable, install and remove options, and verify the subsystem operations.
- The *pSeries 7311 Model D10 and Model D20* Service Guide, oreder number SA38-0627, contains reference information, maintenance analysis procedures (MAPs), error codes, removal and replacement procedures, and a parts catalog.
- 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 *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, contains information on how to set up a hardware management console and how to use it to manage a system.
- 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.

Trademarks

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- AIX
- Electronic Service Agent
- @server
- IBM
- LANstreamer
- POWER4
- pSeries
- Service Director
- SP

Other company, product, and service names may be trademarks or service marks of others.

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:

- Memory overview and placement
- General description of the operator panel
- Cabling rules
- System location rules and descriptions
- Power flow
- Data flow

Overview

The pSeries 630 Model 6C4 and Model 6E4 have similar operational capabilities but are packaged differently.
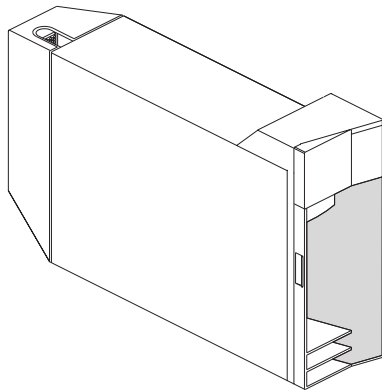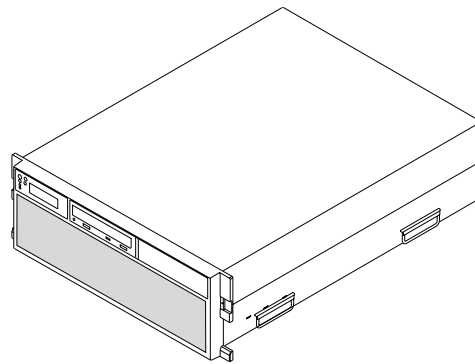
Model 6E4   Model 6C4

The Model 6E4 is a deskside system while the Model 6C4 is a 4 EIA-unit drawer designed to be housed in a 19-inch rack. Both models can be configured as a 1-way to 4-way symmetric multiprocessing (SMP) system; each can have up to 4 hot-plug disk drives and 6 hot-plug PCI adapters. Both models support redundant hot-plug power supplies, cooling fans, and PCI adapters. Power is provided through ac power cords. Either model can be set up to use 100-127 V ac or 200-240 V ac power. The two media bays can be used to accommodate any of the following drives:

- SCSI DVD-RAM drive
- IDE DVD-ROM drive
- IDE CD-ROM drive
- Diskette drive (special mounting carriage needed)
- Tape drive

Note: A CD-ROM is recommended for use in the base configuration of either model.

System Features

Bus Architecture

Depending on your system configuration, four or six PCI-X slotted riser cards are available. The slots are 64-bit capable at 133 MHz, 3.3 volts. If your system has four PCI-X slots, use slots 3 and 4 with PCI adapters that require high performance. Use slots 1 and 2 with PCI adapters that do not require high performance. On the six-slotted PCI riser cards, all slots are equal. All slots are capable of using the full-length PCI-X adapters. The PCI-X slots are numbered on the rear of the chassis, from left to right.

When equipped with POWER4+ processors and a six-slotted PCI riser card, the Model 6C4 and Model 6E4 include six hot-plug PCI-X slots, dual integrated Ultra3 SCSI controllers, dual 10/100 Mbps integrated Ethernet controllers, and four front-accessible disk bays supporting hot-swappable disks. These disk bays can accommodate up to 587.2 GB of disk storage using 146.8 GB Ultra3 SCSI disk drives. Two media bays are used for a CD-ROM, DVD-RAM, DVD-ROM, or another optional media device, such as a tape or diskette drive. The Converged Service Processor 2 (CSP), including system power control, is also integrated, along with the native I/O functions such as serial ports, keyboard, and mouse. Also included are an enhanced I/O subsystem with the implementation of the remote I/O (RIO) interconnect and PCI-X bus protocols.

The Model 6C4 can support up to two high-density 7311 Model D20 I/O drawers to provide additional PCI-X slots and disk drive bays. A fully configured system with two I/O drawers has 20 PCI-X slots and 4.1 TB of disk space. Optionally redundant hot-plug cooling fans and power supplies are available.

All PCI-X slots can run 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	Model 6C4 Using a 4-Slotted PCI Riser Card	**3**	Model 6E4 Using a 4-Slotted PCI Riser Card
2	Model 6C4 Using a 6-Slotted PCI Riser Card	**4**	Model 6E4 Using a 6-Slotted PCI Riser Card
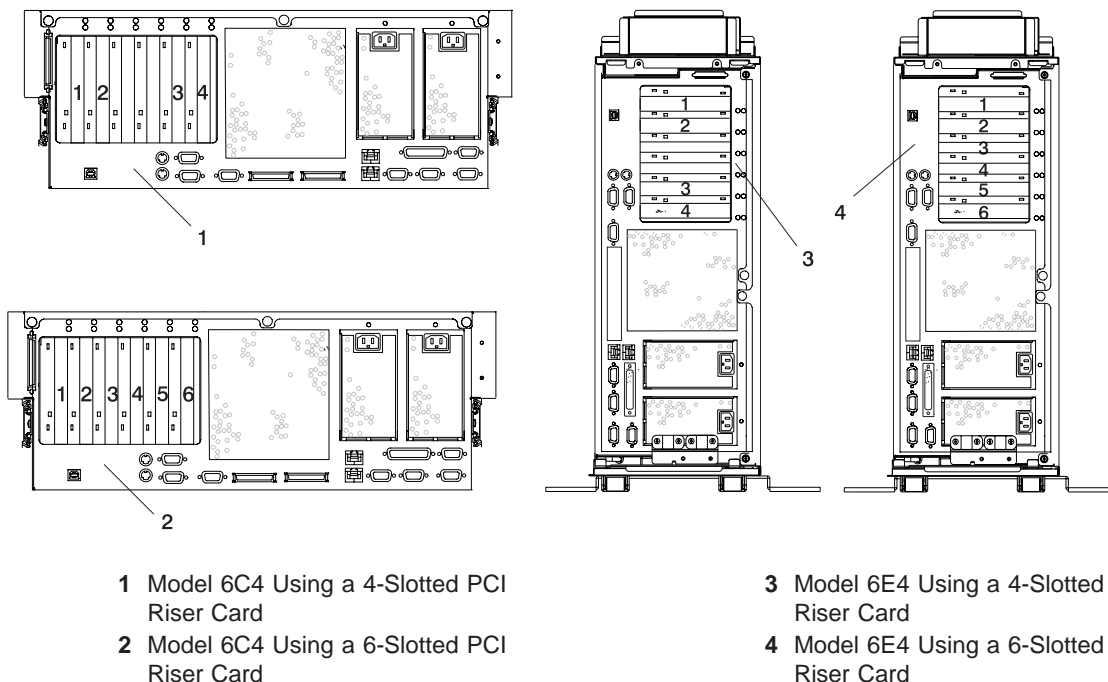
Processor Card

The Model 6C4 and Model 6E4 have two processor types and speeds from which to choose.

The GP (POWER4) processor has a processing speed of 1.0 GHz, while the GQ (POWER4+) processor has a processing speed of 1.45 GHz.

Use only processor cards of the same type and speed when adding, replacing or upgrading processor cards in your system.

Processor cards can be configured in any one of following combinations:

- One 1-way processor card
- Two 1-way processor cards
- One 2-way processor card
- Two 2-way processor cards

Notes:

1. Feature conversions are available for upgrading from a 1-way to a 2-way processor and when upgrading from a POWER4 to POWER4+ processor.
2. The processor feature conversions must be performed by a service representative.

Memory

- 1 GB to 32 GB ECC (error code correction) DDR (double data rate) SDRAM (synchronous dynamic random-access memory).
- Memory DIMMs plug into the processor cards (8 DIMM slots per card).
- DIMMs must be populated in quads (four DIMMs). A memory feature consists of a quad. Additional quads can consist of any memory size.
- A system with a single processor card (1-way or 2-way) can have a maximum of 16 GB of memory.

Media Drives

Typical system configuration consists of two media bays. One of the media bays can be configured with either IDE CD-ROM or IDE DVD-ROM.

- Media bay 1 can accommodate an IDE CD-ROM or IDE DVD-ROM.
- Media bay 2 can accommodate a SCSI DVD-RAM, diskette drive, or tape drive.

    Note: The SCSI DVD-RAM can read CD-ROM installation media.

    The following media drives are available for the Model 6C4 and Model 6E4.
    - Diskette drive
    - DVD-RAM drive 4.7 GB capacity
    - 650 MB IDE 48x CD-ROM drive
    - 4.7 GB IDE 16x/48x DVD-ROM drive
    - 80/160 GB VXA tape drive
    - 8 mm 60/150 GB tape drive
    - 4 mm 20/40 GB tape drive

Hot-Pluggable Disk Drives
Four hot-plug disk-drive bays:
- 18.2 GB to 587.2 GB of disk storage
- The following disk-drive sizes and speeds are available:
  - 18.2 GB Ultra3 10K RPM 1 inch
  - 36.4 GB Ultra3 10K RPM 1 inch
  - 73.4 GB Ultra3 10K RPM 1 inch
  - 146.8 GB Ultra3 10K RPM 1 inch
  - 36.4 GB Ultra3 15K RPM 1 inch
  - 73.4 GB Ultra3 15K RPM 1 inch

PCI-X Slots and Integrated Adapters
The following devices are included in the Model 6C4 and Model 6E4:
- Six hot-plug PCI-X slots, 64-bit, 133 MHz, 3.3 volt on POWER4+ processor models, four slots on POWER models.
- Integrated ports:
  - Two 10/100 Ethernet (IEEE 802.3 compliant).
  - Two Ultra3 SCSI (one external Ultra3 SCSI (with VHDCI 4 mini 68-pin port), and one internal Ultra3 SCSI disk drive backplane). VHDCI may require a mini 68-pin connector or FC 2118 mini 68-pin to 68-pin 0.3 meter cable as an additional feature.
  - Three serial. Serial port 1 (S1) has two physical connectors, one RJ-48 connector located in front on the operator panel and a 9-pin D-shell connector located on the rear of the chassis. The use of the front port disables the rear S1 port.
  - One parallel (the parallel port is not accessible when in partitioned mode).
  - Keyboard and mouse.

I/O Expansion Drawer
Expansion is provided by adding additional 7311 Model D20 I/O drawers (up to two) for the Model 6C4. The Model D20 provides additional PCI-X slots and disk drive bays for the Model 6C4.
- Seven hot-plug PCI-X slots, 64-bit, 133 MHz, 3.3 volt
- Up to 12 hot-pluggable disk drive bays

  The optional disk backplane consists of two 6-pack disk bays and requires SCSI cables to connect a required Ultra3 SCSI PCI adapter or Ultra3 SCSI RAID adapter, in slot 7 to each of the 6-packs, or two SCSI adapters (one in slot 4 and one in slot 7 of the I/O drawer).

Power Supplies
Up to two power supplies maximum per system; the second power supply is for redundant power.
- AC input type 100-127 V ac or 200-240 V ac
- Single phase
- Frequency = 47 Hz - 63 Hz

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, attention, SCSI activity, and LAN activity
- Buttons for power on, system reset, and 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 on the operator panel above the system reset button.

Input/Output Ports

- One 25-pin parallel
- Keyboard
- Mouse
- Two Ultra3 SCSI (one to internal 4-pack disk drive backplane, one to external VHDCI mini 68-pin connector)
- Integrated Drive Electronics (IDE)
- Two System Power Control Network (SPCN) Connectors
- Two RIO Connectors
- Two 10/100 Ethernet (IEEE 802.3 compliant)
- Three serial ports. Serial port 1 (S1) has two physical connectors, one RJ-48 connector located in front on the operator panel, and a 9-pin D-shell connector located on the rear of the chassis. The other two serial ports are 9-pin D-shell connectors located on the rear of the system chassis.

1	Serial Port 1 Connector	**3**	Serial Port 3 Connector
1a	Serial Port 1 Front Connector (RJ-48)	**4**	Parallel Connector
2	Serial Port 2 Connector		
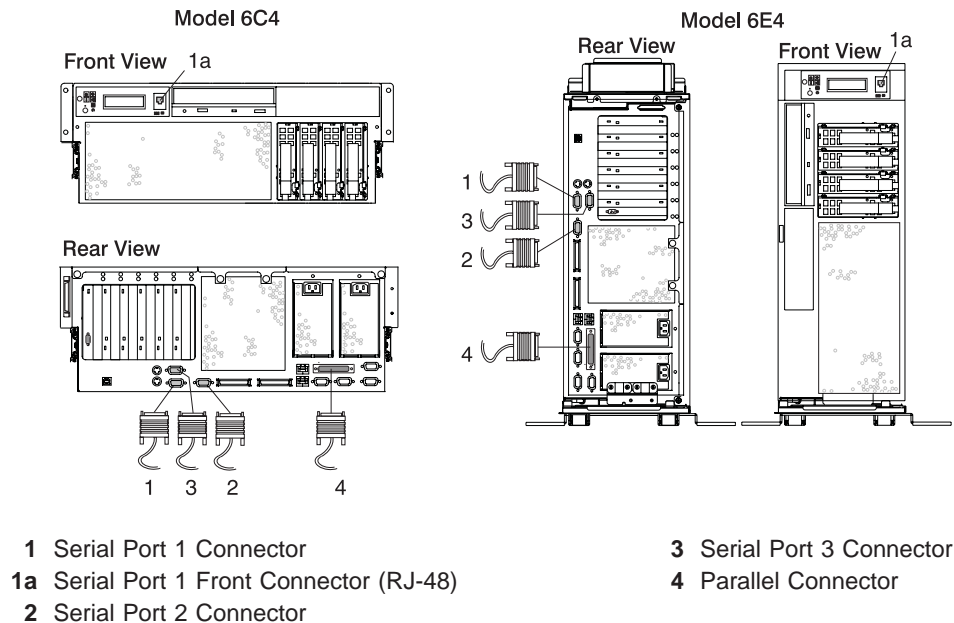
Current usage for the serial port connectors are as follows:

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 the 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 the operating system console, and modems
Serial Port 2 (S2)	Rear of the System	Service Processor menus, HACMP, ASCII terminal for the operating system console, and modems
Serial Port 3 (S3)	Rear of the System	HACMP, UPS (uninterruptible power supply), ASCII terminal for the 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 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

On the Model 6C4 and Model 6E4, you can 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.

Hardware Management Console (HMC)

The Hardware Management Console (HMC) is an optional feature that allows you to manage configuration and operation of partitions in a system, as well as add and remove hardware without interrupting system operation.

In this book, a system that is managed by the HMC is referred to as the *managed system*. The HMC uses its serial connection to the managed system to perform various functions. The HMC's main functions include the following:

- Detecting, reporting, and storing changes in hardware conditions

- Acting as a service focal point for service representatives to determine an appropriate service strategy

Service representatives use the Service Focal Point application on the HMC to start and end their service calls. Service Focal Point provides service representatives with serviceable event information, vital product data (VPD), and diagnostic information.

The HMC is a closed system. Additional applications cannot be loaded on the HMC. All the tasks needed to maintain the platform, the underlying operating system, and the HMC application code are available by using the HMC's management applications.

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 without an HMC Attached" on page 363 and "Starting the System without an HMC Attached" on page 364.

Console Strategy

Note: This section applies to a system that does not have 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 (for example, keyboard installed or removed, mouse installed or removed, graphics adapter installed/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 OK 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 started at boot time only 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 installed, 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 installed. 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 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 diagnostics from the boot hard disk.

System Unit Locations

Model 6C4 Front View
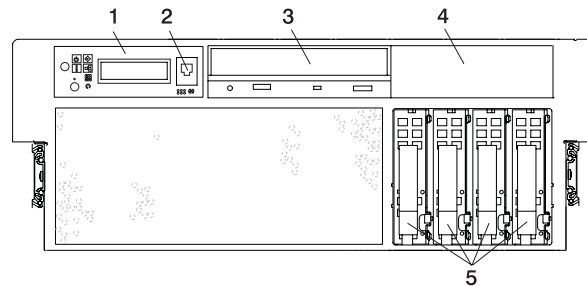
1 Operator Panel	**4** Media Bay
2 Front Serial Port	**5** Hot-Plug Disk Drives
3 CD-ROM Drive (optional)	

Model 6C4 Rear View
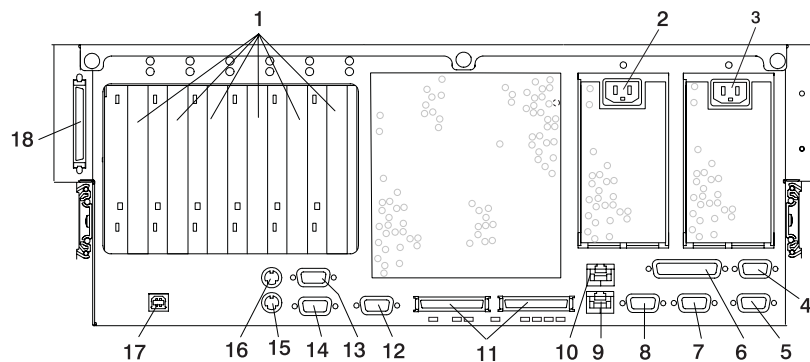
1 PCI-X Slot Access	**11a** RIO-G0 Connector
2 Redundant Power Cable Receptacle	**11b** RIO-G1 Connector
3 Primary Power Cable Receptacle	**12** Serial Connector 2
4 System Power Control Network Connector SPCN2	**13** Serial Connector 3
5 System Power Control Network Connector SPCN1	**14** Serial Connector 1
6 Parallel Connector	**15** Mouse Connector
7 Hardware Management Console Connector HMC2	**16** Keyboard Connector
8 Hardware Management Console Connector HMC1	**17** Rack Indicator
9 Ethernet Connector 1	**18** External SCSI Connector
10 Ethernet Connector 2	

Model 6E4 Front View
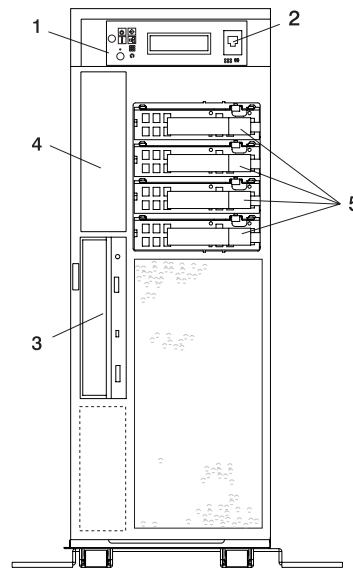
1	Operator Panel	**4**	Media bay
2	Front Serial Connector	**5**	Hot-Plug Disk Drives
3	CD-ROM Drive		

Rear View
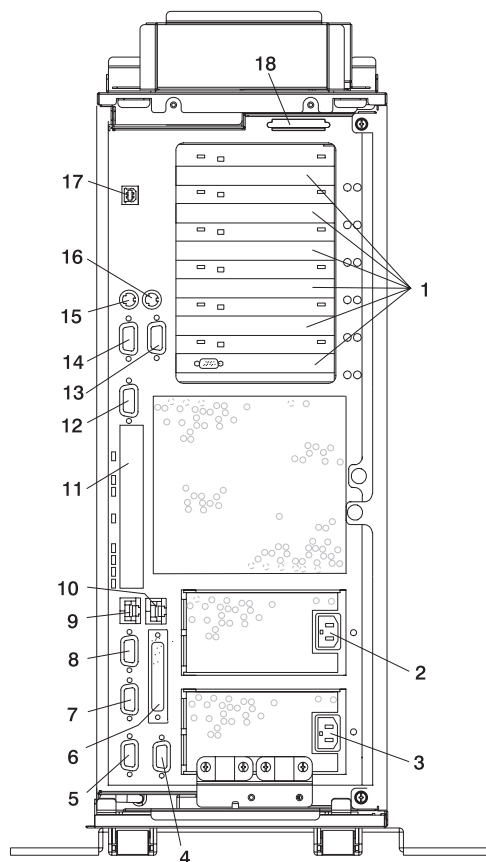
1	PCI-X Slot Access	**10**	Ethernet Connector 2
2	Redundant Power Cable Receptacle	**11**	RIO Connector Cover
3	Primary Power Cable Receptacle	**12**	Serial Connector 2
4	System Power Control Network Connector SPCN2	**13**	Serial Connector 3
5	System Power Control Network Connector SPCN1	**14**	Serial Connector 1
6	Parallel Connector	**15**	Mouse Connector
7	Hardware Management Console Connector HMC2	**16**	Keyboard Connector
8	Hardware Management Console Connector HMC1	**17**	Rack Indicator
9	Ethernet Connector 1	**18**	External SCSI Connector

Power Supply Locations

Model 6C4
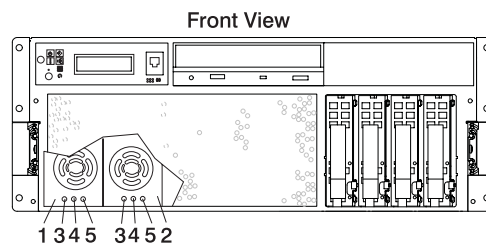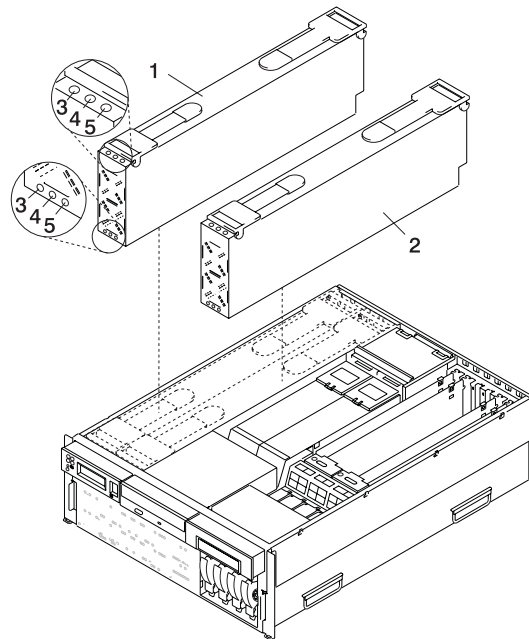
Front View

1 Power Supply #1 (Primary)	**3** AC Good LED (Green)
2 Power Supply #2 (Redundant)	**4** DC Good LED (Green)
	5 Fault LED (Amber)

Model 6E4

Front View   Rear View
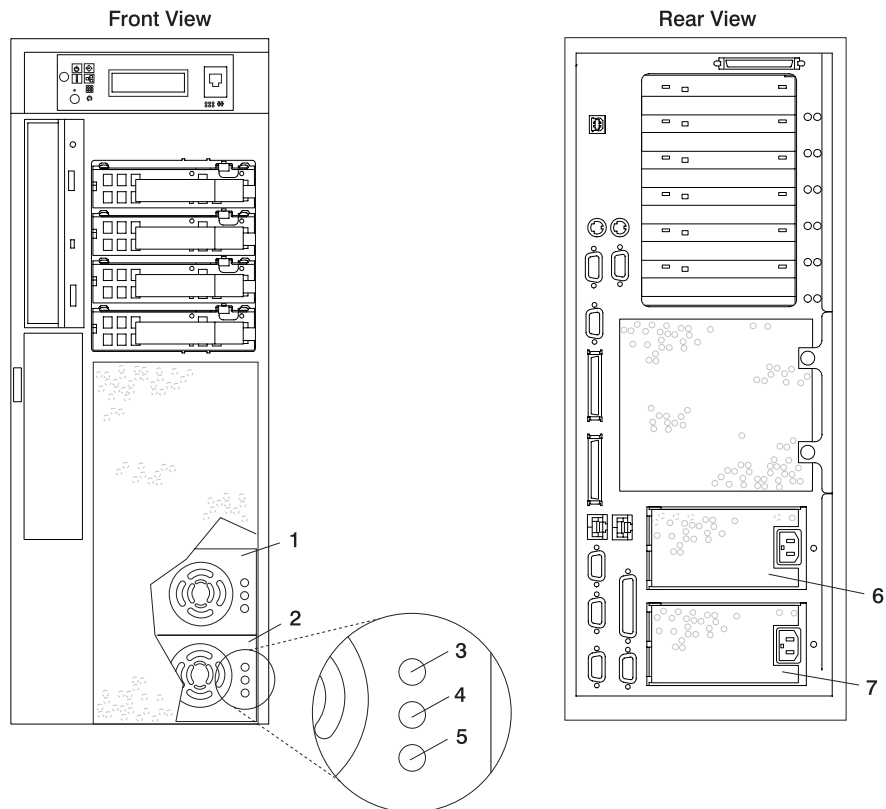
1	Power Supply #2 (Redundant) (Front View)	**5**	AC Good LED (Green)
2	Power Supply #1 (Primary) (Front View)	**6**	Redundant Power Supply (Rear View)
3	Fault LED (Amber)	**7**	Primary Power Supply (Rear View)
4	DC Good LED (Green)		

Note: The preceding illustration does not show the LEDs located on the top of the power supplies. For location references, see the illustration on page 13 showing the power supplies for the Model 6C4.

Fan Locations

The following illustration identifies the system cooling fans. The fans have an amber LED located on top of the housing. A lit amber LED indicates that the fan is not operating correctly.

The power supplies have two groups of three LEDs located on the front and top. 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.
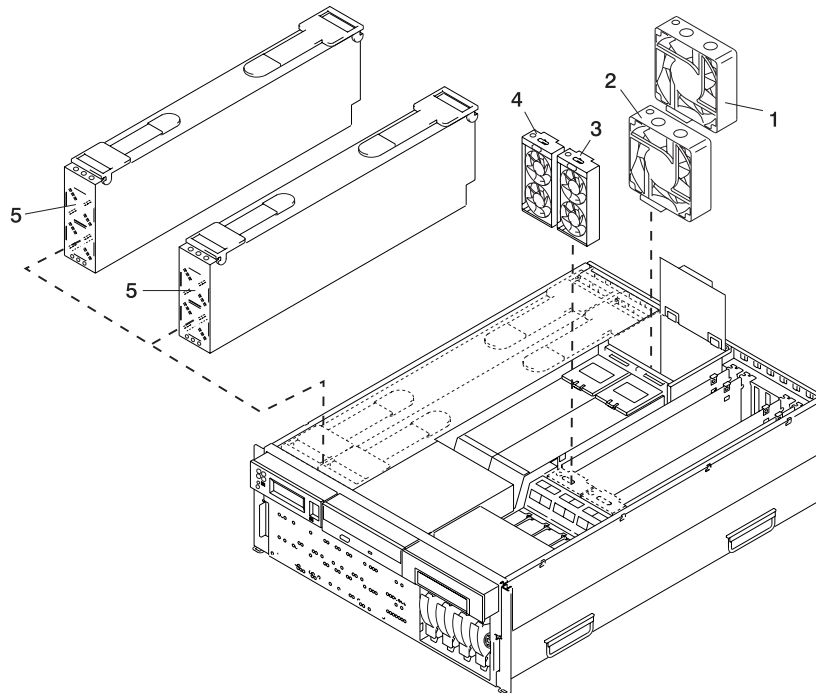
1	Processor Card Cooling Fan (Primary Fan #1)	**4**	PCI Adapter Cooling Fan (Fan #3)
2	Processor Card Cooling Fan (Redundant Fan #2)	**5**	Stacked Power Supply Cooling Fans
3	PCI Adapter Cooling Fan (Fan #4)		

Note: The preceding illustration does not show the two cooling fans integrated into each power supply.

CEC Backplane Locations

The following illustration of the CEC backplane identifies the primary connectors used in your system.
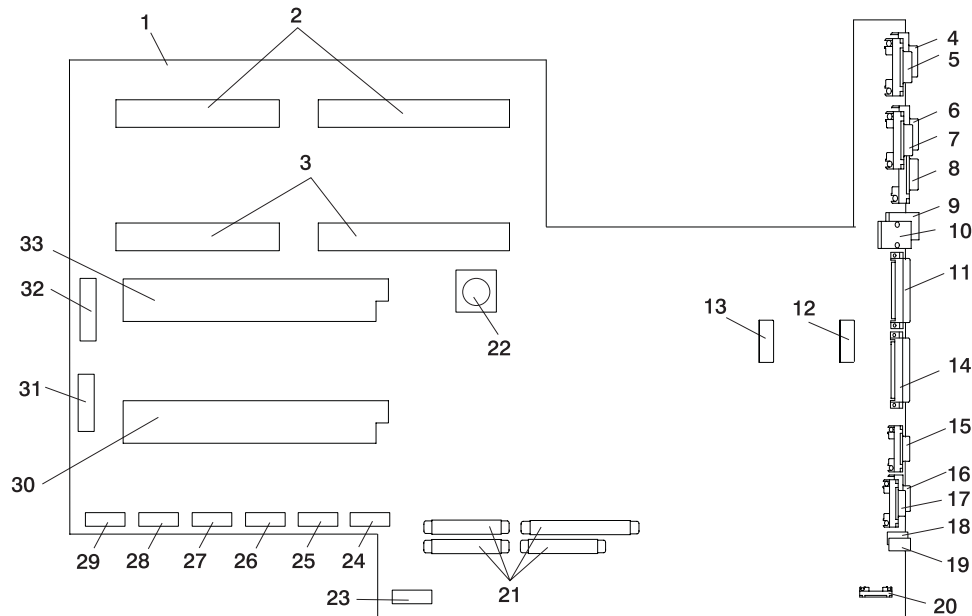
1	CEC Backplane	**17**	Serial Port #3 Connector
2	Power Supply #1 (Primary) Connectors	**18**	Mouse
3	Power Supply #2 (Redundant) Connectors	**19**	Keyboard
4	SPCN1 Connector	**20**	Rack Indicator Connector
5	SPCN2 Connector	**21**	PCI Riser Card Connectors
6	HMC2 Connector	**22**	Battery Connector
7	Parallel Port Connector	**23**	For Manufacturing Use Only
8	HMC1 Connector	**24**	PCI Cooling Fan #3 and #4 Connector
9	Ethernet #1 Connector	**25**	IDE CD-ROM Signal Connector
10	Ethernet #2 Connector	**26**	Diskette Drive Signal Connector
11	Connector RIO-G1 Connector	**27**	Diskette Drive Power Connector
12	Processor Cooling Fan #1 Connector (Primary Fan)	**28**	Media Power Connector
13	Processor Cooling Fan #2 Connector (Redundant Fan)	**29**	Disk Drive Backplane Power Connector
14	Connector RIO-G0 Connector	**30**	Processor Card #2 Connector
15	Serial Port #2 Connector	**31**	For Manufacturing Use Only
16	Serial Port #1 Connector	**32**	Operator Panel Connector
		33	Processor Card #1 Connector

PCI Riser Card Locations

Depending on your system configuration, four-slotted or six-slotted PCI-X riser cards are available. The slots are 64-bit capable at 133 MHz, 3.3 volts. If your system has four PCI-X slots, use slots 3 and 4 with PCI adapters that require high performance. Use slots 1 and 2 with PCI adapters that do not require high performance. On the six-slotted PCi riser cards, all slots are equal. All slots are capable of using the full-length PCI-X adapters. The PCI-X slots are numbered on the rear of the chassis, from left to right.

The PCI card has two integrated SCSI controllers. One SCSI controller (PCI, 64-bit) is a SYM53C1010 that operates at 66MHz and has dual LVD (low voltage differential) ports. The other is a 53C875, SE-SCSI controller and is only available on the 6 slotted PCI riser card. The internal port from SCSI controller SYM53C1010 connects to the DASD board through a 68-pin SCSI cable. The port from the SE-SCSI controller is available only on the six–slotted PCI riser card, and connects to the media bay through a 68-pin SCSI cable.

All PCI-X slots can run 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 illustrations show the PCI adapter slot locations when viewing from the rear of the system.
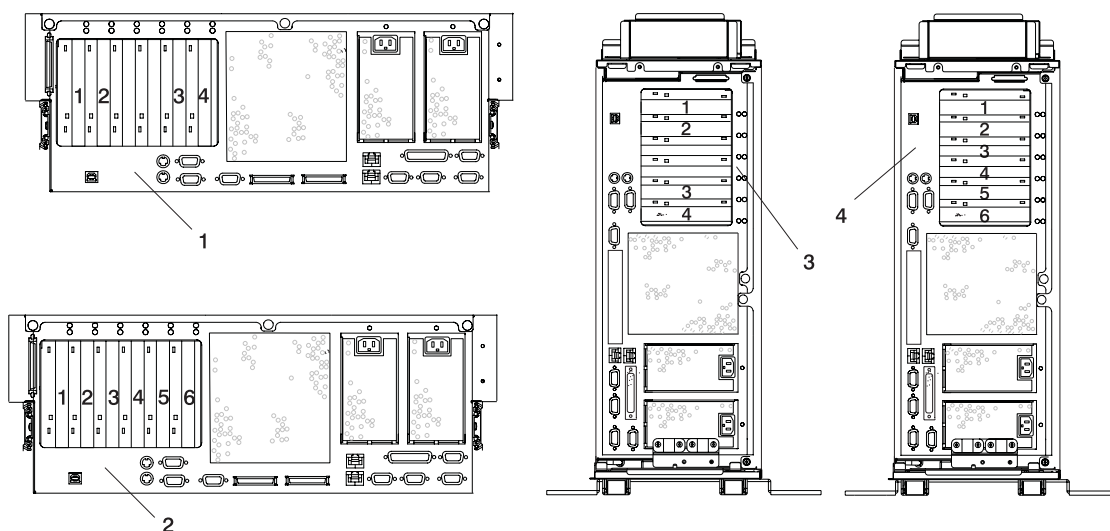
1	Model 6C4 Using a 4-Slotted PCI-X Riser Card	**3**	Model 6E4 Using a 4-Slotted PCI-X Riser Card
2	Model 6C4 Using a 6-Slotted PCI-X Riser Card	**4**	Model 6E4 Using a 6-Slotted PCI-X Riser Card

The following illustrations show the connector and slot locations on the four-slotted PCI riser card and six-slotted PCI riser card, respectively.

Four-Slotted PCI Riser Card
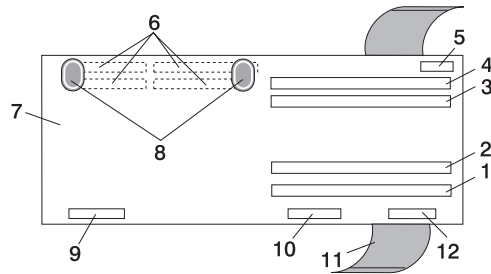
1	PCI Slot 1	**7**	4 Slotted PCI Riser Card
2	PCI Slot 2	**8**	″Push″ Labels
3	PCI Slot 3	**9**	Internal Disk Drive SCSI Connector (for internal disk drive use only)
4	PCI Slot 4	**10**	External SCSI Connector
5	Manufacturing Use Only	**11**	Removal Sling
6	Riser Card to CEC Backplane Standoff Connectors (Quantity 4) located on the underside of the PCI Riser Card	**12**	Riser Card to Disk Drive Backplane Signal Connector

Six-Slotted PCI Riser Card
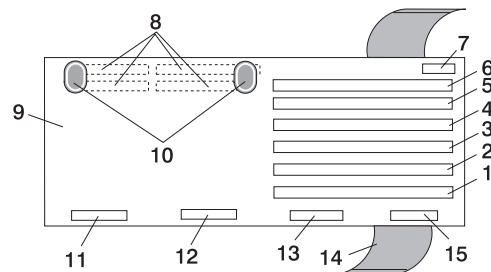
1	PCI Slot 1	**9**	6-Slotted PCI Riser Card
2	PCI Slot 2	**10**	″Push″ Labels
3	PCI Slot 3	**11**	Internal Disk Drive SCSI Connector (for internal disk drive use only)
4	PCI Slot 4	**12**	Single-Ended SCSI to Media Connector
5	PCI Slot 5	**13**	External SCSI Connector
6	PCI Slot 6	**14**	Removal Sling
7	Manufacturing Use Only	**15**	Riser Card to Disk Drive Backplane Signal Connector
8	Riser Card to CEC Backplane Standoff Connectors (Quantity 4) located on the underside of the PCI Riser Card		

Memory DIMM Location

The memory DIMMs used in the pSeries 630 Model 6C4 and Model 6E4 are located on the processor card. Your system contains either one or two processor cards, each card with 8 memory DIMM slots. Associated with each memory DIMM slot is an LED, which is located on the edge of the processor card. A lit LED indicates a problem with a specific memory DIMM. 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. Swap out each DIMM, starting the system after each change, until the faulty DIMM has been replaced.

  Note: A quad is a group of four memory DIMMs. Each memory DIMM in a quad must be the same type and size. However, both quads on the same processor card are not required to be the same.
- The system must have at least four memory DIMMs installed (one quad).
- The quad slot combinations are 1, 3, 6, and 8 (or 2, 4, 5, and 7).

  Note: 1, 3, 6, and 8 (or 2, 4, 5, and 7) combinations are the only possible slot combinations recognized by the system.
- On a two-processor-card system, either processor card can be populated with memory.

  Note: A processor card containing no memory is still functional. (For example, a system containing two processor cards has all of its memory installed on processor card 1, and no memory installed on processor card 2. Processor card 2 has no memory-storage capacity, but functions as a processor card.)

The following are valid memory configurations for one and two processor cards:

Number of Processor Cards	Allowable Memory Configurations
1 Processor Card	1 GB through 16 GB installed in quads of 256 MB DIMMs to 2 GB DIMMs
2 Processor Cards	1 GB through 32 GB installed in quads of 256 MB DIMMs to 2 GB DIMMs

Note: The maximum amount of system memory varies by model.

The following processor card illustration shows the memory DIMM slot locations, as well as the LED location associated with each memory DIMM slot.
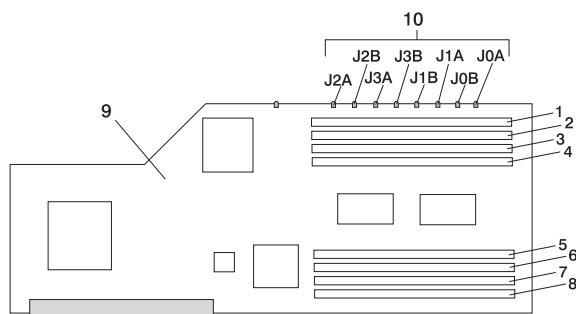
1 Memory Module Slot 1 (J2A)		**6** Memory Module Slot 6 (J1A)	
2 Memory Module Slot 2 (J2B)		**7** Memory Module Slot 7 (J0B)	
3 Memory Module Slot 3 (J3A)		**8** Memory Module Slot 8 (J0A)	
4 Memory Module Slot 4 (J3B)		**9** Processor Card	
5 Memory Module Slot 5 (J1B)		**10** Memory Module Fault LEDs	

Reading the Operator Panel and System LEDs

The following illustration shows the component location on the operator panel.
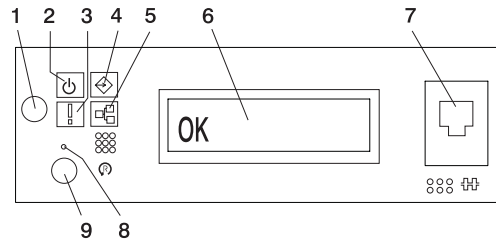
1	Power-On Button	6	Operator Panel Display
2	Power LED	7	(FS1) Front Serial Connector (RJ-48 Connector)
3	Attention LED	8	Service Processor Reset Switch (Pinhole)
4	SCSI Port Activity	9	System Reset Button
5	Ethernet Port Activity		

Index	Component Name	Component Description
1	Power-On Button	Turns the system power on and off.
2	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 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.
3	Attention LED	Normal State - LED is off.
4	SCSI Port Activity	Normal State - LED is on when there is SCSI activity.
5	Ethernet Port Activity	Normal State - LED is on when there is Ethernet activity.
6	Operator Panel Display	Displays current status of system startup, or diagnostic information in the event of a hardware problem.
7	Front Serial Connector (FS1)	Serial port uses RJ-48 connector. Use to plug in external devices at the front of the system unit.
8	Service Processor Reset Switch (Pinhole)	Service Personnel Use Only
9	System Reset Button	Resets the system

For more information about other system LEDs, see "Component LEDs" on page 470.

SCSI IDs and Bay Locations
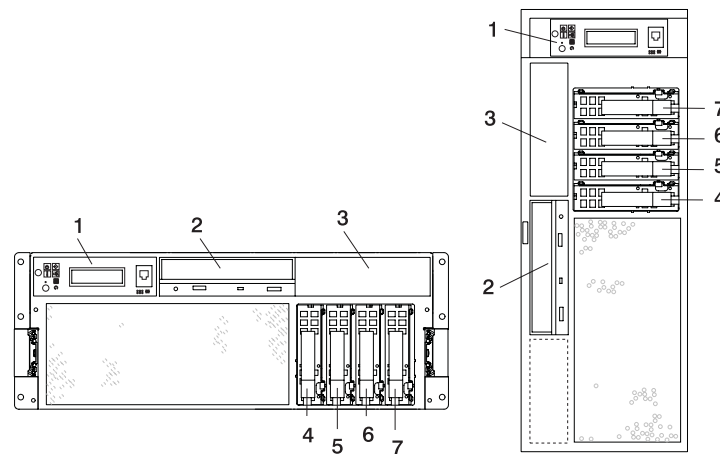
Note: To show the disk drive and disk drive bay locations, the pSeries 630 Model 6C4 and Model 6E4 are shown with their bezels removed.

Index	Bay Location	Drive Name	SCSI ID
1		Operator Panel	
2	D01	IDE CD-ROM (Default) or IDE DVD-ROM (Optional)	IDE (Non-SCSI) SCSI ID 1
3	D02	Tape Drive (Optional)	SCSI ID 0
		SCSI DVD-RAM (Optional)	SCSI ID 1
		Diskette Drive (Optional)	Not Applicable
4	D10	Disk Drive	SCSI ID 8
5	D11	Disk Drive	SCSI ID 9
6	D12	Disk Drive	SCSI ID 10
7	D13	Disk Drive	SCSI ID 11

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:
   - Tape Drive
   - SCSI DVD-RAM
   - Diskette Drive

System Logic Flow

When viewing the following system logic flow illustrations, select the diagram that is closest to your system configuration.

Systems Configured with a GP Processor and Four-Slotted PCI Riser Card
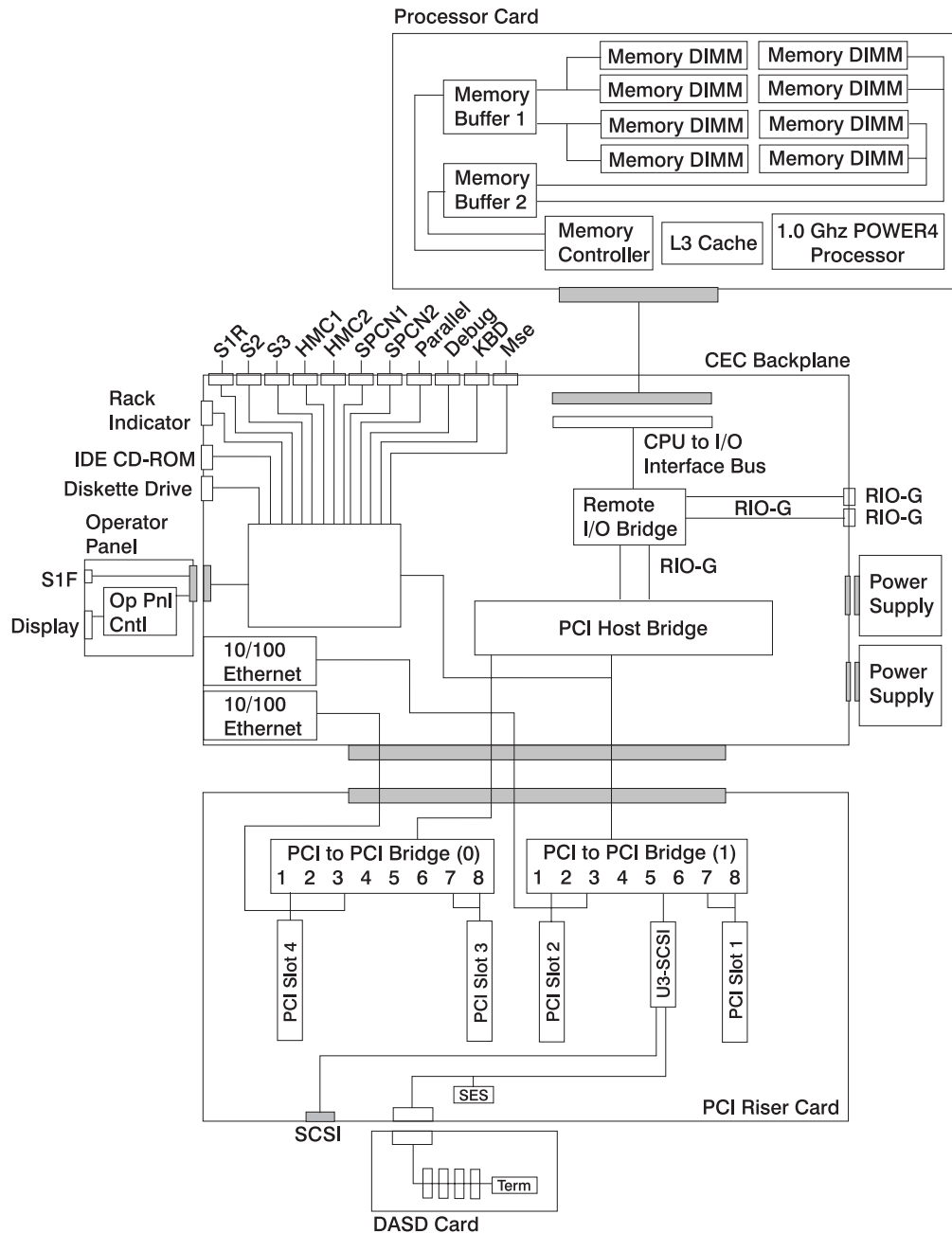
Systems Configured with a GQ Processor and Six-Slotted PCI Riser Card
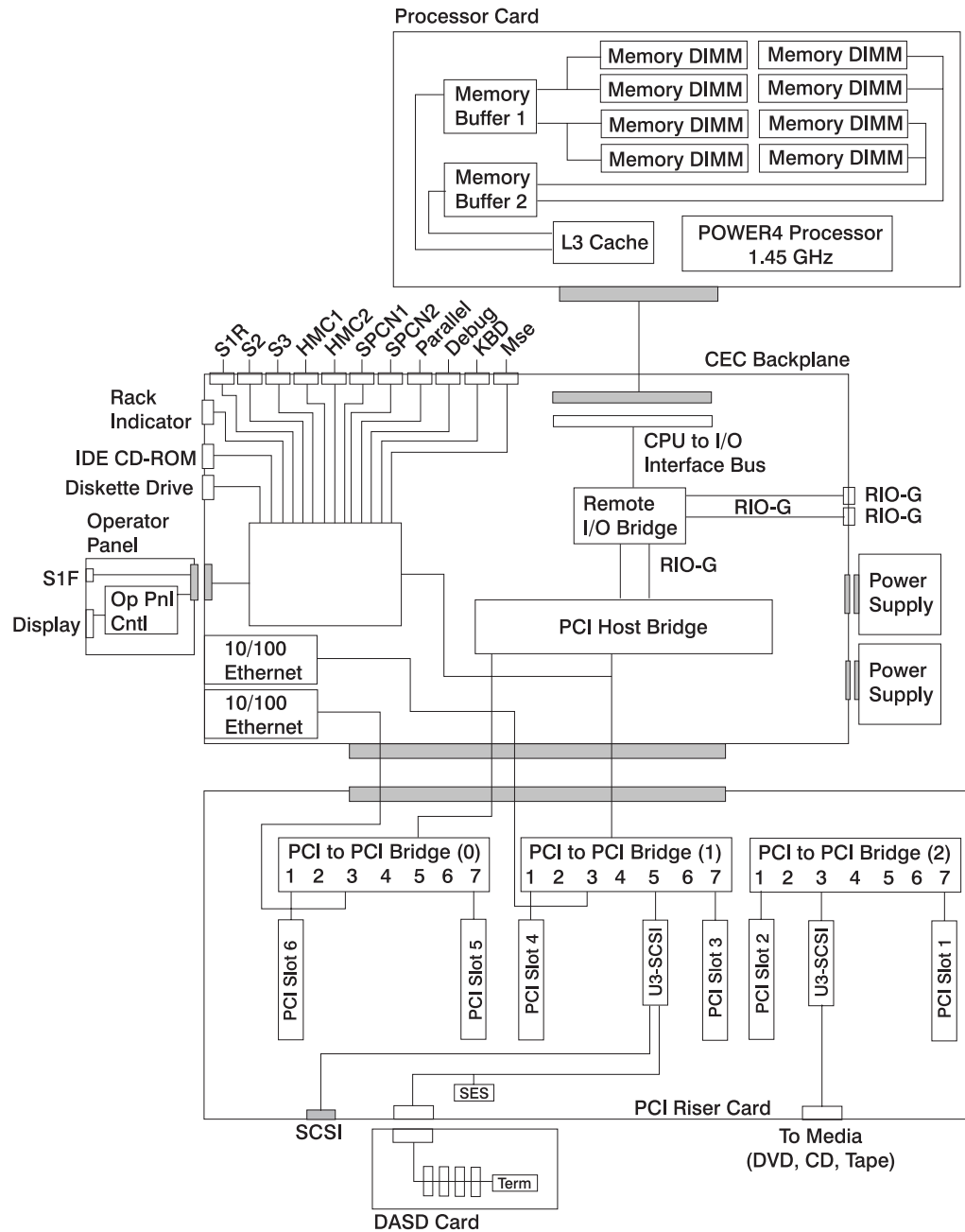
Location Codes

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.

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.

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-C1 is a processor card (C1) plugged into a planar (P1), or P1-M1 is a memory card (M1) plugged into a planar (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, P2/S1 describes the location of the serial port 1 controller and its connector (S1), which is located on planar P2 (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 P2/K1, which means they have the same base location code (P2) as serial port 1, but a different external connector. In contrast, the location code P2-K1 actually points to the device connected to connector K1; that is, the keyboard. The location code P2/Z1 indicates an integrated SCSI controller which drives connector Z1, while location codes of P2-Z1-... point to the actual SCSI bus and devices.
- The # (pound sign) separator character indicates a cable connection between a connector and parent.

The following are examples:

- U0.1-P1-C1 identifies processor card C1 plugged into the CEC backplane P1.
- U0.1-P1-C2-M1 identifies memory card M1 plugged into slot 1 on processor card C2 connected to the CEC backplane P1.
- U0.1-P1/S1 identifies serial port 1 controller on the CEC backplane P1 or the connector for serial port 1.
- U0.1-P1-K1 identifies a keyboard K1, attached to connector K1 on CEC backplane P1.
- U0.1-P2/Z1 identifies an integrated SCSI port controller on PCI riser card P2 that drives internal SCSI drive connector Z1.
- U0.1-P2-Z1-A8... points to the actual SCSI bus and devices attached to Z1; in this case, a hot-plug disk drive in bay location D10 with a SCSI ID of 8.

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
```
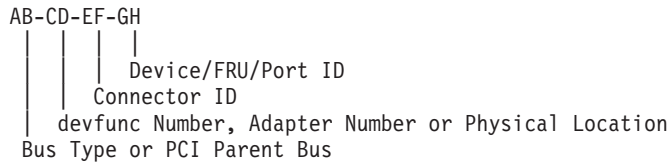
- The AB value identifies a bus type or PCI parent bus as assigned by the firmware.
- The CD value identifies adapter number, the adapter's devfunc number, or physical location. The devfunc number is defined as the PCI device number times 8, plus the function number.
- The EF value identifies a connector.
- 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
```
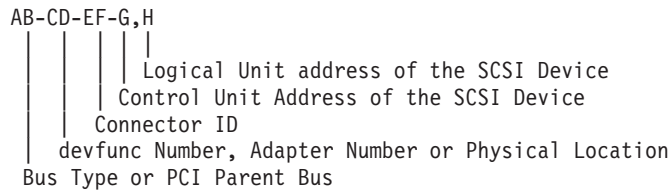
Where AB-CD-EF are the same as non-SCSI devices.

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:
• Processor card C1 plugged into CEC backplane P1:

  U0.1-P1-C1

• Processor card C2 attached to CEC backplane P1:

  U0.1-P1-C2

• Memory DIMM in slot 2 of processor card C1 attached to CEC backplane P1:

  U0.1-P1-C1-M2

Examples of AIX location codes displayed are as follows:
• Integrated PCI adapter:

  10-80   Ethernet
  10-60   Integrated SCSI Port 1 (internal)
  10-88   Integrated SCSI Port 2 (external)

- Pluggable PCI adapters:

    Note: The number of PCI-X slots available is dependent on the number of slots your PCI riser card has available. Your system can be configured with either a four or six slotted PCI riser card.

20-58 to 20-5F	Any PCI card in slot 1
20-60 to 20-67	Any PCI card in slot 2
10-68 to 10-6F	Any PCI card in slot 3
10-70 to 10-77	Any PCI card in slot 4
10-78 to 10-7F	Any PCI card in slot 5
10-80 to 10-87	Any PCI card in slot 6

- Integrated ISA adapters:

01-D1	Diskette adapter
01-R1	Parallel port adapter
01-S1	Serial port 1 adapter
01-S2	Serial port 2 adapter
01-S3	Serial port 3 adapter
01-K1	Keyboard adapter

- 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 181, a location code for a failing part might 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 might involve mixed types of parts. In this case, check the system's configuration for FRU part numbers to determine the appropriate set of FRUs.

To determine the FRU part numbers of the electronic assemblies in the entire system, use 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).

To determine the FRU part numbers of the electronic assemblies in a partition by using the **lscfg -vp** | **pg** command on the AIX command line to display the detailed VPD of all assemblies. The FRU part number information for processors and memory DIMMs might be located at the bottom of the command output.

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 321.

Any identify LED in the system can also be flashed by using the ″Identify and Attention Indicators″ task through 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:

* If the system is configured as a full system partition, boot to the open firmware prompt. See the "System Power Control Menu" on page 318 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 the system is logically partitioned, the HMC must be attached. 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: When the system is running under the Linux operating system, AIX location codes are not available.

Use the following illustration to aid you in the mapping of a location code to its connector on the system backplane.
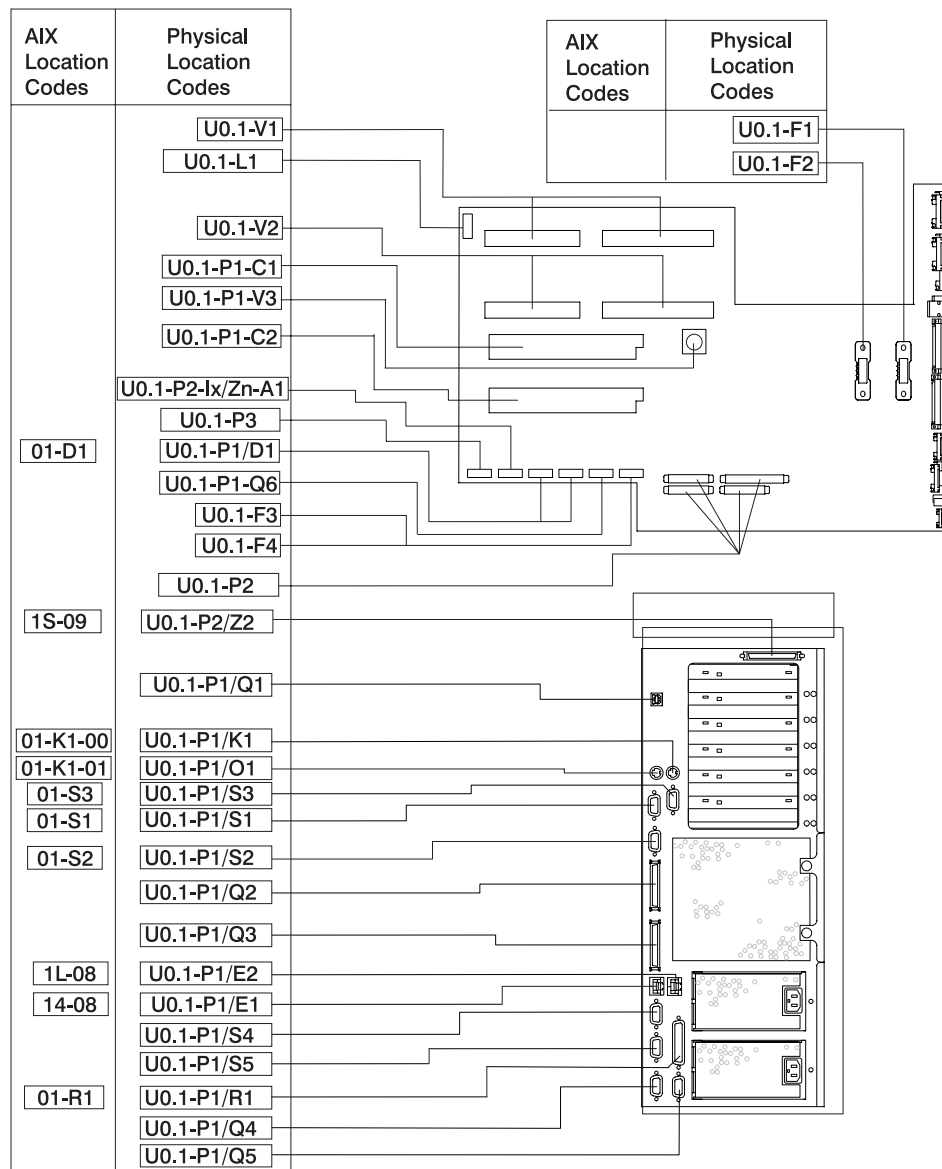
Use the following illustration to aid you in the mapping of a location code to its DIMM slot on the processor cards.
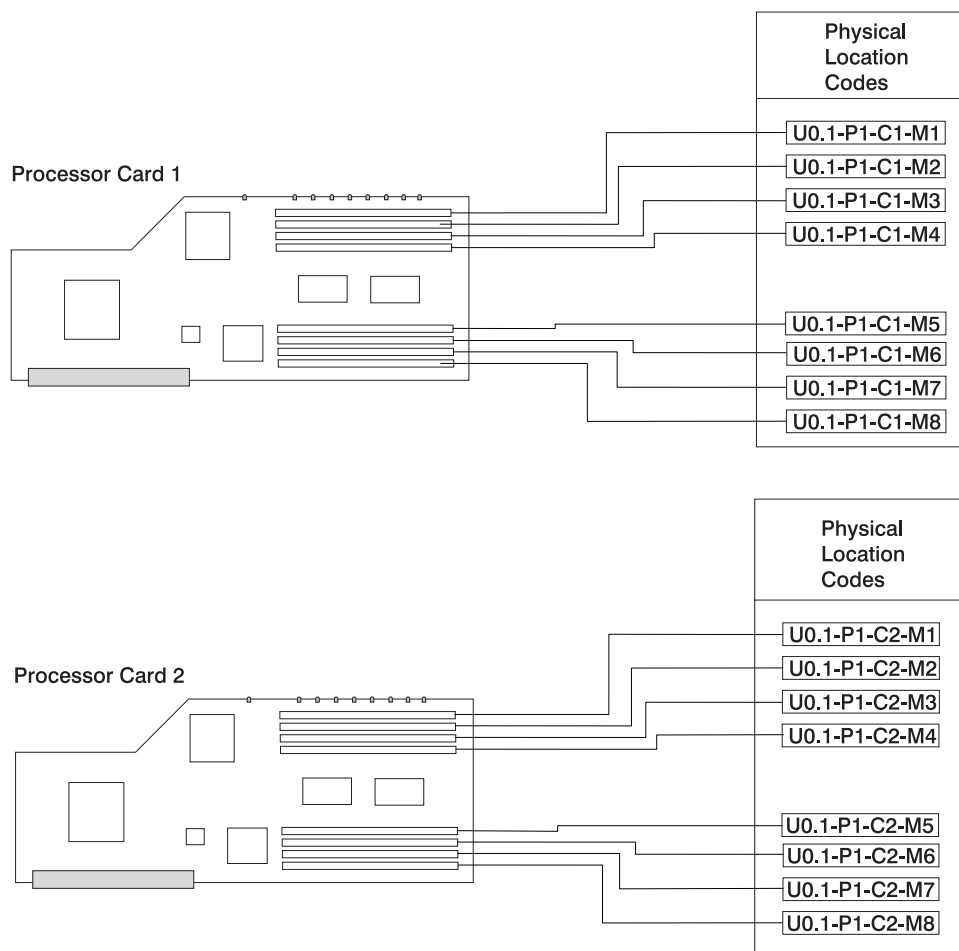
Physical
Location
Codes

Processor Card 1

U0.1-P1-C1-M1
U0.1-P1-C1-M2
U0.1-P1-C1-M3
U0.1-P1-C1-M4

U0.1-P1-C1-M5
U0.1-P1-C1-M6
U0.1-P1-C1-M7
U0.1-P1-C1-M8

Physical
Location
Codes

Processor Card 2

U0.1-P1-C2-M1
U0.1-P1-C2-M2
U0.1-P1-C2-M3
U0.1-P1-C2-M4

U0.1-P1-C2-M5
U0.1-P1-C2-M6
U0.1-P1-C2-M7
U0.1-P1-C2-M8

Use the following illustration to aid you in the mapping of a location code to its slot on the PCI riser card.

Four-Slotted PCI Riser Card Location Codes

AIX Location Codes	Physical Location Codes
11-08	U0.1-P2/I4
1D-08	U0.1-P2/I3
1H-08	U0.1-P2/I2
1V-08	U0.1-P2/I1

AIX Location Codes	Physical Location Codes
1S-09	U0.1-P2/Z2
1S-08	U0.1-P2/Z1

Six-Slotted PCI Riser Card Location Codes

AIX Location Codes	Physical Location Codes
11-08	U0.1-P2/I6
1D-08	U0.1-P2/I5
1Z-08	U0.1-P2/I4
1n-08	U0.1-P2/I3
1H-08	U0.1-P2/I2
1V-08	U0.1-P2/I1

AIX Location Codes	Physical Location Codes
1S-08-00-15,0	U0.1-P2/Z1-AF
1S-09	U0.1-P2/Z2
1c-08	U0.1-P2/Z3
1S-08	U0.1-P2/Z1
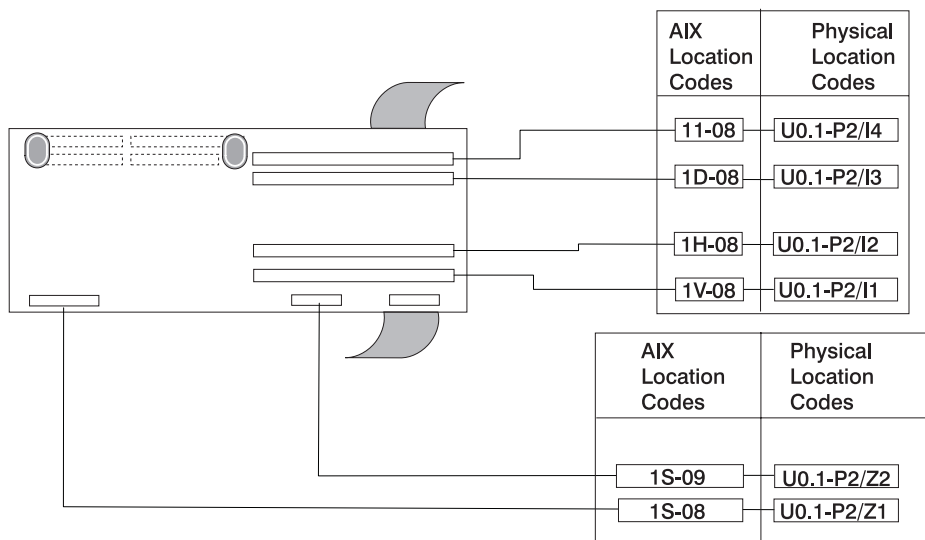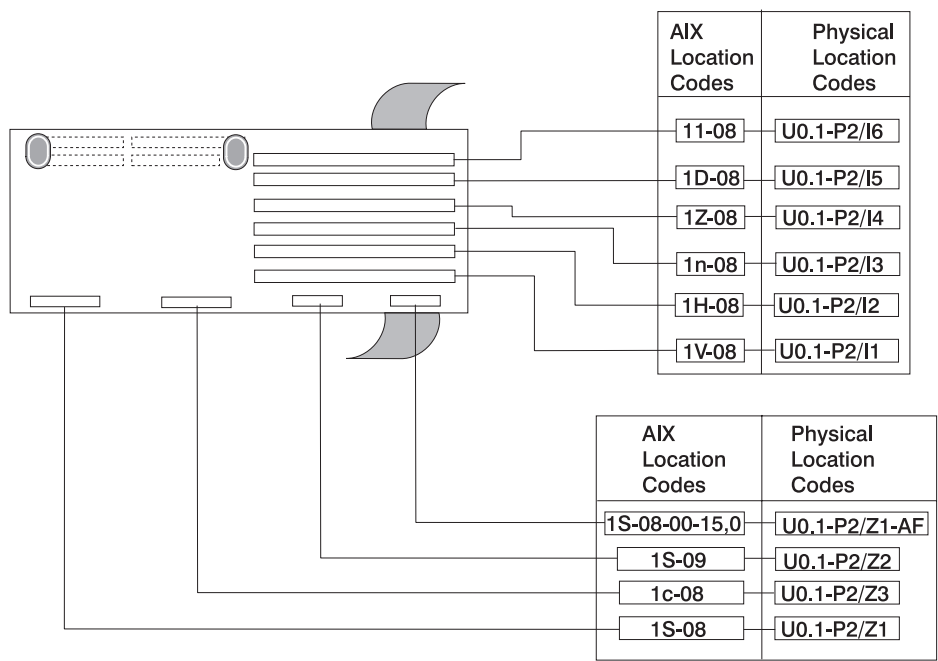
Disk Drive Backplane Location Codes

Use the following illustration to aid you in the mapping of a location code to its slot on the disk drive backplane.

AIX Location Codes	Physical Location Codes
1S-08-00-11,0	U0.1-P2/Z1-AB
1S-08-00-10,0	U0.1-P2/Z1-AA
1S-08-00-9,0	U0.1-P2/Z1-A9
1S-08-00-8,0	U0.1-P2/Z1-A8
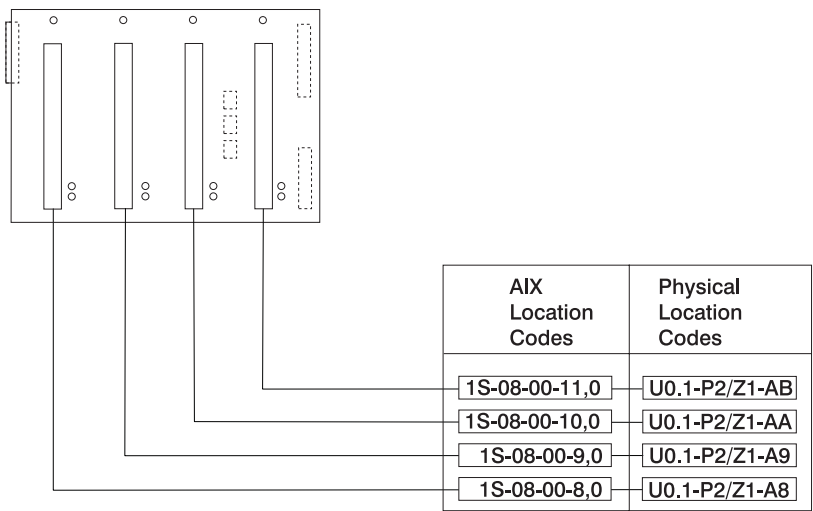
AIX and Physical Location Code Table

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

This section covers the AIX and Physical Location Code tables for the pSeries 630 Model 6C4 and Model 6E4, as well as the 7311 Model D20 I/O Drawer.

pSeries 630 Model 6C4 and Model 6E4 Location Code Table

Component Name	Physical Location Code	AIX Location Code
Central Electronics Complex (CEC)		
Rack Frame	U0	
CEC Drawer	U0.1	
CEC Backplane	U0.1-P1	
PCI Riser Card	U0.1-P2	
Disk Drive Backplane	U0.1-P3	
Processor Cards		
Processor Card 1	U0.1-P1-C1	
Processor Card 2	U0.1-P1-C2	
Memory DIMMs on Processor Card 1		
Memory DIMM 1	U0.1-P1-C1-M1	
Memory DIMM 2	U0.1-P1-C1-M2	
Memory DIMM 3	U0.1-P1-C1-M3	
Memory DIMM 4	U0.1-P1-C1-M4	
Memory DIMM 5	U0.1-P1-C1-M5	
Memory DIMM 6	U0.1-P1-C1-M6	
Memory DIMM 7	U0.1-P1-C1-M7	
Memory DIMM 8	U0.1-P1-C1-M8	
Memory DIMMs on Processor Card 2		
Memory DIMM 1	U0.1-P1-C2-M1	
Memory DIMM 2	U0.1-P1-C2-M2	
Memory DIMM 3	U0.1-P1-C2-M3	
Memory DIMM 4	U0.1-P1-C2-M4	
Memory DIMM 5	U0.1-P1-C2-M5	
Memory DIMM 6	U0.1-P1-C2-M6	

Component Name	Physical Location Code	AIX Location Code
Memory DIMM 7	U0.1-P1-C2-M7	
Memory DIMM 8	U0.1-P1-C2-M8	
Integrated Devices		
Debug Connector (Manufacturing Use Only)		Labeled Debug Connector
Parallel Port	U0.1-P1/R1	01-R1
ISA Bus	U0.1-P1	1G-18
HMC2 Connector	U0.1-P1/S5	
HMC1 Connector	U0.1-P1/S4	
SPCN2 Connector	U0.1-P1/Q5	
SPCN1 Connector	U0.1-P1/Q4	
Keyboard Connector	U0.1-P1/K1	01-K1-00
Keyboard	U0.1-P1/K1-K1	01-K1-00-00
Mouse Connector	U0.1-P1/O1	01-K1-01
Mouse	U0.1-P1/O1-O1	01-K1-01-00
Ethernet Connector 1	U0.1-P1/E1	14-08
Ethernet Connector 2	U0.1-P1/E2	1L-08
RIO-G1 Connector	U0.1-P1/Q3	
RIO-G0 Connector	U0.1-P1/Q2	
Rack Indicator USB Connector	U0.1-P1/Q1	
Serial Connector 1	U0.1-P1/S1	01-S1
Serial Connector S1F (Located on Operator Panel)	U0.1-P1/S1	01-S1
Serial Connector 2	U0.1-P1/S2	01-S2
Serial Connector 3	U0.1-P1/S3	01-S3
Diskette Port	U0.1-P1/D1	01-D1
Diskette	U0.1-P1-D1	01-D1-00-00
CD-ROM (IDE)	U0.1-P1/Q6-A0	1G-19-00
Base CD-ROM (IDE) Controller	U0.1-P1/Q6	1G-19
Pluggable Adapters		
PCI Host Bridge 0	U0.1-P2	
PCI Host Bridge 1	U0.1-P2	
PCI Slot 1	U0.1-P2/I1	
PCI Slot 1 Card	U0.1-P2-I1	1V-08
PCI Slot 2	U0.1-P2/I2	
PCI Slot 2 Card	U0.1-P2-I2	1H-08
PCI Host Bridge 2	U0.1-P2	
PCI Slot 3	U0.1-P2/I3	
PCI Slot 3 Card	U0.1-P2-I3	1n-08
PCI Slot 4	U0.1-P2/I4	

Component Name	Physical Location Code	AIX Location Code
PCI Slot 4 Card	U0.1-P2-I4	1Z-08
PCI Slot 5 (six-slotted PCI riser card only)	U0.1-P2/I5	
PCI Slot 5 Card (six-slotted PCI riser card only)	U0.1-P2-I5	1D-08
PCI Slot 6 (six-slotted PCI riser card only)	U0.1-P2/I6	
PCI Slot 6 Card (six-slotted PCI riser card only)	U0.1-P2-I6	11-08
SCSI Devices		
Internal SCSI Port (for internal disk drive)	U0.1-P2/Z1	1S-08
External SCSI Port	U0.1-P2/Z2	1S-09
Single-Ended SCSI (six-slotted PCI riser card only)	U0.1-P2/Z3	1c-08
Media Device #1 (for example, a tape drive)	U0.1-P2-Ix/Zn-A0	Dependent on *Ix*
Media Device #2 (for example, a DVD drive)	U0.1-P2-Ix/Zn-A1	Dependent on *Ix*
Hot-swap Disk Drive bay 1	U0.1-P2/Z1-A8	1S-08-00-8,0
Hot-swap Disk Drive bay 2	U0.1-P2/Z1-A9	1S-08-00-9,0
Hot-swap Disk Drive bay 3	U0.1-P2/Z1-AA	1S-08-00-10,0
Hot-swap Disk Drive bay 4	U0.1-P2/Z1-AB	1S-08-00-11,0
Fans		
Fan 1 (Primary Processor Fan)	U0.1-F1	
Fan 2 (Redundant Processor Fan)	U0.1-F2	
Fan 3 (PCI Fan)	U0.1-F3	
Fan 4 (PCI Fan)	U0.1-F4	
Operator Panel		
Operator panel	U0.1-L1	
Power Supply		
Power supply 1 (Primary)	U0.1-V1	
Power supply 2 (Redundant)	U0.1-V2	
Battery		
Battery	U0.1-P1-V3	
Platform Firmware		
Platform Firmware	U0.1-P1/Y1	
System VPD module		
System VPD module	U0.1-L1-N1	

Component Name	Physical Location Code	AIX Location Code

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. SCSI bus IDs are the recommended values. 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.

I/O Subsystem Locations

This section covers the AIX and physical location code tables for the 7311 Model D20 I/O drawer.

The tables in this section contain the location codes for I/O subsystems when they are attached to the processor-subsystem drawer. A separate table is shown for each I/O subsystem. In the tables, the drawer number for the I/O subsystem is represented by *dd*. The first time that a system is powered on, the I/O subsystems are numbered according to the order in which they are configured. For example, if a system is first installed with eight I/O subsystems connected, the *dd* values for the subsystems should number from 2 through 9.

If at a later time, an I/O subsystem is removed from the system and another I/O subsystem is substituted, the substitute is assigned the next higher number available for its value of *dd*. In the earlier example, this is 10.

Also, if an I/O backplane is replaced inside an I/O subsystem and power is applied, the system will configure the I/O subsystem with the new backplane in the order following the other I/O subsystems. Its value for *dd* will not be the same as the one it replaced. In the case of the earlier example, the next higher value for *dd* is 10, so a drawer number of 10 is assigned to the new I/O backplane.

Note: If the I/O backplane VPD module is moved to the new I/O backplane, the I/O subsystem retains its original *dd* value.

If the original I/O subsystem or I/O backplane is reinstalled in the system, the system uses the original *dd* value for the I/O subsystem.

The following diagram defines each part of a location code:

```
Ux.dd-xx-yy
 │  │  │  │
 │  │  │  │
 │  │  │  yy This code is used for the next component (yy, yy, yy, ...)
 │  │  xx This code is used for the next component (Px, Fx, Vx, ...)
 │  dd This code is the drawer number for the I/O drawer (2 to 63)
Ux This code normally identifies the rack in which a drawer is installed.
   The x will always be zero (0) for this system.
```

Determining the AIX Location Code of a Physical Slot: Every slot of every I/O subsystem has a unique AIX location code assigned to it. For instance, the PCI adapter in slot 1 of I/O subsystem 1 is 29-08. There is no obvious way to determine the value of the *dd* number for the I/O subsystem that is interpreted by the system as the first I/O subsystem. If you have only the AIX location code, you might determine the associated I/O subsystem *dd* number by performing the following steps:

1. On the AIX command line type `lsdev -Ccadapter |pg`

   The resulting list gives the logical AIX name of all resources and the corresponding AIX location code. Look for the appropriate AIX location code, and record the corresponding AIX logical name of the resource.

2. On the AIX command line type `lsslot -c pci |pg`

   This list relates the AIX logical name of all resources to location code. Look for the AIX logical name that you recorded in the first step and read the location code of the resource. You can then determine the physical location of the resource by flashing the FRU identify LED (see "FRU Identify LEDs" on page 28) that corresponds to the location code.

FRU Name	Physical Location Code
Model D20 I/O Drawer U0.*dd* (*dd* = any number from 2 through 63)	
Rack frame	U0
I/O drawer backplane	U0.*dd*-P1
I/O subsystem drawer	U0.*dd*
RIO Bus Adapter	
RIO bus adapter	U0.*dd*-P1.1
RIO port 1 upper connector	U0.*dd*-P1.1/Q1
RIO port 1 cable	U0.*dd*-P1.1/Q1#
RIO port 0 lower connector	U0.*dd*-P1.1/Q2
RIO port 0 cable	U0.*dd*-P1.1/Q2#
PCI Bus Controller	
PCI bus controller **PHB0**	U0.*dd*-P1
PCI to PCI bridge EADS-X	U0.*dd*-P1
PCI Bus Controller PHB2	
PCI bus controller **PHB2**	U0.*dd*-P1
PCI to PCI bridge EADS-X	U0.*dd*-P1
Pluggable Adapter Slots	
PCI slot 1	U0.*dd*-P1/I1
PCI card in slot 1	U0.*dd*-P1-I1
PCI slot 2	U0.*dd*-P1/I2
PCI card in slot 2	U0.*dd*-P1-I2
PCI slot 3	U0.*dd*-P1/I3
PCI card in slot 3	U0.*dd*-P1-I3
PCI slot 4	U0.*dd*-P1/I4
PCI card in slot 4	U0.*dd*-P1-I4
PCI slot 5	U0.*dd*-P1/I5
PCI card in slot 5	U0.*dd*-P1/I5
PCI slot 6	U0.*dd*-P1/I6
PCI card in slot 6	U0.*dd*-P1/I6
PCI slot 7	U0.*dd*-P1/I7
PCI card in slot 7	U0.*dd*-P1/I7
Power Supply	
Power supply 1 (no internal blower)	U0.*dd*-V1
Power supply 2 (no internal blower)	U0.*dd*-V2
Cooling Blowers	
Cooling blower 1	U0.*dd*-F1

FRU Name	Physical Location Code
Cooling blower 2	U0.*dd*-F2
Cooling blower 3	U0.*dd*-F3
Cooling blower 4	U0.*dd*-F4
SPCN Connectors	
SPCN connector 1	U0.*dd*-P1/Q3
SPCN connector 2	U0.*dd*-P1/Q4
SPCN connector 3	U0.*dd*-P1/Q5
SPCN connector 4	U0.*dd*-P1/Q6
Rack Indicator	
Rack beacon (4-pin)	U0.*dd*-P1/Q7
Operator Panel	
Operator panel	U0.*dd*-L1
Temperature Sensor	
Temperature sensor (on operator panel)	U0.*dd*-L1
Disk Drive Backplanes	
Disk drive backplane 1	U0.*dd*-P3
Disk drive backplane 2	U0.*dd*-P4
Disk Drive Locations	
Hot-swap disk drive bay 1	U0.*dd*-P1-Ix/Zn-A8
Hot-swap disk drive bay 2	U0.*dd*-P1-Ix/Zn-A9
Hot-swap disk drive bay 3	U0.*dd*-P1-Ix/Zn-AA
Hot-swap disk drive bay 4	U0.*dd*-P1-Ix/Zn-AB
Hot-swap disk drive bay 5	U0.*dd*-P1-Ix/Zn-AC
Hot-swap disk drive bay 6	U0.*dd*-P1-Ix/Zn-AD
Hot-swap disk drive bay 7	U0.*dd*-P1-Iy/Zn-A8
Hot-swap disk drive bay 8	U0.*dd*-P1-Iy/Zn-A9
Hot-swap disk drive bay 9	U0.*dd*-P1-Iy/Zn-AA
Hot-swap disk drive bay 10	U0.*dd*-P1-Iy/Zn-AB
Hot-swap disk drive bay 11	U0.*dd*-P1-Iy/Zn-AC
Hot-swap disk drive bay 12	U0.*dd*-P1-Iy/Zn-AD
SCSI	
SES0	U0.*dd*-P1-Ix/Zn-AF
SES1	U0.*dd*-P1-Iy/Zn-AF

System Cables

The following diagrams show the system cable connections. The following diagram illustrates the routing of the internal power cables.

Internal Power Cable Routing Diagram
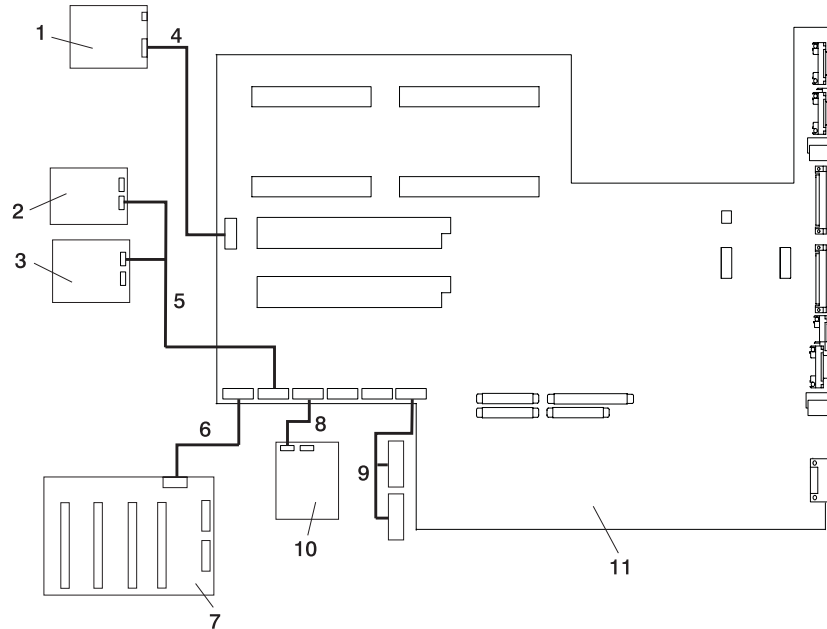
1	Operator Panel
2	IDE CD-ROM
3	SCSI Media Device
4	CEC Backplane to Operator Panel Signal/Power Cable
5	2-drop Power Cable from CEC Backplane to IDE CD-ROM and other SCSI Media Devices
6	CEC Backplane to Disk Drive Backplane Power Cable
7	Disk Drive Backplane
8	Diskette Drive to CEC Backplane Power Cable
9	PCI Cooling Fans #3 and #4 Power Cable
10	Diskette Drive
11	CEC Backplane

Internal Signal Cable Routing Diagram

The following diagram illustrates the routing of the signal cables.
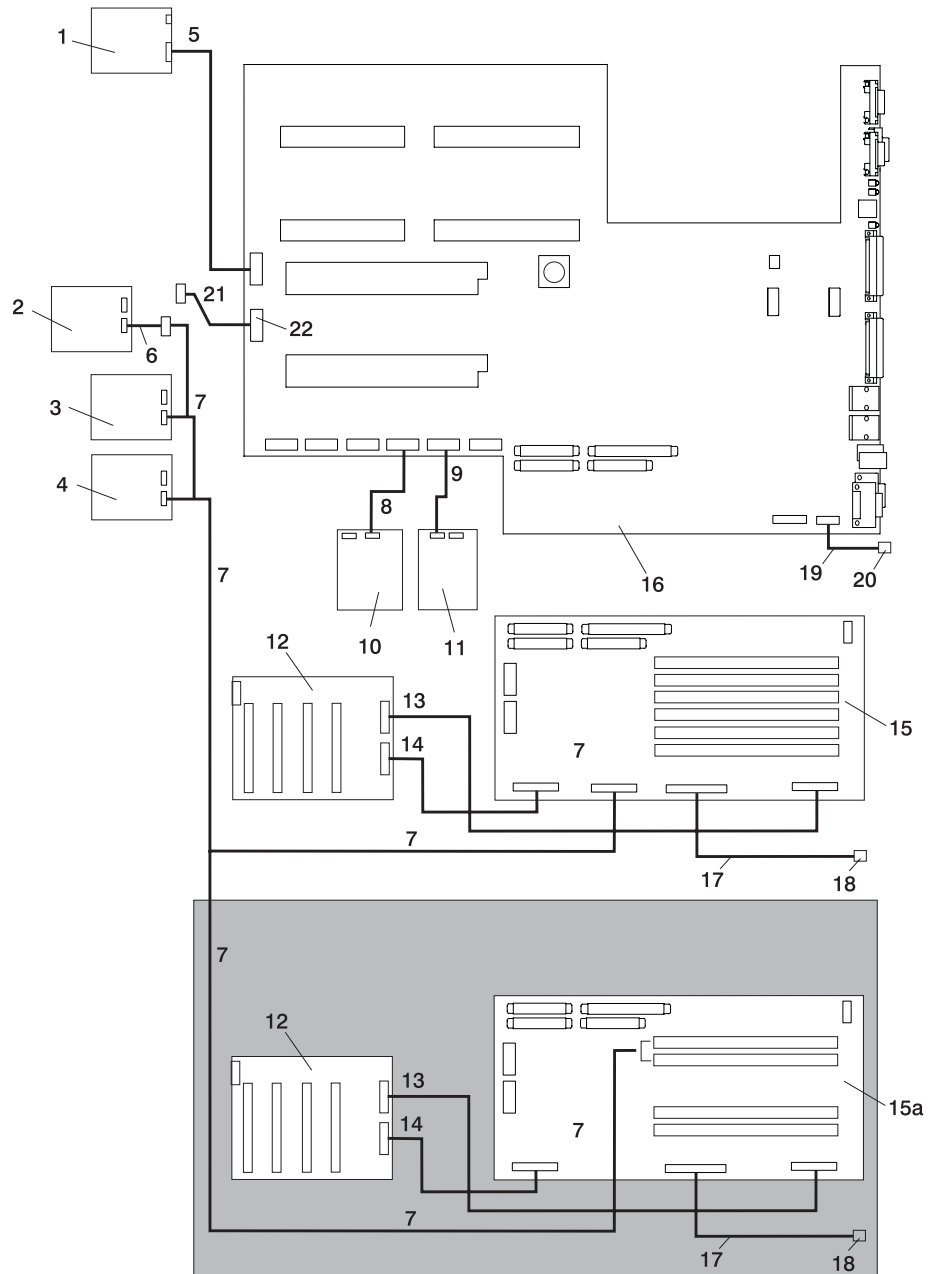
1	Operator Panel
2	SCSI Media Device (50-pin)
3	SCSI Media Device (68-pin)
4	SCSI Media Device (68-pin)
5	CEC Backplane to Operator Panel Signal Cable
6	SCSI Media (68-pin) to 50-pin Converter Cable
7	SCSI Media Device Signal Cable to Integrated Single-Ended SCSI Connector on the PCI Riser Card
8	CEC Backplane Connector to Diskette Drive Signal Cable
9	CEC Backplane to IDE CD-ROM Signal Cable
10	Diskette Drive
11	IDE CD-ROM
12	Disk Drive Backplane
13	PCI Riser Card to Disk Drive Backplane Signal Cable
14	PCI Riser Card to Disk Drive Backplane Signal Cable
15	6-Slotted PCI Riser Card
15a	4-Slotted PCI Riser Card (Used on 4-slotted models only
16	CEC Backplane
17	PCI Riser Card to External SCSI Signal Cable
18	External SCSI Port
19	CEC Backplane to Rack Indicator Signal Cable
20	Rack Indicator Port
21	CEC Backplane to Debug Port Signal Cable
22	Debug Parallel Port

Subsystem Positioning and Cabling

The I/O subsystem drawer can be installed in a standard 19-inch EIA rack in any location near to the system. The cables that connect the drawers allow some flexibility in drawer placement, but the I/O drawers should be located as close to the system unit as possible.

The Model 6C4 can have a total of two I/O drawers connected. Each drawer is connected to the system unit using a system power control network (SPCN) cable loop and a remote I/O (RIO) cable loop.

Although the SPCN cables are connected in a loop, only one loop is needed for both of the I/O drawers.

SPCN Cabling

I/O drawer SPCN cables are connected to the system using a loop configuration. The SPCN cables are connected in a loop so that the system has two paths to each I/O drawer. The Model 6C4 can have a total of two I/O drawers connected in one SPCN loop.

The location codes for the I/O drawers are assigned during the system power-on sequence. Each drawer's location is determined by its position in the SPCN loop. The first drawer in the SPCN loop (the drawer connected to SPCN 0) is given the location U0.2. If there is a second I/O drawer in the SPCN loop, it is assigned the location U0.3. The I/O drawers are numbered sequentially until the end of the loop is reached at SPCN 1. For cabling examples, see the following illustrations.

Cabling SPCN Cables to One or Two I/O Subsystems

The following illustration shows the SPCN cabling for either one or two I/O drawer configurations.
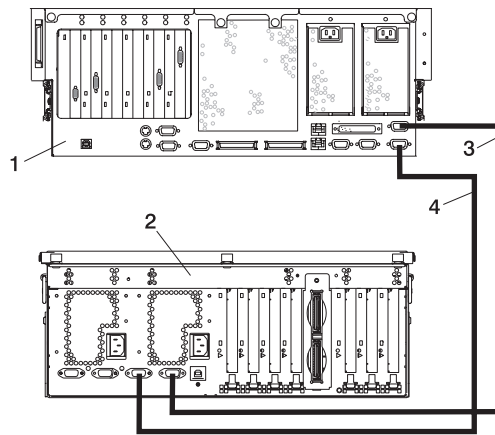
One I/O Drawer Attached to Model 6C4:

1	Model 6C4	**3**	SPCN 2 to SPCN 2 Cable
2	7311 Model D20	**4**	SPCN 1 to SPCN 1 Cable

Two I/O Drawers Attached to Model 6C4:
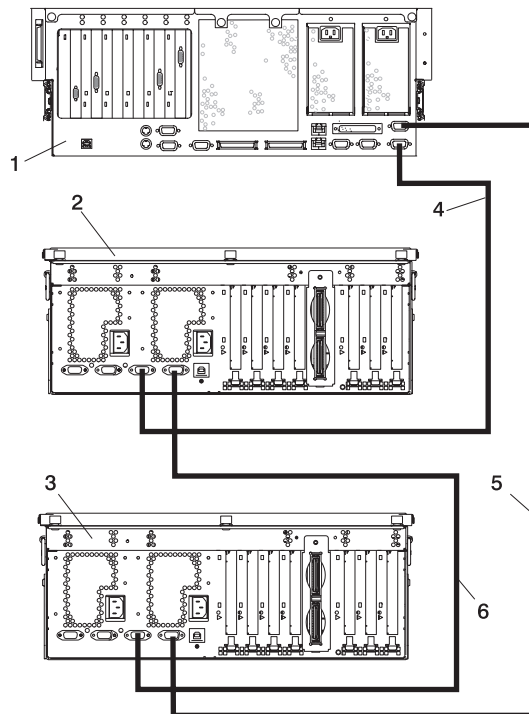
1	Model 6C4	**4**	SPCN 1 to SPCN 1 Cable
2	7311 Model D20 I/O Drawer	**5**	SPCN 2 to SPCN 2 Cable
3	7311 Model D20 I/O Drawer	**6**	SPCN 2 to SPCN 1 Cable

RIO Cabling

I/O drawers are connected to the system through remote I/O (RIO-G) cable loops. The cable loops are connected to ports located on the rear of the system. The RIO-G cables are connected in loops so that the system has two paths to each I/O drawer.

Up to two I/O drawers can be connected to a system using one RIO loop. For cabling examples, see the following illustrations.

Cabling RIO-G Cables to One or Two I/O Subsystems
The following illustrations show the RIO-G cabling for either one or two I/O drawer configurations.
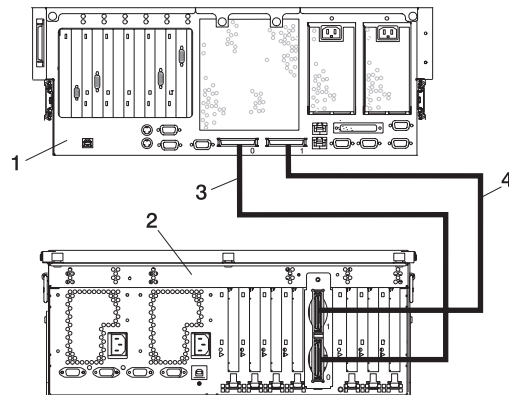
One I/O Drawer Attached to Model 6C4:

1	Model 6C4	**3**	RIO-G 0 to RIO-G 0 Cable
2	7311 Model D20	**4**	RIO-G 1 to RIO-G 1 Cable

Two I/O Drawers Attached to Model 6C4:
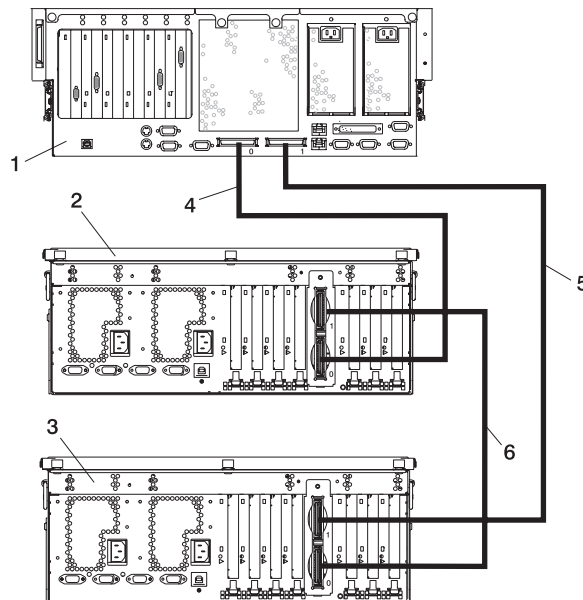
1	Model 6C4	**4**	RIO-G 0 to RIO-G 0 Cable
2	7311 Model D20 I/O Drawer	**5**	RIO-G 1 to RIO-G 1 Cable
3	7311 Model D20 I/O Drawer	**6**	RIO-G 1 to RIO-G 0 Cable

Specifications

This section contains system specifications for both Model 6C4 and Model 6E4.

Note: Refer to the *7014 Series Model T00 and T42 Rack Installation and Service Guide*, order number SA38-0577, for information on cabling power from the rack to the I/O subsystem.

Dimensions	Rack (Model 6C4)	Tower (Model 6E4)
Height	176 mm 6.9 in. 4 EIA Units	544.0 mm (21.42 in.)
Width	448 mm 17.5 in.	308.0 mm (12.13 in.) 191 mm without legs
Depth	816 mm 32.13 in. - Includes 145 mm for cable management arm	789.0 mm (31 in.) - Includes 70 mm for rear acoustic cover
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 (V ac)	100-127 Vac or 200-240 Vac (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 6E4 Noise Emissions[4]	**Operating**	**Idle**
L_{WAd}	6.0 bels	5.9 bels
$<L_{pA}>_m$	42 dBA	41 dBA
Model 6C4 Noise Emissions[4]	**Operating**	**Idle**
L_{WAd}	6.1 bels	6.0 bels
$<L_{pA}>_m$	44 dBA	43 dBA

Dimensions	Rack (Model 6C4)	Tower (Model 6E4)
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 485 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 115 V 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, 125 V.″

″For 230 V 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, 250 V.″

- 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 455.

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 143, Chapter 5, "Error Code to FRU Index", on page 181, Chapter 6, "Using the Online and Standalone Diagnostics", on page 301, and Chapter 10, "Parts Information", on page 455, 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 1321: Quick Entry MAP for Systems with Service Focal Point. This MAP contains information for systems not running under 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 1542: I/O Problem Isolation
- MAP 1548: Processor Subsystem 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. See Chapter 11, "Fault and Attention LEDs", on page 469 for more information about these LEDs.

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 56.

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 143, Chapter 5, "Error Code to FRU Index", on page 181, Chapter 6, "Using the Online and Standalone Diagnostics", on page 301, and Chapter 10, "Parts Information", on page 455). 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 OK prompt is displayed by the service processor on the operator panel display. (Several 9xxx checkpoints are displayed just before the OK 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. AIX progress codes will not appear when Linux is the operating system. Location codes may also be shown on the operator panel display during this time.

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 143. 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 181. These actions can refer to Chapter 10, "Parts Information", on page 455, Chapter 3, "Maintenance Analysis Procedures (MAPs)", on page 59, 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 455. 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 321.

Any identify LED in the system can also be flashed by using the ″Identify and Attention Indicators″ task through 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:

- If the system is configured as a full system partition, boot to the open firmware prompt. See the "System Power Control Menu" on page 318 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 the system is logically partitioned, the HMC must be attached. 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 pSeries 630 Model 6C4 and Model 6E4

Service support for the pSeries 630 Model 6C4 and Model 6E4 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 *IBM Hardware Management Console for pSeries Installation and Operations Guide* 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 309. 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 partitioned 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.

Traditional service strategies become more complicated in a partitioned environment. Each partition runs on its own, unaware that other partitions exist on the same system. If one partition reports an error for a shared resource, such as a managed system power supply, other active partitions report the same error. The Service Focal Point application enables service representatives to avoid long lists of repetitive call-home information by recognizing that these errors repeat, and by filtering them into one error code.

Errors that require service are reported to the HMC as *serviceable events*. Because the HMC stores these serviceable events for 90 days and then discards them, it is important to have the partition and HMC date and time set correctly. For instance, if the date on a partition's software is set 90 days *behind* the HMC's set time, the serviceable events reported from this partition are immediately discarded. For more information about setting the HMC's date and time, see the *IBM Hardware Management Console Operations Guide for pSeries*, order number SA38-0590. To set the partition's date and time, see the documentation provided with the operating system that is running on that partition.

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 properly, 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 52.

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 on 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 considered an outage
* The number of connected minutes you want the HMC to consider a recovery
* The number of minutes between outages 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 and 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 *Hardware Management Console Installation and Operations Guide*, 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 on the top of the window.
5. Select one or more managed systems from the list and then 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".
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 53.
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 then 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 role.

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 53.
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".

Closing a Serviceable Event

To close a serviceable event, do the following:

1. Perform the steps in "Viewing Serviceable Event Details" on page 53.
2. Select the error to which you want to add comments and click **Comments...**.
3. Click **Close Event** from this window. The Serviceable Event Comments window opens.
4. Click **OK** to commit your comments. The Update FRU Information window displays. See "Updating Field Replaceable Unit (FRU) Information" for information on completing this window. Click **OK** on the Update FRU Information window to close the serviceable event.

   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 properly 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 53.
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" on page 54.
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" on page 54.
2. Click **Add New FRU to List**.
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 53.
2. Click **Partition Info...**.

Hardware Service Functions

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 57.

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" on page 57.

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 *IBM Hardware Management Console for pSeries Installation and Operations Guide*.

Note: For information on these Service Focal Point settings, see ″Setting Up Surveillance and Enabling Surveillance Notifications″ in the *IBM Hardware Management Console for pSeries Installation and Operations 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 1321-34" on page 83 in "MAP 1321: Quick Entry MAP for Systems with Service Focal Point" on page 78, return to "Step 1321-34" on page 83 to process any other error codes or symptoms.
- If you have not performed any of the steps in "MAP 1321: Quick Entry MAP for Systems with Service Focal Point" on page 78, go to step "Step 1321-1" on page 78 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 59 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 1321-34" on page 83 in "MAP 1321: Quick Entry MAP for Systems with Service
| Focal Point" on page 78, return to "Step 1321-34" on page 83 to process any other error codes or
| symptoms.

| • If you have not performed any of the steps in "MAP 1321: Quick Entry MAP for Systems with Service
| Focal Point" on page 78, go to step "Step 1321-1" on page 78 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 pSeries 630 Model 6C4 and Model 6E4.

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.

Attention: AIX diagnostics from the hard drive is not available when Linux is the operating system.

If this system has an *IBM Hardware Management Console for pSeries Installation and Operations Guide* (HMC) with Service Focal Point, go to "MAP 1321: Quick Entry MAP for Systems with Service Focal Point" on page 78. Otherwise, use the following table to help determine your next step.

Notes:
1. Licensed programs frequently rely on system information stored on the VPD module on the operator panel assembly. If the MAPs indicate that the operator panel assembly should be replaced, refer to "Operator Panel Replacement" on page 424. 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.
3. If more than eight digits are displayed in the operator panel, use only the first eight digits to find the error in the tables. The digits that display beyond the first eight digits are location codes that can assist you in diagnosing the problem. See "Location Codes" on page 24.
4. If you are not able to isolate the problem, try loading standalone diagnostics from the CD-ROM or a NIM server.

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.

Number of Digits in Error Code	Error code	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)

Symptom	Starting Point
You have a problem that does not prevent the system from booting and the operator panel is functional and the rack indicator LED operates as expected.	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.	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".

Quick Entry MAP

The following is a Quick Entry MAP table of contents.

Table 1.

Problem Description	Page No.
Service actions	61
The rack indicator LED does not operate as expected.	61
The system attention LED on the operator panel is on.	61
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.	61
8-digit error codes	62
System stops with an 8-digit number displayed	62
System stops with a 4-digit number displayed that does not begin with 0 or 2.	62
System stops with a 3-digit number displayed (see below for 888 sequence).	62
Hardware Management Console (HMC) Problem	62
There appears to be a display problem (distortion, blurring, etc.)	63
Power and cooling problems	63
888 sequence in operator panel display	63
Other symptoms or problems	63

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 50.
You have parts to exchange or a corrective action to perform.	1. Go to Chapter 9, "Removal and Replacement Procedures", on page 361. 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.	

Symptom: The rack indicator LED does not turn on, but a drawer identify LED is on.
 	
Action:
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.
   • 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 48 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.	

Symptom: A bouncing or scrolling ball remains on the operator panel display, or the operator panel display is filled with dashes or blocks.
 	
Action: 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.
1. If the service processor menu is displayed:
   a. Replace the operator panel assembly, location U0.1-L1. Refer to "Operator Panel" on page 423.
   b. Replace the CEC backplane, location U0.1-P1. (See notes on page 59).
2. If the service processor menu is not displayed, replace the CEC backplane. (See notes on page 59).
 	
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" on page 423.
2. CEC backplane, location U0.1-P1. (See notes on page 59).	

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" on page 423. 2. Replace the CEC backplane, Location: U0.1-P1. (See notes on page 59).

Symptom	Action
You have a blank display on the operator panel. Other LEDs on the operator panel are off.	Go to "MAP 1520: Power" on page 91.
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 183.
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 183.
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 183. 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 (see below for 888 sequence)	
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, then 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	

Symptom: Hardware Management Console (HMC) cannot be used to manage a managed system, or the connection to the managed system is failing.

Action: 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 OK prompt is in the operator panel.) If the managed system does not appear in the Navigation area of the HMC Management Environment, then the HMC or the connection to the managed system might be failing.

3. Go to the *"Entry MAP"* in the *IBM Hardware Management Console for pSeries Maintenance Guide*, order number SA38-0603.

4. If you cannot fix the problem using the HMC tests in the *IBM Hardware Management Console for pSeries Maintenance Guide*, there might be a problem with the CEC backplane; replace the CEC backplane.

Symptom: Hardware management console (HMC) cannot call out using the attached modem and the customer's telephone line.

Action: 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 *IBM Hardware Management Console for pSeries Maintenance Guide*, order number SA38-0603.

Symptom	Action
There is a Display Problem (Distortion, Blurring, Etc.	

Symptom: All display problems.
 	
Action:
1. If you are using the HMC, go to the *IBM Hardware Management Console for pSeries 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-P2-I*n* or U0.dd-P1-I*n*.
     • replace the backplane in which the card is plugged.
3. If you are 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 CEC backplane, location U0.1-P1. (See notes on page 59).	

Power and Cooling Problems	
The system will not power on and no error codes are available.	Go to "MAP 1520: Power" on page 91.
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 91.
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 91.
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 91.
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 91.
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 91.
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 OK 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, go to "MAP 1020: Problem Determination" on page 66.
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 175.

Symptom	Action
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 175.
The system stops and the message STARTING SOFTWARE PLEASE WAIT... is displayed on the firmware console.	Go to Chapter 4, "Checkpoints", on page 143.

Symptom: The system does not respond to the password being entered or the system login prompt is displayed when booting in service mode.

Action:

1. If the password is being entered from the hardware management console (HMC), go to the *IBM Hardware Management Console for pSeries Maintenance Guide*.

2. If the password is being entered from a keyboard attached to the system, then the keyboard or its controller may be faulty. In this case, replace these parts in the following order:

   a. Keyboard

   b. CEC backplane, location U0.1-P1. (See notes on page 59).

3. If the password is being entered from an ASCII terminal, then use the problem determination procedures for the ASCII terminal. Make sure the ASCII terminal is connected to S1.

   If the problem persists, replace the CEC backplane, location U0.1-P1. (See notes on page 59).

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 125.

Symptom: 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.

Action: 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. CEC backplane, location U0.1-P1. (See notes on 59).

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 125.

Symptom: The SMS configuration list or boot sequence selection menu shows more SCSI devices attached to a controller/adapter than are actually attached.

Action: 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 1542: I/O 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.

Symptom	Action
Symptom: The System Management Services menu is displayed. **Action:** 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 181 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 181 • 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 125.	
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 66.

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 321). 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, 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 630 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 309.

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 the system on is an AIX function called *Timed Power-On* (not available when Linux is the operating system). For more information about timed power-on, see "System Power-On Methods" on page 334.

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. Be observant of these conditions.

1. Power off the system. Refer to "Stopping the System without an HMC Attached" on page 363.
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 without an HMC Attached" on page 364.
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 60.
The rack identify LED does not operate properly.	Go to the "Entry MAP" on page 59.
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*.

Symptom: The system login prompt is displayed.

Action: 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 69.

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 175 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 69.

Symptom: The system stopped. A POST indicator is displayed on the system console and an eight-digit error code is not displayed.

Action: If the POST indicator represents:

1. Memory, go to "MAP 1240: Memory Problem Resolution" on page 70.
2. Keyboard
    a. Replace the keyboard.
    b. Replace the CEC backplane, location U0.1-P1. (See notes on page 59).
    c. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
3. Network, go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
4. SCSI, go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
5. Speaker
    a. Replace the operator panel, location U0.1-L1. Refer to "Operator Panel" on page 423.
    b. Replace the CEC backplane, location: U0.1-P1. (See notes on page 59).
    c. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.

Symptom	Action

Symptom: The System Management Services menu is displayed.
 	
Action: 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 181 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 181 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 125.	

All other symptoms.	If you were directed here from the Entry MAP, go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125. Otherwise, find the symptom in the "Quick Entry MAP" on page 60.

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 CEC backplane, location U0.1-P1. (See notes on page 59.)
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 CEC backplane, location U0.1-P1. (See notes on page 59.)
Type 106 keyboard. (Identified by the Japanese characters.)	• Replace the type 106 keyboard. • Replace the CEC backplane, location U0.1-P1. (See notes on page 59.)
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 125.

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 125.
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 the processor cards or memory DIMMs to avoid damage to them.

It is acceptable for the memory DIMMs to partially populate each processor card in a multi-processor card system. For example, 4 memory DIMMs can be placed onto processor card 1, and another 4 memory DIMMs can be placed onto processor card 2. The system uses both sets of memory DIMMs indiscriminately.

Memory DIMMs, however, must be installed in matched (size and speed) quads. Refer to "Memory DIMMs" on page 432 for labeling of the processor card 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*; also return the setting to enabled if necessary.

Step 1240-1

1. Record the error code that sent you to this map.
2. Go to the service processor menus and disable memory repeat gard if it is not already disabled.
3. Turn off the power. Remove the power cord.
4. Remove and reinstall the processor cards.
5. Reattach the power cord. Wait for OK to display in the operator panel.
6. 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.)
7. Power off the system using the white button. After the OK displays in the operator panel, look at the memory configuration/deconfiguration menu.

Are any DIMMs deconfigured or does the error code recorded earlier in this step still appear?

No Reseating the processor card(s) 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 1 processor card installed, tag it as "suspect bad" and go to "Step 1240-6" on page 73. If there are 2 processor cards installed, go to "Step 1240-2".

Step 1240-2

1. Turn off the power. Remove the power cord.
2. Remove processor card 2.
3. Reattach the power cord. Wait for OK to display 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 off the system using the white button. After the OK displays 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 72.

Yes Go to "Step 1240-6" on page 73.

Step 1240-3

1. Turn off the power. Remove the power cord.
2. Remove processor card 1.
3. Reinstall processor card 2 in slot 1.
4. Reattach the power cord. Wait for OK to display in the operator panel.
5. 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.)
6. Power off the system using the white button. After the OK displays 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 71 still appear?

No   Go to "Step 1240-4".

Yes   Go to "Step 1240-6" on page 73.

Step 1240-4

1. Turn off the power. Remove the power cord.
2. Install processor card 1 in slot 2.
3. Reattach the power cord. Wait for OK to display 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 off the system using the white button. After the OK displays in the operator panel, look at the memory configuration/deconfiguration menu.

Have any DIMMs been deconfigured or does the error code recorded in "Step 1240-1" on page 71 still appear?

No   Reseating the processor cards 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   Go to "Step 1240-5" on page 73.

Step 1240-5

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

1. Turn off the power. Remove the power cord.
2. Exchange the following FRUs one at a time in the order listed:
   - CEC backplane
   - Processor cards
3. Reattach the power cord. Wait for OK to display 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 off the system using the white button. After the OK displays 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 71 still appear?

No 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 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 FRUs have been exchanged, go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.

Step 1240-6

1. Turn off the power. Remove the power cord.
2. Reseat the DIMMs. Reinstall the processor card.
3. Reattach the power cord. Wait for OK to display 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 off the system using the white button. After the OK displays 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 71 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 card, go to "Step 1240-10" on page 75.

If there are two quads of DIMMs on the card, go to "Step 1240-7" on page 74.

Step 1240-7

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 `OK` to display 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 off the system using the white button. After the `OK` displays 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 71 still appear?

NO   Go to "Step 1240-8".

YES   Go to "Step 1240-10" on page 75.

Step 1240-8

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 `OK` to display 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 off the system using the white button. After the `OK` displays 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 71 still appear?

NO   Go to "Step 1240-9".

YES   Replace the processor card.

   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 1240-9

The failing DIMM(s) is in the quad of DIMMs that was removed in "Step 1240-7". Do the following:

1. Turn off the power. Remove the power cord.
2. Remove the quad of DIMMs that is on the processor card and reinstall the quad of DIMMs that had been removed. The DIMMs can be reinstalled in either quad.

Go to "Step 1240-11" on page 75.

Step 1240-10

1. Turn off the power. Remove the power cord.
2. Move the quad of DIMMs that is on the processor card to the other quad's location.
3. Reattach the power cord. Wait for OK to display 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 off the system using the white button. After the OK displays 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 71 still appear?

NO   Replace the processor card.

       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 1240-11".

Step 1240-11

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

If there were two quad of DIMMs on the processor card, but they are not the same size, your 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 quad of DIMMs on the processor card, 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 processor card and install the replacement DIMM or another known good DIMM.
3. Reattach the power cord. Wait for OK to display 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 off the system using the white button. After the OK displays 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 71 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 1240-12" on page 76.

Step 1240-12

Have all the DIMMs in the quad located on the processor card been replaced?

NO Go to "Step 1240-11" on page 75 to test the next DIMM of the quad on the processor card.

YES Go to "Step 1240-13".

Step 1240-13

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

NO Call service support.

YES Replace the processor card. 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 1320: Service Focal Point Procedures

These procedures define the steps to be taken when servicing a machine equipped with Service Focal Point (SFP).

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.

Number of Digits in Error Code	Error code	Service Guide Name
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 78.

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 86.

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

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 81.

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 50.

Does the HMC appear to operate correctly?

No Go to "Quick Entry MAP" on page 60, 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 84.

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 80.

Step 1321-7

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

No Go to "Step 1321-14" on page 79.

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" on page 78 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" on page 78 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" on page 78 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 78 that sent you to this MAP?

No   Go to "Step 1321-13".

Yes   Record the error codes from "Step 1321-8" on page 78 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 78 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 78, 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 78, 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 50.

Step 1321-15

Are there any service action events that are closed?

No   Go to the table in "Entry MAP" on page 59.

Yes   Go to "Step 1321-16" on page 80.

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 78?

No   Go to the table in "Entry MAP" on page 59.

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 59.

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   Go to "Step 1321-7" on page 78.

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 console).Choose a running Linux partition (preferably the partition with the problem).

Step 1321-23

Is Linux functional in any partition with Linux installed?

No   Go to "Step 1321-34" on page 83.

Yes   Go to "Step 1321-24".

Attention: "Step 1321-24" through "Step 1321-40" on page 84 must be performed on a partition running the Linux operating system.

Step 1321-24

If your 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
```

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

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 ----------

Step 1321-25

If present, record any additional error information recorded in the Linux system log. If the system is configured with more than one logical partition with Linux installed, repeat "Step 1321-24" and "Step 1321-25" for all logical partitions that have Linux installed.

Step 1321-26

Examine the Linux boot (IPL) log by logging in to the system as the root user and enter 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

If present, record any additional error information reported 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

Examine the extended data in both logs.

The following is an example of the Linux extended error log.

```
<3>RTAS daemon started
<3>RTAS: -------- event-scan begin --------
<3>RTAS: Location Code: U0.1-P1-C2
<4>RTAS: Log Debug: 04
4b2726fb04a00011702c0014000000000000000000000000f1800001001801d3ffffffff010000000000000000042343138
20202020383030343236464238454134303030303 030303030303030
<4>RTAS: Log Debug: D2
5046413405020d0a0000010002714001000000033434d502044415441000001000000000000000010000f180000153595
3204441544410000000000000000002002162715010509200216271501050920020637150105095352432044415441 70
2c0014000000000000000020018820201d382000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000280048ea4000000000000000000000000
000000000000000000000000043505420444154417 02cff08000000001c000000702cf008000000080000000702cf10070
2cf200702c000400000800702c01040bf2002e702c02040c1fffbf702c0300702c1000702c11040bf2002e702c12040
c1fffbf702c1300702ca000702ca1080000000000000a03c702ca208000000000000effc702cb000702cb10800000000
0000a03c702cb208000000000000effc702cc000702cc108000000000000a03c702cc208000000000000effc702c3
000702c3108000000000000000003702c3208000000000000007b702c8000702c81080000000020e27a39702c820800
000000fffeffff702cd000702cd1080000000010004010702cd208000000007777f3ffffffffffffffffffffffffffffffffffffff
fffffffffffffffffffffffffff
<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

If present, record any additional error information in the Linux extended data error log.

Note: The line(s) in the Linux extended error log that begin with ″<4>RTAS: Log Debug: 04″ contain the error code listed in the next 8 hex characters. In the example above, ″4b27 26fb″ is an error code.

If the system is configured with more than one logical partition with Linux installed, repeat "Step 1321-28" on page 82 and "Step 1321-29" for all logical partitions that have Linux installed.

Step 1321-30

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

Step 1321-31

Compare the list of found resources and partition assignments to the customer's known configuration to determine if any device(s) or adapter(s) are missing. Record any missing adapters or devices.

If the system is configured with more than one logical partition with Linux installed, repeat "Step 1321-30" and "Step 1321-31" for all logical partitions that have Linux installed.

Step 1321-32

Go to "Step 1321-33".

Step 1321-33

Go to "Step 1321-34".

Step 1321-34

Were any error codes, checkpoints, or symptoms recorded in Steps 1321-1, 1321-22, 1321-25, 1321-27, 1321-29, or 1321-31?

No   Go to "Step 1321-35".

Yes   Go to the "Quick Entry MAP" on page 60 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 1321-35".

Step 1321-35

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 (and cable, part number 62H4857) capable of connecting to serial port 1 on the processor subsystem. The Linux login prompt cannot be seen on a laptop connected to serial port 1.

1. If there is no HMC, attach the laptop and cable to serial port 1 on the processor subsystem.
2. When 0K displays in the operator panel, press a key on the virtual terminal on the laptop. The service processor menus are available on the attached laptop 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 1321-36" on page 84.
4. If the service processor menus are not available, go to "Step 1321-37" on page 84.

Step 1321-36

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

Step 1321-37

Were any error codes recorded in steps 1321-35 or 1321-36

No   Go to "Step 1321-41" on page 85.

Yes   Go to the "Quick Entry MAP" on page 60 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 is has not been corrected, go to "Step 1321-41" on page 85.

Step 1321-38

Does the system appear to stop or hang before reaching the login prompt or did you record any missing resources in "Step 1321-31" on page 83?

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 113. 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 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. Check to make sure 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   You may have a software problem, call service support.

Yes   Go to the table in "Entry MAP" on page 59 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". If all recorded SRNs or error codes have been processed and the problem has not been corrected, call service support.

Step 1321-40

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

No   Go to "Step 1321-14" on page 79.

Yes   Go to "Step 1321-22" on page 80.

Step 1321-41

Have you replaced all parts whose location codes were recorded in Steps 1321-25, 1321-27,1321-29, or 1321-31?

No   Replace, one at a time, all parts whose location code was recorded in Steps 1321-25, 1321-27, 1321-29, and 1321-31 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.

Yes   Go to "Step 1321-38" on page 84.

Step 1321-42

Was the problem corrected in Step 1321-41?

No   Go to "Step 1321-38" on page 84.

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*.

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

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 50. At the HMC console, 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 LED when a System is Attached To an HMC" on page 57. 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 89 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 87.

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 79.

Yes   Go to "Step 1321-9" on page 79.

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 86?

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 86 in the list of FRUs for this service action event?

No   Go to "Step 1322-33" on page 89.

>   **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 88.

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 88.

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 87. If you are referred to the list of partition(s) obtained in "Step 1322-11" on page 87 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

Select the **Close Event** button.

Step 1322-19

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

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

Select **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 87 empty?

No   Go to "Step 1322-26".

Yes   Go to "Step 1322-33" on page 89.

Step 1322-26

Does the list of all partition(s) you recorded in "Step 1322-11" on page 87 contain more than one entry?

No   Go to "Step 1322-33" on page 89.

Yes   Go to "Step 1322-27" on page 89.

Step 1322-27

Is the error class recorded in "Step 1322-6" on page 86 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 87, 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 87 been processed?

No   Go to "Step 1322-28" to process the next partition in the list you recorded in "Step 1322-11" on page 87.

Yes   Go to "Step 1322-33".

Step 1322-33

Have all the serviceable events recorded in "Step 1322-4" on page 86 been processed?

No   Go "Step 1322-5" on page 86 and process the next service action event in the list of serviceable events recorded in the list of serviceable events recorded in "Step 1322-4" on page 86.

Yes   Go to "Step 1322-34" on page 90.

Step 1322-34

While processing all service action events, were you directed to "Step 1322-14" on page 87?

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 57. 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 actions events were left 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 87, 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 87 been processed?

No Go to "Step 1322-35" to process the next partition in the list you recorded in "Step 1322-14" on page 87.

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 57. 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 actions events were left 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 pSeries 630 Model 6C4 and Model 6E4 can accommodate two power supplies installed 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. Refer to "Component LEDs" on page 470 for additional information.

4. The condition of two power supplies being 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 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 321.

Any identify LED in the system can also be flashed by using the ″Identify and Attention Indicators″ task through 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:

- If the system is configured as a full system partition, boot to the open firmware prompt. See the "System Power Control Menu" on page 318 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 the system is logically partitioned, the HMC must be attached. 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.

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 93.
The I/O drawer does not power on and the power LED is not lit.	Go to "Map 1522: Cannot Power On the I/O Drawer, Power Present LED Does Not Come On" 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 6C4, do the following:

1. Place the drawer into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.
2. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370.

For Model 6E4, 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 "Service Access Cover Removal (Model 6E4)" on page 375.

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 6C4, go to "Step 1521-2" on page 94.
  - Model 6E4, go to "Step 1521-5" on page 95.
- 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 96.
- 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 96.
- 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 96.
- An SRN referenced in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* is listed in MAP 1521 in the ″Actions/Descriptions″ column. Go to "Step 1521-11" on page 98.

Step 1521-2

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

NO   Go to "Step 1521-3".

YES   Go to "Step 1521-5" on page 95.

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 panel.
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 panel.
2. Plug in the main power cable into the power distribution panel.
3. Plug in the main power cable from the wall outlet.

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

NO   Replace the rack-mounted power distribution panel.

YES   Go to "Step 1521-5" on page 95.

Step 1521-5

Turn off the power and do the following:

For Model 6C4:
1. Unplug the the system unit power cables from the power distribution panel.
2. Unplug the power cables from the system unit.
3. Check that the power cables have continuity.
4. Check that the power distribution panel outlets have the correct voltage.

For Model 6E4:
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".

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
    • CEC backplane
    • Memory DIMMs
    • Processor cards
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)
    • CEC backplane
    • Memory DIMMs
    • Processor card(s)
3. Turn off the power.
4. Unplug the power cables from the system unit.
5. Exchange one of the FRUs in the list.
6. 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 service support 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 first processor card.
5. Remove processor card #2 (if installed).
6. Unplug the signal and power cables from the DASD backplane.
7. Unplug the disk drives from the DASD backplane.
8. Unplug the signal and power cables from any devices in the media bays.
9. Remove all the fans.
10. Plug the power cables into the system unit.
11. 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" on page 97.

Step 1521-9

Note: Either the processor card, PCI riser card, 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. CEC backplane.
4. Processor card
5. Memory
6. PCI riser card

Do the following 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 service support 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 on processor card #1
2. Processor card #2 (if removed)
3. DASD backplane
4. Disk drives
5. Media bay devices
6. PCI adapters, lowest slot to highest slot
7. 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.

Do the following 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 first processor card 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 processor card.
- If the second processor card was just installed, exchange the memory DIMMs one at a time to isolate a possible failing module. If all modules have been exchanged and the problem is not, resolved replace the processor card.

Repeat these steps until all the parts have been installed. Go to "Step 1521-11" on page 98.

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 99.

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. CEC backplane
3. PCI riser card

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".

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 60 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 125.

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 6C4 and Model 6E4 accommodate redundant power supplies, it is not necessary to power off the system when replacing a power supply.

The power supplies are symmetrical, so 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 Supplies" on page 441.

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 60 and follow the instructions for the new symptom.

Step 1521-15

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

Shut down the system and remove the power cable from the system unit. Exchange the following FRUs in the order listed.
1. PCI riser card
2. CEC 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 98.
      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 60 and follow the instructions for the new symptom.

Map 1522: Cannot Power On the I/O Drawer, Power Present LED Does Not Come On

Step 1522-1

Attempt to power on the I/O drawer (see "Starting the System without an HMC Attached" on page 364)

Does the I/O drawer power on?

NO   Go to "Step 1522-2".

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

Step 1522-2

Examine the power supply LEDs at the rear of the I/O drawer.

Are the green AC Good LEDs of both power supplies of the I/O drawer on solid?

NO   Go to "Step 1522-8" on page 101.

YES   Go to "Step 1522-3".

Step 1522-3

Is the amber fault LED of any power supply of the I/O drawer on solid?

NO   Go to "Step 1522-4".

YES   Go to "Step 1522-21" on page 104.

Step 1522-4

Is the amber fault LED of any power supply of the I/O drawer blinking?

NO   Go to "Step 1522-5".

YES   Go to "Step 1522-23" on page 105.

Step 1522-5

Is the green DC good LED of any power supply of the I/O drawer off?

NO   Go to "Step 1522- 25" on page 105.

YES   Go to "Step 1522-6".

Step 1522-6

Are the green DC good LEDs of both power supplies of the I/O drawer off?

NO   Go to "Step 1522-7" on page 101.

YES   Go to "Step 1522- 25" on page 105.

Step 1522-7

Replace the items in the following list one at a time. Turn the power off before removing the item, and turn the power back on after replacing the item to determine if the drawer will power on.

1. Replace the power supply with the green DC good LED off.
2. Replace the other power supply with the one just removed from above.
3. Replace the I/O drawer backplane.

Does the I/O drawer power on?

NO   **Have all the items in the list above been replaced?**

        NO   Go to beginning of this step and replace the next item.

        YES   Call service support.

YES   The item 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*.

Step 1522-8

Is this machine connected to dc power?

NO   Go to "Step 1522-12" on page 102.

YES   Go to "Step 1522-9".

Step 1522-9

Are all circuit breakers reset at the rack power distribution panel?

NO   Reset the breaker switch by first turning off, then turning on.

        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 1522-10".

Step 1522-10

Are all the dc power cables seated firmly and connected correctly from the rack power distribution panel to the rack drawers?

NO   Fix the connection.

        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 1522-11" on page 102.

Step 1522-11

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

Perform the following:
1. Disconnect the dc power cable from each power supply of the I/O drawer.
2. Use a multimeter to measure the dc voltage at the drawer end of each dc power cable.

Is the dc voltage from –40 V dc to –60 V dc?

NO   There is no power to the drawer. Refer to the rack documentation to isolate the dc power problem. The *7014 Series Model T00 and T42 Rack Installation and Service Guide* is appropriate for most systems.

        This ends the procedure.

YES   Go to "Step 1522-17" on page 103.

Step 1522-12

Are all circuit breakers reset at the rack power distribution unit(s)?

NO   Reset the breaker switch.

        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 1522-13".

Step 1522-13

Are all the ac power cables seated firmly and connected correctly from the rack power distribution unit(s) to the rack drawers?

NO   Fix the connection.

        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 1522-14".

Step 1522-14

Follow the ac power cable(s) from the I/O drawer to the appropriate power distribution unit.

Is the power distribution unit power LED on?

NO   Go to "Step 1522-18" on page 104.

YES   Go to "Step 1522-15" on page 103.

Step 1522-15

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

Perform the following:

1. Disconnect the ac power cable(s) from the power distribution unit that supplies power to the I/O drawer.
2. Use a multimeter to measure the ac voltage at the power distribution unit socket(s) where the ac power cable(s), just removed, was (were) attached.

Is the ac voltage from 200 V ac to 240 V ac?

NO   Replace the power distribution unit

    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 1522-16".

Step 1522-16

Reconnect the ac power cable(s) to the power distribution unit.

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

Perform the following:

1. Disconnect the ac power cable from each power supply of the I/O drawer.
2. Use a multimeter to measure the ac voltage at the drawer end of each ac power cable.

Is the ac voltage from 200 V ac to 240 V ac?

NO   Replace the ac power cable(s).

    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 1522-17".

Step 1522-17

Replace the following in the I/O drawer, one at a time, disconnecting the ac power cable (dc power cable for a dc-powered system) to each power supply before replacement and reconnecting the ac power cable (dc power cable for a dc-powered system) to each supply after replacement:

- I/O power supply 1.
- I/O power supply 2.
- I/O drawer backplane

Does the operator panel show the OK prompt?

NO   Contact your next level of support for assistance.

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

Step 1522-18

Is the ac power cable from the rack power distribution unit to the customer's ac power outlet connected and seated correctly at both ends?

NO   Connect the ac power cable correctly at both ends.

   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 1522-19".

Step 1522-19

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

Perform the following:

1. Disconnect the mainline ac power cable from the power distribution unit that supplies power to the I/O drawer.
2. Use a multimeter to measure the ac voltage at the power distribution unit end of the mainline ac power cable.

Is the ac voltage from 200 V ac to 240 V ac?

NO   Go to "Step 1522-20".

YES   Replace the power distribution unit.

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

Step 1522-20

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

Perform the following:

1. Disconnect the mainline ac power cable from the customer's ac power outlet.
2. Use a multimeter to measure the ac voltage at the customer's ac power outlet.

Is the ac voltage from 200 V ac to 240 V ac?

NO   Inform the customer that the ac voltage at the power outlet is not correct.

   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 mainline ac power cable.

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

Step 1522-21

Are the amber fault LEDs of both power supplies of the I/O drawer on solid?

NO   Go to "Step 1522-22" on page 105.

YES   Go to "Step 1522- 25" on page 105.

Step 1522-22

Replace the items in the following list one at a time. Turn the power off before removing the item, and turn the power back on after replacing the item to determine if the drawer will power on.
1. Replace the power supply with the amber fault LED on solid.
2. Replace the other power supply with the one just removed.
3. Replace the I/O drawer backplane.

Does the I/O drawer power on?
NO   **Have all the items in the list above been replaced?**
        NO   Go to "Step 1522-22" and replace the next item.
        YES   Call service support.
YES   The item 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*.

Step 1522-23

Are the amber fault LEDs of both power supplies of the I/O drawer blinking?
NO   Go to "Step 1522-24".
YES   Go to "Step 1522- 25".

Step 1522-24

Perform the action items in the following list one at a time. Turn the power off before removing the item, and turn the power back on after replacing the item to determine if the drawer will power on.
1. Check all SPCN external cabling.
2. Replace the power supply with the amber fault LED blinking.
3. Replace the other power supply with the one just removed.
4. Replace the I/O drawer backplane.

Does the I/O drawer power on?
NO   **Have all the items in the list above been replaced?**
        NO   Go to "Step 1522-24", and replace the next item.
        YES   Call service support.
YES   The item 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*.

Step 1522- 25

Disconnect the ac power cable (dc power cable for a dc-powered system) to each power supply of the I/O drawer and remove the following components from the I/O drawer, one at a time, in the sequence listed:
1. RIO adapter card
2. PCI adapter card(s)

Reconnect the ac power cables (dc power cable for a dc-powered system) to each power supply of the I/O drawer and attempt to power on the I/O drawer.

Does the I/O drawer power-on?
NO   Go to "Step 1522-28" on page 106.
YES   Go to "Step 1522-26" on page 106.

Step 1522-26

Reinsert the following components in the I/O drawer, one card at a time, disconnecting the ac power cable (dc power cable in a dc-powered system) to each power supply before reinsertion and reconnecting the ac power cable (dc power cable for a dc-powered system) to each power supply after reinsertion:
1. RIO adapter card
2. PCI adapter card(s)

Does the I/O drawer power-on?
NO   Replace the defective component just reinserted.
           Reinsert any remaining components.
           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 1522-27".

Step 1522-27

Have all components in step "Step 1522-26" been reinserted?
NO   Go to "Step 1522-26" to reinsert the next component.
YES   The symptom has changed. Call your next level of support for assistance.
           This ends the procedure.

Step 1522-28

Replace each I/O drawer, one at a time, disconnecting the power cable to each power supply before replacement and reconnecting the power cable to each power supply after replacement:

Does the I/O drawer power on?
NO   Go to "Step 1522-29".
YES   Reinsert the components removed in "Step 1522- 25" on page 105.
           This ends the procedure. Go to ″MAP 0410: Repair Checkout″ in the *RS/6000* @server *pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1522-29

Have all components in the previous step been replaced?
NO   Go to "Step 1522-28" and replace the next component.
YES   Call your next level of support for assistance.
           This ends the procedure.

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. Processor card(s)
    b. RIO adapter card(s)
    c. PCI adapter card(s)
    d. DASD device
    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" on page 108.

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" 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. 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. Disregard a base system fan error code if it occurs during this step.
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" on page 109.

Step 1523-6

1. Turn off the power.
2. Reinstall base system fan 3 that was removed in "Step 1523-5" on page 108.
3. Remove base system fan 4. 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 4, location: U0.1-F4. **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*.

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. Processor cards
   b. RIO adapter card(s)
   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*.

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

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 321.

Any identify LED in the system can also be flashed by using the ″Identify and Attention Indicators″ task through 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:

- If the system is configured as a full system partition, boot to the open firmware prompt. See the "System Power Control Menu" on page 318 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 the system is logically partitioned, the HMC must be attached. 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.

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

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 1542: I/O Problem Isolation" on page 113.
406x 00B7	Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
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 139.
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 125.
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, E5E6, E5E7, E5E8, E5E9, E5EE, E5EF, 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 125.
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, E861, E871	Go to "MAP 1542: I/O Problem Isolation" on page 113.
B1xx 4634	Go to "MAP 154C: SPCN Cable Problem Isolation" on page 141.

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 CEC backplane at U0.1-P1.
- Processor card at location U0.1-P1-C1 if not recorded in "Step 1541-1".
- All memory DIMMS on processor card 1 at location U0.1-P1-C1-Mn (n equals 1 to 8), if not recorded in "Step 1541-1".
- Processor card at location U0.1-P1-C2 if not recorded in "Step 1541-1".
- All memory DIMMS on processor card 2 at location U0.1-P1-C2-Mn (n equals 1 to 8), if not recorded in "Step 1541-1".
- PCI riser card at U0.1-P2.

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 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.

This I/O problem-determination MAP isolates I/O card and I/O subsystem failures. When I/O problem isolation is complete, all cables and cards exhibiting a failure will have been replaced or reseated.

Notes:

1. This MAP assumes that a CD-ROM drive is installed in the base system and connected to an adapter in the base system, and that a Diagnostics CD-ROM is available.
2. If a general-access password or privileged-access password is installed, you are prompted to enter the password before the diagnostic CD-ROM can load.
3. The term *POST indicators* refers to the device mnemonics (words **memory**, **keyboard**, **network**, **SCSI**, and **speaker**) that appear on the system console during the power-on self-test (POST).
4. 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 "System Information Menu" on page 321).
5. 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 you disable them, make notes of their current settings so that you can restore them easily. The following table lists the settings:

Surveillance	From the service processor Setup Menu, go to the Surveillance Setup Menu and disable surveillance. (Operating System Surveillance is disabled in LPAR mode.)
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: a. Number of reboot attempts to **0** (zero) b. Use OS-Defined restart policy to **No** c. 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.

The steps in this procedure will attempt to slow boot the system into service mode diagnostics. The following procedure describes booting a nonpartitioned system with an attached 3151 console. The procedure for booting a partitioned system with an attached HMC is slightly different and is described in "Standalone Diagnostics Operations" on page 305. "Standalone Diagnostics Operation with an HMC Attached to the System" describes the procedure for booting online disgnostics (6 key between the **keyboard** and **speaker** indicators) and the following procedure requires booting standalone diagnostics (5 key between the **keyboard** and **speaker** indicators). Therefore, on a partitioned system, make sure the partition you selected to boot in the following procedure has the CD-ROM allocated to it, as described in Chapter 6, "Using the Online and Standalone Diagnostics", on page 301.

Step 1542-1

1. Ensure that the diagnostics and the operating system are shut down.
2. Turn off the power.
3. Select slow boot mode (select **Disable Fast Boot**) on the System Power Control menu from the service processor main menu.
4. Turn on the power.
5. Insert the diagnostic CD-ROM into the CD-ROM drive.

Does the CD-ROM appear to operate correctly?

NO   Go to "Boot Problems/Concerns" on page 175.

YES   Go to "Step 1542-2".

Step 1542-2

1. When the keyboard indicator is displayed (the word **keyboard**), press the 5 key on the firmware console.
2. Enter the appropriate password when you are prompted to do so.

Is the Please define system console screen displayed?

NO   Go to "Step 1542-3".

YES   Go to "Step 1542-4" on page 115.

Step 1542-3

The system is unable to boot standalone diagnostics.

Check the service processor error log and the operator panel for additional error codes resulting from the slow boot in "Step 1542-1". Did the slow boot generate a different error code from the one that originally sent you to MAP 1542?

NO   It appears you have a processor subsystem problem. Call for support. **This ends the procedure**.

YES   Restore fast-boot mode (select **Enable Fast Boot**) on the System Power Control menu from the service processor main menu. Go to "Checkpoint and Error Code Index" on page 183 and follow the actions for the new error code.

Step 1542-4

The system stopped with the Please define system console prompt appearing on the system console.

Standalone diagnostics can be booted. Perform the following:

1. Follow the instructions on the screen to select the system console.

2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.

3. If the terminal type has not been defined, you must use the Initialize Terminal option of the FUNCTION SELECTION menu to initialize the AIX operating system environment before you can continue with the diagnostics. This is a separate and different operation from selecting the firmware console display.

4. Select **Advanced Diagnostic Routines**.

5. When the DIAGNOSTIC MODE SELECTION menu displays, select **System Verification** to run diagnostics on all resources.

    Did running diagnostics produce a different symptom?

    NO   Go to substep 6.

    YES   Go to "Entry MAP" on page 59. Use the new symptom.

6. Record any devices missing from the list of all adapters and devices. Continue with this MAP. When you have fixed the problem, use this record to verify that all devices appear when you run System Verification.

Are there any devices missing from the list of all adapters and devices?

NO   Reinstall all remaining adapters, if any, and reconnect all devices. Return the system to its original configuration. Be sure to select fast-boot mode (select **Enable Fast Boot**) on the System Power Control menu from the service processor main menu. Go to ″Map 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES   The boot attempts that follow will attempt to isolate any remaining I/O drawer problems with missing devices. Ignore any codes that may display on the operator panel unless stated otherwise. Go to "Step 1542-5".

Step 1542-5

Examine the base system RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1).

Are there any I/O subsystems attached to the base system?

NO   Go to "Step 1542-18" on page 121.

YES   Go to "Step 1542-6".

Step 1542-6

There may be missing devices associated with one or more I/O subsystems.

Note: Before continuing, check the cabling from the base system to the I/O subsystem(s) to ensure that the system is cabled correctly. Refer to "Subsystem Positioning and Cabling" on page 40 for valid configurations. Record the current cabling configuration and then continue with the following steps:

1. Turn off the power.

2. At the base system, disconnect the cable connection at RIO-G port 0 (U0.1-P1/Q2).

3. At the other end of the RIO-G cable referred to in substep 2, disconnect the I/O subsystem port connector 0 (U0.x-P1/Q2). The RIO cable that was connected to RIO-G port 0 in the base system should now be loose and can be removed. Record the location of this I/O subsystem.

4. Examine the connection at the I/O port connector 1 (U0.x-P1/Qu) of the I/O subsytem recorded in substep 3 on page 115. If the RIO cable attached to the I/O port connector 1 of the I/O subsytem connects to the I/O port connector 0 of another I/O subsystem, record that the I/O subsystem identified in substep 3 on page 115 is ″looped one″ and record the location of the next I/O subsystem that is connected to I/O port connector 1 of the ″looped one″ I/O subsystem, then go to substep 9.

5. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the I/O subsytem recorded in substep 3 on page 115 connects to RIO-G port 1 (U0.1-P1/Q3) of the base system, record that the I/O subsystem is ″not looped″.

6. At the base system, disconnect the cable connection at RIO-G port 1 (U0.1-P1/Q3) and reconnect it to RIO-G port 0 (U0.1-P1/Q2).

7. At the I/O subsystem recorded in substep 3 on page 115, disconnect the I/O port connector 1 (U0.x-P1/Qu) and reconnect to the I/O port connector 0 (U0.x-P1/Q2).

8. Verify that a single RIO cable connects base system RIO-G port 0 (U0.1-P1/Q2) to the I/O subsystem recorded in substep 4 port connector 0 (U0.x-P1/Q2). Go to substep 13.

9. Record that the next I/O subsystem. This will be the I/O subsystem that is connected to I/O port connector 1 of the ″looped one″ I/O subsystem.

10. At the base system, disconnect the cable connection at RIO-G port 1 (U0.1-P1/Q3) and reconnect it to RIO-G port 0 (U0.1-P1/Q2).

11. At the ″looped two″ I/O subsystem recorded in substep 14, disconnect the I/O port connector 1 (U0.x-P1/Qu) and reconnect to the I/O port connector 0 (U0.x-P1/Q2) of the ″looped one″ I/O subsystem identified in substep 4.

12. Verify that a single RIO cable connects base system RIO-G port 0 (U0.1-P1/Q2) to the I/O subsystem recorded in substep 3 on page 115 port connector 0 (U0.x-P1/Qu). Go to substep 13.

13. If an I/O subsystem was ″looped two″, verify that the ″looped one″ I/O subsystem I/O port connector 1 (U0.x-P1/Qu) is connected to the ″looped two″ I/O subsystem I/O port connector 0 (U0.x-P1/Q2).

14. At this point, a chain of one or two I/O subsystems is attached to RIO-G port 0 (U0.1-P1/Q2) of the base system.

15. Turn on the power to boot standalone diagnostics from CD.

16. If the Please define the System Console screen is displayed, follow directions to select the system console.

17. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, if necessary).

18. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to "Step 1542-7" on page 117.

YES The RIO cable that was removed in substep 3 on page 115 is defective. Replace the RIO cable.

If two I/O subsystems are chained to RIO-G port 0 (U0.1-P1/Q2) of the base system, connect the new RIO cable from the ″looped two″ I/O subsystem I/O port connector 1 (U0.x-P1/Q1) to base system RIO-G port 1 (U0.1-P1/Q1).

If the I/O subsystem was ″not looped″ connect the new RIO cable from the I/O subsystem recorded in substep 4 I/O port connector 1 (P1/Q1) to base system RIO-G port 1 (U0.1-P1/Q3).

Reconfigure the system to its original condition. Go to "Map 0410: Repair Checkout" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1542-7

The @server pSeries 630 Model 6C4 and Model 6E4 server may have up to two I/O subsystems attached to its RIO ports. The following steps reduce the system I/O to only the I/O of the base system.

1. Turn off the system power.
2. At the base system, disconnect the cable connection at RIO-G port 0 (U0.1-P1/Q2). Record all connections.
3. At the base system, disconnect the cable connection at RIO-G port 1 (U0.1-P1/Q3). Record all connections.
4. Disconnect the power cables from the I/O subsystem(s) that were attached to the base system. All I/O subsystems should now be physically disconnected from the base system.

Go to "Step 1542-8".

Step 1542-8

The base system is running from the integrated I/O or from I/O attached to an adapter installed into one of the integrated PCI slots.

1. Turn on the power to boot standalone diagnostics from CD.
2. If the Please define the System Console screen is displayed, follow directions to select the system console.
3. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
4. Check that all attached devices and adapters are listed.

If the Please define the System Console screen did not display or all attached devices and adapters are not listed, the problem is in the base system.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO   Go to "Step 1542-18" on page 121.

YES   Go to "Step 1542-17" on page 121.

Step 1542-9

For any I/O subsystem attached to the RIO-G ports ot the base system:

If the I/O subsystem was recorded as ″looped one″, are there any adapters in slots 1, 2, 3, 4, 5, 6, or 7 (location codes U0.x-P1-I1 through I7)?

NO   Go to "Step 1542-10".

YES   Go to "Step 1542-11" on page 118.

Step 1542-10

For any I/O subsystem attached to the RIO-G ports of the base:

If the I/O subsystem was recorded as ″looped two″, are there any adapters in slots 1, 2, 3, 4, 5, 6, or 7 (location codes U0.x-P1-I1 through I7)?

NO   Go to "Step 1542-15" on page 120.

YES   Go to "Step 1542-12" on page 118.

Step 1542-11

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 1, 2, 3, 4, 5, 6, and 7 (location codes Ux.y-P1-I1 through I7) from the I/O drawer.
3. Label and record the location of any cables attached to the adapters.
4. Record the slot number of the adapters.
5. Turn on the power to boot standalone diagnostics from CD.
6. If the TTY screen displays, enter 0 to select this console, press the 0 key on the TTY terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
9. Check that all attached devices and adapters are listed.

Did the `Please define the System Console` screen display and are all attached devices and adapters listed?

NO   Go to "Step 1542-10" on page 117.

YES   Go to "Step 1542-13" on page 119.

Step 1542-12

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 1, 2, 3, 4, 5, 6, and 7 (location codes Ux.y-P1-I1 through I7) from the I/O drawer.
3. Label and record the location of any cables attached to the adapters.
4. Record the slot number of the adapters.
5. Turn on the power to boot standalone diagnostics from CD.
6. If the TTY screen displays Enter 0 to select this console, press the 0 key on the TTY terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary)
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO   Go to "Step 1542-15" on page 120.

YES   Go to "Step 1542-13" on page 119.

Step 1542-13

If the Please define the System Console screen does display and all attached devices and adapters are listed, the problem is with one of the adapter cards or devices that was removed or disconnected from the I/O subsystem.

1. Turn off the power.
2. Reinstall one adapter or device that was removed. Use the original adapter cards in their original slots when reinstalling adapters.
3. Turn on the power to boot standalone diagnostics from CD.
4. If the Please define the System Console screen is displayed, follow directions to select the system console.
5. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
6. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to "Step 1542-14".

YES Reinstall the next adapter or device and return to the beginning of this step. Repeat this process until an adapter or device causes the Please define the System Console screen to not display or all attached devices and adapters to not be listed.

After installing all of the adapters and the Please define the System Console screen does display and all attached devices and adapters are listed, 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 1542-14

Replace the adapter you just installed with a new adapter and retry the boot to standalone diagnostics from CD.

1. If the Please define the System Console screen is displayed, follow directions to select the system console.
2. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
3. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to "Step 1542-25" on page 124.

YES The adapter was defective. Go to "Step 1542-16" on page 120.

Step 1542-15

1. Turn off the power.
2. Disconnect the I/O subsystem power cables.
3. Replace the following parts, one at a time, in the sequence listed:
   a. I/O subsystem backplane of any ″looped one″ I/O subsystem attached to the base system.
   b. I/O subsystem backplane of any ″looped two″ I/O subsystem attached to the base system.
4. Reconnect the I/O subsystem power cables.
5. Turn on the power.
6. Boot standalone diagnostics from CD.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509 if necessary).
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO   Replace the next part in the list and return to the beginning of this step. Repeat this process until a part causes the Please define the System Console screen to be displayed and all attached devices and adapters to be listed. If you have replaced all the items listed above and the Please define the System Console screen does not display or all attached devices and adapters are not listed, check any external devices and cabling. If you do not find a problem, contact your next level of support for assistance.

YES   Go to "Step 1542-16".

Step 1542-16

1. Turn off the power.
2. The item just replaced fixed the problem.
3. If a display adapter with keyboard and mouse were used, reinstall the display adapter card, keyboard, and mouse.
4. Reconnect the diskette drive cable to the diskette drive connector on the base system.
5. Reconnect the tape drive (if previously installed) to the internal SCSI bus cable.
6. Plug in all adapters that were previously removed but not reinstalled.
7. Reconnect the I/O subsystem power cables that were previously disconnected.

Reconfigure the system to its original condition. Go to "Map 0410: Repair Checkout" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Step 1542-17

1. Turn off the power.
2. At the base system, reconnect the cable connection at RIO-G port 0 (U0.1-P1/Q2) recorded in "Step 1542-7" on page 117.
3. At the base system, reconnect the cable connection at RIO-G port 1 (U0.1-P1/Q3) recorded in "Step 1542-7" on page 117.
4. Reconnect the power cables to the I/O subsystems that were found attached to the base system RIO-G ports mentioned in substeps 2 and 3 above. All I/O subsystems that were attached to the base system RIO-G port 0 (U0.1-P1/Q2) and RIO-G port 1 (U0.1-P1/Q3) should now be physically reconnected to the base system.
5. Make sure the I/O subsystem(s) are cabled correctly as shown in "Subsystem Positioning and Cabling" on page 40.
6. Turn on the power to boot standalone diagnostics from CD.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, if necessary).
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO   Go to "Step 1542-9" on page 117 to isolate I/O problems attached to the base system RIO-G connectors.

YES   The symptom has changed. No items were replaced. Go to "Step 1542-16" on page 120.

Step 1542-18

Are there any adapters in slots 1, 2, 3, or 4 (location codes U0.1-P1-I1 through I4) in the base system?

NO   Go to "Step 1542-19".

YES   Go to "Step 1542-21" on page 122.

Step 1542-19

Replace the CEC backplane, location U0.1-P1

Step 1542-20

1. Boot standalone diagnostics from CD.
2. If the Please define the System Console screen is displayed, follow directions to select the system console.
3. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
4. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO   Go to "Step 1542-24" on page 123.

YES   Go to "Step 1542-16" on page 120.

Step 1542-21

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 1, 2, 3, and 4 (location codes U0.1-P1-I1 through I4) in the base system that are not attached to the boot device.
3. Label and record the location of any cables attached to the adapters.
4. Record the slot number of the adapters.
5. Turn on the power to boot standalone diagnostics from CD.
6. If the TTY screen displays Enter 0 to select this console, press the 0 key on the TTY terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO   Go to "Step 1542-19" on page 121.

YES   Go to "Step 1542-22".

Step 1542-22

If the Please define the System Console screen does display and all attached devices are adapters are listed, the problem is with one of the adapter cards or devices that was removed or disconnected from the I/O subsystem.

1. Turn off the power.
2. Reinstall the adapter or device that was removed. Use the original adapter cards in their original slots when reinstalling adapters.
3. Turn on the power to boot standalone diagnostics from CD.
4. If the Please define the System Console screen is displayed, follow directions to select the system console.
5. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
6. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO   Go to "Step 1542-23" on page 123.

YES   Reinstall the next adapter or device and return to the beginning of this step. Continue repeating this process until an adapter or device causes the Please define the System Console screen to not display or all attached devices and adapters to not be listed.

       After installing all of the adapters and the Please define the System Console screen displays and all attached devices and adapters are listed, go to "Step 1542-16" on page 120.

Step 1542-23

Replace the adapter you just installed with a new adapter and retry the boot to standalone diagnostics from CD.

1. If the Please define the System Console screen is displayed, follow directions to select the system console.
2. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
3. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO   Go to "Step 1542-19" on page 121.

YES   Go to "Step 1542-16" on page 120.

Step 1542-24

1. Turn off the power.
2. Disconnect the base system power cables.
3. Replace the following parts, one at a time, in the sequence listed:
   a. Internal SCSI cable.
   b. DASD backplane.
   c. Media backplane.
4. Reconnect the base system power cables.
5. Turn on the power.
6. Boot standalone diagnostics from CD.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO   Replace the next part in the list and return to the beginning of this step. Repeat this process until a part causes the Please define the System Console screen to be displayed and all attached devices and adapters to be listed. If you have replaced all the items listed above and the Please define the System Console screen does not display or all attached devices and adapters are not listed, check any external devices and cabling. If you do not find a problem, contact your next level of support for assistance.

YES   Go to "Step 1542-16" on page 120.

Step 1542-25

1. Turn off the power.
2. Disconnect the I/O subsystem power cables.
3. Replace the following parts, one at a time, in the sequence listed:
   a. Attached external device cable.
   b. Attached external device(s), one at a time, if more than one.
   c. I/O subsystem backplane (U0.x-P1).
4. Reconnect the I/O subsystem power cables.
5. Turn on the power.
6. Boot standalone diagnostics from CD.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Replace the next part in the list and return to the beginning of this step. Repeat this process until a part causes the Please define the System Console screen to be displayed and all attached devices and adapters to be listed. If you have replaced all the items listed above and the Please define the System Console screen does not display or all attached devices and adapters are not listed, check any external devices and cabling. If you do not find a problem, contact your next level of support for assistance.

YES Go to "Step 1542-16" on page 120.

MAP 1548: Processor Subsystem Problem Isolation

Notes:

1. Be sure to unplug the power cords before removing or installing processor cards, the PCI riser card, or the CEC 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 installed, 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 support leg located on the bottom of the media support shelf is used to deactivate a microswitch. The microswitch is located on the CEC backplane and when deactivated cuts off power to some of the components and connectors located on the CEC backplane. This support shelf must be correctly seated and secured in position after any new FRU is added to the system and you perform a system boot.

6. 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 126.

   - 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 126.

   - 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 126.

   Before proceeding, it is a good idea to examine that error log (see "System Information Menu" on page 321).

7. 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: a. Number of reboot attempts to **0** (zero) b. Use OS-Defined restart policy to **No** c. 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.

8. 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), the word **keyboard**, press the number 5 key.
    - On a graphical display, the word **keyboard**, 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 135.

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 7 on page 125. 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 6E4) or place the drawer (Model 6C4) 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 "Media Removal" on page 405.
9. Remove the media support shelf by loosening the thumbscrew and grasping the back edge of the shelf, sliding it back, then lifting it up and out of the system chassis.

    Note: The support leg located on the bottom of the media support shelf is used to deactivate a microswitch. The microswitch is located on the CEC backplane and when deactivated, cuts off all power to the CEC backplane. This support shelf must be correctly seated and secured in position after any new FRU is added to the system.

10. Remove processor card #2 (if installed). If processor card #2 is removed, ensure processor card #1 is installed and contains at least one quad of memory DIMMs.

    The processor card that is left in the system must contain at least one quad of memory DIMMs. For example, a system configuration having two processor cards; processor card #2 contains all of the memory DIMMs, processor card #1 contains no memory DIMMs. Remove processor card #1 that contains no memory DIMMs, then remove all but one quad of memory DIMMs from processor card #2. Place processor card #2 into processor slot #1.

11. Record the slot numbers of the memory DIMMs on processor card #1. Remove all memory DIMMs except for one quad from processor card #1.

    Notes:

    a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.

    b. Memory DIMMs must be installed in quads and in the correct connectors. Refer to "Memory DIMM Location" on page 19 for complete information on memory DIMMs.

12. Disconnect the cables attached to the PCI riser card.

13. Disconnect the IDE cable from the IDE connector on the CEC backplane.

14. If your system is equipped with a diskette drive, disconnect the diskette drive cable from the diskette drive connector on the CEC backplane.

15. Disconnect the signal and power connectors from the disk drive backplane.

16. Disconnect the disk drives from the disk drive backplane connectors.

17. Plug in the power cords and wait for the OK prompt to display on the operator panel display.

18. 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 128.

YES   Go to "Step 1548-3".

Step 1548-3

Were any more memory DIMMs removed from processor card #1?

NO   Go to "Step 1548-5" on page 128.

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 processor #1 in "Step 1548-2" on page 126 in their original locations.

    Notes:

    a. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.

    b. Memory DIMMs must be installed in quads in the correct connectors. Refer to "Memory DIMM Location" on page 19 for complete information on memory DIMMs.

3. Plug in the power cords and wait for the OK 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 60 and follow instructions for the new symptom.

YES Go to "Step 1548-5".

Step 1548-5

Was processor card #2 removed from the system?

NO Go to "Step 1548-8" on page 129.

YES Go to "Step 1548-7" on page 129.

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. Processor card #1
   c. CEC backplane (See the notes on page 59.)
   d. PCI riser card
   e. Power supplies.
2. Plug in the power cords and wait for the OK 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 60 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

No failure was detected with this configuration.

1. Turn off the power and remove the power cords.
2. Reinstall processor card #2.
3. Plug in the power cords and wait for the OK prompt to display on the operator panel display.
4. Turn on the power.

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

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. Memory DIMMs, if present on processor card #2, exchange one at a time with new or previously removed memory DIMMs.
2. Processor card #2 (last one installed)
3. CEC backplane (see notes on page 59)

    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.

    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 60 and follow the instructions for the new symptom.

YES   Go to "Step 1548-8".

Step 1548-8

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

   Notes:

   a. 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.
   b. 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.
   c. 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 before, 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. If you are prompted to do so, enter the appropriate password.

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 *IBM Hardware Management Console for pSeries 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, do the following:

    *   Replace the CEC backplane, location U0.1-P1. (See notes on page 59.)

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 60 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 OK 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. If you are prompted to do so, enter the appropriate password .

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 59)
4. Processor card

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 60 and follow the instructions for the new symptom.

YES   Go to "Step 1548-10" on page 131.

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 OK 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. If you are prompted to do so, enter the appropriate password.

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 59.)
4. Processor card

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 60 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 backplane, are connected and tested.

Go to "Step 1548-11".

Step 1548-11

The system is working correctly with this configuration. The disk drive backplane 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 the disk drive backplane.
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 is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. If you are prompted to do so, enter the appropriate password.

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 60 and follow the instructions for the new symptom.

YES Go to "Step 1548-12".

Step 1548-12

The system is working correctly with this configuration. One of the disk drives that you removed from the disk 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. Install a disk drive in the disk drive backplane.
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. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. If you are prompted to do so, enter the appropriate password.

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

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 60 and follow the instructions for the new symptom.

Yes Repeat this step with the second disk drive (if it was installed).

If the system has a diskette drive, go to "Step 1548-13" on page 133.

Go to "Step 1548-14" on page 133.

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 OK 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. If you are prompted to do so, enter the appropriate password.

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 59)

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 60 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) that had been removed.
3. Plug in the power cords and wait for the OK 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. If you are prompted to do so, enter the appropriate password.

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 59).

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 60 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 OK 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. If you are prompted to do so, enter the appropriate password.

Is the Please define the System Console screen displayed?

NO Go to ″Step 1548-16" on page 135.

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. PCI riser card
3. CEC backplane (see notes on page 59)

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 60 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 136, select the adapter/device that you loaded from the supplemental media).

Did you get an SRN?

NO   Go to "Step 1548-19" on page 136.

YES   Go to "Step 1548-18" on page 136.

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 59.

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 137.

YES   Press F3 to return to the FUNCTION SELECTION screen.

Go to "Step 1548-17" on page 135, 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 59)

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 60 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*.

Step 1548-23

1. Ensure that the diagnostics and the operating system are shut down.
2. Turn off the power.
3. If you have not already done so, configure the service processor with the instructions in note 7 on page 125 and then return here and continue.
4. Exit the service processor menus and remove the power cords.
5. Remove the service access cover (Model 6E4), or place the drawer (Model 6C4) 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. Plug in the power cords and wait for the OK prompt to display on the operator panel display.
8. Turn on the power.

Does the system stop with the same error code displayed on the operator panel that directed you to this MAP step?

NO   Go to "Step 1548-25" on page 138.

YES   Go to "Step 1548-24".

Step 1548-24

One of the FRUs remaining in the system unit is defective.
1. Turn off the power, remove the power cords and exchange the CEC backplane. See the notes on page 59.
2. Plug in the power cable and wait for the OK prompt to display on the operator panel display.
3. Turn on the power.

Does the system stop with the same error code displayed on the operator panel that directed you to this MAP step?

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

YES Reinstall the original FRU.

If the symptom did not change and all the FRUs have been exchanged, return to "Step 1548-2" on page 126.

Step 1548-25

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

1. Turn off the power and remove the power cable from the power outlet.
2. Install a FRU (adapter) and connect any cables and devices that were attached to it.
3. Plug in the power cable and wait for the OK prompt to display on the operator panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the firmware console.
6. Enter the appropriate password if you are prompted to do so.

Does the system stop with the same error code displayed on the operator panel that directed you to this MAP step?

NO Repeat this step until all of the FRUs (adapters) are installed, then go to ″MAP 0410: Repair Checkout″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

YES Go to "Step 1548-26".

Step 1548-26

The last FRU installed or one of its attached devices is probably defective.

1. Turn off the power and remove the power cables from the power outlet.
2. Starting with the last installed adapter, disconnect one attached device and cable.
3. Plug in the power cords and wait for the OK prompt to display on the operator panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the firmware console.
6. Enter the appropriate password if you are prompted to do so.

Does the system stop with the same error code displayed on the operator panel that directed you to this MAP step?

NO 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*.

YES Repeat this step until the defective device or cable is identified or all of the devices and cables have been disconnected. If all of 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 59)

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, return to "Step 1548-2" on page 126.

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 1549-4".
406x 0EB2	Go to "Step 1549-4".
406x 0EB3	Go to "Step 1549-4".
406x 0EB4	Go to "Step 1549-7" on page 140.
406x 0EB5	Go to "Step 1549-7" on page 140.
406x 0EB6	Go to "Step 1549-7" on page 140.
406x 0EB7	Go to "Step 1549-7" on page 140.
406x 0EB8	Go to "Step 1549-7" on page 140.
406x 0EB9	Go to "Step 1549-7" on page 140.
406x 0EBA	Go to "Step 1549-7" on page 140.
406x 0EBB	Go to "Step 1549-7" on page 140.
406x 0EBC	Go to "Step 1549-7" on page 140.

Step 1549-4

Replace the following cards if present, one at a time:

- First location code item recorded, if any, in "Step 1549-1".
- Second location code item recorded, if any, in "Step 1549-1".
- Third location code item recorded, if any, in "Step 1549-1".
- Processor card 1 at U0.1-P1-C1, if not recorded in "Step 1549-1".
- Processor card 2 at U0.1-P1-C2, if not recorded in "Step 1549-1".
  Attention: Before replacing the system backplane, call support.
- CEC backplane at U0.1-P1, if not recorded in "Step 1549-1".

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 139?

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 139 have been replaced, go to "Step 1549-10", otherwise continue with "Step 1549-4" on page 139 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 139.
- Second location code item recorded, if any, in "Step 1549-1" on page 139.
- Third location code item recorded, if any, in "Step 1549-1" on page 139.
  Attention: Before replacing the system backplane, call support.
- CEC backplane at U0.1-P1, if not recorded in "Step 1549-1" on page 139.

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 139?

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 154C: SPCN Cable Problem Isolation

Step 154C-1

Record the error code, location code(s), and word 13 that sent you to this MAP.

Step 154C-2

Turn off the power.

Step 154C-3

Locate the word 13 value that you recorded in Step 154C-1 in the following table and perform the indicated action.

Word 13 Value	Action
A780 xxxx	Replace the SPCN cable attached to U0.1-P2/Q12 of the base system drawer.
A781 xxxx	1. Trace the SPCN cable attached to U0.1-P2/Q12 of the base system drawer back to an attached I/O drawer connector U0.dd-P1/Q4. 2. Replace the SPCN cable attached to connector U0.dd-P1/Q5 of this I/O drawer.
A782 xxxx	1. Trace the SPCN cable attached to U0.1-P2/Q12 of the base system drawer back to an attached I/O drawer connector U0.dd-P1/Q4. 2. Trace the SPCN cable attached to connector U0.dd-P1/Q5 of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4. 3. Replace the SPCN cable attached to connector U0.dd-P1/Q5 of this I/O drawer.
A783 xxxx	1. Trace the SPCN cable attached to U0.1-P2/Q12 of the base system drawer back to an attached I/O drawer connector U0.dd-P1/Q4. 2. Trace the SPCN cable attached to connector U0.dd-P1/Q5 of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4. 3. Trace the SPCN cable attached to connector U0.dd-P1/Q5 of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4. 4. Replace the SPCN cable attached to connector U0.dd-P1/Q5 of this I/O drawer.
A784 xxxx	1. Trace the SPCN cable attached to U0.1-P2/Q12 of the base system drawer back to an attached I/O drawer connector U0.dd-P1/Q4. 2. Trace the SPCN cable attached to connector U0.dd-P1/Q5 of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4. 3. Trace the SPCN cable attached to connector U0.dd-P1/Q5 of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4. 4. Trace the SPCN cable attached to connector U0.dd-P1/Q5 of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4. 5. Replace the SPCN cable attached to connector U0.dd-P1/Q5 of this I/O drawer.
A785 xxxx	1. Trace the SPCN cable attached to U0.1-P2/Q11 of the base system drawer back to an attached I/O drawer connector U0.dd-P1/Q5. 2. Trace the SPCN cable attached to connector U0.dd-P1/Q4 of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q5. 3. Trace the SPCN cable attached to connector U0.dd-P1/Q4 of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q5. 4. Replace the SPCN cable attached to connector U0.dd-P1/Q4 of this I/O drawer.

Word 13 Value	Action
A786 xxxx	1. Trace the SPCN cable attached to U0.1-P2/Q11 of the base system drawer back to an attached I/O drawer connector U0.dd-P1/Q5. 2. Trace the SPCN cable attached to connector U0.dd-P1/Q4 of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q5. 3. Replace the SPCN cable attached to connector U0.dd-P1/Q4 of this I/O drawer.
A787 xxxx	1. Trace the SPCN cable attached to U0.1-P2/Q11 of the base system drawer back to an attached I/O drawer connector U0.dd-P1/Q5. 2. Replace the SPCN cable attached to connector U0.dd-P1/Q4 of this I/O drawer.
A78F xxxx	Replace the SPCN cable attached to U0.1-P2/Q11 of the base system drawer.

Step 154C-4

Turn on the power.

Step 154C-5

Did the system stop with the same error code as recorded in "Step 154C-1" on page 141?

No The SPCN cable 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 Call service support.

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 with an HMC Attached to the System

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 processor subsystem 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 pressing 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 processor subsystem 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**

  On a full system partition, at phase 3, a system processor takes control and continues initializing partition resources. During this phase, checkpoints in the form of Exxx are displayed. E105, the last checkpoint in this phase, indicates that control is being passed to the operating system boot program.

  On a partitioned system, there is a global system-wide initialization phase 3 during which a system processor continues the initialization process. Checkpoints in this phase are of the form Exxx. This global phase 3 ends with a `LPAR...` on the operator panel. As a logical partition begins a partition initialization phase 3, one of the system processors assigned to that partition continues initialization of resource assigned to that partition. Checkpoints in this phase are also of the form Exxx.

  This partition phase 3 ends with an E105 displayed on the partition's virtual operator panel on the HMC, indicating control has been passed to that logical partition's operating system boot program. For both the global and partition phase 3, location codes may also be displayed on the physical operator panel and the partition's virtual terminal.

- **Phase 4: Operating System Boot**

  When the operating system starts to boot, checkpoints in the form 0xxx and 2xxx are displayed. This phase ends when the operating system login prompt displays on the operating system console.

IPL Flow Without an HMC Attached to the System

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 media subsystem 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 processor subsystem 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. 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	2 to 30+	Number of SSA drives Number of SCSI drives Number of Async sessions Number of processors Number of adapters Amount of memory

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 321 for information on how to access the service processor error log.

Notes:

1. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125 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 1542: I/O 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".
You have a code of the form Exxx.	Go to "Firmware Checkpoints" on page 152.
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 152.

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.

Checkpoint	Description	Action/ Possible Failing FRU
8000	Test of the service processor DRAM	See note 1 on page 151.
8004	Verify base code checksum	See note 1 on page 151.
8008	Verify base code mirror checksum	See note 1 on page 151.

Checkpoint	Description	Action/ Possible Failing FRU
8009	Set NVRAM configuration in TITAN	See note 1 on page 151.
800F	Start base code	See note 1 on page 151.
8010	Start supervisor in base code	See note 1 on page 151.
8012	Initialize hardware interrupts	See note 1 on page 151.
8014	Allocate and initialize area in DRAM	See note 1 on page 151.
8016	Initialize debugger and build VPD	See note 1 on page 151.
8018	Initialize service processor interfaces	See note 1 on page 151.
801A	Initialize external FLASH load	See note 1 on page 151.
801B	Initialize and test ISA hub chip	See note 1 on page 151.
801C	Initialize and test SUPER I/O chip	See note 1 on page 151.
801F	Initialize diskette, verify VDASD and start operational loader	See note 1 on page 151.
809x	Related to recovery mode system firmware update from diskette	See note 3 on page 151.
8092	Diskette initialization during recovery mode system firmware update	See note 3 on page 151.
8098	Firmware image being read during recovery mode system firmware update	See note 3 on page 151.
809C	Firmware image being written during recovery mode system firmware update	See note 3 on page 151.
809F	Diskette error during recovery mode system firmware update	See note 3 on page 151.
8100	Start operational loader	See note 1 on page 151.
81xx	Load code into DRAM from VDASD (where xx = number of loads)	See note 1 on page 151.
81FE	Load service processor operating system	See note 1 on page 151.
81FF	Start service processor operating system	See note 1 on page 151.
9000	Primary service processor task initializing	See note 1 on page 151.
9009	System processor IPL has started	See note 1 on page 151.
9010	Primary service processor thread waiting for response	See note 1 on page 151.
9020	Service processor state set to pre-standby	See note 1 on page 151.
9021	Service processor state set to standby	See note 1 on page 151.
9022	Service processor state set to IPL	See note 1 on page 151.
9023	Service processor state set to runtime	See note 1 on page 151.
9024	Service processor state set to terminate	See note 1 on page 151.
9025	Service processor state set to DPO	See note 1 on page 151.
9030	Waiting for secondary thread acknowledgement	See note 1 on page 151.
9033	I/O base initialization	See note 1 on page 151.
9034	I2C initialization	See note 1 on page 151.
9035	ISA initialization	See note 1 on page 151.
9036	Mailbox initialization	See note1 on page 151.

Checkpoint	Description	Action/ Possible Failing FRU
9037	SLLA initialization (VPD)	See note 1 on page 151.
9038	NVRAM initialization	See note 1 on page 151.
9039	Serial port initialization	See note 1 on page 151.
903A	Serial I/O initialization	See note 1 on page 151.
903B	SPCN initialization	See note 1 on page 151.
9051	End of reset/reload operation: service processor dump has completed	See note 1 on page 151.
9055	Start menus thread	See note 1 on page 151.
9060	Checking/configuring modem on serial port 1	See note 4 on page 151.
9061	Checking/configuring modem on serial port 2	See note 4 on page 151.
906A	Create mailbox processing thread	See note 1 on page 151.
906B	Create menu interface thread	See note 1 on page 151.
906C	Create general thread	See note 1 on page 151.
906D	Create SPCN thread	See note 1 on page 151.
9070	Create thread to control LEDs on I/O subsystems	See note 1 on page 151.
9071	Initialize thread to control LEDs on I/O subsystems	See note 1 on page 151.
9080	Start VPD collection program	See note 1 on page 151.
9081	Start SC VPD data collection	See note 1 on page 151.
9082	I2C/SPCN VPD data collection	See note 1 on page 151.
9083	End SC VPD data collection	See note 1 on page 151.
9084	End I2C/SPCN VPD data collection	See note 1 on page 151.
90FD	Waiting for IBIST to complete	See note 1 on page 151.
9101	Setup load source	See note 1 on page 151.
9102	Open load source	See note 1 on page 151.
9103	Verify open status of load source	See note 1 on page 151.
9104	Waiting for SPCN VPD collection to be completed	See note 1 on page 151.
9105	Load IPL LIDs	See note 1 on page 151.
9106	Initialize MOPs	See note 1 on page 151.
9107	System flush	See note 1 on page 151.
9108	Processor scan interface BATs and LBIST	See note 1 on page 151.
9109	ABIST	See note 1 on page 151.
910A	Non-processor scan interface BATs and LBIST	See note 1 on page 151.
910B	Wire test	See note 1 on page 151.
910C	Initialize main storage (system memory)	See note 1 on page 151.
910D	Configure processors	See note 1 on page 151.
910E	Configure and initialize I/O	See note 1 on page 151.

Checkpoint	Description	Action/ Possible Failing FRU
910F	Test and initialize main storage (system memory)	See note 1 on page 151.
9110	Free IPL LIDs	See note 1 on page 151.
9111	Load run-time LIDS	See note 1 on page 151.
9112	Load dump LIDs	See note 1 on page 151.
9113	Enable attention	See note 1 on page 151.
9114	Enable function 22	See note 1 on page 151.
9115	Load system IPL program	See note 1 on page 151.
9116	Load system data areas (NACA/PACA)	See note 1 on page 151.
9117	Start system IPL program	See note 1 on page 151.
9119	Waiting for VPD collection to complete	See note 1 on page 151.
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 151.
91FF	Control being handed to system processor from service processor	See note 1 on page 151.
9200	Scan interface BATs	See note 1 on page 151.
9300	Logic BIST	See note 1 on page 151.
9301	Scanned ABIST	See note 1 on page 151.
9302	Dedicated ABIST	See note 1 on page 151.
9303	Dedicated ABIST array fuse repair calculation	See note 1 on page 151.
9380	Built-in-self-test (BIST)	See note 2 on page 151.
9400	Service processor is requesting system flush	See note 1 on page 151.
9410	Service processor is issuing request to start instruction execution	See note 1 on page 151.
9411	Service processor is issuing request to stop instruction execution	See note 1 on page 151.
9420	Service processor is issuing request to start system clocks	See note 1 on page 151.
9421	Service processor is issuing request to stop system clocks	See note 1 on page 151.

Checkpoint	Description	Action/ Possible Failing FRU
94B0	Wire test faulty driver status refcode	See note 2 on page 151.
94B1	Wire test shorted net status refcode	See note 2 on page 151.
94B2	Wire test elastic interface test	See note 2 on page 151.
94BB	Wire test starting	See note 2 on page 151.
9501	IPL diagnostic initialization	See note 2 on page 151.
9502	IPL diagnostic L3 cache march test	See note 2 on page 151.
9503	IPL diagnostic L3 connections test	See note 2 on page 151.
9504	IPL diagnostic L2 cache march test	See note 2 on page 151.
9505	IPL diagnostic RIO wrap test	See note 2 on page 151.
9506	IPL diagnostic cleanup	See note 2 on page 151.
9507	IPL diagnostic test	See note 2 on page 151.
9508	IPL diagnostic main storage march test	See note 2 on page 151.
9509	IPL diagnostic main storage connections test	See note 2 on page 151.
950A	IPL diagnostic elastic interface slack test	See note 2 on page 151.
950B	IPL diagnostic fast initialization to zeros	See note 2 on page 151.
96C2	IPL MOPs processor configuration	See note 2 on page 151.
96C3	IPL MOPs main storage size	See note 2 on page 151.
96C4	IPL MOPs main storage configuration	See note 2 on page 151.
96C6	IPL MOPs I/O configuration	See note 2 on page 151.
96C7	IPL MOPs: enable chip machine checks	See note 2 on page 151.
96E1	Initialize run-time PRD objects and memory	See note 2 on page 151.
96E2	Run-time initialization: enable attention handling	See note 2 on page 151.
99FD	Service processor receiving firmware update module	See note 2 on page 151. **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.

Checkpoint	Description	Action/ Possible Failing FRU
99FF	Service processor writing firmware update module	See note 2 on page 151. **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 151.
A801	Start dump to NVRAM	See note 1 on page 151.
A802	Start dump to debug port	See note 1 on page 151.
A803	NVRAM not usable	See note 1 on page 151.
A804	NVRAM dump done	See note 1 on page 151.
A805	Start dump to flash	See note 1 on page 151.
A806	Flash dump area done	See note 1 on page 151.
A807	Flash area not usable	See note 1 on page 151.
A808	Flash error log to debug port	See note 1 on page 151.
A809	Flash erase start	See note 1 on page 151.
A80A	Flash erase end	See note 1 on page 151.
A80B	Reserved; not used	See note 1 on page 151.
A80C	Reserved; not used	See note 1 on page 151.
A80D	Reserved; not used	See note 1 on page 151.
A80E	Reserved; not used	See note 1 on page 151.
A80F	Service processor dump done	See note 1 on page 151.
A810-A8FF	**Description:** Scan log dump in progress **Action/Possible Failing FRU** Informational message. (See "Scan Log Dump Policy" on page 316.) 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 on page 151 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 on page 151.

Checkpoint	Description	Action/ Possible Failing FRU
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 CEC backplane, location: U0.1-P1.
   d. 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) CEC backplane, location: U0.1-P1.
   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 145.

If you have a checkpoint with no location code associated with it, see "Determining Location Code" on page 182. If a checkpoint has a location code associated with a FRU replacement, see "Mapping AIX and Physical Location Codes" on page 29 for physical location information.

If you replace FRUs and the problem is still not corrected, go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125 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 following table, go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.

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 175.
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.
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.
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.

Checkpoint	Description	Action/ Possible Failing FRU
E140	Operating system load	See "Boot Problems/Concerns" on page 175.
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 175.
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 175.
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.
E172	First pass of PCI device probe	Follow the repair action listed for checkpoint E151.

Checkpoint	Description	Action/ Possible Failing FRU
E174	**Description:** Establishing host connection **Action/Possible Failing FRU:** 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 175.
E17B	Processor clock speed measurement	Call service support.
E183	Service processor POST	1. Replace the CEC backplane, location: U0.1-P1. 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 183.
E1A0	User requested boot to SMS menus via keyboard entry	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
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.

Checkpoint	Description	Action/ Possible Failing FRU
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	**Description:** System booting to SMS menus **Action/Possible Failing FRU:** 1. If a graphics adapter is driving the console display, connect a laptop (and cable PN 62H4857) to serial port 1 on the processor subsystem. If the SMS menus appear on the laptop you may have a problem with the display. Go to the "Quick Entry MAP" on page 60 with the display problem symptom. 2. If the SMS menus do not appear on the laptop in step 1 or a graphics adapter is not driving the console display, 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	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.
E1B6	Probe for (ISA) keyboard	Replace the CEC backplane, Location: U0.1-P1.
E1BD	Probe for (ISA) mouse	Replace the CEC backplane, Location: U0.1-P1.
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.
E1D4	Create SCSI byte device node (ST)	Go to "MAP 1540: Problem Isolation Procedures" on page 110.

Checkpoint	Description	Action/ Possible Failing FRU
E1DB	Create floppy controller (FDC) node	Go to "MAP 1540: Problem Isolation Procedures" on page 110.

E1DC	**Description:** Dynamic console selection.
	
	Action/Possibly Failing FRU
	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 CEC backplane, Location: U0.1-P1.
	  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 (maybe a virtual terminal on the HMC). If a console is attached but nothing is displayed on it, go to the "Quick Entry MAP" on page 60 with the symptom ″All display problems.″
E1F3	Privileged-access password prompt	The prompt should be visible on the firmware console (maybe a virtual terminal on the HMC). If a console is attached but nothing is displayed on it, go to the "Quick Entry MAP" on page 60 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.
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 175.
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.

Checkpoint	Description	Action/ Possible Failing FRU
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 devices	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.
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 1542: I/O Problem Isolation" on page 113.
E20F	System firmware has exited to open firmware prompt	1. Replace the CEC backplane, Location: U0.1-P1. 2. Call service support.
E440	Validate NVRAM, initialize partitions as needed	1. Check for system firmware updates. 2. Replace the CEC backplane, Location: U0.1-P1. 3. Call service support.
E441	Generate /options node NVRAM configuration variable properties	1. Check for system firmware updates. 2. Replace the CEC backplane, Location: U0.1-P1. 3. Call service support.
E442	Validate NVRAM partitions	1. Check for system firmware updates. 2. Replace the CEC backplane, Location: U0.1-P1. 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.

Checkpoint	Description	Action/ Possible Failing FRU
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.
E505	Enable the time base for all RIO hubs	1. Check for system firmware updates. 2. Replace the RIO riser card specified by the location code. 3. 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.
E507	RIO hub assignment	1. Check for system firmware updates. 2. Replace the RIO riser card specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E508	Begin initializing RIO hubs	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.
E50A	Check for missing RIO interface chips	1. Check for system firmware updates. 2. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E50B	Save RIO hub information	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.

Checkpoint	Description	Action/ Possible Failing FRU
E50E	Copy all of the RIO hub information	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. Replace the RIO riser card specified by the location code. 3. 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.
E520	Set up the RIO architecture registers	1. Check for system firmware updates. 2. Replace the RIO riser card specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E521	Set up interrupts for the current RIO hub	1. Check for system firmware updates. 2. Replace the RIO riser card specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E522	Set up miscellaneous registers for the current RIO hub	1. Check for system firmware updates. 2. Replace the RIO riser card specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E523	Initialize data structures and enable all RIO hub ports	1. Check for system firmware updates. 2. Replace the RIO riser card specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E524	Determine I/O configuration of current RIO hub	1. Check for system firmware updates. 2. Replace the RIO riser card specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E525	Set up the ETE of the current RIO hub	1. Check for system firmware updates. 2. Replace the RIO riser card specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.

Checkpoint	Description	Action/ Possible Failing FRU
E526	Reassign the I/O subsystems to the closest RIO hub	1. Replace the RIO-G cable specified by the location code. 2. Replace the RIO riser card that the failing drawer is attached to. 3. Replace the I/O subsystem planar that the RIO-G cable in step 1 is attached to. 4. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E527	Enable the memory MAP and I/O MAP for the current RIO hub port	1. Check for system firmware updates. 2. Replace the RIO riser card specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E52F	End of configuration of the RIO hub	1. Check for system firmware updates. 2. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E528	Begin search for the next available I/O drawer from a current RIO port	1. Check the RIO cable specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, check the RIO cables going into and out of the I/O subsystem. 2. Replace the RIO cables specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, replace the RIO cables going into and out of the I/O subsystem. 3. Replace the CEC backplane, U0.1-P1. 4. Replace the I/O subsystem backplane specified by the location code, or the I/O subsystem backplane that the RIO cables in step 1 are attached to.
E529	Enable the control port and driver of the current RIO hub	1. Check the RIO cable specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, check the RIO cables going into and out of the I/O subsystem. 2. Replace the RIO cables specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, replace the RIO cables going into and out of the I/O subsystem. 3. Replace the CEC backplane, U0.1-P1. 4. Replace the I/O subsystem backplane specified by the location code, or the I/O subsystem backplane that the RIO cables in step 1 are attached to.

Checkpoint	Description	Action/ Possible Failing FRU
E52A	Search for the next available I/O drawer from a current RIO port	1. Check the RIO cable specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, check the RIO cables going into and out of the I/O subsystem. 2. Replace the RIO cables specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, replace the RIO cables going into and out of the I/O subsystem. 3. Replace the CEC backplane, U0.1-P1. 4. Replace the I/O subsystem backplane specified by the location code, or the I/O subsystem backplane that the RIO cables in step 1 are attached to.
E52B	The RIO cable connected to the RIO port has been detected	1. Check the RIO cable specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, check the RIO cables going into and out of the I/O subsystem. 2. Replace the RIO cables specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, replace the RIO cables going into and out of the I/O subsystem. 3. Replace the CEC backplane, U0.1-P1. 4. Replace the I/O subsystem backplane specified by the location code, or the I/O subsystem backplane that the RIO cables in step 1 are attached to.
E530	Checking RIO hub ports on current RIO hub	1. Check for system firmware updates. 2. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E531	Get RIO hub node ID	1. Replace the RIO-G cable specified by the location code. 2. Replace the RIO riser card that the failing drawer is attached to. 3. Replace the I/O subsystem planar that the RIO-G cable in step 1 is attached to. 4. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E532	RIO cable detected; enable the RIO hub port	1. Replace the RIO-G cable specified by the location code. 2. Replace the RIO riser card that the failing drawer is attached to. 3. Replace the I/O subsystem planar that the RIO-G cable in step 1 is attached to. 4. Go to "MAP 1540: Problem Isolation Procedures" on page 110.

Checkpoint	Description	Action/ Possible Failing FRU
E533	Set up the RIO hub routing table	1. Replace the RIO-G cable specified by the location code. 2. Replace the RIO riser card that the failing drawer is attached to. 3. Replace the I/O subsystem planar that the RIO-G cable in step 1 is attached to. 4. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E534	Get the node ID of the node on the other end of the RIO cable	1. Replace the RIO-G cable specified by the location code. 2. Replace the RIO riser card that the failing drawer is attached to. 3. Replace the I/O subsystem planar that the RIO-G cable in step 1 is attached to. 4. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E535	Valid node ID detected at other end of the RIO cable	1. This error code may indicate that the RIO-G cables are not properly connected to the I/O subsystems. Check the RIO cabling. 2. Replace the RIO-G cable specified by the location code. 3. Replace the RIO riser card that the failing drawer is attached to. 4. Replace the I/O subsystem planar that the RIO-G cable in step 1 is attached to. 5. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E536	I/O subsystem detected at other end of the RIO cable	1. Check for system firmware updates. 2. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E537	Configuring the I/O subsystem	1. Replace the RIO-G cable specified by the location code. 2. Replace the RIO riser card that the failing drawer is attached to. 3. Replace the I/O subsystem planar that the RIO-G cable in step 1 is attached to. 4. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E538	Detected the RIO hub on the other end of the RIO cable	1. Check for system firmware updates. 2. Go to "MAP 1540: Problem Isolation Procedures" on page 110.

Checkpoint	Description	Action/ Possible Failing FRU
E539	Enabling the RIO hub ports	1. Check for system firmware updates. 2. Replace the RIO riser card specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E53A	Set up the RIO port speed of the exit port of the I/O subsystem connected to the RIO hub port	1. Replace the RIO-G cable specified by the location code. 2. Replace the RIO riser card that the failing drawer is attached to. 3. Replace the I/O subsystem planar that the RIO-G cable in step 1 is attached to. 4. 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.
E53C	End of looking for next RIO hub port	1. Check for system firmware updates. 2. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E53D	Disable the anynode mode	Replace the I/O subsytem backplane that the RIO cable specified by the location code is attached to.
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	1. Replace the I/O subsystem planar specified by the location code. 2. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E544	Enable the RIO ports	Replace the I/O subsystem planar specified by the location code.
E545	Set up the device routing address for this new node ID	Replace the I/O subsystem planar specified by the location code.
E546	Set up the RIO interface chip new node ID	Replace the I/O subsystem planar specified by the location code.
E547	Set up the RIO interface chip routing table	Replace the I/O subsystem planar specified by the location code.
E548	Disable any node mode	Replace the I/O subsystem planar specified by the location code.
E549	Adjust RIO hub table	Replace the I/O subsystem planar specified by the location code.

Checkpoint	Description	Action/ Possible Failing FRU
E54A	Configure the I/O drawer	1. Check the RIO cable specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, check the RIO cables going into and out of the I/O subsystem. 2. Replace the RIO cables specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, replace the RIO cables going into and out of the I/O subsystem. 3. Replace the I/O subsystem backplane specified by the location code, or the I/O subsystem backplane that the RIO cables in step 1 are attached to.
E54B	Update the I/O drawer routing table of RIO ports	1. Check the RIO cable specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, check the RIO cables going into and out of the I/O subsystem. 2. Replace the RIO cables specified by the location code. If the location code specifies an I/O subsystem or its RIO interface, replace the RIO cables going into and out of the I/O subsystem. 3. Replace the I/O subsystem backplane specified by the location code, or the I/O subsystem backplane that the RIO cables in step 1 are attached to.
E550	Begin to initialize RIO interface chip	Replace the device specified by the location code.
E551	Set up the RIO speed	Replace the device specified by the location code.
E552	Set up RIO interface chip registers	Replace the device specified by the location code.
E553	Set up the RIO interface chip base address	Replace the device specified by the location code.
E554	Set up more RIO interface chip registers	Replace the device specified by the location code.
E555	Set up the RIO interface chip RIO link	Replace the device specified by the location code.
E556	Set up and initialize RIO interface chips under current RIO interface chip	Replace the device specified by the location code.
E55F	End of I/O drawer initialization	Replace the device specified by the location code.
E560	Begin initializing the I/O drawer	1. Check for system firmware updates. 2. Go to "MAP 1540: Problem Isolation Procedures" on page 110.

Checkpoint	Description	Action/ Possible Failing FRU
E561	Set up RIO interface chip registers	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E562	Set up RIO interface chip registers	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E563	Set up RIO interface chip registers	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E564	Set up RIO interface chip registers	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E565	Set up RIO interface chip registers	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.

Checkpoint	Description	Action/ Possible Failing FRU
E566	Enable device arbitration on the RIO interface chip	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E567	Set up RIO interface chip registers	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E568	Set up the external interrupt vector register	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E569	Set up RIO interface chip registers	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E56A	Set up RIO interface chip registers	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.

Checkpoint	Description	Action/ Possible Failing FRU
E56B	Set up RIO interface chip registers	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E56C	Set up the RIO interface chip PCI bus	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E56D	Identify devices on current bus	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
E56E	Begin initializing the service processor control chip	If the location code associated with this checkpoint is either U0.1-P1 or U0.1-P2, do the following: 1. Replace the PCI riser card in the CEC drawer, location: U0.1-P2. 2. Replace the CEC backplane: location U0.1-P1. Otherwise, replace the device specified by the location code.
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.
E570	Initialize the PCI-ISA bridge chip	Replace the device specified by the location code.
E571	Initialize the integrated Ethernet (if present)	Replace the device specified by the location code.
E572	Initialize the integrated SCSI	Replace the device specified by the location code.
E57F	End of RIO interface chip initialization	1. Check for system firmware updates. 2. Go to "MAP 1540: Problem Isolation Procedures" on page 110.

Checkpoint	Description	Action/ Possible Failing FRU
E580	Begin initializing the EADS module.	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E581	Read the PCI bus configuration header.	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E582	EADS has been detected.	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E583	Running BIST on the current EADS	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E584	Checking function of current EADS	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E585	Valid function of current EADS detected	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E586	Set up EADS function	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E587	Set up EADS BIST	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E588	Set up EADS function register	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.

Checkpoint	Description	Action/ Possible Failing FRU
E589	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E58A	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E58B	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E58C	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E58D	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E58E	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E58F	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E590	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E591	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.

Checkpoint	Description	Action/ Possible Failing FRU
E592	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E593	Set up EADS function registers	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E594	Begin probing slots	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E595	Detected valid adapter in slot	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E596	Read the EADS revision ID and class code.	1. Replace the RIO cable specified by the location code. 2. Replace the I/O subsystem planar that the RIO cable in step 1 is attached to.
E59E	End of walking bus of current EADS	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
E5E0	Initialize system processor array	1. Check for system firmware updates. 2. Replace the I/O subsystem backplane specified by the location code. 3. 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 1548: Processor Subsystem Problem Isolation" on page 125.
E5E3	Not in quick-restart: load and set up open firmware code in memory	1. Check for system firmware updates. 2. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.

Checkpoint	Description	Action/ Possible Failing FRU
E5E4	Activate slave processors	1. Check for system firmware updates. 2. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
E5E5	Initialize the hypervisor, phase 2	1. Check for system firmware updates. 2. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
E5E6	Set L2 and processor status	1. Check for system firmware updates. 2. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
E5E7	Save I/O hub information for RTAS and open firmware	1. Check for system firmware updates. 2. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
E5E8	Set up registers	1. Check for system firmware updates. 2. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
E5E9	Reset the quick restart path	1. Check for system firmware updates. 2. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
E5EE	Hang state in main control code	1. Check for system firmware updates. 2. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
E5EF	End of low-level firmware	1. Check for system firmware updates. 2. Go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.
E5FE	Get the system's licensed memory quantity from the service processor	1. Remove, then reapply AC power to the system using the UEPO switch. 2. Verify that the CUoD capacity card is installed and properly seated. 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.

Checkpoint	Description	Action/ Possible Failing FRU
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.
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.

Checkpoint	Description	Action/ Possible Failing FRU
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.
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. Check the SPCN and RIO cabling to the I/O subsystems. 2. Remove, then reapply power to the system. 3. Go to "MAP 1542: I/O Problem Isolation" on page 113. 4. Call service support.

Checkpoint	Description	Action/ Possible Failing FRU
E854	**Description:** Start collecting cable IDs **Action:** 1. Check the SPCN and RIO cabling to the I/O subsystems. 2. Remove, then reapply power to the system. 3. Go to "MAP 1542: I/O Problem Isolation" on page 113. 4. Call service support.	
E855	**Description:** Start setting RIO link speed **Action:** 1. Check the SPCN and RIO cabling to the I/O subsystems. 2. Remove, then reapply power to the system. 3. Go to "MAP 1542: I/O Problem Isolation" on page 113. 4. 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-plug interface	1. Check for system firmware updates. 2. Call service support.
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.
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 an IDE CD-ROM or IDE DVD-RAM drive is connected to the internal IDE connector. If your CD-ROM or DVD-RAM drive is SCSI note the following:

- If your system is configured with a four slotted riser card, the CD-ROM or DVD RAM drive must be connected to a SCSI adapter.
- If your system is configured with a four slotted riser card, for peek performance load the SCSI adapter into either PCI-X slot 3 or PCI-X slot 4 on the PCI riser card. See "PCI Riser Card Locations" on page 17 for riser card description and connector locations.
- If your system is configured with a six slotted riser card the CD-ROM or DVD-RAM can be connected to the integratted SE-SCSI connector located on the PCI riser card. See "PCI Riser Card Locations" on page 17 for riser card description and connector locations.

Booting the diagnostics image from CD-ROM or a NIM server is referred to as running standalone diagnostics.

Step 1

Without an HMC Attached to the System: Restart the system and access the firmware SMS main menu. Select **View Error Log**. Look for any errors with time stamps that are close to the boot during which the error was received that sent you here. Perform the actions associated with these error code(s) if present.

If the problem is resolved, go to *"MAP 410: Repair Checkout"* in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*. If the problem is not resolved, restart the system and access the firmware SMS 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" on page 176.
   c. If attempting to boot from a disk drive or CD-ROM, go to "Step 3" on page 177.

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 177.

With an HMC Attached to the System:

Attention: If the system is running partitions from partition standby (LPAR), the following procedure addresses the problem in which one partition will not boot while other partitions boot successfully and run the operating system successfully.

This procedure also addresses the problem in which a system does not boot to a full system partition. All of the system's resources are available to the diagnostics; the same general procedure applies, with the exception of moving resources between partitions.

Attention: It is the customer's responsibility to move devices between partitions. If a device must be moved to another partition to run standalone diagnostics, contact the customer or system administrator. (If a SCSI CD-ROM or DVD-RAM must be moved to another partition, all SCSI devices connected to that SCSI adapter must be moved because moves are done at the slot level, not at the device level. In addition, if a CD-ROM or DVD-RAM drive is connected to the internal IDE adapter, and the CD-ROM or DVD-RAM drive must be moved to another partition, all of the integrated I/O devices will move with it.) Both partitions must be rebooted if a device is moved between partitions.

Step 2
This procedure assumes that a CD-ROM or DVD-RAM drive is connected to the system, or that the diagnostics can be run from a NIM (Network Installation Management) server.

1. Look at the service action event-error log in the Service Focal Point on the HMC (see "Service Focal Point" on page 50 for instructions on accessing the service action event log). If there are open entries that affect devices in the boot path of the partition, perform the actions to correct those errors. If there are open entries that indicate problems with I/O cabling, perform the actions to correct those problems. Try to reboot the partition.

   If the partition hangs with a 4-character checkpoint in the display, the partition must be deactivated, then reactivated before attempting to reboot.

   If a 20EE xxxx error code is reported, the partition is already deactivated and in the error state. Reboot by activating the partition. If the system is running in full system partition, the power must be cycled before the system can be rebooted. If the reboot is still not successful, continue to step substep 2.

2. Boot to the SMS main menu as follows:
   - If you are rebooting a partition from partition standby (LPAR), go to the properties of the partition and select **Boot to SMS**, then activate the partition.

   - If you are rebooting the system in full system partition, start the service processor menus, select option 2, **System Power Control Menu**, then select option 7, **Boot Mode Menu**, then select option 1, **Boot to SMS menu**. Enter 98 to return to the system power control menu, then select option 4, **Power-on System**. Enter y to confirm.

   At the SMS main menu, select **Select Boot Devices**.
   a. Check to see if the intended boot device is correctly specified in the boot list. If it is in the boot list:
      1) Remove all removable media from devices in the boot list from which you do not want to boot.
      2) If attempting to boot from a network, go to step "Step 2".

         If attempting to boot from a disk drive or CD-ROM, go to step "Step 3" on page 177.

b. If the intended boot device is not correctly listed 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 partition. If the intended boot device cannot be added to the boot list, ask the customer or system administrator to verify that the device you are trying to boot from is assigned to the correct partition. If it is, go to step "Step 3".

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.

Standalone diagnostics can be run from CD-ROM or a NIM server. To boot standalone diagnostics, follow the detailed procedures in "Considerations for Running Standalone Diagnostics from CD-ROM" on page 305 or "Running Standalone Diagnostics from a Network Installation Management (NIM) Server with an HMC Attached to the System" on page 306.

Attention: Standalone diagnostics may be run on systems configured for either full system partition or partition standby. When attempting to boot diagnostics on a partition from partition standby, the device from which you are booting standalone diagnostics must be made available to the partition that is not able to boot, if it is not already in that partition. Contact the customer or system administrator if a device must be moved between partitions in order to boot standalone diagnostics. If devices are moved between partitions, both partitions must be rebooted. For more information, see "Standalone Diagnostics Operations" on page 305 or "Running the Standalone Diagnostics with No HMC Attached" on page 306.

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 125.

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 178.

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 present previously, go to MAP 0410: Repair Checkout in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

If the device still is not present, continue with the actions shown in the following 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 PCI riser card.

   f. Replace the SCSI backplane.

   g. Replace the intended boot device.

   h. Replace the CEC backplane.

2. Go to the Task Selection Menu and select **Display Configuration and Resource List**. If the intended boot device is not listed, go to ″MAP 0290: Missing Resource Problem Resolution″ in *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

3. If an SRN, not an 8-digit error code, is reported, go to *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

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 125.

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" on page 179.

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 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 cable.

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 125.

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 183. 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 1548: Processor Subsystem Problem Isolation" on page 125 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 without an HMC Attached" on page 363.
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 318. (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 without an HMC Attached" on page 364.
   - 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.

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 152. 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 VPD module on the operator panel. If the MAPs indicate that the operator panel should be replaced, the system VPD must be written into the VPD module on the new operator panel. See "System Vital Product Data (VPD) Update Procedure" on page 425.

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 351.
- 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 321, 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 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 321.

Any identify LED in the system can also be flashed by using the ″Identify and Attention Indicators″ task through 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:

- If the system is configured as a full system partition, boot to the open firmware prompt. See the "System Power Control Menu" on page 318 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 the system is logically partitioned, the HMC must be attached. 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 184 and follow the instructions in the Operator Panel Error Code table.
1xxx xxxx	System Power Control Network (SPCN) Error Codes Go to "SPCN Error Codes" on page 185 and follow the instructions in the SPCN Error Code table.
2xxx xxxx	Firmware Error Codes Go to "Firmware Error Codes" on page 194 and follow the instructions in the Firmware Error Code table.
4xxx xxxx	Service Processor Error Codes 1. Perform slow boot, if not already performed earlier. See "Performing Slow Boot" on page 181. 2. If the error codes are 450x xxxx, and if their actions call out memory DIMMs, go to "MAP 1240: Memory Problem Resolution" on page 70. 3. Go to "Service Processor Error Codes" on page 213 and follow the instructions in the Service Processor Error Codes table.
8xxx 9xxx Axxx Bxxx	Service Processor Checkpoints Go to "Service Processor Checkpoints" on page 145 for more information on these checkpoints.
A1FD 000x	The system has entered recovery mode. Go to "Recovery Mode" on page 340.
B006 xxxx B1xx xxxx	Common Firmware Error Codes Go to "Common Firmware Error Codes" on page 289 and follow the instructions in the Common Firmware Error Codes table.
Exxx	Firmware Checkpoints Go to "Firmware Checkpoints" on page 152 for more information on these checkpoints.
Mxxx xxxx	Problem Determination-Generated Error Codes Go to "Problem Determination Generated Error Codes" on page 298 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 1548: Processor Subsystem Problem Isolation" on page 125 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 2. 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.	Information 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 1548: Processor Subsystem Problem Isolation" on page 125 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. SPCN Error Codes for the CEC (system unit)

Error Code	Description	Action/ Possible Failing FRU
1011 00AC	AC loss or brownout detected	Informational
1011 00EF	Room emergency power off detected	Informational
1011 1510	Power supply 1 power source failure	1. Check input power to the power supply 2. System power supply 1 Location: U0.1-V1 3. CEC backplane Location: U0.1-P1
1011 1511	Power supply 1 fault	1. Verify that the media support shelf is installed and properly seated. 2. System power supply 1 Location: U0.1-V1 3. CEC backplane Location: U0.1-P1
1011 1512	Power supply 1 non-power fault	1. System power supply 1 Location: U0.1-V1 2. CEC backplane Location: U0.1-P1
1011 1513	Power supply 1 domain fault	1. Verify that the media support shelf is installed and properly seated. 2. System power supply 1 Location: U0.1-V1 3. CEC backplane Location: U0.1-P1
1011 1520	Power supply 2 power source failure	1. Check input power to power supply 2 2. System power supply 2 Location: U0.1-V2 3. CEC backplane Location: U0.1-P1
1011 1521	Power supply 2 fault	1. System power supply 2 Location: U0.1-V2 2. CEC backplane Location: U0.1-P1

Table 3. SPCN Error Codes for the CEC (system unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 1522	Power supply 2 non-power fault	1. System power supply 2 Location: U0.1-V2 2. CEC backplane Location: U0.1-P1
1011 1523	Power supply 2 domain fault	1. System power supply 2 Location: U0.1-V2 2. CEC backplane Location: U0.1-P1
1011 1B0A	+12V/-12V load fault	1. Replace power supply 1 Location: U0.1-V1 2. If power supply 2 is present, use removed power supply 1 to replace power supply 2 3. CEC backplane Location: U0.1-P1
1011 1B0B	1.8V load fault	1. Replace power supply 1 Location: U0.1-V1 2. If power supply 2 is present, use removed power supply 1 to replace power supply 2 3. CEC backplane Location: U0.1-P1
1011 1B0C	3.3V/1.5V load fault	1. Replace power supply 1 Location: U0.1-V1 2. If power supply 2 is present, use removed power supply 1 to replace power supply 2 3. CEC backplane Location: U0.1-P1
1011 1B0D	2.5V load fault	1. Replace power supply 1 Location: U0.1-V1 2. If power supply 2 is present, use removed power supply 1 to replace power supply 2 3. CEC backplane Location: U0.1-P1
1011 1B0E	+5V load fault	1. Replace power supply 1 Location: U0.1-V1 2. If power supply 2 is present, use removed power supply 1 to replace power supply 2 3. CEC backplane Location: U0.1-P1
1011 1B0F	1.5V/1.3V load fault	1. Replace power supply 1 Location: U0.1-V1 2. If power supply 2 is present, use removed power supply 1 to replace power supply 2 3. CEC backplane Location: U0.1-P1
1011 1F01	TMS log limit reached	Call service support.

Table 3. SPCN Error Codes for the CEC (system unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 2600	Pgood fault	CEC backplane Location: U0.1-P1
1011 2603	Pgood fault	CEC backplane Location: U0.1-P1
1011 2612	Optical converter fault	CEC backplane Location: U0.1-P1
1011 3100	I2C controller fault	CEC backplane Location: U0.1-P1
1011 3105	I2C port 5 fault	CEC backplane Location: U0.1-P1
1011 3114	PCI riser card fault	1. PCI riser card Location: U0.1-P2 2. CEC backplane Location: U0.1-P1
1011 3116	I^{2}C VPD interface	CEC backplane Location: U0.1-P1
1011 3118	SPCN VPD and NVS interface	CEC backplane Location: U0.1-P1
1011 7610	System processor fan 1 failure	1. Processor fan 1 Location: U0.1-F1 2. CEC backplane Location: U0.1-P1
1011 7611	Processor card cooling fan missing from primary location	1. Processor fan 1 Location: U0.1-F1 2. CEC backplane Location: U0.1-P1
1011 7620	System processor fan 2 failure	1. Processor fan 2 Location: U0.1-F2 2. CEC backplane Location: U0.1-P1
1011 7621	System processor fan 2 missing	1. Processor fan 2 Location: U0.1-F2 2. CEC backplane Location: U0.1-P1
1011 7630	Slow system PCI fan 3 failure	1. PCI fan 3 Location: U0.1-F3 2. CEC backplane Location: U0.1-P1
1011 7631	System PCI fan 3 missing	1. PCI fan 3 Location: U0.1-F3 2. CEC backplane Location: U0.1-P1
1011 7640	Slow system PCI fan 3 failure	1. PCI fan 3 Location: U0.1-F3 2. CEC backplane Location: U0.1-P1

Table 3. SPCN Error Codes for the CEC (system unit) (continued)

Error Code	Description	Action/ Possible Failing FRU

1011 7641	System PCI fan 3 missing	1. PCI fan 3
		   Location: U0.1-F3
		2. CEC backplane
		   Location: U0.1-P1

1011 7650	Slow system PCI fan 4 failure	1. PCI fan 4
		   Location: U0.1-F4
		2. CEC backplane
		   Location: U0.1-P1

1011 7651	System PCI fan 4 missing	1. PCI fan 4
		   Location: U0.1-F4
		2. CEC backplane
		   Location: U0.1-P1

1011 7660	System PCI fan 4 failure	1. PCI fan 4
		   Location: U0.1-F4
		2. CEC backplane
		   Location: U0.1-P1

1011 7661	System PCI fan 4 missing	1. PCI fan 4
		   Location: U0.1-F4
		2. CEC backplane
		   Location: U0.1-P1

1011 8400	VPD configuration	Ignore all location codes. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
1011 8401	VPD access	Ignore all location codes. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
1011 8402	VPD access-concentrator	CEC backplane, U0.1-P1
1011 8403	VPD level mismatch	1. System VPD module, U0.1-L1-N1 2. CEC backplane, U0.1-P1

1011 8404	PU 2 mismatch	1. Processor card 2,
		   Location: U0.1-P1-C2
		2. CEC backplane
		   Location: U0.1-P1

Table 3. SPCN Error Codes for the CEC (system unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 8409	No valid processor card VPD found	1. Verify that the processor card(s) is of the right type for your system and is properly installed. 2. If only one processor card is installed, replace it. If there are two processor cards installed, remove the second processor card. If the problem is resolved, replace that processor card. If it does not resolve the problem, swap the first processor card with the second, just removed, processor card. If this resolves the problem, replace the processor card that was originally in the first slot. If it does not resolve the problem, go to "MAP 1540: Problem Isolation Procedures" on page 110. 3. Go to "MAP 1540: Problem Isolation Procedures" on page 110.
1011 840A	VPD +5 stuck high	Ignore all location codes. Go to "MAP 1540: Problem Isolation Procedures" on page 110 and run minimum configuration.
1011 840B	VPD +5 stuck low	Ignore all location codes. Go to "MAP 1540: Problem Isolation Procedures" on page 110 and run minimum configuration.
1011 840C	Memory DIMM misplugged.	Inspect system memory for proper installation of memory DIMMs.
1011 840D	SPCN configuration	1. Check cabling 2. Set the I/O type. See Power Control Network Utilities Menu on page 325. 3. CEC backplane Location: U0.1-P1
1011 840E	SPCN default configuration loaded	1. Check cabling 2. Set the I/O type. See Power Control Network Utilities Menu on page 325. 3. CEC backplane Location: U0.1-P1
1011 840F	I/O type not recognized	1. Check cabling 2. Set the I/O type. See Power Control Network Utilities Menu on page 325. 3. CEC backplane Location: U0.1-P1
1011 8413	Invalid processor 1 VPD	Processor card Location: U0.1-P1-C1
1011 8414	Invalid processor 2 VPD	Processor card Location: U0.1-P1-C2
1011 8423	No processor 1 VPD	Processor card Location: U0.1-P1-C1
1011 8424	No processor 2 VPD	Processor card Location: U0.1-P1-C2

Table 3. SPCN Error Codes for the CEC (system unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 9280	SPCN interface failure	1. Check the SPCN cables going to the CEC drawer. 2. Check for system firmware updates. Apply the update if it is available. 3. Replace the SPCN cables going to the CEC drawer, locations: U0.1-P1/Q4#, U0.1-P1/Q5# 4. Replace the system backplane, location: U0.1-P1.
1011 9281	SPCN interface failure	1. Check the SPCN cables going to the CEC drawer. 2. Check for system firmware updates. Apply the update if it is available. 3. Replace the SPCN cables going to the CEC drawer, locations: U0.1-P1/Q4#, U0.1-P1/Q5# 4. Replace the system backplane, location: U0.1-P1.
1011 9282	SPCN interface failure	1. Check the SPCN cables going to the CEC drawer. 2. Check for system firmware updates. Apply the update if it is available. 3. Replace the SPCN cables going to the CEC drawer, locations: U0.1-P1/Q4#, U0.1-P1/Q5# 4. Replace the system backplane, location: U0.1-P1.

Attention: If you replace FRUs or perform an action on an I/O subsystem and the problem is still not corrected, go to "MAP 1542: I/O Problem Isolation" on page 113 unless you were already directed to any MAP 154*x* by the error code. Otherwise call support if the action(s) for an error code do not resolve the problem.

Attention: If the error code that brought you to this chapter originated in the operating system error log, please be aware that an error may require an additional 15 minutes to be propagated to the operating system error log.

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*.

The "nn" in "1nn1 xxxx", where nn is between 2 and 3F hexadecimal, inclusive, is replaced by the I/O subsystem drawer number (in hexadecimal) in the error code that is reported by the system. The I/O drawer number in the location code of a failing FRU will be converted to decimal (which is shown as U0.dd in the following table). The "dd" value ranges from 02 to 63, inclusive. For example, the error code 11F1 1510 will have location codes U0.31-V1 and U0.31-P1 listed.

Table 4. SPCN Error Codes for I/O Subsystems

Error Code	Description	Action/ Possible Failing FRU
1nn1 00AC	AC loss or brownout detected	Informational message.
1nn1 00EF	Remote emergency power off occurred	Informational message.
1nn1 1510	Power supply 1 source failure	1. Check the input voltage to the power supply. 2. I/O subsystem power supply 1, U0.dd-V1. 3. I/O subsystem backplane, U0.dd-P1.
1nn1 1511	Power supply 1 fault	1. I/O subsystem power supply 1, U0.dd-V1. 2. I/O subsystem backplane, U0.dd-P1.
1nn1 1512	Power supply 1 non-power fault	1. I/O subsystem power supply 1, U0.dd-V1. 2. I/O subsystem backplane, U0.dd-P1.
1nn1 1513	Power supply 1 domain fault	1. I/O subsystem power supply 1, U0.dd-V1. 2. I/O subsystem backplane, U0.dd-P1.
1nn1 1517	Power supply 1 thermal fault	1. Check for obstructions to the air flow around the I/O subsystem. 2. I/O subsystem power supply 1, U0.dd-V1. 3. I/O subsystem backplane, U0.dd-P1.
1nn1 1520	Power supply 2 source failure	1. Check the input voltage to the power supply. 2. I/O subsystem power supply 2, U0.dd-V2. 3. I/O subsystem backplane, U0.dd-P1.
1nn1 1521	Power supply 2 fault	1. I/O subsystem power supply 2, U0.dd-V2. 2. I/O subsystem backplane, U0.dd-P1.
1nn1 1522	Power supply 2 non-power fault	1. I/O subsystem power supply 2, U0.dd-V2. 2. I/O subsystem backplane, U0.dd-P1.
1nn1 1523	Power supply 2 domain fault	1. I/O subsystem power supply 2, U0.dd-V2. 2. I/O subsystem backplane, U0.dd-P1.
1nn1 1527	Power supply 2 thermal fault	1. Check for obstructions to the air flow around the I/O subsystem. 2. I/O subsystem power supply 2, U0.dd-V2. 3. I/O subsystem backplane, U0.dd-P1.
1nn1 1B01	+12 V load fault	1. Replace power supply 1, U0.dd-V1. 2. If power supply 2 is present, use power supply 1 that was removed to replace power supply 2. 3. I/O subsystem backplane, U0.dd-P1.
1nn1 1B02	+5 V load fault	1. Replace power supply 1, U0.dd-V1. 2. If power supply 2 is present, use power supply 1 that was removed to replace power supply 2. 3. I/O subsystem backplane, U0.dd-P1.

Table 4. SPCN Error Codes for I/O Subsystems (continued)

Error Code	Description	Action/ Possible Failing FRU
1nn1 1B03	+3.3 V load fault	1. Replace power supply 1, U0.dd-V1. 2. If power supply 2 is present, use power supply 1 that was removed to replace power supply 2. 3. I/O subsystem backplane, U0.dd-P1.
1nn1 1B04	-12 V load fault	1. Replace power supply 1, U0.dd-V1. 2. If power supply 2 is present, use power supply 1 that was removed to replace power supply 2. 3. I/O subsystem backplane, U0.dd-P1.
1nn1 2600	Pgood fault	I/O subsystem backplane, U0.dd-P1.
1nn1 2603	Power domain fault	I/O subsystem backplane, U0.dd-P1.
1nn1 2605	Pgood 1.8 V fault	I/O subsystem backplane, U0.dd-P1.
1nn1 2606	Pgood 2.5 V fault	I/O subsystem backplane, U0.dd-P1.
1nn1 3100	I2C controller fault	I/O subsystem backplane, U0.dd-P1.
1nn1 3101	I2C bus fault	I/O subsystem backplane, U0.dd-P1.
1nn1 3102	I2C interface fault	I/O subsystem backplane, U0.dd-P1.
1nn1 3103	I2C interface fault	I/O subsystem backplane, U0.dd-P1.
1nn1 3104	I2C interface fault	I/O subsystem backplane, U0.dd-P1.
1nn1 3110	SES module fault on SCSI backplane 1	Replace the SCSI backplane, location: U0.dd-P3
1nn1 3111	SES module fault on SCSI backplane 2	Replace the SCSI backplane, location: U0.dd-P4
1nn1 3113	PCI bridge chip fault	I/O subsystem backplane, U0.dd-P1.
1nn1 3114	I2C fault	I/O subsystem backplane, U0.dd-P1.
1nn1 3115	Operator panel fault	I/O subsystem backplane, U0.dd-P1.
1nn1 3118	SPCN VPD fault	I/O subsystem backplane, U0.dd-P1.
1nn1 3121	I2C VPD fault	I/O subsystem backplane, U0.dd-P1.
1nn1 7610	Blower 1 fault	Blower 1, U0.dd-F1.
1nn1 7611	Blower 1 missing	Blower 1, U0.dd-F1.
1nn1 7620	Blower 2 fault	Blower 2, U0.dd-F2.
1nn1 7621	Blower 2 missing	Blower 2, U0.dd-F2.
1nn1 7630	Blower 3 fault	Blower 3, U0.dd-F3.
1nn1 7631	Blower 3 missing	Blower 3, U0.dd-F3.
1nn1 7640	Blower 4 fault	Blower 4, U0.dd-F4.
1nn1 7641	Blower 4 missing	Blower 4, U0.dd-F4.
1nn1 8400	Configuration ID conflict	1. Check the RIO and the SPCN cabling. 2. Set the I/O type using the service processor menus. 3. I/O subsystem backplane, U0.dd-P1.

Table 4. SPCN Error Codes for I/O Subsystems (continued)

Error Code	Description	Action/ Possible Failing FRU
1nn1 840D	I/O type mismatch	1. Check the RIO and the SPCN cabling. 2. Set the I/O type using the service processor menus. 3. I/O subsystem backplane, U0.dd-P1.
1nn1 840E	I/O type mismatch	1. Check the RIO and the SPCN cabling. 2. Set the I/O type using the service processor menus. 3. I/O subsystem backplane, U0.dd-P1.
1nn1 8A00	The power controlling the CEC changed	Informational message
1nn1 C62E	Polling error	I/O subsystem backplane, U0.dd-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 125 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 152 using code **E174**.
20A8 0003	Cannot get system hardware address.	Refer to 152 using code **E174**.
20A8 0004	Bootup failed.	Refer to 152 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 0001	I/O subsystem has changed locations	This is an informational message. The I/O subsystem at the location code associated with this message was found at another location code during a prior boot of the system. If an I/O subsystem has not been moved, do the following: 1. 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. If no cabling problem is found, call your next level of support.
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 29 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.
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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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/NUMA access	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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-plug 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.
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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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.
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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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.
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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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-V3 2. If problem persists, replace the CEC backplane Location: U0.1-P1
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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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 113.
20EE 0009	Unable to communicate with the service processor.	Replace the CEC backplane Location: U0.1-P1.
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 175.
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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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.
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.
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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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. Check for system firmware updates. 2. 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.	

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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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.
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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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.
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 183 for location code information related to this error. Also see "Replacing the Network Adapter" on page 182.
2200 1001	10/100 Mbps Ethernet PCI Adapter internal wrap test failure	Replace the adapter. See "Checkpoint and Error Code Index" on page 183 for location code information related to this error. Also see "Replacing the Network Adapter" on page 182.
2200 1002	10/100 Mbps Ethernet PCI adapter failure	Replace the adapter. See "Checkpoint and Error Code Index" on page 183 for location code information related to this error. Also see "Replacing the Network Adapter" on page 182.
2201 0001	PCI Auto LANstreamer token ring adapter failed to complete hardware initialization.	Replace the adapter. See "Checkpoint and Error Code Index" on page 183 for location code information related to this error. Also see "Replacing the Network Adapter" on page 182.
2201 1001	PCI token ring adapter failed to complete hardware initialization.	Replace the adapter. See "Checkpoint and Error Code Index" on page 183 for location code information related to this error. Also see "Replacing the Network Adapter" on page 182.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
25A0 0001	Cache L2 controller failure	1. Replace the processor card. Location: U0.1-P1-C1 2. Replace the CEC backplane assembly. Location: U0.1-P1.
25A1 0001	Cache L2 SRAM failure	1. Replace the processor card. 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 CEC backplane Location: U0.1-P1	
25A8 0000	Initialization failed, device test failed	Refer to Action under error code 25A80xxx.
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/$Setenv parameter error - name contains a null character.	Refer to Action under error code 25A80xxx.
25A8 0211	Setenv/$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 support support for further assistance.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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 288) 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 288 for information on how to interpret PD bits.		
25B0 0001	No memory DIMMs detected.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
25B0 0004	Multiple memory DIMMs failed a memory test.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
25Cy y001	DIMM is not supported	Replace unsupported DIMM(s). **Note:** Memory DIMMs must be replaced 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 206 for more information.
25Cy y002	Memory DIMM fails memory test.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
2602 0001	**Description:** Invalid PCI adapter vendor ID **Action:** **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. 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. If the card is in the system drawer, replace the PCI riser card, location: U0.1-P2. 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 0002	**Description:** Invalid PCI adapter device ID **Action:** **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. 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. If the card is in the system drawer, replace the PCI riser card, location: U0.1-P2. 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 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 an I/O planar:
	  a. Check for system firmware updates. Apply if available.
	  b. Replace the I/O planar.
	3. Call service support.	

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 an I/O planar:
	  a. Check for system firmware updates. Apply if available.
	  b. Replace the I/O planar.
	3. Call service support.	

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU

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 208.
	
	    NO Check the *PCI Adapter Placement Reference* to see if the adapter is hot-pluggable. If it is not hot-pluggable, go to The System is Running Linux on page 208 because the system must be powered off to continue. If it is hot-pluggable, continue.
	
	4. Use the hot plug service aid to reseat the card specified by the location code. See "Replacing a Hot-Pluggable PCI Adapter" on page 392. 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 plug task to move the adapter card to another slot behind a different PCI bridge. The "System Logic Flow" on page 22 identifies the PCI bridges and the associated slots. See "Hot-Pluggable PCI Adapter Removal" on page 389 when removing the adapter, and "Installing a Hot-Pluggable PCI Adapter" on page 396 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 PCI riser card or I/O planar in which the card was installed, location: U0.1-P2 or U0.dd-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 PCI riser card or I/O planar in which the card was installed, location: U0.1-P2 or U0.dd-P1.
	
	6. Go to "MAP 1542: I/O 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 1542: I/O Problem Isolation" on page 113.
	
	 The System is Running Linux

Error Code	Description	Action/ Possible Failing FRU
	1. Power off the system. See "Non-Hot-Pluggable PCI Adapter Removal" on page 385 and "Adding or Replacing a Non-Hot-Pluggable PCI Adapter" on page 387 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 22 identifies the PCI bridges and the associated slots. See "Non-Hot-Pluggable PCI Adapter Removal" on page 385 when removing the adapter, and "Adding or Replacing a Non-Hot-Pluggable PCI Adapter" on page 387 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 PCI riser card or I/O planar in which the card was installed, location: U0.1-P2 or U0.dd-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 PCI riser card or I/O planar in which the card was installed, location: U0.1-P2 or U0.dd-P1.	
	3. Go to "MAP 1542: I/O 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 1542: I/O 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 PCI riser card, location: U0.1-P2. 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 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. **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 if update available. 6. If the card is in the system drawer, replace the PCI riser card, location: U0.1-P2. 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.	
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 182 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 PCI riser card Location: U0.1-P2 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.

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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 or restore the time and date, use the operating system facility. 2. If the error is persistent, replace the battery. Location: U0.1-P1-V3 3. If the error is persistent after the battery is replaced, replace the CEC backplane. Location: U0.1-P1	
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 CEC backplane Location: U0.1-P1
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 0010	The real-time-clock cannot be protected in the LPAR environment	1. Check for system firmware updates. Apply update if available. 2. Contact your next level of support for assistance.
2803 F003	Real-time-clock not updating - not correctable (detected by hypervisor)	Replace the CEC backplane Location: U0.1-P1
2900 0002	Keyboard/mouse controller failed self-test	Replace CEC backplane Location: U0.1-P1
29A0 0003	Keyboard not present/detected	1. Keyboard 2. Replace CEC backplane Location: U0.1-P1
29A0 0004	Keyboard stuck key detected	1. Keyboard 2. Replace CEC backplane Location: U0.1-P1
29B0 0004	Mouse not present/detected	1. Mouse 2. Replace CEC backplane Location: U0.1-P1
2B20 0011	Processor is manually disabled	Use the service processor menus to re-enable the processor and reboot the system

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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 processor card.
2B20 8880	Unrecoverable internal hardware error	Replace the FRU indicated in the service processor error log entry. If the system has been rebooted, run AIX diagnostics and look for an operating system error log entry in which the description says cache or cache controller error.
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	Replace the FRU indicated in the service processor error log entry. If the system has been rebooted, run AIX diagnostics and look for an operating system error log entry in which the description says cache or cache controller error. Replace the FRUs listed in this entry.
2B20 8885	Unrecoverable internal hardware error	Run AIX diagnostics. Look for an operating system 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 in 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.	
2BA0 0000	Service processor POST failure	Replace CEC backplane Location: U0.1-P1
2BA0 0012	Service processor reports self test failure	Replace CEC backplane Location: U0.1-P1

Table 5. Firmware Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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. 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 CEC backplane Location: U0.1-P1
2BA0 0071	VPD data is corrupted for processor card 1.	Replace the processor card Location: U0.1-P1-C1
2BA0 0073	VPD data is corrupted for processor card 2.	Replace the processor card Location: U0.1-P1-C2
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 183. 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 125 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
4064 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
4064 0002	CEC backplane fault	CEC backplane Location: U0.1-P1
4064 0003	Scan interface basic assurance tests detected processor fault	Processor card Location: U0.1-P1-C1
4064 0004	Processor fault	Processor card Location: U0.1-P1-C2
4064 000E	Processor capacity card	Operator panel Location: U0.1-L1
4064 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
4064 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6
4064 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
4064 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4064 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
4064 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
4064 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
4064 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4
4064 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
4064 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
4064 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
4064 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
4064 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
4064 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
4064 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2
4064 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
4064 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4064 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4064 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
4064 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
4064 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 00D1	Informational message	Informational message
4064 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
4064 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4064 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4064 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4064 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
4064 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
4064 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
4064 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
4064 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4064 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4064 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.
4064 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4064 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
4064 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (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
4064 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.
4064 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
40640 CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
4064 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.
4064 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
4064 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 60 and follow the instructions. 3. Call service support.
4064 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
4064 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
4064 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.
4064 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
4064 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 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
4064 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4064 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
4064 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.
4064 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
4065 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
4065 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
4065 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
4065 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2
4065 000E	Processor capacity card	Operator Panel Location: U0.1-L1
4065 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
4065 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6
4065 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
4065 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
4065 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
4065 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
4065 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
4065 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4065 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
4065 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
4065 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
4065 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
4065 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
4065 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
4065 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2
4065 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
4065 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4065 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4065 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
4065 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
4065 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 00D1	Informational message	Informational message
4065 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
4065 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
4065 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4065 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4065 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4065 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
4065 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
4065 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
4065 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4065 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4065 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.
4065 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4065 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
4065 0C11	Proc 1 configuration error: VPD mismatch for processor card 1. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
4065 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.
4065 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4065 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
4065 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.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4065 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
4065 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 60 and follow the instructions. 3. Call service support.
4065 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
4065 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
4065 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.
4065 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
4065 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4065 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
4065 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4065 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
4066 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
4066 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
4066 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
4066 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2
4066 000E	Processor capacity card	Operator Panel Location: U0.1-L1
4066 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
4066 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6
4066 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
4066 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
4066 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
4066 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
4066 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
4066 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4
4066 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
4066 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
4066 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
4066 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
4066 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
4066 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
4066 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
4066 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4066 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4066 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
4066 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
4066 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 00D1	Informational message	Informational message
4066 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
4066 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
4066 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4066 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4066 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
4066 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
4066 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
4066 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
4066 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4066 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.
4066 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4066 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
4066 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
4066 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.
4066 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4066 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
4066 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.
4066 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
4066 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 60 and follow the instructions. 3. Call service support.
4066 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
4066 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
4066 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
4066 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4066 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
4066 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.
4066 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
4067 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
4067 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
4067 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
4067 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4067 000E	Processor capacity card	Operator Panel Location: U0.1-L1
4067 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
4067 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6
4067 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
4067 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
4067 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
4067 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
4067 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
4067 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4
4067 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
4067 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
4067 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
4067 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
4067 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
4067 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
4067 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2
4067 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
4067 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4067 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4067 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4067 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
4067 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 00D1	Informational message	Informational message
4067 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
4067 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
4067 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4067 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4067 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
4067 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
4067 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
4067 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
4067 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4067 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4067 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4067 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4067 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
4067 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
4067 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.
4067 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4067 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
4067 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.
4067 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
4067 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 60 and follow the instructions. 3. Call service support.
4067 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
4067 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
4067 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.
4067 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
4067 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EB2	Attention line 1 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
4067 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4067 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
4067 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.
4067 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
4068 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
4068 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
4068 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
4068 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2
4068 000E	Processor capacity card	Operator Panel Location: U0.1-L1
4068 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
4068 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4068 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
4068 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
4068 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
4068 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
4068 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
4068 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4
4068 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
4068 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
4068 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
4068 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
4068 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
4068 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
4068 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2
4068 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
4068 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4068 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4068 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
4068 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
4068 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 00D1	Informational message	Informational message

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4068 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
4068 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
4068 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4068 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4068 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to ″MAP 0235: System Array Self-Repair Problem Resolution″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems.*
4068 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to ″MAP 0235: System Array Self-Repair Problem Resolution″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems.*
4068 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
4068 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
4068 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4068 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4068 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.
4068 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4068 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
4068 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (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
4068 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.
4068 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4068 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
4068 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.
4068 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
4068 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 60 and follow the instructions. 3. Call service support.
4068 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
4068 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
4068 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.
4068 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
4068 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 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
4068 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4068 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
4068 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.
4068 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
4069 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
4069 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
4069 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
4069 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2
4069 000E	Processor capacity card	Operator Panel Location: U0.1-L1
4069 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
4069 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6
4069 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
4069 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
4069 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
4069 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
4069 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
4069 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
4069 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
4069 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
4069 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
4069 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
4069 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
4069 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2
4069 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
4069 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4069 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
4069 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
4069 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
4069 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 00D1	Informational message	Informational message
4069 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
4069 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
4069 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4069 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4069 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
4069 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
4069 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
4069 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4069 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4069 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.
4069 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
4069 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
4069 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
4069 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.
4069 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4069 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
4069 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.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
4069 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 60 and follow the instructions. 3. Call service support.
4069 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
4069 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
4069 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.
4069 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
4069 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
4069 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
4069 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
406A 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
406A 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
406A 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
406A 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2
406A 000E	Processor capacity card	Operator Panel Location: U0.1-L1
406A 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
406A 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6
406A 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
406A 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
406A 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
406A 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
406A 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
406A 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4
406A 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
406A 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
406A 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
406A 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
406A 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
406A 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
406A 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
406A 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406A 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406A 00B3	MCM/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
406A 00B4	MCM/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
406A 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 00D1	Informational message	Informational message
406A 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
406A 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
406A 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406A 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406A 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406A 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406A 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
406A 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
406A 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406A 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.
406A 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406A 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406A 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406A 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.
406A 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
406A 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
406A 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.
406A 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
406A 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 60 and follow the instructions. 3. Call service support.
406A 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
406A 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
406A 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
406A 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406A 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
406A 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.
406A 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
406B 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
406B 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
406B 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
406B 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 000E	Processor capacity card	Operator Panel Location: U0.1-L1
406B 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
406B 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6
406B 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
406B 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
406B 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
406B 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
406B 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
406B 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4
406B 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
406B 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
406B 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
406B 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
406B 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
406B 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
406B 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2
406B 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
406B 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406B 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406B 00B3	MCM/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 00B4	MCM/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
406B 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 00D1	Informational message	Informational message
406B 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
406B 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
406B 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406B 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406B 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406B 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406B 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
406B 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
406B 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406B 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406B 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406B 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406B 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406B 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.
406B 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
406B 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
406B 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.
406B 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
406B 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 60 and follow the instructions. 3. Call service support.
406B 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
406B 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
406B 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.
406B 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
406B 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EB2	Attention line 1 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
406B 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406B 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
406B 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.
406B 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
406C 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
406C 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
406C 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
406C 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2
406C 000E	Processor capacity card	Operator Panel Location: U0.1-L1
406C 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
406C 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406C 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
406C 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
406C 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
406C 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
406C 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
406C 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4
406C 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
406C 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
406C 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
406C 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
406C 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
406C 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
406C 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2
406C 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
406C 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406C 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406C 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
406C 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
406C 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 00D1	Informational message	Informational message

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406C 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
406C 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
406C 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406C 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406C 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to ″MAP 0235: System Array Self-Repair Problem Resolution″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406C 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to ″MAP 0235: System Array Self-Repair Problem Resolution″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406C 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
406C 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
406C 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406C 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406C 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.
406C 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406C 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406C 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (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
406C 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.
406C 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
406C 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
406C 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.
406C 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
406C 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 60 and follow the instructions. 3. Call service support.
406C 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
406C 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
406C 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.
406C 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
406C 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 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
406C 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406C 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
406C 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.
406C 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
406D 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
406D 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
406D 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
406D 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2
406D 000E	Processor capacity card	Operator Panel Location: U0.1-L1
406D 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
406D 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6
406D 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
406D 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
406D 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
406D 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
406D 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
406D 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
406D 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
406D 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
406D 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
406D 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
406D 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
406D 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2
406D 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
406D 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406D 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406D 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
406D 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
406D 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 00D1	Informational message	Informational message
406D 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
406D 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
406D 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406D 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406D 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to ″MAP 0235: System Array Self-Repair Problem Resolution″ in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406D 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
406D 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
406D 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406D 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406D 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.
406D 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406D 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406D 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406D 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.
406D 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
406D 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
406D 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.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
406D 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 60 and follow the instructions. 3. Call service support.
406D 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
406D 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
406D 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.
406D 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
406D 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406D 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
406D 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
406E 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
406E 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
406E 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
406E 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2
406E 000E	Processor capacity card	Operator Panel Location: U0.1-L1
406E 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
406E 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6
406E 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
406E 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
406E 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
406E 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
406E 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
406E 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4
406E 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
406E 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
406E 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
406E 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
406E 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
406E 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
406E 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406E 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
406E 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406E 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406E 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
406E 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
406E 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 00D1	Informational message	Informational message
406E 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
406E 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
406E 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406E 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406E 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406E 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406E 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
406E 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
406E 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406E 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406E 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.
406E 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406E 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406E 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406E 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.
406E 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
406E 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
406E 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.
406E 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
406E 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 60 and follow the instructions. 3. Call service support.
406E 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
406E 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
406E 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406E 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
406E 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406E 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
406E 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.
406E 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.
406F 0001	Scan interface basic assurance tests detected a CEC backplane fault	CEC backplane Location: U0.1-P1
406F 0002	CEC backplane fault	1. Check JTAG cable connections 2. CEC backplane Location: U0.1-P1
406F 0003	Scan interface basic assurance tests detected processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C1
406F 0004	Processor fault	1. Check JTAG cable connections. 2. Processor card Location: U0.1-P1-C2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 000E	Processor capacity card	Operator Panel Location: U0.1-L1
406F 0010	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M8
406F 0011	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M6
406F 0012	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M1
406F 0013	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M3
406F 0014	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M7
406F 0015	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M5
406F 0016	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M2
406F 0017	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C1-M4
406F 0018	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M8
406F 0019	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M6
406F 001A	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M1
406F 001B	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M3
406F 001C	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M7
406F 001D	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M5
406F 001E	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M2
406F 001F	Memory DIMM fault	Memory DIMM Location: U0.1-P1-C2-M4
406F 00B0	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406F 00B1	Bus controller failure	1. Check for system firmware updates 2. PCI riser card Location: U0.1-P2
406F 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
406F 00B7	Insufficient hardware resources were detected to continue IPL of the system after processor subsystem testing and initialization was completed	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 00D1	Informational message	Informational message
406F 0100	Memory extender 0 on processor card 1	Processor card, Location: U0.1-P1-C1
406F 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
406F 0130	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406F 0131	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406F 0A03	Reboot message on VPD channel 3 processor card 1. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406F 0A04	Reboot message on VPD channel 4 processor card 2. Reboot is necessary for run-time array gard to take effect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*.
406F 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	CEC backplane, U0.1-P1
406F 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	CEC backplane, U0.1-P1
406F 0B02	Problem with internal RIO interface (I/O slot 0, I/O port 2)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406F 0B03	Problem with internal RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406F 0B40	Problem with controller chip on CEC backplane	1. CEC backplane, U0.1-P1. 2. Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 0BF0	Problem with RIO interface (I/O slot 0, I/O port 3)	1. Check for system firmware updates. 2. Check the cabling between the CEC and the I/O subsystems. 3. CEC backplane, U0.1-P1 4. Call service support.
406F 0C10	Processor 0 configuration error: VPD mismatch for processor card 0. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406F 0C11	Processor 1 configuration error: VPD mismatch for processor card 1. (Service processor code problem.)	1. Check for system firmware updates. 2. Call service support.
406F 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.
406F 0CA6	No usable memory left in the system. The system must be rebooted.	Go to "MAP 1240: Memory Problem Resolution" on page 70.
406F 0CA9	Incorrect/incompatible memory DIMMs are installed.	Check that the memory DIMMs are properly configured, and are the right type for the system.
406F 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.
406F 0EA0	MOPS service processor code error.	1. Check for system firmware updates. 2. Call service support.
406F 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 60 and follow the instructions. 3. Call service support.
406F 0EA2	PRD code on service processor error.	1. Check for system firmware updates. 2. Call service support.
406F 0EA4	The service processor detected a problem, but was unable to isolate the source.	Contact next level of support.
406F 0EAF	Service processor code and system type are unknown	1. Check for system firmware updates. 2. Call service support.
406F 0EB0	JTAG problem	Go to "MAP 1541: JTAG Problem Isolation" on page 112.
406F 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EB2	Attention line 1 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
406F 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 110.
406F 0EE1	Service processor firmware: invalid MRU to FRU mapping	1. Check for system firmware updates. 2. Call service support.
406F 0EE2	Service processor firmware fault	1. Check for system firmware updates. 2. Call service support.
406F 0EE5	Firmware error, no callout available	1. Check for system firmware updates. 2. Call service support.

4503 26F6	**Description:** 1-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
4503 26F7	**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.	
4503 26F8	**Description:** 1-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.	
4503 26FA	**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

4503 26FB	**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.	

4503 26FD	**Description:** 1-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.	

4503 26FE	**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
4503 26FF	**Description:** 1-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.	
4503 301A	**Description:** 128 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 301B	**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.	

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 301C	**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 301D	**Description:** 512 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 301E	**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.	

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 302E	**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.	
4503 302F	**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 303B	**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.	

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 303C	**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 303D	**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.	
4503 309A	**Description:** 128 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.	

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 309B	**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 309C	**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 309D	**Description:** 512 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.	

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 309E	**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 309F	**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 30AA	**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.	
4504 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4504 26F7	2-way processor card fault	Replace the processor card specified by the location code.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4504 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4504 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4504 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4504 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4504 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4504 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4504 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4504 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4505 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4505 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4505 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4505 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4505 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4505 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4505 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4505 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4505 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4505 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4505 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4506 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4506 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4506 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4506 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4506 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4506 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4506 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4506 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4506 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4506 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4507 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4507 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4507 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4507 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4507 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4507 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4507 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4507 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4507 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4507 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4508 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4508 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4508 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4508 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4508 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4508 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4508 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4508 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4508 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4508 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4509 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4509 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4509 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4509 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4509 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4509 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4509 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4509 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4509 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4509 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 26F6	1-way processor card fault	Replace the processor card specified by the location code.
450A 26F7	2-way processor card fault	Replace the processor card specified by the location code.
450A 26F8	1-way processor card fault	Replace the processor card specified by the location code.
450A 26FA	2-way processor card fault	Replace the processor card specified by the location code.
450A 26FB	2-way processor card fault	Replace the processor card specified by the location code.
450A 26FD	1-way processor card fault	Replace the processor card specified by the location code.
450A 26FE	2-way processor card fault	Replace the processor card specified by the location code.
450A 26FF	1-way processor card fault	Replace the processor card specified by the location code.
450A 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450A 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450A 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 26F6	1-way processor card fault	Replace the processor card specified by the location code.
450B 26F7	2-way processor card fault	Replace the processor card specified by the location code.
450B 26F8	1-way processor card fault	Replace the processor card specified by the location code.
450B 26FA	2-way processor card fault	Replace the processor card specified by the location code.
450B 26FB	2-way processor card fault	Replace the processor card specified by the location code.
450B 26FD	1-way processor card fault	Replace the processor card specified by the location code.
450B 26FE	2-way processor card fault	Replace the processor card specified by the location code.
450B 26FF	1-way processor card fault	Replace the processor card specified by the location code.
450B 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450B 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450B 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 26F6	1-way processor card fault	Replace the processor card specified by the location code.
450C 26F7	2-way processor card fault	Replace the processor card specified by the location code.
450C 26F8	1-way processor card fault	Replace the processor card specified by the location code.
450C 26FA	2-way processor card fault	Replace the processor card specified by the location code.
450C 26FB	2-way processor card fault	Replace the processor card specified by the location code.
450C 26FD	1-way processor card fault	Replace the processor card specified by the location code.
450C 26FE	2-way processor card fault	Replace the processor card specified by the location code.
450C 26FF	1-way processor card fault	Replace the processor card specified by the location code.
450C 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450C 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450C 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 26F6	1-way processor card fault	Replace the processor card specified by the location code.
450D 26F7	2-way processor card fault	Replace the processor card specified by the location code.
450D 26F8	1-way processor card fault	Replace the processor card specified by the location code.
450D 26FA	2-way processor card fault	Replace the processor card specified by the location code.
450D 26FB	2-way processor card fault	Replace the processor card specified by the location code.
450D 26FD	1-way processor card fault	Replace the processor card specified by the location code.
450D 26FE	2-way processor card fault	Replace the processor card specified by the location code.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450D 26FF	1-way processor card fault	Replace the processor card specified by the location code.
450D 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450D 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 26F6	1-way processor card fault	Replace the processor card specified by the location code.
450E 26F7	2-way processor card fault	Replace the processor card specified by the location code.
450E 26F8	1-way processor card fault	Replace the processor card specified by the location code.
450E 26FA	2-way processor card fault	Replace the processor card specified by the location code.
450E 26FB	2-way processor card fault	Replace the processor card specified by the location code.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450E 26FD	1-way processor card fault	Replace the processor card specified by the location code.
450E 26FE	2-way processor card fault	Replace the processor card specified by the location code.
450E 26FF	1-way processor card fault	Replace the processor card specified by the location code.
450E 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450E 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 26F6	1-way processor card fault	Replace the processor card specified by the location code.
450F 26F7	2-way processor card fault	Replace the processor card specified by the location code.
450F 26F8	1-way processor card fault	Replace the processor card specified by the location code.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450F 26FA	2-way processor card fault	Replace the processor card specified by the location code.
450F 26FB	2-way processor card fault	Replace the processor card specified by the location code.
450F 26FD	1-way processor card fault	Replace the processor card specified by the location code.
450F 26FE	2-way processor card fault	Replace the processor card specified by the location code.
450F 26FF	1-way processor card fault	Replace the processor card specified by the location code.
450F 301A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 301B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 301C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 301D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 301E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 302E	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 302F	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 303B	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 303C	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 303D	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 309A	128 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 309B	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 309C	256 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 309D	512 MB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 309E	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 309F	1 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
450F 30AA	2 GB DIMM fault	Go to "MAP 1240: Memory Problem Resolution" on page 70.
4604 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4604 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
4605 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
4605 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
4606 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
4606 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
4607 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
4607 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
4608 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
4608 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
4609 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
4609 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
460A 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
460A 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
460B 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
460B 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
460C 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
460C 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
460D 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
460D 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
460E 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
460E 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1
460F 287A	CEC backplane	Replace the CEC backplane, Location: U0.1-P1
460F 28C4	CEC backplane fault	Replace the CEC backplane, Location: U0.1-P1

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B23 26F6	**Description:** 1-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 down 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.	
4B23 26F7	**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.	
4B23 26F8	**Description:** 1-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 26FA	**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.	

4B23 26FB	**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.	

4B23 26FD	**Description:** 1-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 26FE	**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.	

4B23 26FF	**Description:** 1-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.	

4B24 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B24 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4B24 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B24 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B24 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4B24 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B24 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B24 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B25 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B25 26F7	2-way processor card fault	Replace the processor card specified by the location code.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B25 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B25 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B25 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4B25 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B25 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B25 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B26 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B26 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4B26 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B26 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B26 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4B26 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B26 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B26 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B27 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B27 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4B27 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B27 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B27 26FB	**Description:** 2-way processor card fault **Action:** 1. If the system has one 2-way processor card or two 2-way processor cards, look at word 13 in the service processor error log entry detail data. If word 13 is not 7xxxD023 or 7xxxD0E1, replace the processor card specified by the location code. If word 13 is 7xxxD023 or 7xxxD0E1, look for an earlier entry in the service processor error log of the form 4067xxxx, 4507xxxx, 4607xxxx, or 4B2726FB that has not already been corrected by a parts replacement. If you find an earlier entry, replace the FRU identified by that error, not the latest occurrence of 4B2726FB. 2. If this does not resolve the problem, call service support.	
4B27 26FD	1-way processor card fault	Replace the processor card specified by the location code.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B27 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B27 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B28 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B28 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4B28 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B28 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B28 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4B28 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B28 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B28 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B29 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B29 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4B29 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B29 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B29 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4B29 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B29 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B29 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B2A 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B2A 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4B2A 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B2A 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B2A 26FB	2-way processor card fault	Replace the processor card specified by the location code.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B2A 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B2A 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B2A 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B2B 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B2B 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4B2B 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B2B 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B2B 26FB	**Description:** 2-way processor card fault **Action:** 1. Replace the processor card at location U0.1-P1-C2. 2. If the problem is not resolved, remove the processor card at U0.1-P1-C1 and replace it with the processor card that was removed in the previous step. 3. If the problem is still not resolved, replace the CEC backplane, at location U0.1-P1.	
4B2B 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B2B 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B2B 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B2C 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B2C 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4B2C 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B2C 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B2C 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4B2C 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B2C 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B2C 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B2D 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B2D 26F7	2-way processor card fault	Replace the processor card specified by the location code.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B2D 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B2D 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B2D 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4B2D 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B2D 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B2D 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B2E 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B2E 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4B2E 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B2E 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B2E 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4B2E 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B2E 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B2E 26FF	1-way processor card fault	Replace the processor card specified by the location code.
4B2F 26F6	1-way processor card fault	Replace the processor card specified by the location code.
4B2F 26F7	2-way processor card fault	Replace the processor card specified by the location code.
4B2F 26F8	1-way processor card fault	Replace the processor card specified by the location code.
4B2F 26FA	2-way processor card fault	Replace the processor card specified by the location code.
4B2F 26FB	2-way processor card fault	Replace the processor card specified by the location code.
4B2F 26FD	1-way processor card fault	Replace the processor card specified by the location code.
4B2F 26FE	2-way processor card fault	Replace the processor card specified by the location code.
4B2F 26FF	1-way processor card fault	Replace the processor card specified by the location code.

Memory DIMM Present Detect Bits (PD-Bits)

The following table expands on the Memory Error Notes found on page 206, 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 1548: Processor Subsystem Problem Isolation" on page 125 unless otherwise indicated in the Memory Error Notes found on page 206.

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 181 and perform the listed action.
5. If no recent error is logged in the error log, go to "MAP 1548: Processor Subsystem Problem Isolation" on page 125.

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.

Error Code	Description	Action/ Possible Failing FRU
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 183. 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 125 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*.

Error Code	Description	Action/ Possible Failing FRU
B006 1403	Missing service processor resource	1. Update system firmware 2. CEC backplane Location: U0.1-P1
B006 1404	Service processor firmware fault	1. Update system firmware 2. CEC backplane Location: U0.1-P1
B006 1405	Service processor firmware fault	1. Update system firmware 2. CEC backplane Location: U0.1-P1
B006 1406	Service processor program error	1. Update system firmware 2. Check for operating system updates 3. CEC backplane Location: U0.1-P1
B006 1407	Service processor resource allocation problem	1. Update system firmware 2. Check for operating system updates 3. CEC backplane Location: U0.1-P1
B006 1408	Service processor program error	1. Update system firmware 2. Check for operating system updates 3. CEC backplane Location: U0.1-P1
B006 1409	Service processor program error	1. Update system firmware 2. CEC backplane Location: U0.1-P1
B10F 1000	Service processor DRAM failure	CEC backplane Location: U0.1-P1
B10F 1002	Service processor failure	CEC backplane Location: U0.1-P1
B10F 1005	Service processor failure	CEC backplane Location: U0.1-P1
B10F 1007	Service processor failure	CEC backplane Location: U0.1-P1

Error Code	Description	Action/ Possible Failing FRU
B10F 1008	Service processor failure	CEC backplane Location: U0.1-P1
B10F 100E	Service processor boot flash corrupted	CEC backplane Location: U0.1-P1
B10F 100F	Service processor base flash corrupted	CEC backplane Location: U0.1-P1
B10F 1300	Service processor failure	CEC backplane Location: U0.1-P1
B10F 1370	Service processor flash update failure	1. Retry flash update 2. CEC backplane Location: U0.1-P1
B10F 1380	Service processor program failure	1. Update system firmware 2. CEC backplane Location: U0.1-P1
B10F 1381	Service processor flash error	1. Update system firmware 2. CEC backplane Location: U0.1-P1
B10F 1384	Service processor failure	CEC backplane Location: U0.1-P1
B10F 1387	Service processor failure	CEC backplane Location: U0.1-P1
B10F 1400	Service processor failure	CEC backplane Location: U0.1-P1
B10F 1401	Service processor failure	CEC backplane Location: U0.1-P1
B10F 1670	Service processor flash update failure	1. Retry flash update 2. CEC backplane Location: U0.1-P1
B10F 1672	Service processor firmware update invalid	Call service support
B10F 1675	Service processor failure	CEC backplane Location: U0.1-P1
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	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.	Install a valid firmware image for the specific type and model.
B1xx 4600	Service processor failure	CEC backplane Location: U0.1-P1
B1xx 4601	System processor failure	Go to "MAP 1540: Problem Isolation Procedures" on page 110.

Error Code	Description	Action/ Possible Failing FRU
B1xx 4602	Service processor firmware failure	1. Do a slow boot (see "Performing Slow Boot" on page 181), then look at the service processor error log. Look for the first new error after the B1xx 4602. Go to the "Checkpoint and Error Code Index" on page 183 with the new error code and perform the action indicated. If there are no new error codes, go to "MAP 1540: Problem Isolation Procedures" on page 110. 2. Call service support.
B1xx 4603	Service processor firmware corrupted	1. Reload system firmware 2. CEC backplane Location: U0.1-P1
B1xx 4606	Firmware failure	1. Check for system firmware updates 2. Operator panel Location: U0.1-L1 3. CEC backplane Location: U0.1-P1
B1xx 4608	Service processor early termination	1. Reset the system by disconnecting and reconnecting system power 2. Reload system firmware 3. CEC backplane Location: U0.1-P1
B1xx 460A	TOD clock has been reset	1. Set TOD clock 2. CEC backplane Location: U0.1-P1
B1xx 460B	TOD battery failure	TOD battery Location: U0.1-P1-V3
B1xx 4611	Service processor failure	1. Processor card Location: U0.1-P1-C1 2. CEC backplane Location: U0.1-P1
B1xx 4620	Modem configuration failure	1. Check modem configuration files 2. Check for system firmware update 3. Modem 4. CEC backplane Location: U0.1-P1
B1xx 4621	Modem disconnect failure	1. Check modem configuration files 2. Check for system firmware update 3. Modem 4. CEC backplane Location: U0.1-P1
B1xx 4622	Service processor failure	1. Operator panel Location: U0.1-L1 2. Check for system firmware update 3. CEC backplane Location: U0.1-P1

Error Code	Description	Action/ Possible Failing FRU
B1xx 4633	System power control network failure	1. Check for system firmware update 2. CEC backplane Location: U0.1-P1
B1xx 4634	SPCN loop fault	1. Check SPCN cabling 2. 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. Do not swap the VPD module from the old operator panel onto the new operator panel; leave the new, unprogrammed VPD module on the new operator panel. Call service support for instructions.
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	Processor card Location: U0.1-P1-C1, U0.1-P1-C2
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. CEC backplane Location: U0.1-P1

Error Code	Description	Action/ Possible Failing FRU
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. CEC planar, U0.1-P1
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.dd-P1
B1xx 4681	JTAG scan interface	1. JTAG cabling 2. CEC backplane Location: U0.1-P1 3. Processor card Location: U0.1-P1-C1
B1xx 4682	Problem with system VPD on operator panel.	1. Replace the operator panel, location: U0.1-L1. Do not swap the old VPD module onto the new operator panel. Call service support for instructions on programming the new VPD module. 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 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 181, 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 is a ″SCAN_ERROR_CHRP″ error with an identifier of BFEC0425. Look at the AIX error log entry containing B1xx4690. This is a ″SCAN_ERROR_CHRP″ error with an identifier of BFEC0425.
	  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.

Error Code	Description	Action/ Possible Failing FRU

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.
	Note: If the location code is U0.1-P1/E1 or U0.1-P1/E2, change the PCI riser card (U0.1-P2) first, then change the CEC backplane (U0.1-P1). If no location code is specified, and you have an 8-character error code, go to the "Checkpoint and Error Code Index" on page 183. If no location code is specified, and you have a 4-character checkpoint (for example, Exxx), go to "Firmware Checkpoints" on page 152.
	
	3. If your checkpoint is 91FF, perform the following:
	
	   a. Replace the RIO cable attached to RIO-G port 0 (U0.1-P1/Qx) of the base system.
	
	   b. Replace the RIO adapter card of the I/O subsystem attached to the other end of the RIO cable attached to RIO-G port 0 (U0.1-P1/Qx) of the base system.
	
	   c. Replace the CEC backplane, location U0.1-P1.
	
	4. 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
B1xx 4695	System power control network to service processor interface failure	1. Check for system firmware updates. 2. CEC backplane Location: U0.1-P1
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.

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. 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 in slot one (U0.1-P1-C1); a processor card is required in the first slot for the system to boot.
Actions:
1. If a processor card is not plugged into slot one (U0.1-P1-C1), plug one in.
2. If a processor card is plugged into slot one (U0.1-P1-C1), reseat it. If reseating the processor card does not fix the problem, replace it.

A205: Machine type and model fields are not valid in the VPD module. Obtain an operator panel. Do not swap the old VPD module onto the new operator panel. Call service support for instructions on how to write the machine type and model into the new VPD module.

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 memory space.
Actions:
1. Reset the service processor, if possible.
2. Check for system firmware updates. Apply the updates if they are available.

A800: HMC/service processor initialization failure.
Actions:
1. Check for system firmware updates.
2. Replace the service processor, location: U0.1-P1.

A801: HMC wrap failure.
Actions:
Replace the service processor, location: U0.1-P1.

Error Code	Description	Action/ Possible Failing FRU
B1xx 4699 (continued)	(Continued from the previous page.) **A806:** 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. 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. Check the serial cables connecting the HMC to the CEC backplane, location: U0.1-P1. 2. Run diagnostics on the serial port on the HMC. 3. Run diagnostics on the serial ports on the service processor. 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, CEC minimum configuration 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, CEC minimum configuration 3. CEC backplane Location: U0.1-P1
B1xx 8FF0	Informational message	No action required.
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.

Error Code	Description	Action/ Possible Failing FRU
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

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 checkstop 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 316.

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.

Problem Determination Generated Error Codes

Table 7. 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 630 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 630 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 630 Model 6C4 and Model 6E4 User's Guide.*	1. Keyboard 2. CEC backplane Location: U0.1-P1
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 630 Model 6C4 and Model 6E4 User's Guide.*	Type 101 keyboard 1. Keyboard 2. CEC backplane Location: U0.1-P1
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 630 Model 6C4 and Model 6E4 User's Guide.*	Type 102 keyboard 1. Keyboard 2. CEC backplane Location: U0.1-P1
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 630 Model 6C4 and Model 6E4 User's Guide.*	1. Keyboard 2. CEC backplane Location: U0.1-P1
M0ME M002	The system hung during memory POST. This error code is generated by the customer performing "Problem Determination" in the *@server pSeries 630 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 630 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 630 Model 6C4 and Model 6E4 User's Guide.*	Go to "MAP 1520: Power" on page 91.
M0SC SI00	Unable to load diagnostics. This error code is generated by the customer performing "Problem Determination" in the *@server pSeries 630 Model 6C4 and Model 6E4 User's Guide.*	Go to "Boot Problems/Concerns" on page 175.

Table 7. 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 630 Model 6C4 and Model 6E4 User's Guide*.	Go to "Boot Problems/Concerns" on page 175.

Chapter 6. Using the Online and Standalone Diagnostics

The AIX diagnostics consist of online diagnostics and standalone diagnostics.

Attention: To run online diagnostics on a partition, the AIX operating system must be installed on that partition. 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 308.

No   If there is an HMC attached to the system, go to "Standalone Diagnostics Operations" on page 305.

   If an HMC is not attached to the system, go to "Running the Standalone Diagnostics with No HMC Attached" on page 306.

   If standalone diagnostics will be run from a NIM server, go to "Running Standalone Diagnostics from a Network Installation Management (NIM) Server with an HMC Attached to the System" on page 306. 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 available only when diagnostics are run from the disk drive.

Consider the following items before using the diagnostics:
- Standalone diagnostics can run on systems configured for either a full (or single) system partition or a multiple partitioned system. When running in a multiple partitioned system, the device from which you are booting standalone diagnostics must be made available to the partition dedicated to running standalone diagnostics. This might require moving the device from the partition that currently contains the boot device (for example, the CD-ROM or network adapter connected to the NIM server that has a standalone diagnostic image) to the partition used to run standalone diagnostics. Unless the system supports dynamic logical partitioning, reboot both partitions if you move a device. For more information, see "Standalone Diagnostics Operations" on page 305.
- 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.
- When running diagnostics in a partitioned system, diagnostics will work only with the resources that were assigned to that partition. You must run diagnostics in the partition containing the resource that you want to test.

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.

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 (HMC) virtual terminal window being used, you may be unable to read the screen, use the function keys, or use the Enter key. To pass these difficulties, press 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 screen 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. All partition on a full system partition resources, except the SCSI adapter and the disk drives used for paging, 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 **Problem Determination** on the DIAGNOSTIC MODE SELECTION menu.

Running Online Diagnostics with an HMC Attached to the System

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.

- On a full system partition, 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 virtual terminal, 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. For more information about full system partitions, see "Full System Management Tasks" in the *IBM Hardware Management Console for pSeries Maintenance Guide*, order number SA38-0590.
10. Make sure that there are no media in the devices in the media subsystem.
11. Enter any passwords, if requested.

Concurrent Mode

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

Because the system is running in normal operation, the following resources cannot be tested in concurrent mode:
- SCSI adapters connected to paging devices
- Disk drive used for paging
- Some display adapters and graphics related devices
- 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 **Problem Determination** 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, press 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 **Problem Determination** 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, press 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 Diagnostics Operations

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 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

Performing Slow Boot

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 or that was reported by the customer.
2. Do a slow-mode boot in service mode. This boot can be specified using the System Power Control Menu on the service processor main menu. (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. If a new error code is reported, use this code to continue problem analysis.

Considerations for Running Standalone Diagnostics on a Partitioned Systems

To run standalone diagnostics on a full system partition, you must reboot the entire system. However, for a partition in a partitioned system, you can boot standalone diagnostics either in a given partition or on the entire system (which is the same procedure as a full system partition). When running in a multiple partitioned system, the device from which you are booting standalone diagnostics must be made available to the partition dedicated to running standalone diagnostics. This might require moving the device from the partition that currently contains the boot device (for example, the CD-ROM or network adapter connected to the NIM server that has a standalone diagnostic image) to the partition used to run standalone diagnostics. Reboot both partitions if you move a device. Devices on a partitioned system are moved on an I/O-slot basis.

The CD-ROM is attached to an integrated adapter in the base system. All integrated devices must be moved together from partition to partition.

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 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 operating system (get help if needed).
2. Remove all tapes, diskettes, and CD-ROMs.
3. Power off the system. For more information about full system partitions, see "Full System Management Tasks" in the *IBM Hardware Management Console for pSeries Maintenance Guide*, order number SA38-0590.
4. Right-click the mouse and select **Open Terminal Window**.
5. From the service processor menu on the virtual terminal, 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**. For more information about full system partitions, see "Full System Management Tasks" in the *IBM Hardware Management Console for pSeries Maintenance Guide*, 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 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 with an HMC Attached to the System

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. For information about setting the bootlist, see the **Multiboot** section under "SMS" in the client system's service guide.

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 **lsnim -a Cstate -Z *ClientName*** command 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.

Client Configuration and Booting Standalone Diagnostics from the NIM Server

To run standalone diagnostics on a client from the NIM server, do the following:

1. Remove any removable media (tape or CD-ROM disc).
2. Stop all programs including the operating system (get help if needed).
3. If you are running standalone diagnostics in a full system partition, verify with the system administrator and system users that the system unit can shut down. Stop all programs, including the operating system. Refer to the operating system documentation for **shutdown** command information.

   In a partitioned system, make the CD-ROM drive available to the partition used to run standalone diagnostics (refer to the *IBM Hardware Management Console for pSeries Maintenance Guide* for more information). Verify with the system administrator and system users using that partition that all applications on that partition must be stopped, and that the partition will be rebooted. Stop all programs on that partition, including the operating system.
4. If you are in a full system partition, power on the system unit to run standalone diagnostics. In a partitioned system, reboot the partition to run standalone diagnostics.
5. When the keyboard indicator is displayed (the word **keyboard**), press the number 1 key on the keyboard to display the SMS menu.
6. Enter any requested passwords.
7. Select **Setup Remote IPL (Initial Program Load)**.
8. Enter the client address, server address, gateway address (if applicable), and subnet mask. Exit to the Network Parameters screen.
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 175 and follow the steps for network boot problems.

To do a one-time boot of the network adapter attached 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 operating system 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 175 and follow the steps for network boot problems.

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.
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.

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*. LPAR is equivalent to the term *logical partitioned system* or *partitioned system*.

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 and S2) on the CEC backplane (location U0.1-P1). This information is not 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 `OK` 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 `OK` displays in the operator panel, press any key on the keyboard to signal the service processor.

Note: 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 prevents access to the ASCII terminals and vice versa.

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 330), 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.

  Note: If you are running one or more logical partitions, enter the partition ID (0-15) to display progress indicators for that partition since the last system boot. If your system is running in Full System Partition mode, this option automatically displays details from partition 0.

  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 345.

- **Read Service Processor Error Logs**

  Displays the service processor error logs. For an example, refer to "Service Processor Error Logs" on page 344.

- **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: The information under the Service Processor Firmware heading in the following Main Menu illustration is example information only.

```
        Service Processor Firmware
        VERSION: RH011007
        Copyright 2001 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 313 for more information.
- **System Power Control Menu**

  See "System Power Control Menu" on page 318 for more information.
- **System Information Menu**

  See "System Information Menu" on page 321 for more information.
- **Language Selection Menu**

  See "Language Selection Menu" on page 328 for more information.
- **Call-In/Call-Out Setup Menu**

  See "Call-In/Call-Out Setup Menu" on page 329 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 349). 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 disabled in partitioned systems.

  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 343.

- **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**

  Note: This option is disabled in partitioned systems.

  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.

Refer to "Service Processor System Monitoring - Surveillance" on page 341 for more information about surveillance.

- **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: This option is disabled in partitioned systems.

  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 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 334.

- **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
```

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 329 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** - In a full system partition, 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 in a full system partition, 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, and you are running a full system partition, 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.

  This setting is ignored on a partitioned system.

- **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**

  Note: This option is disabled in partitioned systems.

  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**

  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

 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.

  Note: If you are running from a partitioned system, enter the partition ID (0-15) to display progress indicators for that partition since the last system boot. In a full system partition, this option automatically displays details from partition 0.

  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 345.

- **Read Service Processor Error Logs**

  Displays error conditions detected by the service processor. Refer to "Service Processor Error Logs" on page 344 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 (power-on 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 340.

  Processor Hot 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 Processor Hot Sparing (if available): Currently Disabled

  1.  0   3.0  (00)  Configured by system     2.  1   3.1  (00)  Deconfigured by system
  3. 24   4.0  (00)  Configured by system     4. 25   4.1  (00)  Configured 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 the operating system.

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. If the system is running 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 the operating system. Consult the operating system documentation before configuring or deconfiguring a processor to ensure that the correct processor is selected.

2. To determine the number of processors available to AIX, run the following command on the AIX command line: `bindprocessor -q`

   Note: The number of processor 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 (power-on 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 340.

   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 the operating system.

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

 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 is not available on this system.

- **Change I/O Type**

  Use this option to change the I/O type after a service action or configuration change, if the I/O type is incorrect. If this option is chosen, you will be asked to make the following entries:

  1. For the I/O drawer address, type `1`.

  2. If a 4-slot PCI riser has been replaced, or is present in the system, type `A6` for the I/O type. If a 6-slot PCI riser has been replaced, or is present in the system, type `A3` for the I/O type.

  If either value is not valid, a failure message displays on the console. Press Enter to return to the Power Control Network Utilities Menu.

- **LED Indicator Menu**

  This menu displays the state of the processor subsystem disturbance/system attention LED and the fault/identify LED on the I/O subsystem(s). Use this menu to toggle the attention/fault LEDs 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 >
```

  If Option 1 is selected, a list of location codes of the I/O subsystems and the system unit drawer is shown. The screen is similar to the following:

```
  1. U0.2-P1

  2. U0.3-P1


  Enter number corresponding to the location code, or
  press Return to continue, or 'x' to return to the menu
```

  If one of the devices is selected using the index number, the present state of its LED is displayed, and you are given the option to toggle it as shown in the following example screen. The final state of the LED is then displayed whether or not its state was changed.

```
U0.2-P1 is currently in the off state

Select from the following (1=IDENTIFY ON, 2=IDENTIFY OFF)
0>2
Please wait

U0.2-P1 is currently in the OFF state
        (Press Return to continue)
```

  Option 2, **Clear System Attention Indicator**, clears the attention indicator on the operator panel.

  The processor subsystem disturbance/LED is on the operator panel. The I/O drawer fault/identify LED is located on the front of each I/O subsystem.

- **MCM/L3 Interposer Plug Count Menu**

  This option is not available on this system.

- **Performance Mode Setup Menu**

  If certain types of processor cards are installed in the system, this menu is not available. For other types of processor cards, this menu is active after the first boot.

  Note: The first time the system is booted after NVRAM is cleared, `Not Applicable` displays under **Performance Mode Setup Menu** on the screen. This might also happen if the service processor is replaced, or the processor cards are upgraded.

  If **Performance Mode Setup Menu** is selected when `Not Applicable` displays the screen, the system responds with `Not Applicable` and redisplays the system information menu. The setup menu can be displayed after the performance mode is set, which occurs when the system is rebooted for the first time.

The default performance mode is set by the firmware during IPL. The default mode provides the optimum performance for the hardware configuration of the system. The performance mode is systemwide; it cannot be set on a per-partition basis.

You can override the default setting by using the Default Performance Mode menu, which will be similar to the following:

```
                   Default Performance Mode:  Standard Operation

 1. Current Performance Mode:
    Standard Operation


98. Return to Previous Menu

0>1
```

Selecting option 1 displays the following performance modes:

```
Select from the following options:

1. Large Commercial System optimization
2. Standard Operation
3. Turbo Database Mode

0>
```

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 optimum 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 CEC backplane (location U0.1-P1). These serial ports are normally used for call-in and call-out.

Call-out is disabled in partitioned systems. 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 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" on page 330.
- **Serial Port Selection Menu**, see "Serial Port Selection Menu" on page 330.
- **Serial Port Speed Setup Menu**, see "Serial Port Speed Setup Menu" on page 331.
- **Telephone Number Setup Menu**, see "Telephone Number Setup Menu" on page 331.
- **Call-Out Policy Setup Menu**, see "Call-Out Policy Setup Menu" on page 332.
- **Customer Account Setup Menu**, see "Customer Account Setup Menu" on page 333.
- **Call-Out Test** tests the configuration after the modem is installed and configured correctly (disabled in partitioned systems).

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 517 and "Transfer of a Modem Session" on page 521.

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.

Note: Call-out is disabled in partitioned systems.

```
        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 342).

  Note: If the system is running in partitioned mode, call-out is disabled. However, if the system is booted in full system partition mode, at least one of the preceding three telephone numbers must be assigned in order for the call-out test to complete successfully.
- **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

Note: Call-out is disabled on partitioned systems.

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

Note: Call-out test is disabled in partitioned systems.

Use this menu to test the configuration after the modem is installed and configured. To execute this test 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 (Full System Partition)

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 318.

  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 running in a full system partition. Operating system surveillance is disabled in partitioned systems.

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. In a full-system partition, 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 in a full system partition, 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 on a full-system partition, 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 335.

The following table describes the relationship among the operating system and service processor restart controls in a full system partition:

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

Note: In a partitioned system, the service processor's supplemental restart policy is the only setting that is used.

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/mdownload

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 in AIX Using a Locally Available Image" on page 338.
- 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 339.
- 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 on recovery mode, go to "Recovery Mode" on page 340.

To check the level of firmware that is currently on the system, see "Determining the Level of Firmware on the System" on page 338.

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://www.rs6000.ibm.com/support/micro. 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 the information that is available on the Web site listed below. 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 XXYYMMDD, where XX = model designation, YY = year, MM = month, and DD = day of the release.

If your system is running AIX, the platform 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 either of the following methods:

- On the Linux command line, type:

  ```
  /usr/sbin/ibmras/nvram --print-vpd | grep RR
  ```

  A line similar to `Alterable ROM Level RR021114` displays the firmware level that is currently on the system.
- Looking at the top of the service processor menu main menu.

System Firmware Update in AIX 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/RR*.img
   ```

   The update file will have the format RRyymmdd.img. The RR 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. After the update file has been written to the **/tmp/fwupdate** directory, enter the following commands:

   ```
   cd /usr/lpp/diagnostics/bin

   ./update_flash -f /tmp/fwupdate/RRyymmdd.img
   ```

   Attention: Do not overlook the periods (.) in the commands shown above. AIX commands are case-sensitive. Type them exactly as shown.

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

Attention: This method is not recommended for partitioned systems, but if the device resources are allocated properly, the firmware update can be done using the AIX service aid.

Note: This service aid is supported only in online diagnostics.

If the firmware on a partitioned system is being updated:
- One partition running AIX must have service authority.
- All other partitions except the one with service authority must be shut down.
- The partition with service authority must own the device from which the firmware update image will be read.
- It is recommended that the partition with service authority have a hard disk.

If the required devices are not in the partition with service authority, the customer or system administrator must reassign the appropriate resources to it. This requires rebooting the partition with service authority. To avoid the resource allocation issues, it is recommended that the service processor menus be used to update the firmware.

If the firmware on a full system partition is being updated, no special steps are required to perform the firmware update using the service aid.

For information about updating system firmware, refer to the instructions that are provided on the web site 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

For information about updating system firmware, refer to the Web site for detailed instructions on the latest image provided.

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 with an HMC Attached to the System" on page 306.

Recovery Mode

If the service processor detects that its programming has been corrupted when it is powering on to standby mode, it will enter recovery mode. In recovery mode, it prompts for the firmware update diskettes by putting eight-digit codes on the operator panel display, as shown in the following table. After the update process is complete, the service processor resets itself and performs a complete reboot.

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.

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 memory 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 322. For information on configuring or deconfiguring a memory DIMM, see the Memory Configuration/Deconfiguration Menu on page 323. 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 Repeat Gard)

L1 instruction cache recoverable errors, L1 data cache correctable errors, and L2 cache correctable errors are monitored by the processor runtime diagnostics (PRD) code 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 runtime (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

Note: Operating system surveillance is disabled on partitioned systems.

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.

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 previously discussed options, another 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 335.

If surveillance is selected from the service processor menus that are only available at bootup, surveillance is enabled by default as soon as the system boots. From service aids, the selection is optional.

Call-Out (Call-Home)

Note: Call-out is disabled on partitioned systems. 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 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.

```
                        SP Power Applied
                              │
                              ▼
                        Pre-Standby Phase
                              │
          ┌────────┐          ▼
          │        ▼
          │   Standby Phase   SP Menus Available
          │                   │
          │                   ▼
          │   Bring-Up Phase  SMS Menus Available
          │                   │
          │                   ▼
          │   Run-time Phase  Operating System Login Prompt  Available
          │        │
          └────────┘
```
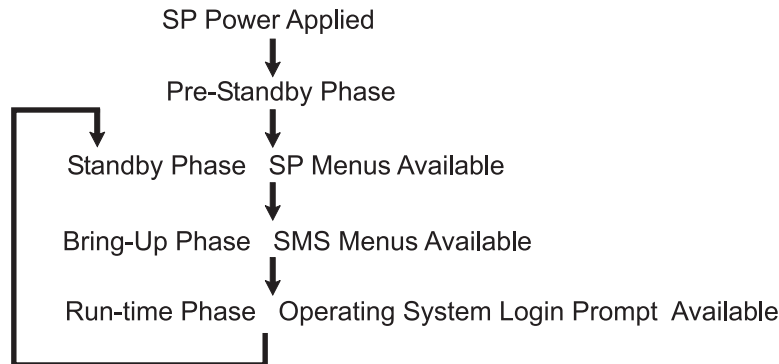
Pre-Standby Phase

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 `OK` 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 interface.

Bring-Up Phase

On a system that is powered-on to full system partition, this phase is entered upon power-on, and exited upon loading of the operating system.

On a system that is powered-on to partition standby, this phase is entered upon power-on, and exited when the partition manager and hypervisor have been loaded and become fully operational in system memory. The end of this phase is indicated by `LPAR` on the operator panel. At this point, the server can start multiple logical partitions that would be activated through the HMC interface.

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 (not supported on partitioned systems)

  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 or partition, and to perform tasks such as setting a password, changing the boot list, and setting the network parameters.

Notes:

1. On some of the system management services (or service processor) screens, you will see the term *LPAR*. LPAR is equivalent to the term *logically partitioned system* or *partitioned system*.

2. In a partitioned system, only those devices that are assigned to the partition that is being booted display in the SMS menus. In a full system partition, all devices in the system display in the SMS menus.

To start the system management services, do the following:

1. For a partitioned system, use the Hardware Management Console (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 320.

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 in partitioned systems.

```
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: _
```

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). The 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 or partition. You must first specify the network parameters.

```
Network Parameters

 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 **IP Parameters** displays the following menu.

```
IP Parameters

 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 (Internet Protocol) parameters, type the number of the parameters for which you want to change the value.

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 Parameters** allows you to view an adapter's hardware address, as well as configure network adapters that require setup. A menu similar to the following displays.

Attention: In a partitioned system, only those network adapters that have been assigned to the partition being booted display in the Adapters Parameters menu. In a full system partition, all network adapters in the system are listed in the adapter parameters menu.

```
 Device                            Slot              Hardware Address

 1. 10/100 Mbps Ethernet PCI Adapter II   4:U0.1-P1-I4/E1        000629aca72d
 2. 10/100 Ethernet Adapter         Integrated:U0.1-P1/E1   0020357A0530
 3. High Speed Token-Ring Adapter   1:U0.1-P1-I1/T1         000629be04e1
 4. Gigabit Ethernet PCI Adapter    3:U0.1-P1-I3/E1         0004ac7c9ec7




 -------------------------------------------------------------------------------------------
 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: _
```

Entering adapter parameters on these screens will automatically update the parameters on the ping test screen.

Selecting an adapter on this menu displays configuration options for that adapter. The current setting is indicated by <===.

```
 Adapter Parameters

 10/100 Mbps Ethernet PCI Adapter II

 1. ethernet, 10, rj45, full
 2. ethernet, 10, rj45, half
 3. ethernet, 100, rj45, full
 4. ethernet, 100, rj45, half
 5. ethernet, auto, rj45, auto <===


 -------------------------------------------------------------------------------------------
 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 the adapter parameters, select an option from the list.

To test a connection to a remote system unit, select **Ping Test** from the Network Parameters Menu. After selecting the **Ping Test** option, you must select which adapter communicates with the remote system.

```
Adapter Parameters

Device                                          Slot              Hardware Address

1. 10/100 Mbps Ethernet PCI Adapter II          4:U0.1-P1-I4/E1        000629aca72d
2. 10/100 Ethernet Adapter                      Integrated:U0.1-P1/E1  0020357A0530
3. High Speed Token-Ring Adapter                1:U0.1-P1-I1/T1        000629be04e1
4. Gigabit Ethernet PCI Adapter                 3:U0.1-P1-I3/E1        0004ac7c9ec7




--------------------------------------------------------------------------------------
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: _
```

After selecting an adapter, you will be asked to set the parameters for the adapter; a menu similar to the following displays:

```
Adapter Parameters

10/100 Mbps Ethernet PCI Adapter II

1. ethernet, 10, rj45, full
2. ethernet, 10, rj45, half
3. ethernet, 100, rj45, full
4. ethernet, 100, rj45, half <===
5. ethernet, auto, rj45, auto
6. Execute 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: _
```

After selecting which adapter and its parameters to use to ping the remote system, you must provide the addresses needed to communicate with the remote system.

```
Ping Test

 1. Client IP Address    [129.132.4.20]
 2. Server IP Address    [129.132.4.10]
 3. Gateway IP Address   [129.132.4.30]
 4. Subnet Mask          [255.255.255.0]
 5. Execute 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: _
```

Notes:

1. After the ping test is initiated, it may take up to 60 seconds 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

Note: This option is not available on partitioned systems.

The Select Console utility allows the user to select which console 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.

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: _
```

Select Install or Boot a Device

> Allows you to select a device from which to boot or install the operating system. This option is for the current boot only.

Select Boot Devices

> Allows you to set the boot list.

Multiboot Startup

> Toggles the multiboot startup flag, which controls whether the multiboot menu is invoked automatically on startup.

If **Select Install or Boot a Device** is selected, the following menu displays:

```
  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 is not 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

Attention: In a partitioned system, only those devices from which an operating system can be booted that are assigned to the partition that is being booted display on the select boot devices menu. In a full system partition, devices from which an operating system can be booted display on the Select Boot Devices menu.

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 Select Device Type screen will be displayed, which is 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 Task menu is displayed. The following is an example of that menu for a hard disk.

```
 Select Task

SCSI 18200 MB Harddisk (loc=U0.1-P2/Z1-A8,0)

 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** displays 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 as follows:

1. Primary diskette drive (if installed)
2. CD-ROM drive (if installed)
3. Tape drive (if 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 or partition.

Chapter 9. Removal and Replacement Procedures

Notes:

1. Servicing of the Model 6E4 can be performed with the system in either the vertical or horizontal position. Servicing of the Model 6C4 is performed with the system in the rack and placed into the service position. The service position for the Model 6C4 is described in "Placing the Model 6C4 into the Service Position" on page 368.

2. Before performing any of the removal or replacement procedures in this chapter, read the following danger and caution notices.

In the system you are about to set up 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

> **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`

Procedure List

Procedure	Procedure Name and Page Location
Adapters	"PCI Adapters" on page 383
Battery Replacement	"Replacing the Battery" on page 437
Bezels	"Bezels" on page 381
Bezel Door	"Bezel Door (Model 6E4)" on page 380
Cable Management Arm	"Installing the Cable-Management Arm" on page 505
CD-ROM Drive	"Media Drives (Diskette, CD-ROM, Tape, or Disk Drive)" on page 405
CEC Backplane	"Central Electronics Complex (CEC) Backplane" on page 448
Covers	"Covers" on page 370
Disk Drive	"Hot-Plug Disk Drives" on page 409
Disk Drive Backplane	"Disk Drive Backplane" on page 419
Disk Drive Configuration or Deconfiguration	"Deconfiguring (Removing) or Configuring a Disk Drive" on page 409
Diskette Drive	"Media Drives (Diskette, CD-ROM, Tape, or Disk Drive)" on page 405
Fans	"Fans" on page 399
HMC	Appendix E, "Installing a Hardware Management Console (HMC)", on page 507
I/O Card	(Refer to PCI Riser Card)
Media Drives	"Media Drives (Diskette, CD-ROM, Tape, or Disk Drive)" on page 405
Memory DIMMs	"Memory DIMMs" on page 432
Operating Position	"Returning the Model 6C4 to the Operating Position" on page 369
Operator Panel	"Operator Panel" on page 423
PCI Riser Card	"PCI Riser Card" on page 413
Power Supply	"Power Supplies" on page 441
Processor Card	"Processor Card" on page 427
Rack Installation	"Model 6C4 Removal and Installation into a Rack" on page 500
Release Latch and Brackets	"Model 6C4 Drawer-Release Latch and Brackets" on page 366
Service Position	"Placing the Model 6C4 into the Service Position" on page 368
Starting the System	"Starting the System without an HMC Attached" on page 364
Static-Sensitive Devices	"Handling Static-Sensitive Devices" on page 363
Stopping the System	"Stopping the System without an HMC Attached" on page 363
System Board	(Refer to CEC Backplane)
Rack Hardware	"Attaching the Mounting Hardware to the Rack Enclosure" on page 489
VPD Update	"System Vital Product Data (VPD) Update Procedure" on page 425

Handling Static-Sensitive Devices

Attention: Electronic boards, diskette 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 a 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.

Stopping the System without an HMC Attached

Attention: When shutting down your system to install options, 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. 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. Have your system administrator stop all applications that are running on the system.
3. At the command line, ask the administrator to 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. If the system is logically partitioned, AIX in each partition may be stopped individually to make repairs. If the system power must be turned off, all of the logical partitions must be stopped.

AIX provides hot-swap procedures for adapters and devices that support hot-swap removal and installation. You do not have to shut down a partition that controls an adapter or device that supports hot-swap. 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 and installation procedures.

If the system is operating in a full system partition under AIX, typing the **shutdown** command causes the system to shut down and power off. The **-F** flag shuts down the system without warning system users. 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 button on the operator panel or typing the appropriate command at the HMC.

Attention: Using the power 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 IPL will also take longer to complete if all applications in all partitions are not stopped beforehand.

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. If the system is logically partitioned, Linux in each partition may be stopped individually to make repairs. If the system power must be turned off, all of the logical partitions must be stopped.

Linux does not provide hot-swap procedures for adapter and device removal and installation. You must shut down all partitions and 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 in a full system partition under Linux, typing the **shutdown now -h** command causes the system to shut down and power off. The **-F** flag shuts down the system without warning system users. 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 button on the operator panel or typing the appropriate command at the HMC.

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 IPL will also take longer to complete if all applications in all partitions are not stopped beforehand.

Starting the System without an HMC Attached

Power on the system only after all of the following steps are completed:
* All I/O drawer cables are connected
* Base system cables are connected
* All PCI cables to supported subsystems are connected
* The hardware management console (HMC) is connected (if required)
* Power is connected to the system

To power on the system, do the following:
1. Open any system or rack doors necessary so that you can view the operator panel.
2. Connect the power source to the system unit.
   Before you press the power-on button on your 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, and observe the following:
   a. The power LED begins to visibly blink faster.
   b. The system cooling fans are activated and begin to accelerate to operating speed.

   Note: 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).

c. The power LED stays on solid and progress indicators, also referred to as *checkpoints*, are visible on the operator panel display.
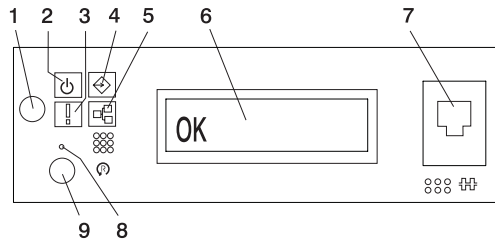
1	Power-On Button	**6**	Operator Panel Display
2	Power LED	**7**	(FS1) Front Serial Connector (RJ-48 Connector)
3	Attention LED	**8**	Service Processor Reset Switch (Pinhole)
4	SCSI Port Activity	**9**	System Reset Button
5	Ethernet Port Activity		

Starting the System with an HMC Attached

Power on the system only after all of the following steps are completed:

- All I/O drawer cables are connected
- Base system cables are connected
- All PCI cables to supported subsystems are connected
- The hardware management console (HMC) is connected (if required)
- Power is connected to the system

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. If a system operator panel is available, the power-on button on the operator panel can be pushed to initialize the system but the preferred method is to use the HMC if you are booting logical partitions. Progress indicators, also referred to as *checkpoints*, are visible on the operator panel display (if available) as the system power is turned on. The power LED on the base system stops blinking and stays on, indicating the system power is on.

The base system and I/O subsystems are powered on through the system power control network (SPCN). When power is applied, the power LEDs on the base system go from blinking to continuous, and the power LEDs on the I/O subsystem(s) come on and stay on, which indicates that power levels are satisfactory in the subsystems.

After the system is powered on, all logical partitions will be in a standby or powered on state. Each logical partition must then be booted through the HMC. The state of all logical partitions that have been booted will be *running*.

Model 6C4 Drawer-Release Latch and Brackets

The following procedure covers the removal and replacement of the system's drawer-release latch.

Drawer-Release Latch Removal

To remove one of the Model 6C4 drawer-release latches, do the following:

1. Open the front rack door and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.
2. Remove the retaining screw located on the side of the release latch.
3. Pull the release latch off the latch bracket post.
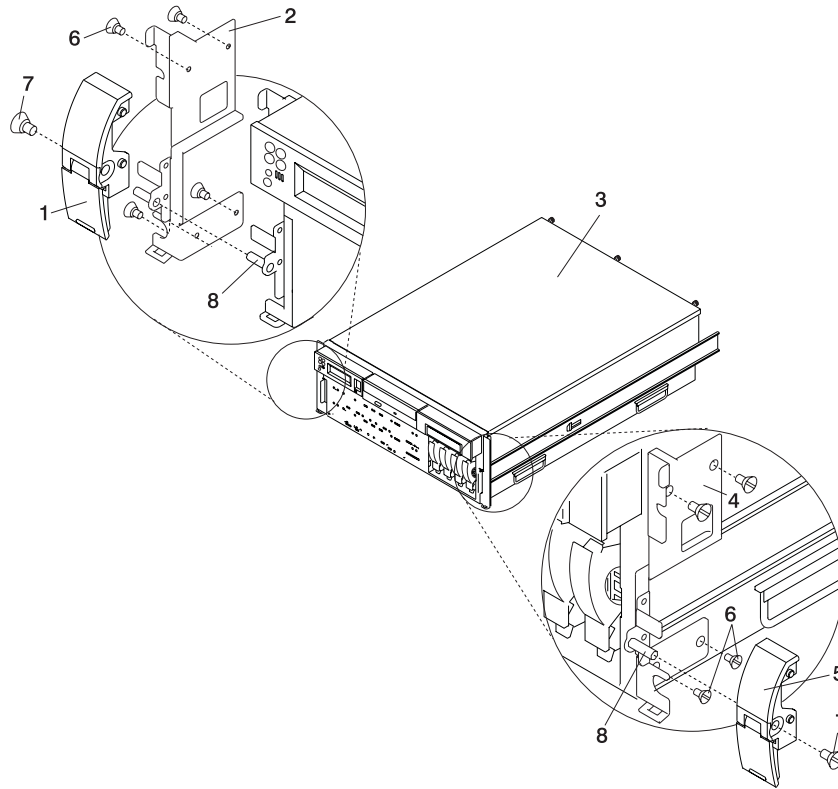
1	System Drawer-Release Latch	**5**	System Drawer-Release Latch
2	System Drawer-Release Latch Bracket (Right)	**6**	Retaining Screws
3	Model 6C4	**7**	Release Latch Retaining Screw
4	System Drawer-Release Latch Bracket (Left)	**8**	Latch Bracket Post

Drawer-Release Latch Replacement

To replace one of the Model 6C4 drawer-release latches, do the following:

1. If you have not already done so, open the front rack door and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.
2. Push the release latch onto the latch bracket post.
3. Secure the drawer-release latch onto the latch bracket post with a release latch retaining screw.
4. Push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

Drawer-Release Latch Bracket Removal

To remove the Model 6C4 drawer-release latches brackets, do the following:

1. Open the front rack door and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.
2. Remove the front bezel as described in "Front Bezel Removal (Model 6C4)" on page 381.
3. Remove the release latch as described in "Drawer-Release Latch Removal" on page 366.
4. Remove the retaining screws that secure the latch bracket to the side of the Model 6C4.
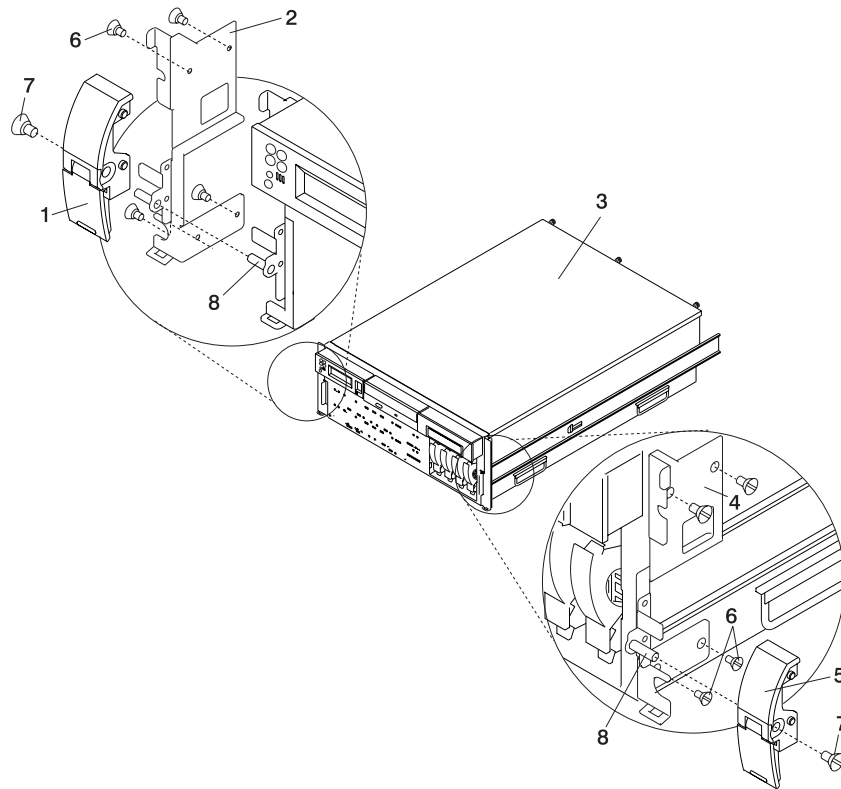
1	System Drawer-Release Latch	**5**	System Drawer-Release Latch
2	System Drawer-Release Latch Bracket (Right)	**6**	Retaining Screws
3	Model 6C4	**7**	Release Latch Retaining Screw
4	System Drawer-Release Latch Bracket (Left)	**8**	Latch Bracket Post

Drawer-Release Latch Bracket Replacement

To replace the Model 6C4 drawer-release latches brackets, do the following:

1. If you have not already done so, open the front rack door and place the system into the service position as described in "Placing the Model 6C4 into the Service Position".

2. Using the supplied retaining screws, secure the latch brackets to the side of the Model 6C4.

   Note: The latch brackets are right-side and left-side dependent.

3. Replace the release latch as described in "Drawer-Release Latch Replacement" on page 367.

4. Replace the front bezel as described in "Front Bezel Replacement (Model 6C4)" on page 381.

5. Push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

Placing the Model 6C4 into the Service Position

Attention: When placing the Model 6C4 into the service position, it is essential that all stability plates must be firmly in position to prevent the rack from toppling. Ensure that only one system drawer at a time is in the service position.

Before doing any service actions inside the Model 6C4, you must put the system into the service position. To place the system into 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-release latch.
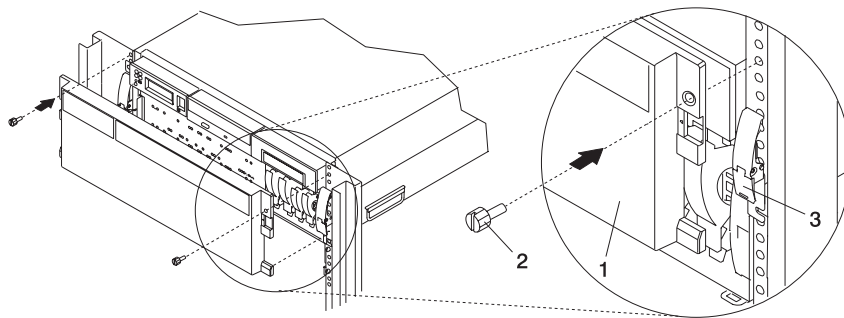
    1 Model 6C4 Front Bezel
    2 M5 16-mm Retaining Screw

3. Release the system-release latches on both the left and right sides.

4. Pull the system drawer out from the rack until the rails are fully extended.

Note: When the system rails are fully extended, safety latches on the slide rails lock into place. This action prevents the system from being accidentally pulled out too far and dropped. The following illustration shows a system drawer in the service position.

1	Model 6C4	**4**	Stabilizing Bar
2	19-Inch Rack	**5**	Front Rack Door
3	Extension Rail Safety Release Tab	**6**	System Drawer-Release Latch
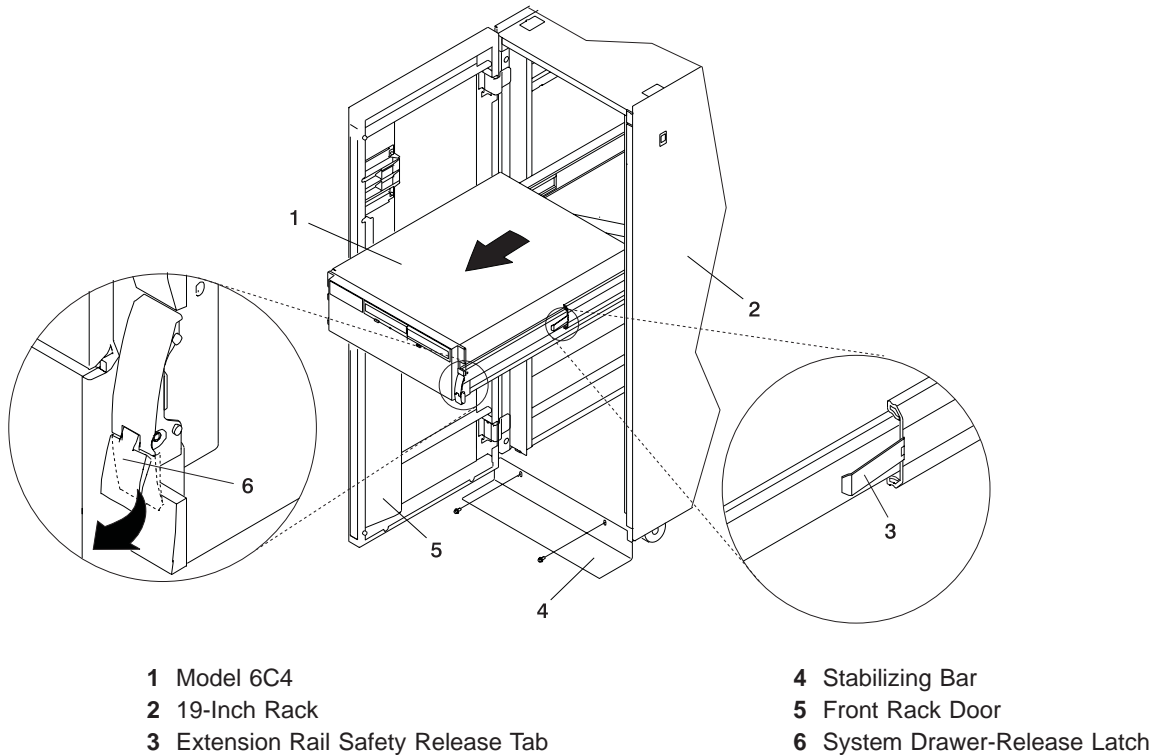
After completing the service actions, return the system to the operating position.

Returning the Model 6C4 to the Operating Position

To return the Model 6C4 to the operating position, do the following:

1. Press in on both spring-loaded release tabs, located on each rail. See the illustration on page 369 for the location of the release tabs.
2. Ensure the system drawer-release latches, located on the system drawer, are in the open position. See the illustration on page 369 for the location of the system drawer-release latches.
3. Push the system drawer straight back into the rack until both system drawer-release latches have locked into position.
4. If you removed two thumbscrews from the bezel front, replace them at this time.
5. Close the front rack door.

Covers

Before performing the following procedures, read the "Safety Notices" on page xi.

Service Access Cover Removal (Model 6C4)

To remove the service access cover, do the following:

1. Ensure that the rack has been correctly stabilized before opening the front and rear rack doors.
2. Open the front rack door and place the Model 6C4 into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.
3. Loosen the three captive thumbscrews located on the rear of the cover. See the following illustration for thumbscrew locations.
4. Placing both hands on each side of the cover, 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.
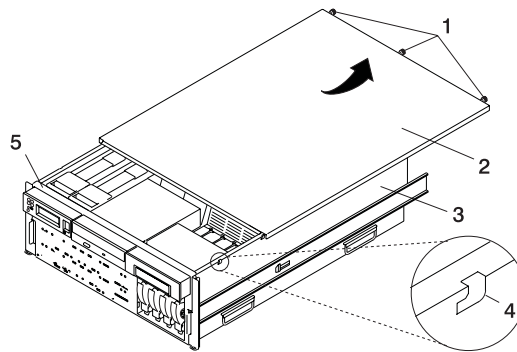
1	Thumbscrews	**4**	Access Cover Locking Tab
2	Service Access Cover	**5**	Upper Chassis Ledge
3	Model 6C4		

Service Access Cover Replacement (Model 6C4)

To replace the service access cover, do the following:

1. Align the service access cover with the top of the system, about 25 mm (1 inch) from the front of the system. The flanges on the left and right sides of the cover should be on the outside of the system chassis.
2. Hold the service access cover against the system drawer, slide it toward the front of the system. The front edge of the service access cover slides beneath the upper chassis ledge.
3. Tighten the three thumbscrews located on the rear of the cover.

Top Cap Removal (Model 6E4)

To remove the top cap, do the following:

1. Remove the bezel door as described in "Bezel Door Removal" on page 380.
2. Remove the front bezel as described in "Front Bezel Removal (Model 6E4)" on page 382.
3. From the front of the top cap, grasp the two lower side edges and pry out to release the lower front tabs.
4. Pivot the cover up to release the two back tabs.
5. Lift the top cap up and off the system.
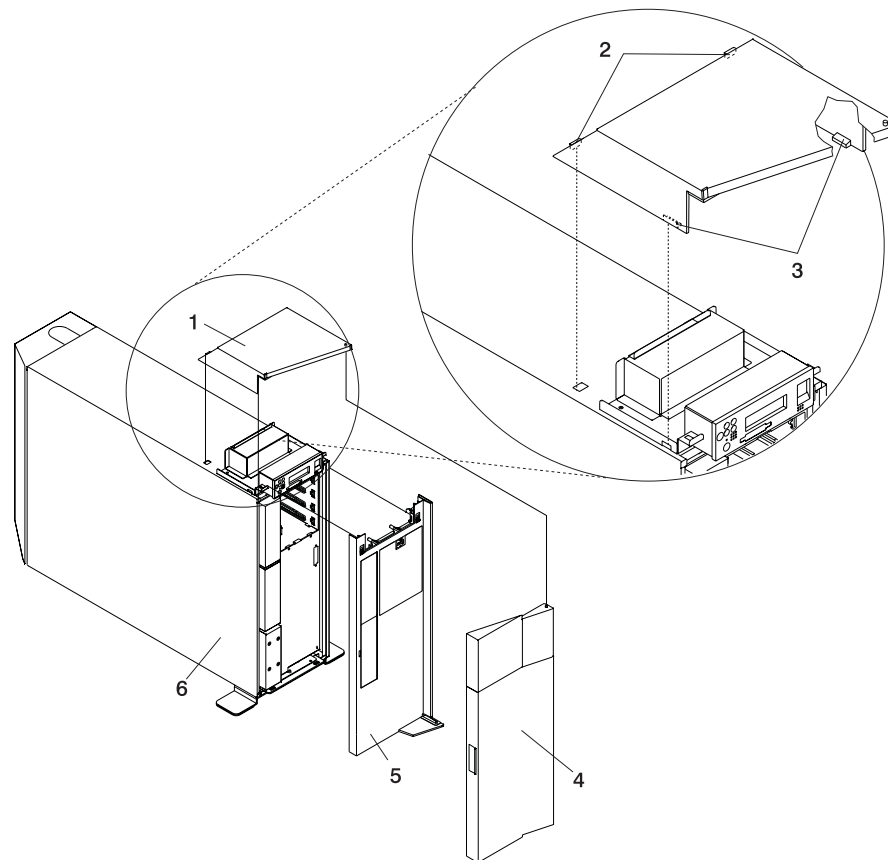
1	Top Cap	**4**	Bezel Door
2	Top Cap Rear Locking Tabs	**5**	Bezel
3	Top Cap Front Locking Tabs	**6**	Model 6E4

Top Cap Replacement (Model 6E4)

To replace the top cap, do the following:

1. Align, and then insert the two tabs located on the back-bottom edge of the top cap with the two mating slots located on the top cover.
2. Rotate the cover down, snapping the two lower front tabs into place on the operator panel bracket.
3. Replace the front bezel as described in "Front Bezel Replacement (Model 6E4)" on page 382.
4. Replace the bezel door as described in "Bezel Door Replacement" on page 380.

Top Cover Removal (Model 6E4)

To remove the top cover, do the following:

1. Remove the bezel door as described in "Bezel Door Removal" on page 380.
2. Remove the front bezel as described in "Front Bezel Removal (Model 6E4)" on page 382.
3. Remove the top cap as described in "Top Cap Removal (Model 6E4)" on page 371.
4. Remove the operator panel as described in "Operator Panel Removal" on page 423.
5. Remove the two retaining screws that secure the operator-panel EMC bracket to the operator-panel bracket.
6. Remove the four retaining screws that secure the operator-panel bracket to the top cover.
7. Remove the four retaining screws that secure the top cover to the system chassis.
8. Remove the front screw that secures the top cover to the right panel assembly. This screw is located on the front inside edge of the system, just below the top cover.
9. Remove the back cover as described in "Back Cover Removal (Model 6E4)" on page 376.
10. From the back of the system, remove the rear screw that secures the top cover to the right panel assembly. This screw is located on the rear inside edge of the system, just below the top cover.
11. From the back of the system, remove the two retaining screws that secure the top cover to the system top-cover rear bracket.
12. Lift the top cover up and off the system chassis.
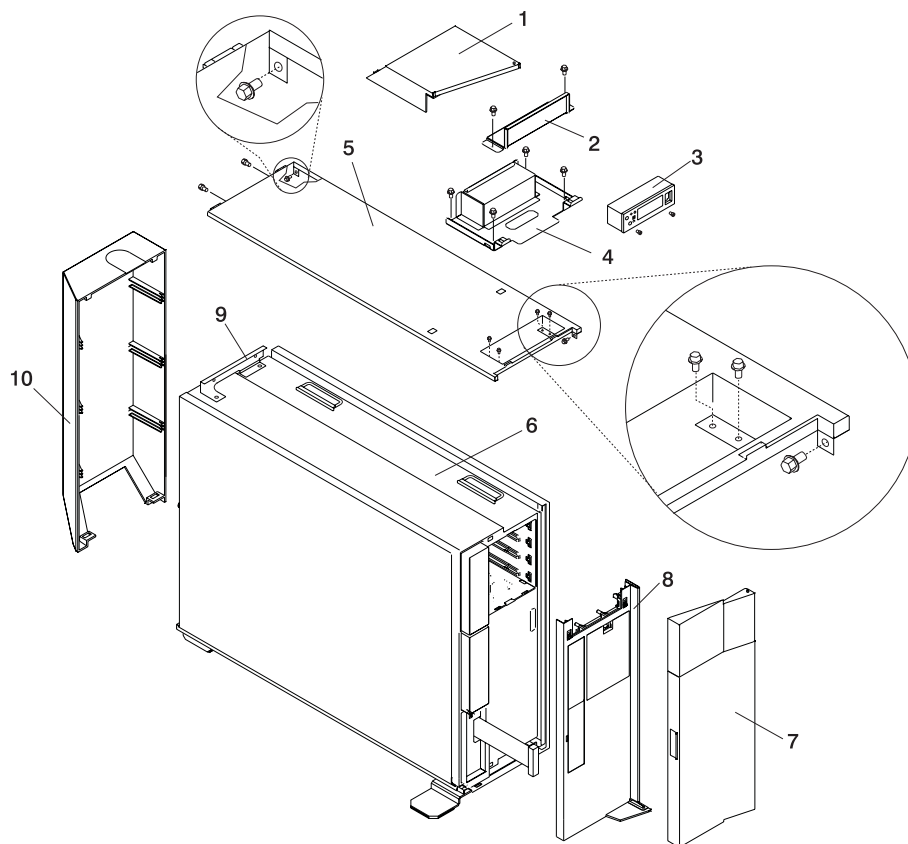
1	Top Cap	**6**	Model 6E4
2	Operator Panel EMC Bracket	**7**	Bezel Door
3	Operator Panel	**8**	Bezel
4	Operator Panel Bracket	**9**	Rear Top Cover Mounting Bracket
5	Top Cover	**10**	Rear Cover

Top Cover Replacement (Model 6E4)

To replace the top cover, do the following:

1. Ensure that the rear top cover bracket is in place. If the rear top cover bracket has not been installed, install it now with two retaining screws.

2. Mount, and then align the top cover onto the system chassis.

3. Replace the four retaining screws that secure the top cover to the system chassis.

   Note: *Do not* tighten the screws at this time

4. Replace the front screw that secures the top cover to the right panel assembly. This screw will be located on the front inside edge of the system, just below the top cover.

5. At the back of the system, replace the rear screw that secures the top cover to the right panel assembly. This screw will be located on the rear inside edge of the system, just below the top cover.

6. At the back of the system, replace the two retaining screws that secure the top cover to the top-cover rear bracket.

7. Tighten all replaced screws in step 3, then tighten the screws replaced in steps 4 through 6.

8. Replace the back cover as described in "Back Cover Replacement (Model 6E4)" on page 377.

9. Mount, and then align the operator-panel bracket, ensuring that the operator-panel bracket screw-clearance holes are exactly centered over their mating screw holes, located on the top cover.

10. With a retaining screw, secure one of the operator-panel bracket corners . Repeat this step, securing a second corner on the operator-panel bracket, diagonally across from the first.

    Note: Before going to the next step, ensure that the four remaining clearance holes on the operator-panel bracket are exactly centered over their mating screw holes. If not, loosen one of the screws and realign the clearance holes to the screw holes.

11. With two retaining screws, secure the two remaining corners of the operator-panel bracket.

12. Mount, then secure with two retaining screws, the operator-panel EMC bracket onto the operator-panel bracket.

13. Replace the operator panel as described "Operator Panel Replacement" on page 424.

14. Replace the top cap as described in "Top Cap Replacement (Model 6E4)" on page 371.

15. Replace the front bezel as described in "Front Bezel Replacement (Model 6E4)" on page 382.

16. Replace the bezel door as described in "Bezel Door Replacement" on page 380.

Outer Side Cover Removal (Model 6E4)

To remove the outer side cover, do the following:

1. Loosen the thumbscrew on the rear of the cover. See the following illustration for the thumbscrew location.
2. Slide the cover toward the rear of the system to release the four locking tab slots located on the top flange of the outer side cover.
3. Grasp the top back corner of the outer side cover.
4. Pull out the top edge of the outer side cover.

   Note: The top edge of the outer side cover must be clear of the top cover.
5. Pull up to release the bottom edge of the outer side cover.
6. Put the cover in a safe place.
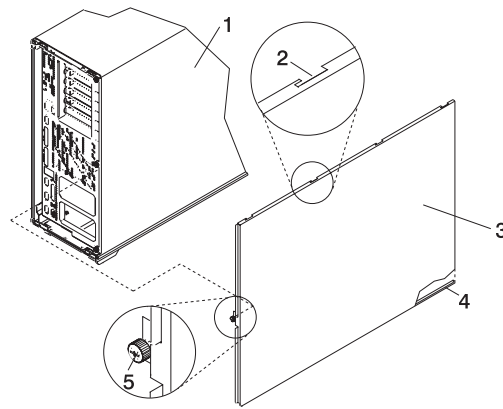
1	Model 6E4	**4**	Cover Retaining Slot
2	Locking Tab Slot for Outer Side Cover	**5**	Thumbscrew
3	Outer Side Cover		

Outer Side Cover Replacement (Model 6E4)

To replace the outer side cover, do the following:

1. Place the bottom edge retaining slot of the outer side cover over the outer edge of the system base.
2. Pivot the outer side cover up toward the top of the system.
3. Align the four top locking tab slots, located on the outer side cover, with the locking tabs, located on the bottom side of the top cover.
4. Push the cover in. When correctly seated, push the outer side cover forward, toward the front of the chassis. The four top locking tabs are now locked in place.
5. Align the thumbscrew, located on the rear of the outer side cover, with the screw hole located on the back of the chassis.
6. Tighten the thumbscrew.

Service Access Cover Removal (Model 6E4)

To remove the service access cover, do the following:

1. Remove the Model 6E4's outer side cover as described in "Outer Side Cover Removal (Model 6E4)" on page 374.
2. Loosen the three captive thumbscrews located on the rear of the cover. See the following illustration for thumbscrew locations.
3. Slide the cover toward the rear of the system drawer. After the front of the service access cover has cleared the front chassis ledge, lift the cover out of the system.

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.
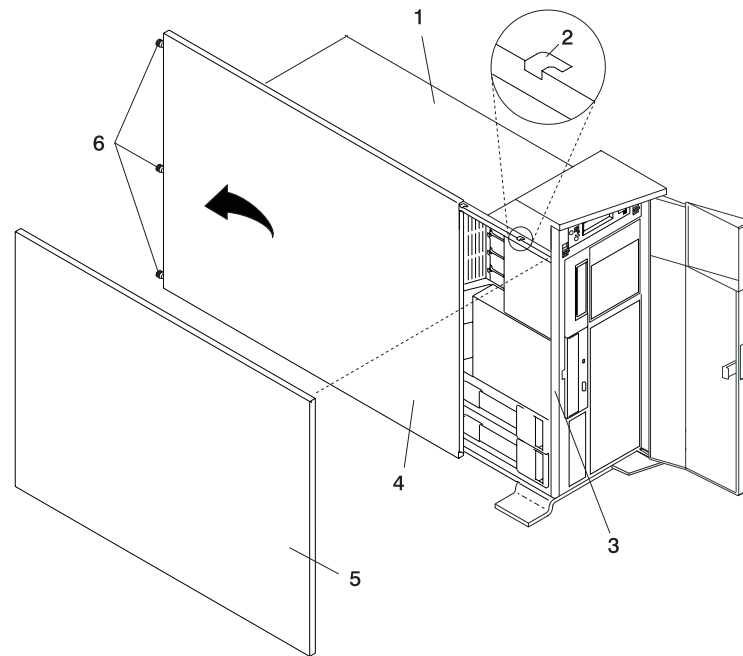
1	Model 6E4	**4**	Service Access Cover
2	Service Access Cover Locking Tab	**5**	Outer Side Cover
3	Front Chassis Ledge	**6**	Thumbscrews

Service Access Cover Replacement (Model 6E4)

To replace the service access cover, do the following:

1. Align the service access cover with the side of the system, about 25 mm (1 inch) from the front of 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. The front edge of the service access cover slides beneath the chassis ledge.
3. Tighten the three thumbscrews located on the rear of the cover.

Back Cover Removal (Model 6E4)

To remove the back cover, do the following:

1. Grasp each side of the back cover and pull straight up and then away from the system. This action releases the two top and two bottom tabs that secure the cover to the back of the system. See the following illustration for the tab locations.
2. Put the back cover in a safe place.
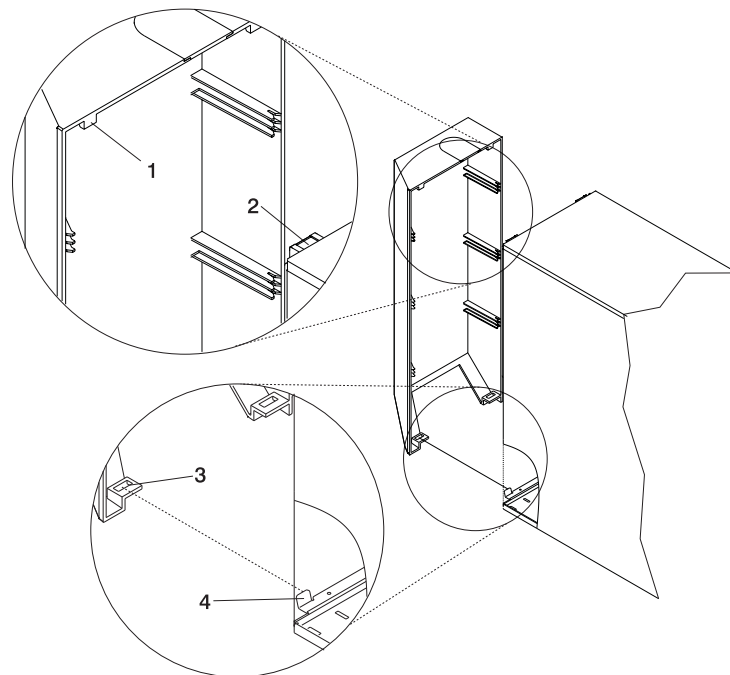
1	Back Cover Top Retaining Tab (Quantity 2)	**3**	Back Cover Bottom Locking Slot (Quantity 2)
2	Back Cover Top Locking Slot (Quantity 2)	**4**	Back Cover Bottom Retaining Tab (Quantity 2)

Back Cover Replacement (Model 6E4)

To replace the back cover, do the following:

1. Ensure all cables have been connected and are correctly seated.
2. Align the back cover side edges with the side edges of the system chassis back.
3. Raise the back cover about 1 inch higher than the system, ensuring tab to slot clearance.
4. Push the back cover straight down. This action seats the tabs into their retaining slots.

Disk Drive Access Cover Removal (Model 6E4)

To remove the disk drive access cover, do the following:

1. Open the bezel door.
2. Locate the disk drive access cover on the front bezel of the system, as shown in the following illustration.
3. Press down on the release tab located at the top of the access cover.
4. Gently pull the top of the access cover out and away from the system.

   Note: The two alignments tabs that are located on the bottom front edge of the access cover must be lifted up and then out of their slots.
5. Put the cover in a safe place.
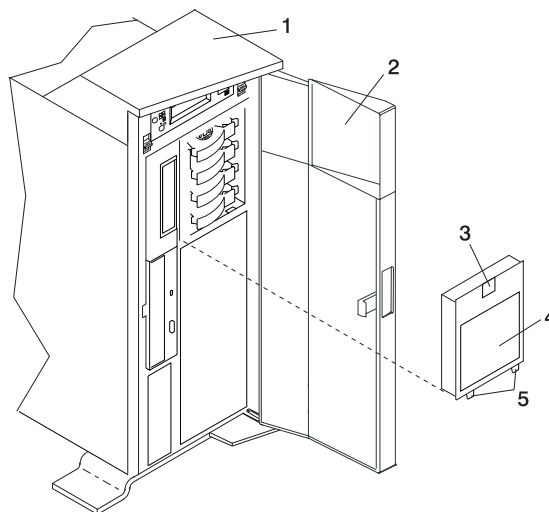
1 Model 6E4		**4** Disk Drive Access Cover	
2 Bezel Door		**5** Alignment Tabs	
3 Disk Drive Access Cover Release Tab			

Disk Drive Access Cover Replacement (Model 6E4)

To replace the disk drive access cover, do the following:

1. Insert the two alignment tabs, located on the bottom front edge of the access cover, into the two slots located on the front bezel.
2. After inserting the alignment tabs into the slots, pivot the access cover up until the release tab clicks into the closed position.
3. Close the bezel door.

Right Side Cover (System Base) Removal (Model 6E4)

To remove the right side cover (system base), do the following:

1. Remove the bezel door as described in "Bezel Door Removal" on page 380.
2. Remove the front bezel as described in "Front Bezel Removal (Model 6E4)" on page 382.
3. Remove the top cap as described in "Top Cap Removal (Model 6E4)" on page 371.
4. Remove the operator panel as described in "Operator Panel Removal" on page 423.
5. Remove the back cover as described in "Back Cover Removal (Model 6E4)" on page 376.
6. Remove the outer service access cover as described in "Outer Side Cover Removal (Model 6E4)" on page 374.
7. Remove the top cover as described in "Top Cover Removal (Model 6E4)" on page 372.
8. Remove the four retaining screws that secure the system chassis to the system base.
9. Use three people to lift the system up and off the alignment pins.
10. To remove the system base plate, lay the system onto its side and remove the four retaining screws.
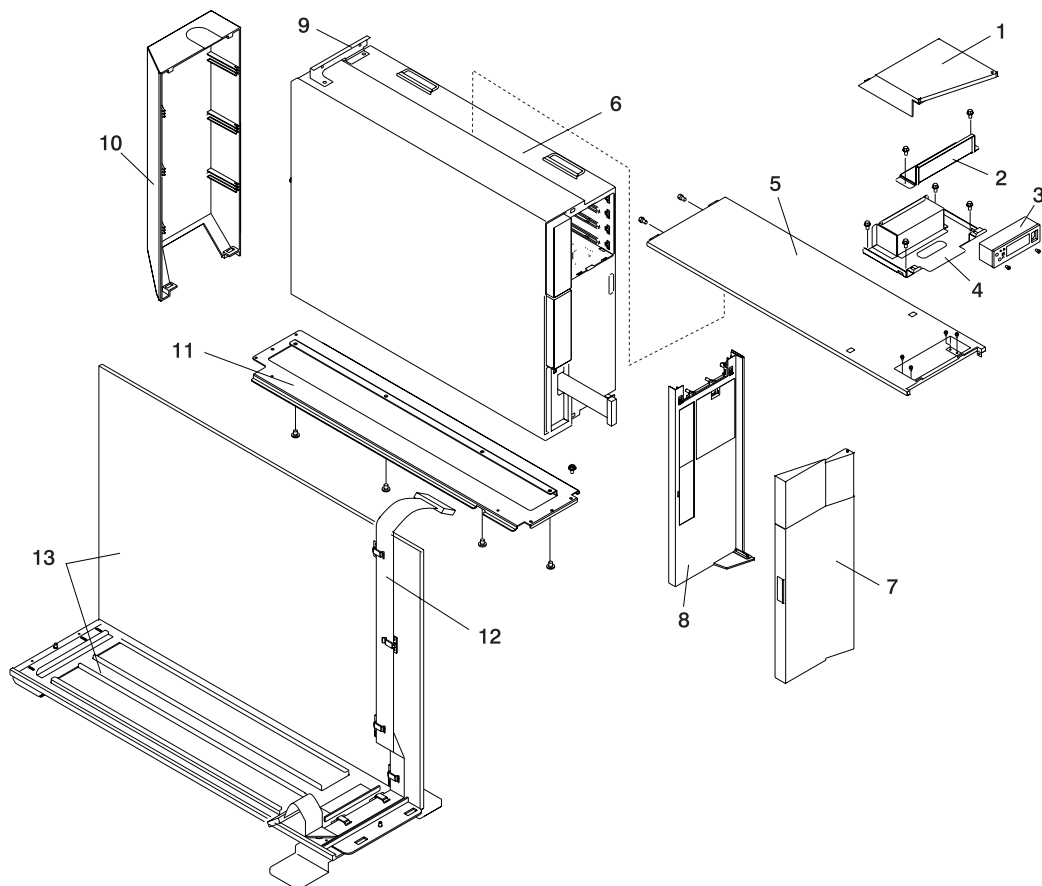
1 Top Cap		**8** Bezel
2 Operator Panel EMC Bracket		**9** Rear Top Cover Mounting Bracket
3 Operator Panel		**10** Rear Cover
4 Operator Panel Bracket		**11** System Base Plate
5 Top Cover		**12** Operator Panel Extension Cable
6 Model 6E4		**13** Right Side Cover (System Base)
7 Bezel Door		

Right Side Cover (System Base) Replacement (Model 6E4)

To replace the right side cover (system base), do the following:

1. Ensure that the system base plate is secured to the system chassis. If the system base plate has not been secured to the system chassis, lay the system chassis onto its side and secure the system base plate with four retaining screws.

2. Using three people, lift the system up and seat the system chassis and the attached mounting plate over the two alignment pins. The alignment pins are located at each end of the system base.

3. Using four retaining screws, secure the system chassis to the system base .

4. Replace the top cover as described in "Top Cover Replacement (Model 6E4)" on page 373.

5. Replace the outer service access cover as described in "Outer Side Cover Replacement (Model 6E4)" on page 374.

6. Replace the back cover as described in "Back Cover Replacement (Model 6E4)" on page 377.

7. Replace the top cap as described in "Top Cap Replacement (Model 6E4)" on page 371.

8. Replace the operator panel as described in "Operator Panel Replacement" on page 424.

9. Replace the front bezel as described in "Front Bezel Replacement (Model 6E4)" on page 382.

10. Replace the bezel door as described in "Bezel Door Replacement" on page 380.

Bezel Door (Model 6E4)

The following procedure covers removal and replacement of the bezel door.

Bezel Door Removal

Refer to the following illustration while you perform the steps in this procedure.

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.
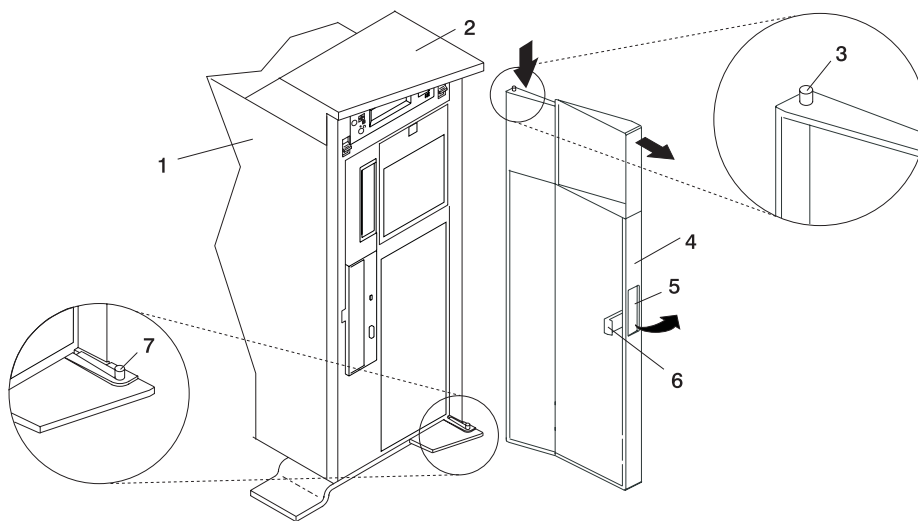
1 Model 6E4	**4** Bezel Door
2 System Handle Assembly	**5** Bezel Door Handle
3 Bezel Door Top Retaining Post	**6** Bezel Door Lock Tab
	7 Bezel Door Lower Retaining Post

Bezel Door Replacement

To replace the bezel door, do the following:

1. Place 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.

   Note: The mating hole for the top post is located on the bottom side of the system handle assembly.
4. Close the bezel door.

Bezels

Before performing the following procedures, read the "Safety Notices" on page xi.

Front Bezel Removal (Model 6C4)

To remove the bezel, do the following:

1. Open the front rack door and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.
2. Press in on both bezel-release tabs at the same time. See the following illustration for bezel-release tab locations.
3. Gently pull the bezel away from the system.
4. Put the bezel in a safe place.
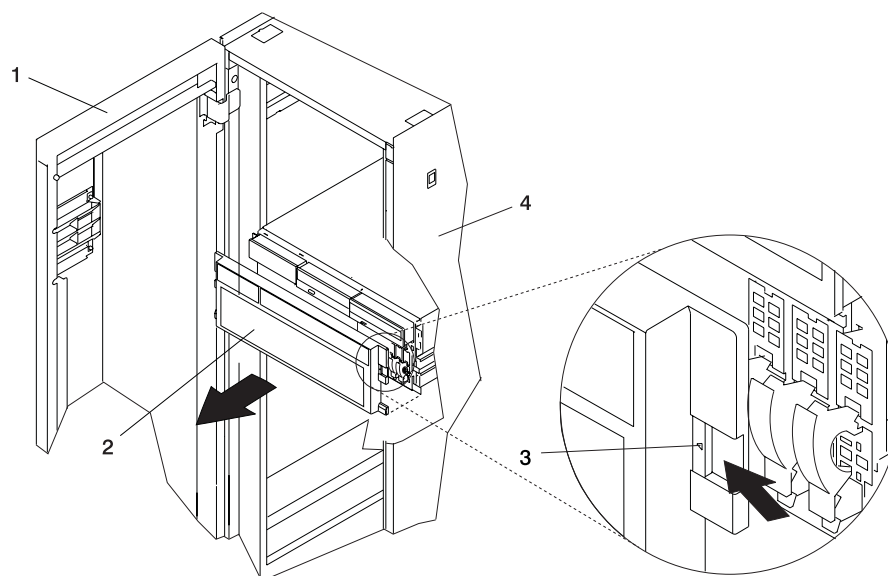
1	Rack Door	**3**	Bezel-Release Tab (Located on each side of bezel)
2	Bezel	**4**	19-Inch Rack

Front Bezel Replacement (Model 6C4)

To replace the front bezel, do the following:

1. Open the front rack door and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.
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. Push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.
6. Close the rack door.

Front Bezel Removal (Model 6E4)

Refer to the following illustrations while you perform the steps in this procedure.

To remove the front bezel, do the following:

1. Remove the bezel door as described in "Bezel Door (Model 6E4)" on page 380.
2. Press down on the two bezel-release levers.
3. Pull the top of the bezel out and away from the system chassis.
4. Gently pull the bezel up off the base, releasing the lower bezel locking tabs.
5. Put the bezel and bezel door in a safe place.
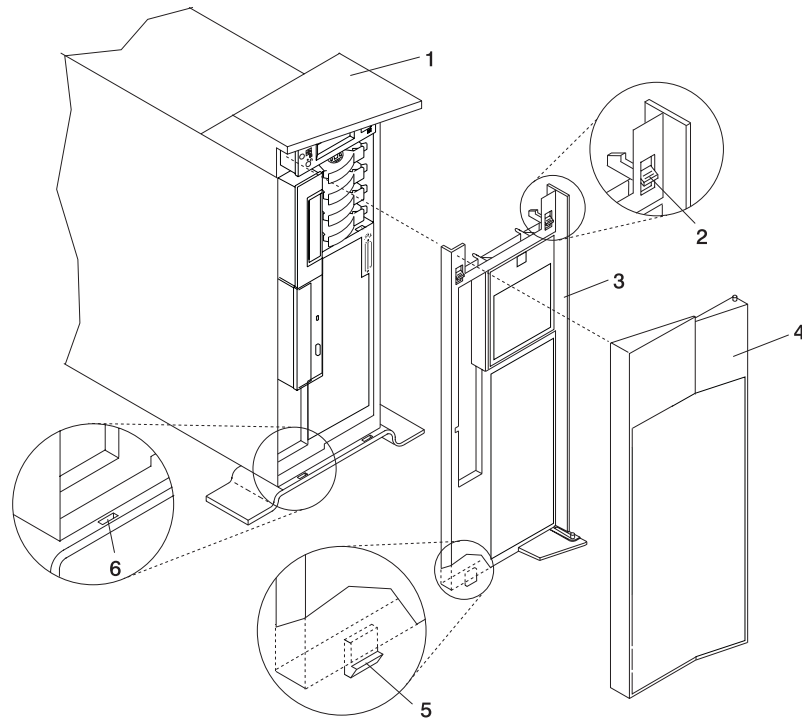
1 Model 6E4	**4** Front Door
2 Bezel-release lever	**5** Lower Bezel Locking Tab (Quantity 2)
3 Front Bezel	**6** Lower Bezel Retaining Slots (Quantity 2)

Front Bezel Replacement (Model 6E4)

To replace the front bezel, do the following:

1. Place the two lower bezel locking tabs into the retaining slots located on the chassis base.
2. Rotate the bezel up toward the top of the chassis, ensuring that the aligning pins are aligned with their mating holes located on the chassis.
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 6E4)" on page 380.

PCI Adapters

Before performing this procedure, read "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 in this system unit, you *must* remove the blue handle or support from the card.

2. With this system, you can install 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.

If you are removing a PCI adapter that is:

* Non-hot-pluggable, go to "Non-Hot-Pluggable PCI Adapter Removal" on page 385.
* Hot-pluggable, go to "Hot-Pluggable PCI Adapter Removal" on page 389.

PCI Hot-Plug Manager Access

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 any hot-pluggable procedures, nor does it support the hot-plugging of any hot-pluggable PCI adapters. A system with the Linux operating system installed on one or more partitions must be shut down and powered off before replacing any PCI adapter assigned to a Linux partition. When replacing a PCI adapter in any partition with the Linux operating system installed, follow the non-hot-pluggable adapter procedures.

Note: A PCI adapter is only hot-pluggable if the PCI adapter is supported for hot-plug applications. See the *PCI Adapter Placement Reference*, order number SA38-0538, for complete information regarding your PCI adapter.

Accessing Hot-Plug 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-plug menus, do the following:

1. Log in as root user.

2. At the command line, type smitty.

3. Select **Devices**.

4. Select **PCI Hot Plug Manager** and press Enter.

5. The PCI Hot-Plug Manager menu displays. Return to the procedure that directed you here. The following section describes the menu options.

PCI Hot-Plug Manager Menu

The following options are available from the PCI Hot Plug Manager menu:

Note: For information about the PCI slot LED states, see "Component LEDs" on page 470.

List PCI Hot-Plug Slots

Provides a descriptive list of all slots that support PCI hot-plug 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-Plug Adapter

Allows the user to add a new PCI hot-plug-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-Plug Adapter

Allows the user to remove an existing adapter, or replace an existing adapter with an identical one. For this option to work, 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-Plug Slot

Allows the user to identify a PCI slot. The selected PCI slot will go into the Identify state. See "Component LEDs" on page 470.

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, the customer 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, remove, and replace 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. Consult with your system administrator or software support to determine the correct method to configure the replacement device.

Non-Hot-Pluggable PCI Adapter Removal

To remove a PCI adapter, do the following:

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.
2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.
3. 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 has been completely disconnected.
4. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375. See the following illustration.
5. Determine which adapters you plan to remove, then label and disconnect all cables attached to that adapter.
6. Record the slot number and location of each adapter being removed.

   Note: Adapter slots are numbered on the rear of the system unit.
7. 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 363.
8. If you are removing a long adapter, make note of how the back edge of the adapter slides into the molded grooves located on the back wall of the PCI cooling fan bracket.
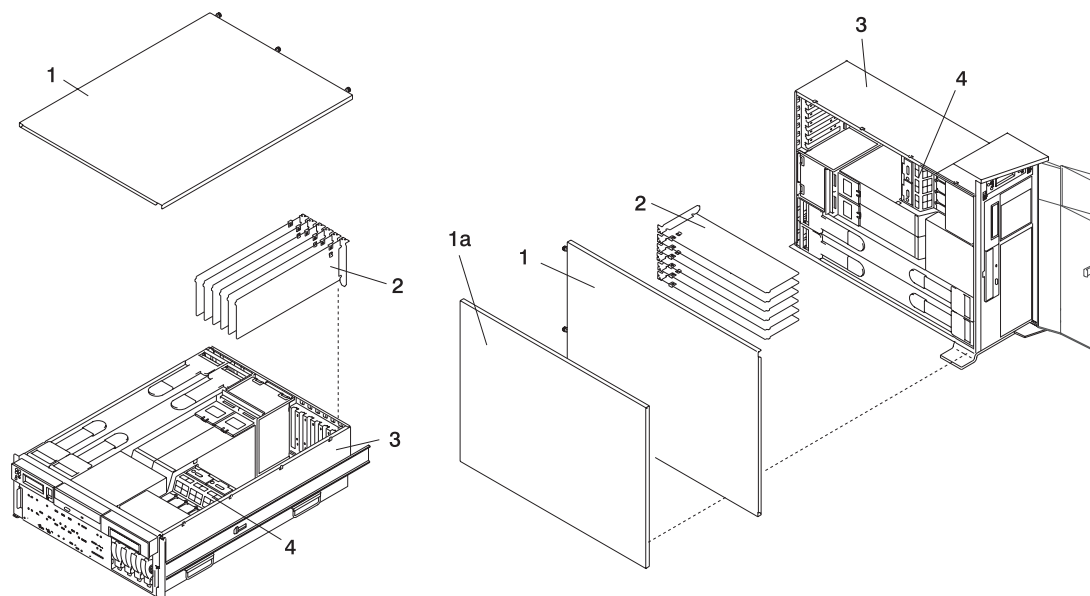
1 Service Access Cover   **3** System Unit
1a Outer Access Cover   **4** PCI Cooling Fan Bracket
2 PCI Adapters

9. Rotate the adapter retainer clip counterclockwise, as shown in the following illustration.

10. The tab resting on the adapter retention bracket should spring to a vertical position, coming to rest next to the adapter retention latch.

11. 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.

12. If you do not plan to install another adapter into the vacated slot, seal the expansion slot using an expansion-slot cover. If you are installing another adapter, go to "Adding or Replacing a Non-Hot-Pluggable PCI Adapter" on page 387.

13. If you have other options to install, refer to "Procedure List" on page 362. If you do not have other options to install, continue on to the next step.

14. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

15. On a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

16. Connect the adapter cables.

17. Reconnect the power source to the system.

18. On a Model 6C4, route the cables through the cable-management arm.

19. Go to ″MAP 0410: Repair Checkout″ in *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*. If necessary, refer to "Starting the System without an HMC Attached" on page 364. After you have completed checking the system close, the rack or system doors.
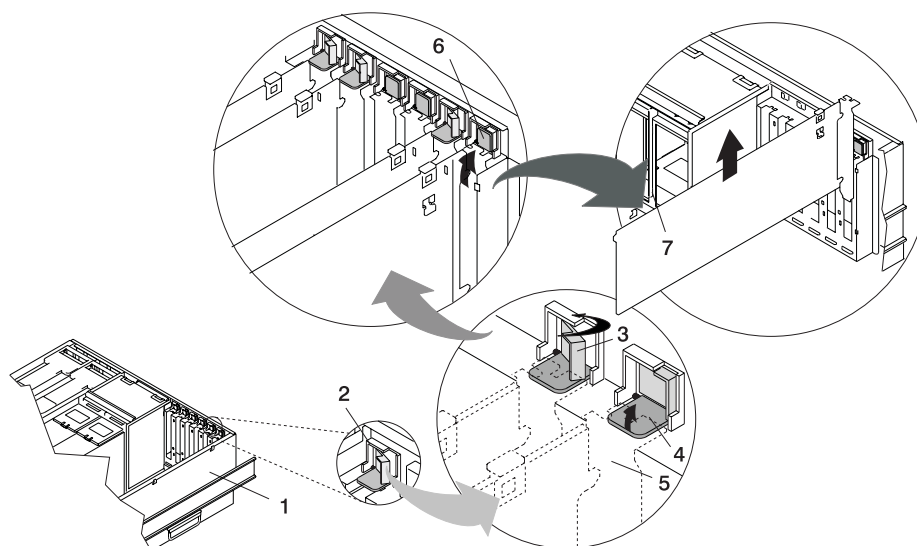
1	Model 6C4 or Model 6E4	**5**	PCI adapter faceplate (dotted lines)
2	Adapter Retainer Assembly	**6**	Adapter Retainer Assembly (in the unlocked position)
3	Adapter Retainer Assembly (retainer seat down and the retainer clip in the locked position)	**7**	PCI Adapter
4	Adapter Retainer Assembly (retainer seat down and the retainer clip in the unlocked position)		

Adding or Replacing a Non-Hot-Pluggable PCI Adapter

To add or install an adapter, do the following:

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.

2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.

3. 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.

4. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

5. Refer to the *PCI Adapter Placement Reference* for information regarding slot restrictions for adapters that can be used in this system.

6. If necessary, remove the adapter expansion slot shield.

7. 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 363.

8. If necessary, remove the adapter from the antistatic package.

   Attention: Avoid touching the components and gold-edge connectors on the adapter.

9. Place the adapter, component-side up, on a flat, static-protective surface.
10. Set any jumpers or switches as instructed by the adapter's manufacturer.
11. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the PCI riser card.
12. 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 located on the PCI riser card. Inserting and seating the adapter card improperly might cause damage to the PCI riser card or the adapter.

13. Lower the tab onto the PCI adapter EMC shield/connector faceplate. Rotate the adapter retainer clip clockwise until it covers the tab at approximately a 45-degree angle. See the following illustration.
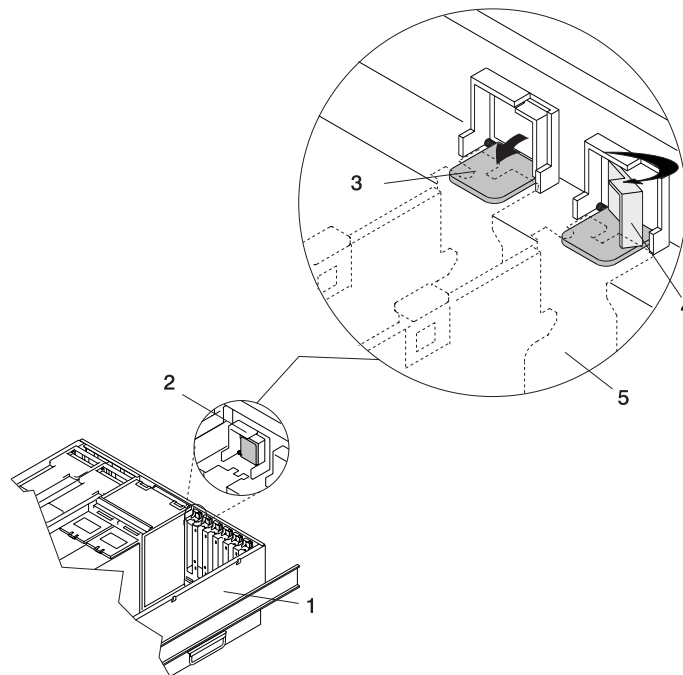
1 System Unit
2 Adapter Retainer Assembly (in the unlocked position)
3 Adapter Retainer Assembly (retainer seat down and the retainer clip in the unlocked position)
4 Adapter Retainer Assembly (retainer seat down and the retainer clip in the locked position)
5 PCI adapter face plate (dotted lines)

14. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.
15. If you are servicing a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.
16. Connect the adapter cables.
17. Reconnect the power source to the system.
18. If you are servicing a Model 6C4, route the cables through the cable-management arm.
19. Go to ″MAP 0410: Repair Checkout″ in *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems*. If necessary, refer to "Starting the System without an HMC Attached" on page 364. After you have completed checking the system, close the rack or system doors.

Hot-Pluggable PCI Adapter Removal

Note: Removing a hot-pluggable PCI adapter requires 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 also be taken offline. 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*.

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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 remove a hot-pluggable PCI adapter, do the following:

1. On a Model 6C4, open the front and rear rack doors, and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.
2. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.
3. Determine which adapters you plan to remove.
4. Record the slot number and location of each adapter being removed.

   Note: Adapter slots are numbered on the rear of the system unit.
5. Ensure that any processes or applications that might use the adapter are stopped.
6. Refer to "PCI Hot-Plug Manager Access" on page 383, and follow the steps in the access procedure to select **PCI Hot Plug Manager**. Then return here to continue.
7. Select **Unconfigure a Device** and press Enter.
8. Press F4 to display the Device Names menu.
9. Select the adapter you are removing.
10. Use the Tab key to answer NO to **Keep Definition** and YES to **Unconfigure Child Devices**. Press Enter.
11. 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.
12. Label and disconnect all cables attached to that adapter.
13. Press F3 to return to the PCI Hot-Plug Manager menu.
14. Select **List PCI Hot-Plug Slots**.
15. If the List PCI Hot-Plug Slots menu indicates that the slot is not empty, go to step 16.

16. If the List PCI Hot-Plug Slots menu indicates that the slot is empty, do the following:
    a. Select **F3** to cancel.
    b. Select **Add PCI Hot-Plug Adapter**, and press Enter. The display screen indicates that the PCI slot is empty.
    c. On the display screen, select the indicated empty slot. Look at the adapter you intend to remove. A slow blinking amber LED located next to the adapter on the PCI riser card indicates that the slot has been identified. Press Enter. The adapter has been put into the action state.
    d. Disconnect any cables that are connected to the adapter being removed.
    e. Completely remove the hot-plug adapter from the slot. The LED goes off.
    f. Go to step 24 on page 391.
17. Move the cursor to select the adapter that you are removing and press Enter. (The description entry displays as `unknown`).
18. Press the Tab key until the entry field displays the remove operation and then press the Enter key. 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. 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 363.
21. If you are removing a long adapter, make note of how the back edge of the adapter slides into the molded grooves located on the back wall of the PCI cooling fan bracket.
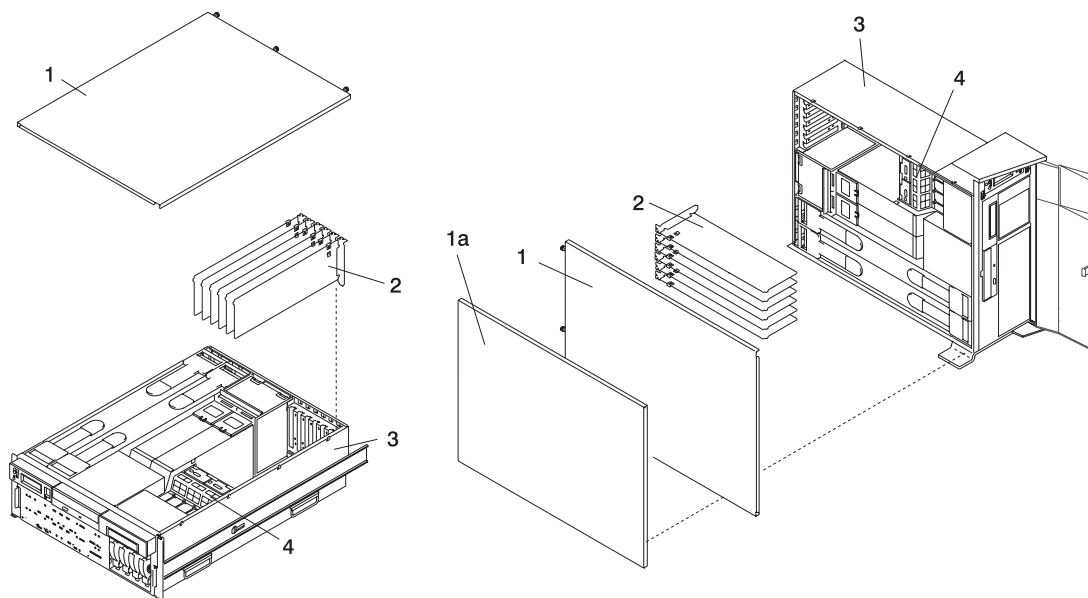
1	Service Access Cover	**3**	System Unit
1a	Outer Side Cover	**4**	PCI Cooling Fan Bracket
2	PCI Adapters		

22. Turn the locking latch, and lift the plastic retainer seat off the adapter.

1 System Unit		**5** PCI adapter face plate (dotted lines)	
2 Adapter Retainer Assembly		**6** Adapter Retainer Assembly (in the unlocked position)	
3 Adapter Retainer Assembly (retainer seat down and the retainer clip in the locked position)		**7** PCI Adapter	
4 Adapter Retainer Assembly (retainer seat down and the retainer clip in the unlocked position)			

23. Carefully grasp the adapter by the edges, and pull it straight out from the PCI riser card.
24. If you are not installing another adapter in this slot, place an expansion slot cover in the adapter slot opening.
25. Lower the plastic retainer seat over the PCI adapter faceplate.
26. Rotate the locking latch clockwise until it clicks into the locked position.
27. 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.
28. If you do not have other adapters to remove, continue with the next step.

    OR

    If you have other adapters to remove, press the F3 key to return to the PCI Hot-Plug Manager menu and then return to step 14 on page 389.
29. Press F10 to exit the Hot-Plug Manager.
30. 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.
31. If you have other options to install, refer to "Procedure List" on page 362. If you do not have other options to install, continue on to the next step.
32. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.
33. On a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.
34. Connect the adapter cables.
35. On a Model 6C4, route the cables through the cable-management arm.
36. On a Model 6C4, close the rack doors.

    On a Model 6E4, close the bezel door.

Replacing a Hot-Pluggable PCI Adapter

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 "Hot-Pluggable PCI Adapter Removal" on page 389 and "Installing a Hot-Pluggable PCI Adapter" on page 396.

2. Removing a hot-pluggable PCI adapter requires 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 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 replace a hot-plug PCI adapter, do the following:

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.

2. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

3. Refer to the *PCI Adapter Placement Reference*, order number SA38-0538, for information regarding slot restrictions for adapters that can be used in this system.

4. 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 363.

5. Determine the slot from which you are removing the adapter.

6. Ensure that any processes or applications that might use the adapter are stopped.

7. Refer to "PCI Hot-Plug Manager Access" on page 383, and follow the steps in the access procedure to select **PCI Hot Plug Manager**. Then return here to continue.

8. Select **Unconfigure a Device** and press Enter.

   Note: If the adapter or device has a problem that prevents it from being replaced by hot-plug, it must be replaced by shutting down the system. Go to "Adding or Replacing a Non-Hot-Pluggable PCI Adapter" on page 387.

9. Press F4 to display the Device Names menu.

10. From the menu, select the adapter you are removing.

11. Use the tab key to answer YES to **Keep Definition** and YES to set **Unconfigure Child Devices**. Press Enter.

12. 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.

13. Press F3 to return to the PCI Hot-Plug Manager menu.

14. Select **List PCI Hot-Plug Slots** and press Enter.

15. If the List PCI Hot-Plug Slots menu indicates that the slot is not empty, go to substep 17. If the List PCI Hot-Plug Slots menu indicates that the slot is empty, do the following:

    a. Select F3 to cancel.

    b. Select **Add PCI Hot-Plug Adapter**, and press Enter. The display screen indicates that the PCI slot is empty.

    c. On the display screen, select the indicated empty slot. Look at the adapter you intend to replace or reseat. A slow blinking amber LED located on the PCI riser card is indicating that the slot has been identified. Press Enter. The adapter is now in the action state.

    d. Completely remove the hot-plug adapter from the slot. The LED goes off.

    e. Reinstall the adapter, ensuring that it is correctly seated. Press Enter.

    f. Select F3 to return to the PCI Hot-Plug Adapter Menu.

    g. Select **Install/Configure Devices Added after IPL**.

    h. Select F3 to return to the PCI Hot-Plug Adapter Menu.

    i. Connect the appropriate cables and devices to the adapter.

    j. Select **List PCI Hot-Plug Slots**, and press Enter.

    k. Return to the error code or procedure that sent you here, if the List PCI Hot-Plug Slots menu indicates that the slot for the just replaced or reseated adapter is empty.

16. Select F3 to cancel.

17. Select **Replace/Remove a PCI Hot-Plug Adapter** and press Enter. The Replace/Remove a PCI Hot-Plug Adapter menu displays.

18. Move the cursor to select the adapter that you are removing, and press Enter.

19. 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.

20. When you are instructed to remove the adapter from the adapter slot, disconnect any cables that are connected to the adapter being removed.

21. Turn the locking latch, and lift the plastic stop for the adapter.

1 System Unit	**5** PCI adapter faceplate (dotted lines)
2 Adapter Retainer Assembly	**6** Adapter Retainer Assembly (in the unlocked position)
3 Adapter Retainer Assembly (retainer seat down and the retainer clip in the locked position)	**7** PCI Adapter
4 Adapter Retainer Assembly (retainer seat down and the retainer clip in the unlocked position)	

22. Carefully grasp the adapter by the edges, and pull it straight out from the PCI riser card.
23. If necessary, remove the replacement adapter from the antistatic package.

   Attention: Avoid touching the components and gold-edge connectors on the adapter.
24. Place the adapter, component-side up, on a flat, static-protective surface.
25. Set any jumpers or switches as instructed by the adapter manufacturer.
26. 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. If you are installing a full-length adapter, ensure that both ends of the adapter engage the card guides.
27. Lower the plastic retaining seat over the PCI adapter face plate (dotted lines). Rotate the locking latch clockwise until it clicks into the locked position. Some full-length cards can be supported by rotating the blue adapter latch on the right end of the adapter counterclockwise.
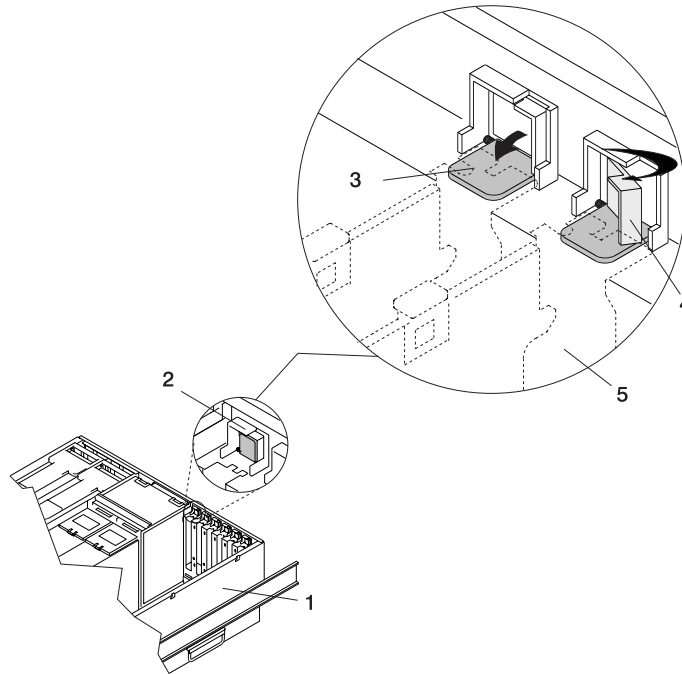
1 System Unit
2 Adapter Retainer Assembly (in the unlocked position)
3 Adapter Retainer Assembly (retainer seat down and the retainer clip in the unlocked position)
4 Adapter Retainer Assembly (retainer seat down and the retainer clip in the locked position)
5 PCI adapter faceplate (dotted lines)

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 the F3 key to return to the PCI Hot-Plug 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. Consult with your system administrator or software support to determine the correct method to configure the replacement device.
32. If you do not have other adapters to replace, continue with the next step.

    OR

    If you have other adapters to replace, press the F3 key to return to the PCI Hot-Plug Manager menu and then return to step 14 on page 393.
33. Press F10 to exit the Hot-Plug 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.

    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.

34. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

35. On a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

36. Connect the adapter cables.

37. On a Model 6C4, route the cables through the cable-management arm.

38. On a Model 6C4, close the rack doors.

    On a Model 6E4, close the bezel door.

Installing a Hot-Pluggable PCI Adapter

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 add or install an adapter, do the following:

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.

2. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

3. Refer to the *PCI Adapter Placement Reference*, order number SA38-0538, for information regarding slot restrictions for adapters that can be used in this system.

4. If necessary, remove the adapter expansion slot shield.

5. 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 363.

6. If necessary, remove the adapter from the antistatic package.

   Attention: Avoid touching the components and gold-edge connectors on the adapter.

7. Place the adapter, component-side up, on a flat, static-protective surface.

8. Set any jumpers or switches as described by the adapter's manufacturer.

9. Refer to "PCI Hot-Plug Manager Access" on page 383, and follow the steps in the access procedure to select **PCI Hot Plug Manager**. Then return here to continue.

10. From the PCI Hot-Plug Manager menu, select **Add a PCI Hot-Plug Adapter** and press Enter. The Add a Hot-Plug Adapter window displays.

11. See the *PCI Adapter Placement Reference*, order number SA38-0538, for adapter placement information. Then select an empty PCI slot for the adapter.

12. Select the appropriate empty PCI slot from the ones listed on the screen, and press Enter.

13. Rotate the locking retainer clip, lift the plastic stop, and remove the expansion slot cover.
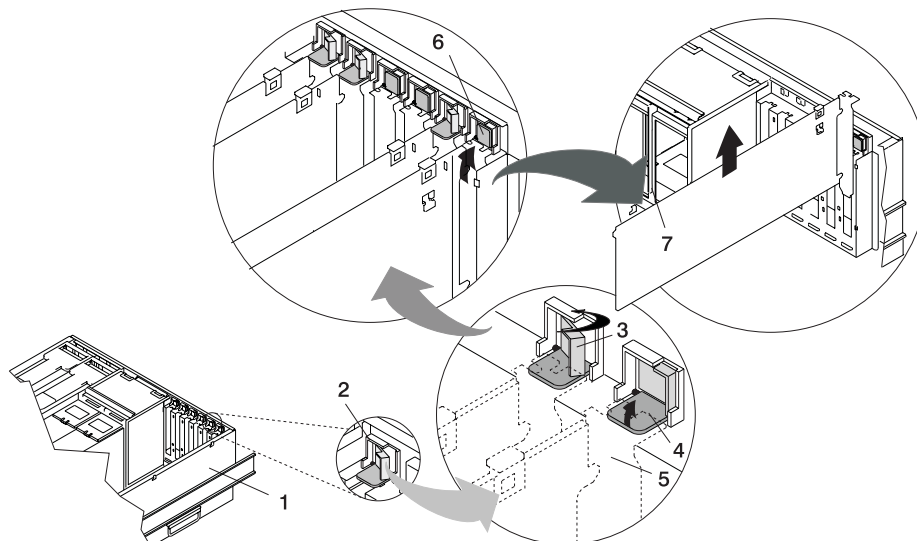
1	System Unit	**5**	PCI adapter faceplate (dotted lines)
2	Adapter Retainer Assembly	**6**	Adapter Retainer Assembly (in the unlocked position)
3	Adapter Retainer Assembly (retainer seat down and the retainer clip in the locked position)	**7**	PCI Adapter
4	Adapter Retainer Assembly (retainer seat down and the retainer clip in the unlocked position)		

14. Follow the instructions on the screen to install the adapter until the LED for the specified PCI slot is set to the Action state. See "Component LEDs" on page 470.

15. 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.

16. Lower the tab onto the PCI adapter faceplate. Rotate the adapter retainer clip clockwise until it covers the tab at approximately a 45-degree angle. See the following illustration.
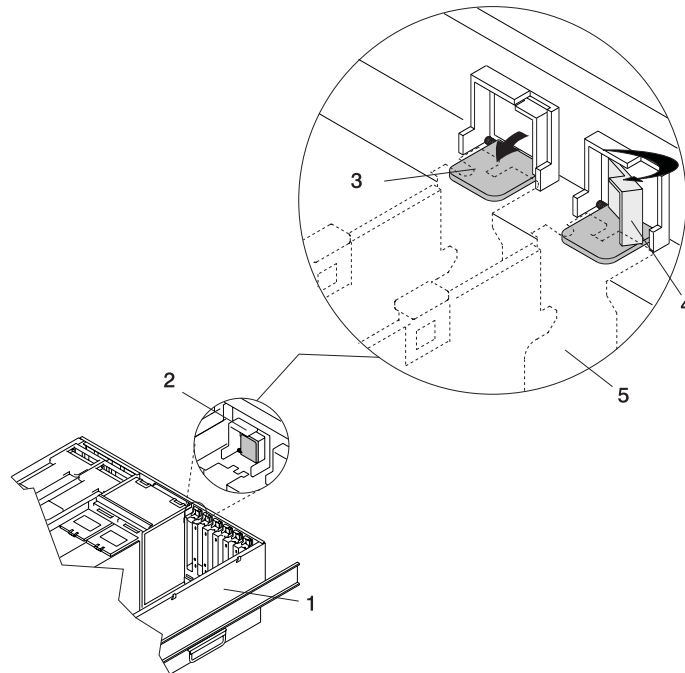
1 System Unit
2 Adapter Retainer Assembly (in the unlocked position)
3 Adapter Retainer Assembly (retainer seat down and the retainer clip in the unlocked position)
4 Adapter Retainer Assembly (retainer seat down and the retainer clip in the locked position)
5 PCI adapter faceplate (dotted lines)

17. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.
18. On a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.
19. Connect the adapter cables.
20. On a Model 6C4, route the cables through the cable-management arm.
21. On a Model 6C4, close the rack doors.

On a Model 6E4, close the bezel door.

Fans

Before performing the following procedures, read "Safety Notices" on page xi.

Removing a Processor Fan in a Non-Hot-Swap Environment

Note: A processor fan in a non-hot-swap environment means that your system is configured at the factory with one processor fan installed. To place your system into an environment that enables the hot-swapping of the processor fans, you must purchase a second processor fan and insert it into the unused docking connector. It is not necessary to shut down the system when adding the second processor fan.

To remove a processor fan in a non-hot-swap environment, do the following:

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.

2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.

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. Continue with the procedure in "Hot-Swap Fan Assembly Removal" on page 401.
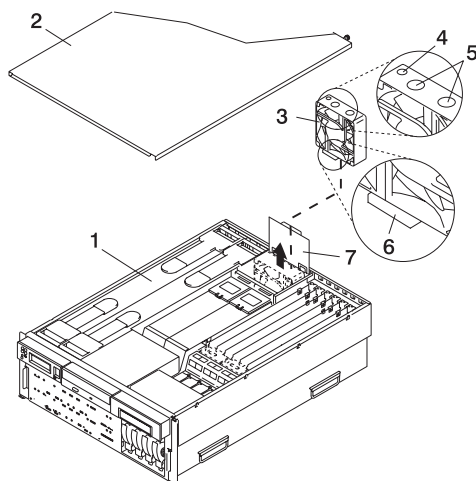
1	Model 6C4	**4**	Processor Fan Amber LED
2	Service Access Cover	**5**	Finger Holes
3	Processor Card Cooling Fan (Fan #1)	**6**	Processor Fan Bottom Connector
		7	Processor Cooling Fans Access Cover
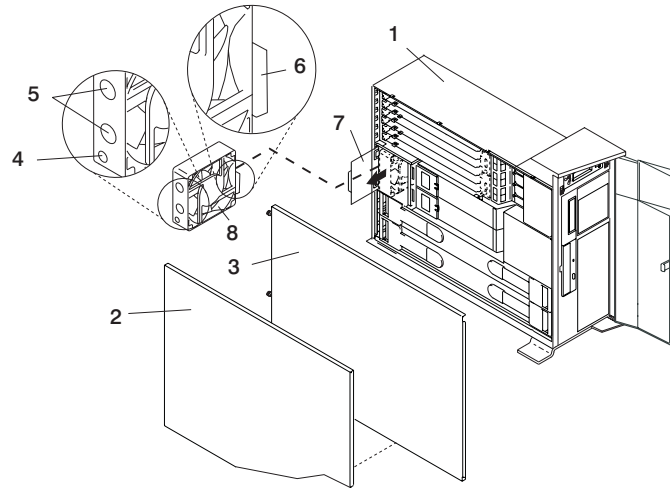
1	Model 6E4	**5**	Finger Holes
2	Outer Side Cover	**6**	Processor Fan Bottom Connector
3	Service Access Cover	**7**	Processor Cooling Fans Access Cover
4	Processor Fan Amber LED	**8**	Processor Card Cooling Fan (Fan #1)

Replacing a Processor Fan in a Non-Hot-Swap Environment

To replace a processor fan in a non-hot-swap environment, do the following:

1. Lift the processor fan access cover.

2. Place your thumb and index finger into the two holes located on the top of the replacement fan.

3. Align the connector located on the fan assembly with the docking connector located on the CEC backplane.

4. Insert and firmly press the replacement fan into the docking connector closest to the back of the chassis.

5. Ensure the cooling fan access cover springs back to the closed position.

6. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

7. On a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

8. Reconnect the power cables.

9. Power on the system as described in "Starting the System without an HMC Attached" on page 364.

10. After the Model 6C4 has successfully powered on, close the rack doors.

    After the Model 6E4 has successfully powered on, close the bezel door.

Hot-Swap Fan Assembly Removal

This section contains procedures for removing processor cooling fans and PCI adapter cooling fans. Select the removal procedure according to the hot-swap fan assembly that you are servicing.

To remove a hot-swap fan, do the following:

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.

2. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

3. Locate the cooling fan assemblies, as shown in the following illustration.

4. The failing fan assembly has the amber-colored LED that is lit.

   Note: All of the hot-swap fan assemblies used in your system have an amber-colored LED located on the top of the fan assembly. When lit, this LED indicates that its fan assembly has a problem. The fan might not be spinning or is not spinning fast enough to help cool the system unit.

Hot-Swap Processor Fan Removal

If you are servicing one of the processor cooling fan assemblies, do the following:

1. Lift the processor fan access cover.

2. Place your thumb and index finger into the two finger holes, located on the top of the faulty fan.

3. Lift the faulty fan out of the system.

   Notes:

   a. The processor cooling fans have a docking connector, located on the bottom of the fan assembly. The docking connectors automatically disconnect as the fan is being removed from the chassis.

   b. Unless you are performing a hot-swap removal or replacement of the processor fans, keep the processor fan access cover closed.

Hot-Swap PCI Adapter Fan Removal

Attention: The system will power off if the failing PCI cooling fan has not been exchanged within five minutes.

If you are servicing one of the PCI adapter cooling fan assemblies, do the following:

1. Disconnect the cooling fan's power cable from the connector, located on the front of the fan assembly.

2. Place your index finger below the front connector and slide the fan out of the fan cage.

   Note: The adapter cooling fan assemblies are arranged in stacked pairs. You cannot replace a single fan in the stacked pair.

Model 6C4
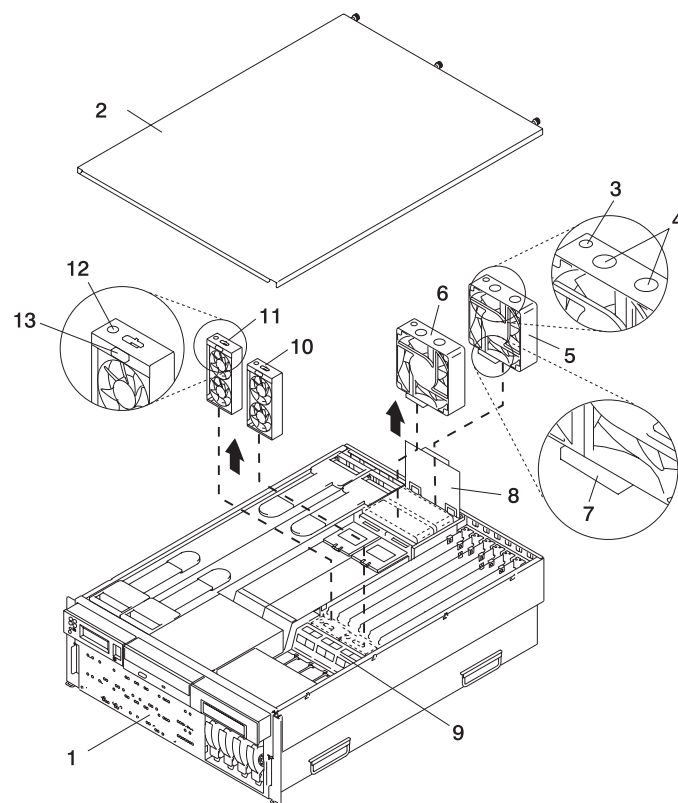
1 Model 6C4
2 Service Access Cover
3 Processor Fan Amber LED
4 Finger Holes

5 Processor Card Cooling Fan (Fan #1)

6 Processor Card Cooling Fan (Fan #2)

7 Processor Fan Bottom Connector
8 Processor Cooling Fans Access Cover
9 Adapter Cooling Fan Retaining Bracket
10 PCI Adapter Cooling Fan Assembly (Fan #4)
11 PCI Adapter Cooling Fan Assembly (Fan #3)
12 PCI Adapter Fan Amber LED
13 Adapter Cooling Fan Front Connector

Model 6E4
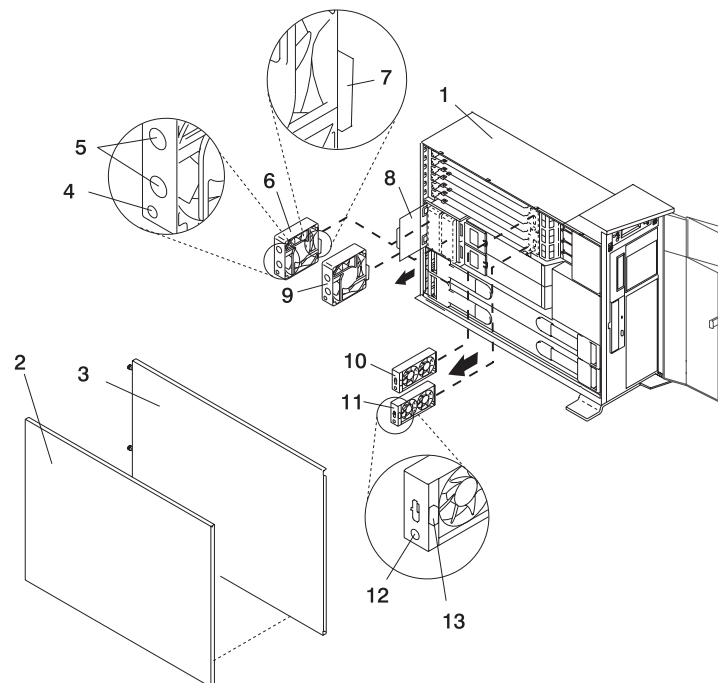
1	Model 6E4	**8**	Processor Cooling Fans Access Cover
2	Outer Side Cover	**9**	Processor Card Cooling Fan (Fan #2)
3	Service Access Cover	**10**	Adapter Cooling Fan Assembly (Fan #4)
4	Processor Fan Amber LED	**11**	Adapter Cooling Fan Assembly (Fan #3)
5	Finger Holes	**12**	PCI Adapter Fan Amber LED
6	Processor Card Cooling Fan (Fan #1)	**13**	PCI Adapter Cooling Fan Front Connector
7	Processor Fan Bottom Connector		

Hot-Swap Fan Assembly Replacement

Note: 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, ask the customer to 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.

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.

The hot-swap fan removal section has a procedure for processor cooling fans and PCI adapter cooling fans. Select the removal procedure according to the hot-swap fan assembly you are servicing.

To replace your system's hot-swap cooling fans, do the following:

Hot-Swap Processor Fan Replacement

When installing a hot-swap processor cooling fan, do the following:

1. Lift the processor fan access cover.

2. Place your thumb and index finger into the two holes located on the top of the replacement fan.

3. Align the connector located on the fan assembly with the docking connector located on the CEC backplane.

4. Insert the replacement fan and firmly press it into its docking connector.

5. Verify that the replaced cooling fan's LED is not lit. If the fan LED is lit, reseat the fan or the fan cable.

6. For proper cooling of the processor, ensure the processor cooling fan access cover springs back to the closed position.

7. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

8. On a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369 and close the rack doors.

   On a Model 6E4, close the bezel door.

Hot-Swap PCI Adapter Fan Replacement

Attention: The system will power off if the failing PCI cooling fan has not been exchanged within five minutes.

When installing a hot-swap PCI adapter cooling fan, do the following:

1. Before inserting the fan assembly into the fan cage, ensure that the fan connector located on the fan housing is facing the front of the system.

2. Insert the replacement adapter cooling fan assembly into the cooling fan cage.

   Note: When seated correctly, the top edge of the fan assembly and the fan cage are flush with each other.

3. Reconnect the power cable to the connector located on the front of the fan assembly.

4. Verify that the replaced cooling fan's LED is not lit. If the fan LED is lit, reseat the fan or the fan cable.

5. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

6. On a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369 and close the rack doors.

   On a Model 6E4, close the bezel door.

Media Drives (Diskette, CD-ROM, Tape, or Disk Drive)

Note: The two media bays can be used to house an IDE CD-ROM, IDE DVDROM, SCSI DVDRAM, tape drive, or diskette drive. See the illustration on 406 and 407 for the location of the two media bays. However, if your system has an IDE CD-ROM, it should be placed in media bay 1.

Before performing this procedure, read the following:
- "Safety Notices" on page xi
- "Laser Safety Information" on page xiii

Media Removal

To remove any of the media drives located in either media bay 1 or media bay 2, do the following:

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.
2. If you are servicing a Model 6E4, open the bezel door.
3. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.
4. 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 power source to the system has been completely disconnected.
5. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.
6. Remove the front bezel as described in "Front Bezel Removal (Model 6C4)" on page 381 or "Front Bezel Removal (Model 6E4)" on page 382.
7. Disconnect the power and signal cables from the media device that you are servicing.
8. Grasping the top front of the media device, press the release tab located on the bottom center of the media drive, and slide the media drive out of the media bay.
9. Remove the four retaining screws holding the carrier tray assembly to the media drive.
10. Put the media drive and carrier tray assembly in a safe place.

Model 6C4
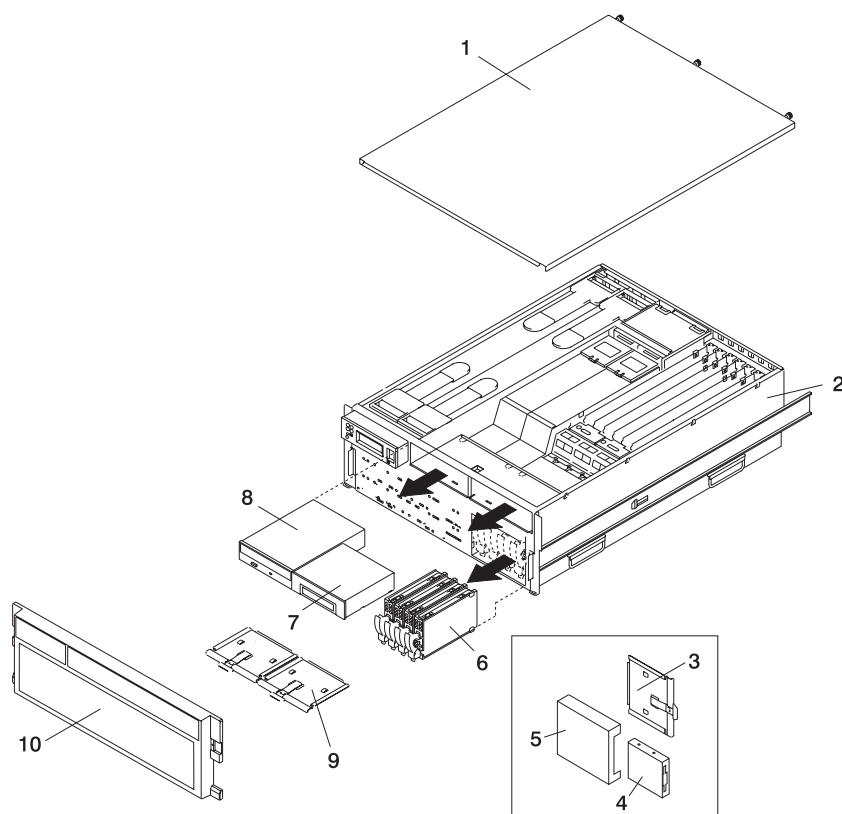
1 Service Access Cover	**6** Disk Drive (4 Pack)
2 Model 6C4	**7** Optional Media Device (for example: Tape Drive, DVD, CD-ROM, Diskette Drive)
3 Media Carrier Tray	**8** IDE CD-ROM
4 Diskette Drive (Optional)	**9** Media Carrier Trays
5 Diskette Drive Cage (Optional)	**10** Front Bezel

Model 6E4
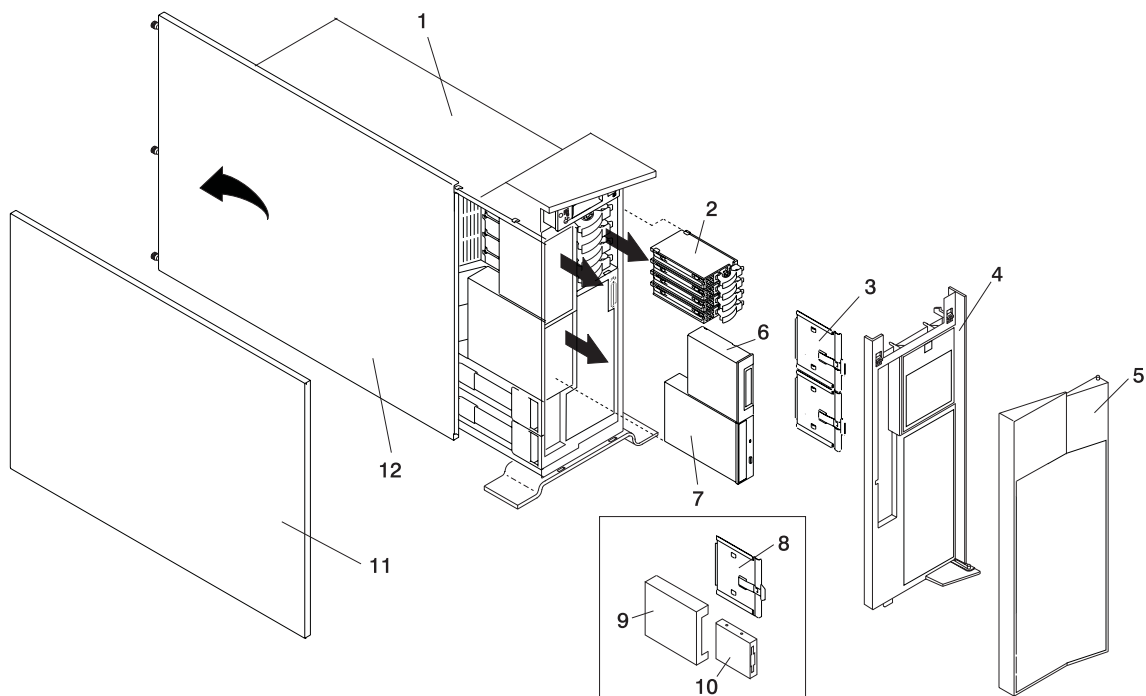
1	Model 6E4	**7**	IDE CD-ROM
2	Disk Drive (4 Pack)	**8**	Diskette Drive Carrier (Optional)
3	Media Carrier Trays	**9**	Diskette Drive Cage (Optional)
4	Front Bezel	**10**	Diskette Drive (Optional)
5	Bezel Door	**11**	Outer Side Cover
6	Optional Media Device (for example: Tape Drive, DVD, CD-ROM, Diskette Drive)	**12**	Service Access Cover

Media Replacement

To replace a media drive, 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 363.

2. Set any jumpers or switches on the device according to the documentation provided with the drive.

3. Using four retaining screws, secure the media carrier tray to the bottom of the media drive.

4. Insert the media drive into the media bay, pushing the drive in until the release tab clicks into the locked position.

5. Connect the media signal and power cables to the drive.

6. Replace the bezel as described in "Front Bezel Replacement (Model 6C4)" on page 381 or "Front Bezel Replacement (Model 6E4)" on page 382.

7. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

8. If you are servicing a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

9. Reconnect the power source to the system.

10. Power on the system as described in "Starting the System without an HMC Attached" on page 364.

11. After the Model 6C4 has successfully powered on, close the rack doors.

    After the Model 6E4 has successfully powered on, close the bezel door.

Hot-Plug Disk Drives

Before performing the following procedure, read "Safety Notices" on page xi.

Attention: The Linux operating system does not support hot-pluggable procedures, nor does it support hot-plugging of any disk drives. A system with the Linux operating system installed on one or more partitions must be shut down and powered off before replacing any disk drives assigned to a Linux partition.

Note: You do not have to power off the system to remove a hot-plug disk drive. Before you perform these procedures, ensure that the customer has taken 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-plug disk drive from the system before it has been removed from the system configuration can cause unrecoverable data corruption.

Deconfiguring (Removing) or Configuring a Disk Drive

Use this procedure if you are removing or installing a drive while the system power is turned on.

Deconfiguring (Removing)

Before removing a disk drive from a volume group, do the following:

1. Log in as root user.
2. Before a disk can be removed from a volume group, all data must be backed up and the data removed from the disk to be replaced. Use AIX Logical Volume Manager to perform this task.

   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.
3. At the command line, type `smitty`.
4. Select **System Storage Manager (Physical and Logical Storage)** and press Enter.
5. Select **Logical Volume Manager** and press Enter.
6. Select **Volume Groups** and press Enter.
7. Select **Set Characteristics of a Volume Group** and press Enter.
8. Select **Remove a Physical Volume from a Volume Group**.
9. Press F4 to list the available volume groups, then select the volume group name and press Enter.
10. Press F4 to select a physical volume, and follow the instructions on the screen to select the physical volume. Then press Enter.
11. Press F3, then select Cancel, to go back to the first menu.
12. Select **System Storage Management (Physical and Logical Storage)**.
13. Select **Removable Disk Management**.
14. Select **Remove a Disk**.
15. Select the desired disk from the list on the screen and press Enter.
16. Follow the instructions on the screen to remove the drive.
17. When you are asked ″Are you sure?,″ press Enter. The power LED on the drive that you selected will remain on.
18. Remove the disk drive by pulling the disk drive lever toward you until it is completely open. 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.
19. Press F10 to exit **smitty**.

Configuring (Replacing)

1. Remove the disk drive from its protective packaging, and open the drive latch handle.
2. Install the disk drive in the drive slot. Align the disk drive with the drive slot rails, and slide the disk drive into the slot until it contacts the backplane at the rear of the drive bay. The drive should be in far enough for the latch handle to engage the latch. Push the disk drive lever up and to the rear to lock the disk drive. The LED above the slot will turn on.
3. Log in as root user.
4. At the command line, type smitty.
5. Select **Devices**.
6. 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.
7. Press F3s, Cancel, to go back to the first menu and select **System Storage Management (Physical and Logical Storage)** and press Enter.
8. Select **Logical Volume Manager** and press Enter.
9. Select **Volume Groups** and press Enter.
10. Select **Set Characteristics of a Volume Group** and press Enter.
11. Select **Add a Physical Volume to a Volume Group**.
12. Fill in the fields for the drive you are adding to the system. Press F4 for a list of selections.
13. To finish the drive 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.
14. Press F10 to exit **smitty**.

Hot-Plug Disk Drive Removal

Attention: Before you perform the following procedure, ensure that the customer has taken 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-plug drive from the system before it has been removed from the system configuration can cause unrecoverable data corruption. Refer to "Deconfiguring (Removing) or Configuring a Disk Drive" on page 409.

To remove a hot-plug disk drive, do the following:

1. Before removing the disk, ensure all data has been saved.
2. Deconfigure the drive you are removing from the system. See "Deconfiguring (Removing) or Configuring a Disk Drive" on page 409.
3. On a Model 6C4, open the rack front door.

    On a Model 6E4, open the front bezel door.
4. Remove the front bezel as described in "Front Bezel Removal (Model 6C4)" on page 381 or the disk drive access cover as described in "Disk Drive Access Cover Removal (Model 6E4)" on page 377.
5. Locate the hot-plug disk drive you plan to remove. If you are removing a faulty disk drive, a lit amber LED located at the front right side of each disk drive will help you isolate the faulty drive.
6. Log in as root user.
7. At the command line, type smitty.

8. Select **System Storage Management (Physical and Logical Storage)**.
9. Select **Removable Disk Management**.
10. Select **Remove a Disk**.
11. Select the desired disk from the list on the screen and press Enter.
12. Remove the disk drive by placing the handle on the disk drive into the open position (perpendicular to the drive) and pulling the hot-plug disk drive away from the bay. The lit LED on the disk drive will turn off when the disk drive is removed.

| **1** Model 6C4 | **3** Disk Drive Release Handle |
| **2** Disk Drive | **4** Front Bezel |

| **1** Model 6E4 | **3** Disk Drive Release Handle |
| **2** Disk Drive | **4** Disk Drive Access Cover |
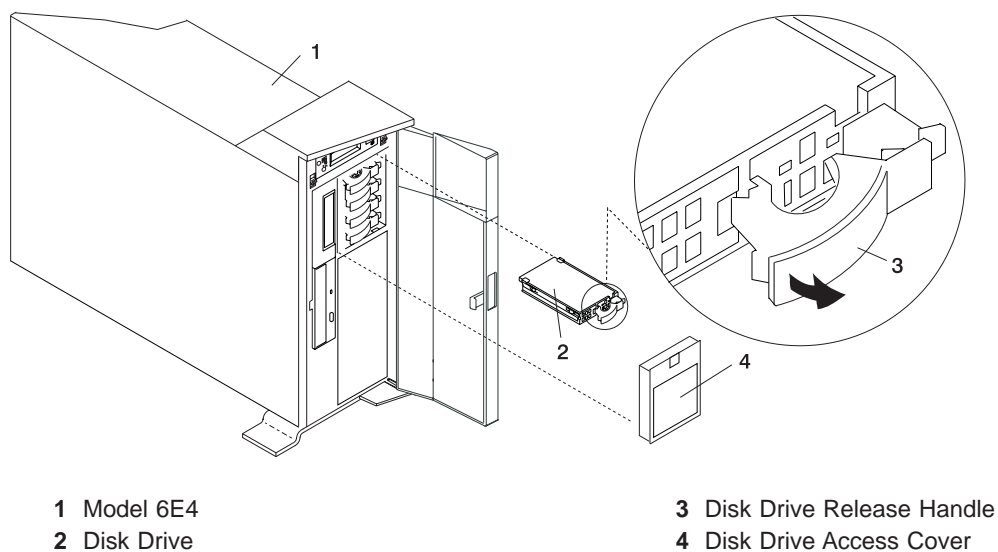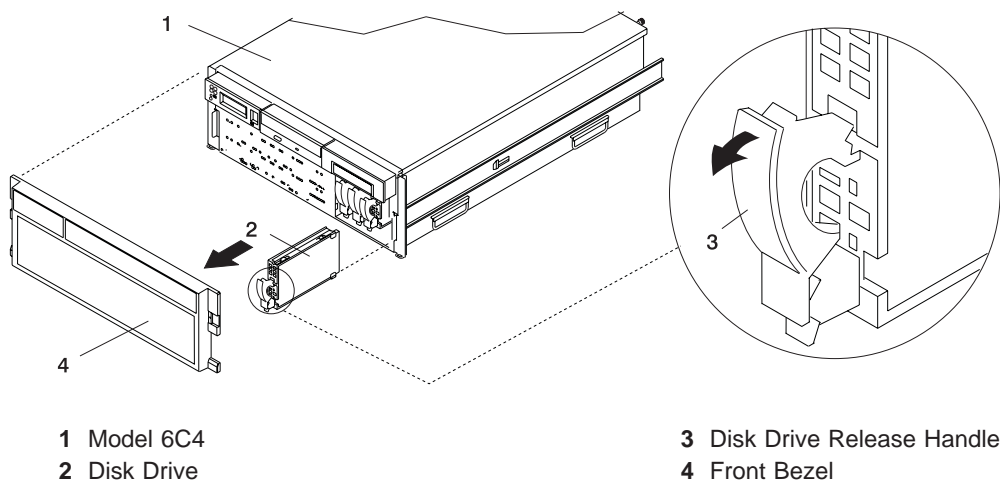
13. Press F10 to exit **smitty**.

Hot-Plug Disk Drive Replacement

Attention: Before you perform these procedures, ensure that the customer has taken 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-plug drive from the system before it has been removed from the system configuration can cause unrecoverable data corruption. Refer to "Deconfiguring (Removing) or Configuring a Disk Drive" on page 409.

Do not use **Install/Configure Devices Added After IPL** if your system is set up to run HACMP clustering. Consult with your system administrator or software support to determine the correct method to configure the replacement disk.

To install a hot-plug disk drive, do the following:
 1. Ensure the tray handle is open (perpendicular to the drive).
 2. Align the drive/tray assembly so that it engages the guide rails in the bay.
 3. Push the drive assembly into the bay until the tray handle engages the lock mechanism.
 4. Push the tray handle in until it locks. The lit LED on the disk drive will turn on.
 5. Log in as root user.
 6. At the command line, type `smitty`.
 7. Select **Devices**.
 8. 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.
 9. Press F10 to exit **smitty**.
10. Replace the front bezel as described in "Front Bezel Replacement (Model 6C4)" on page 381 or "Disk Drive Access Cover Replacement (Model 6E4)" on page 377.
11. On a Model 6C4, close the rack doors.

    On a Model 6E4, close the bezel door.

PCI Riser Card

Note: To perform this procedure requires a considerable amount of force when removing or installing the riser card from its docking connectors. If you are servicing a Model 6C4, it is strongly recommended that the system drawer be removed from the rack. If you are servicing a Model 6E4, it is strongly recommended that the system be placed on its side, on a flat and stable surface. To avoid potential breakage, the Model 6E4 stabilizer foot closest to the desktop or floor is free from resting on any surface.

Before performing the following procedure, read "Safety Notices" on page xi.

PCI Riser Card Removal

To remove the PCI riser card, do the following:

1. If you are servicing a Model 6E4, open the bezel door.

    If you are servicing a Model 6C4 rack-mounted drawer, open the front and rear rack doors.

2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.

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. Label and disconnect all adapter cables, located at the rear of the system unit.

5. If you are servicing a Model 6C4, place the system drawer into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

6. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

7. Disconnect all power and signal cables from the media drives, located in media bay 1 and media bay 2. Then remove the media drives as described in "Media Removal" on page 405.

8. Remove the front bezel as described in "Front Bezel Removal (Model 6C4)" on page 381 or "Front Bezel Removal (Model 6E4)" on page 382.

9. Remove the media device support shelf by loosening the thumbscrew and grasping the back edge of the shelf, sliding it back, then lifting it up and out of the system chassis.

    Note: The support leg located on the bottom of the support shelf is used to deactivate a microswitch. The microswitch is located on the CEC backplane and when deactivated, cuts off power to many of the components and connectors located on the CEC backplane. This support shelf must be correctly seated and secured in position after any new FRU is added to the system and you perform a system boot.

10. Record the slot number and location of each adapter.

11. Remove the processor assembly #2 as described in "Processor Card Removal" on page 427. If your system is equipped with a processor filler panel instead of a second processor card assembly, remove the processor filler panel.

12. 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 363.

13. Remove the PCI adapters as described in "Non-Hot-Pluggable PCI Adapter Removal" on page 385.

14. Remove all power, signal, and SCSI cables from the PCI riser card.

15. Remove all screws that secure the PCI riser card to the CEC backplane and chassis.
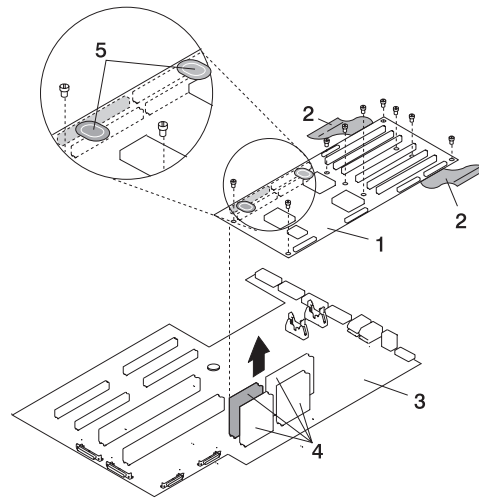
1 PCI Riser Card (The six slotted riser card shown above. The four slotted riser
  card mounts the same.)
2 Removal Sling
3 CEC Backplane
4 CEC Backplane Connectors to PCI Riser Card Connectors
5 ″Push″ Labels

16. Grasp each end of the removal sling located toward the back of the system chassis. Slowly lift up the back end of the PCI riser card. You may need to rock the sling back and forth several times to aid in the removal of the PCI riser card connectors from their docking connectors located on the CEC backplane. As the connectors begin to separate, grasp the front end of the PCI riser card and pull it up and out of the system. Put the PCI riser card in a safe place.

Notes:

a. The PCI riser card may require up to 60 pounds of pulling force to free it from the docking connectors. Depending on the system drawer's location in the rack, it is strongly recommended that the system drawer be removed from the rack to perform the PCI riser card removal and replacement procedures.

b. When placing the Model 6E4 on its side, ensure that the stabilizer foot closest to the desktop or floor surface is free from resting on any surface.

Model 6C4
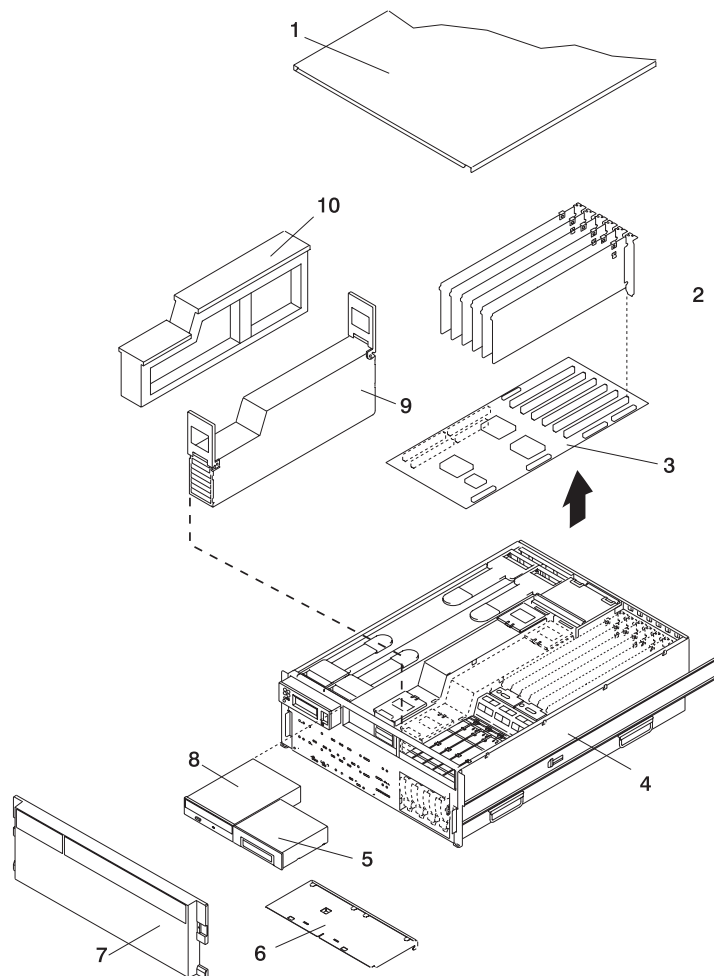
1 Service Access Cover
2 PCI Adapters
3 PCI Riser Card
4 Model 6C4
5 Media Device

6 Media Support Tray
7 Front Bezel
8 IDE CD-ROM
9 Processor Card Assembly #2
10 Processor Filler Panel

Model 6E4
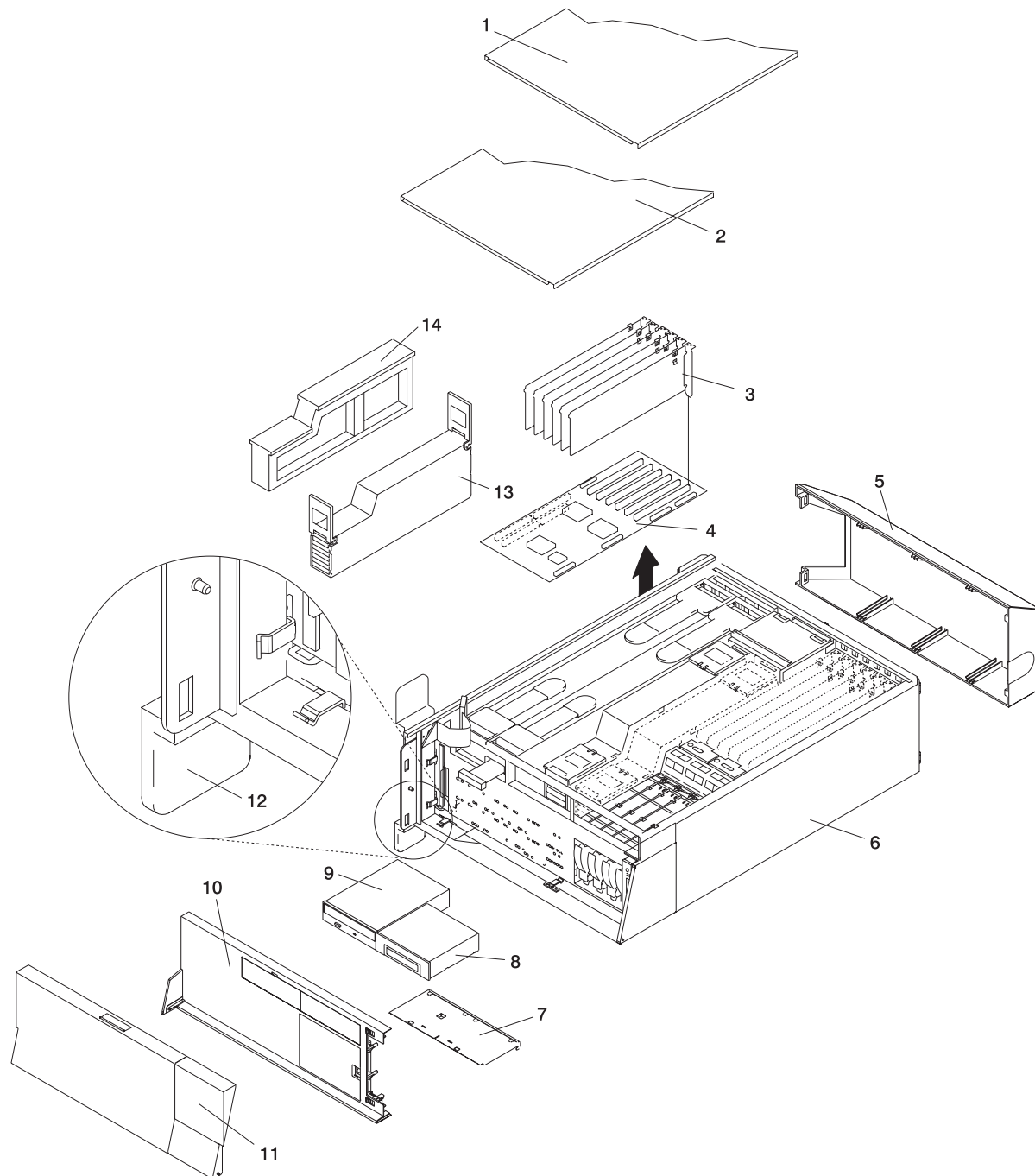
1	Outer Side Cover	**8**	Media Device
2	Service Access Cover	**9**	IDE CD-ROM
3	PCI Adapters	**10**	Front Bezel
4	PCI Riser Card	**11**	Bezel Door
5	Back Cover	**12**	System Stabilizer Foot
6	Model 6E4	**13**	Processor Card Assembly #2
7	Media Device Support Tray	**14**	Processor Filler Panel

PCI Riser Card Replacement

To replace the PCI riser card, 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 363.

2. If necessary, remove the PCI riser card from the antistatic package.

3. Carefully grasp the PCI riser card along two edges, and align the four connectors located on the bottom side of the PCI riser card with the four standoff connectors located on the CEC backplane.

4. Ensure you have proper alignment of the PCI riser card connectors. Seat the PCI riser card into the CEC backplane connectors.

   a. To perform this procedure requires a considerable amount of force when removing or installing the PCI riser card from its docking connectors. If you are servicing a Model 6C4, it is strongly recommended that the system drawer be removed from the rack. If you are servicing a Model 6E4, it is strongly recommended that the system be placed on its side, on a flat and stable surface. To avoid potential breakage, the Model 6E4 stabilizer foot closest to the desktop or floor is free from resting on any surface.
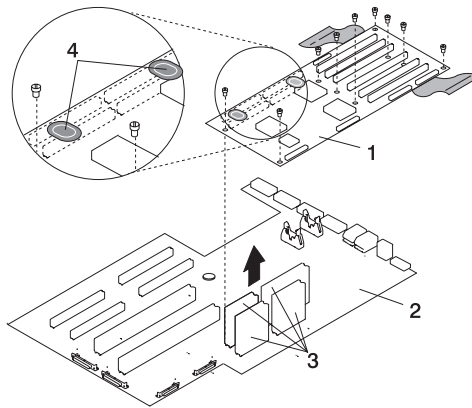
1 PCI Riser Card	**3** CEC Backplane Connectors to PCI Riser Card Connectors
2 CEC Backplane	**4** ″Push″ Labels

   b. To ensure the PCI riser card docking connectors are fully seated, using your thumbs, alternately push down on the two ″push″ labels that are mounted on the PCI riser card. Push until no more movement is felt and then push down hard again on both ″push″ labels. This alternate pushing technique is allowed only for this card.

      Note: Mounted below the CEC backplane is an aluminum plate. The plate aids in stiffening the CEC backplane and keeps it from flexing or cracking when the PCI riser card is inserted.

   c. If you experience any problem when you boot the system, repeat substep 4, but the second time, you must push harder.

5. Replace the screws that secure the PCI riser card to the CEC backplane and chassis.

    Note: For proper alignment, insert all screws before tightening.

6. Reconnect the power, signal, and SCSI cables.

7. Replace all adapters to their proper locations as described in "Adding or Replacing a Non-Hot-Pluggable PCI Adapter" on page 387.

8. Reconnect all of the labeled PCI adapter cables to their respective PCI adapters.

9. Replace the processor #2 assembly as described in "Adding or Replacing a Processor Card" on page 430. If you removed a processor filler panel, replace the processor filler panel now.

10. Replace the media device support shelf. Tighten the thumbscrew located on the support shelf.

    Note: When replacing the support shelf, ensure that the lower support leg, located on the bottom side of the support shelf, activates the microswitch located on the CEC backplane. Failure to do so results in the system not being able to power on.

11. Replace all removed media drives, ensuring that the media drives removed are returned to the same media bay locations from which they were removed. Refer to "Media Replacement" on page 408.

12. Reconnect all power and signal cables to their respective media drives.

13. Replace the front bezel as described in "Front Bezel Replacement (Model 6C4)" on page 381 or "Front Bezel Replacement (Model 6E4)" on page 382.

14. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

15. Reconnect the power cables.

16. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

17. If you are servicing a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

18. Power on the system as described in "Starting the System without an HMC Attached" on page 364.

    Note: If you experience any problem when you boot the system, repeat substep 4, but the second time, you must push harder.

19. If you are servicing a Model 6C4, close the rack doors.

    If you are servicing a Model 6E4, close the bezel door.

Disk Drive Backplane

To perform these procedures requires you to remove and install the PCI riser card. Removing or Installing a PCI riser card from its docking connectors, requires a considerable amount of force. If you are servicing a Model 6C4, it is strongly recommended that the system drawer be removed from the rack. If you are servicing a Model 6E4, it is strongly recommended that the system be placed on its side, on a flat and stable surface. To avoid potential breakage, the Model 6E4 stabilizer foot closest to the desktop or floor is free from resting on any surface.

Before performing the following procedure, read "Safety Notices" on page xi.

Disk Drive Backplane Removal

To remove the disk drive backplane, do the following:

1. If you are servicing a Model 6E4, open the bezel door.

    If you are servicing a Model 6C4 rack-mounted drawer, open the front and rear rack doors.

2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.

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. Label and disconnect all adapter cables, located at the rear of the system unit.

5. If you are servicing a Model 6C4, place the system drawer into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

6. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

7. Remove the front bezel as described in "Front Bezel Removal (Model 6C4)" on page 381 or "Front Bezel Removal (Model 6E4)" on page 382.

8. Disconnect and label all cables from the media drives, located in media bay 1 and media bay 2, then remove the media drives as described in "Media Removal" on page 405. Note the location of each removed media drive.

9. Remove the media device support shelf by loosening the captive thumbscrew. Grasp the back edge of the media device support shelf, slide the media device support shelf back, while lifting it up and out of the system chassis.

10. Remove the processor assembly #2 as described in "Processor Card Removal" on page 427. If your system is equipped with a processor filler panel instead of a second processor card assembly, remove the processor filler panel.

11. Record the slot number and location of each adapter.

12. 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 363.

13. Remove the PCI adapters as described in "Non-Hot-Pluggable PCI Adapter Removal" on page 385.

14. Remove the PCI riser card as described in "PCI Riser Card Removal" on page 413.

15. Remove all hot-plug disk drives as described in "Hot-Plug Disk Drive Removal" on page 410.

16. Remove the PCI adapter cooling fans as described in "Hot-Swap Fan Assembly Removal" on page 401.

17. Remove the PCI adapter cooling fan stabilizing cage by loosening the retaining screw located along the bottom back edge of the stabilizing cage.

18. Disconnect all power and signal cables connected to the disk drive backplane.
19. Remove the four retaining screws that secure the disk drive cage to the front of the system chassis.
20. Slide the disk drive cage back until it clears the upper chassis ledge.
21. Pull the disk drive cage assembly out of the system.
22. Remove the six retaining screws attached to the disk drive backplane.

Model 6C4
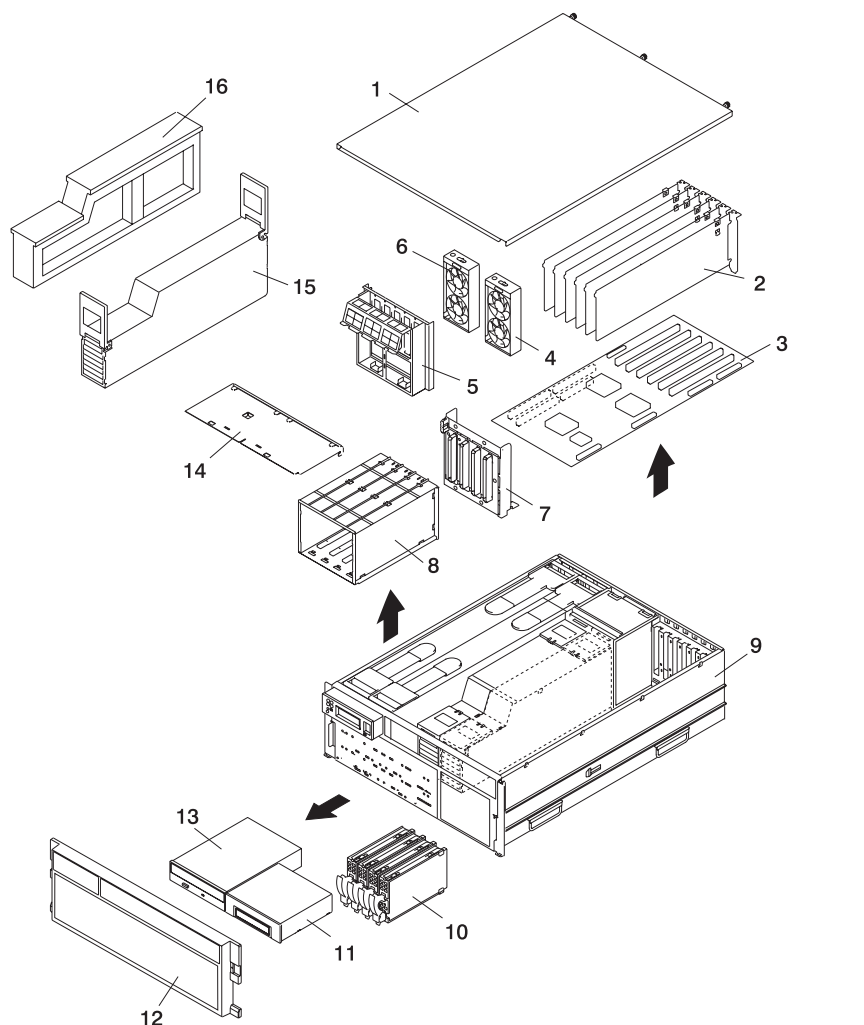
1	Service Access Cover (drawer)	**9**	Model 6C4 Chassis
2	PCI Adapters	**10**	Disk Drive (4 Pack)
3	PCI Riser Card	**11**	Media Device
4	PCI Cooling Fan	**12**	Front Bezel
5	Cable-Management Bracket	**13**	IDE CD-ROM Media
6	PCI Cooling Fan	**14**	Media Device Support Shelf
7	Disk Drive Backplane	**15**	Processor Assembly #2
8	Disk Drive Cage	**16**	Processor Filler

Model 6E4
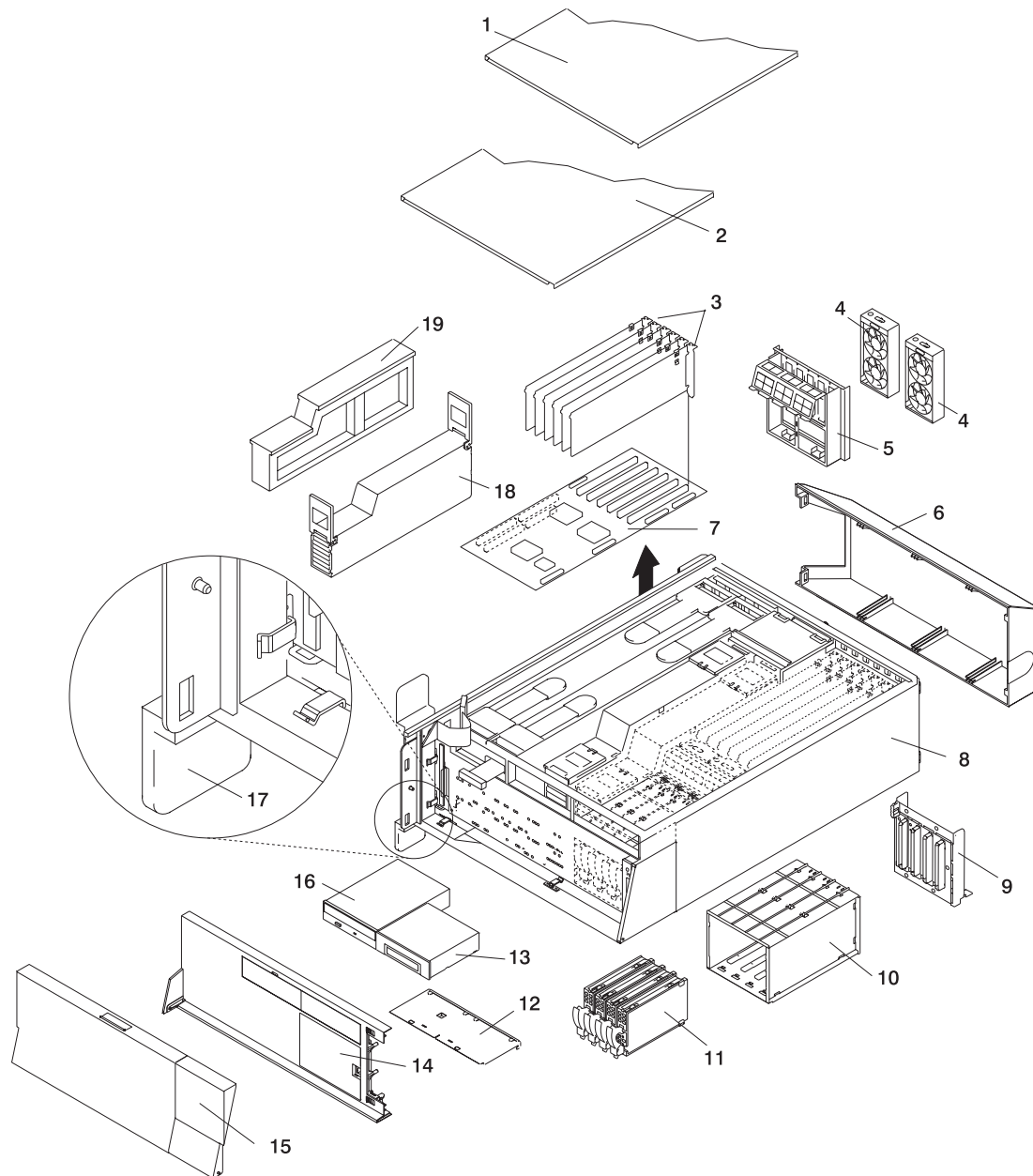
1	Outer Side Cover	**11**	Disk Drive (4 Pack)
2	Service Access Cover	**12**	Media Device Support Shelf
3	PCI Adapters	**13**	Media Device
4	PCI Cooling Fan	**14**	Front Bezel
5	Cable-Management Bracket	**15**	Bezel Door
6	Back Cover	**16**	IDE CD-ROM Media
7	PCI Riser Card	**17**	System Stabilizer Foot
8	Model 6E4	**18**	Processor Assembly #2
9	Disk Drive Backplane	**19**	Processor Filler
10	Disk Drive Cage		

Disk Drive Backplane Replacement

To replace the disk drive backplane, do the following:

1. Using the six supplied retaining screws, secure the backplane to the disk drive cage.
2. Carefully place the disk drive cage assembly into the system.
3. Slide the disk drive cage assembly toward the front of the system.
4. Ensure the six screw holes located on the cage assembly correctly align with the mating screw holes located on the system chassis.
5. Insert and finger-tighten the six retaining screws. After all screws have been started, finish tightening them.
6. Reconnect all power and signal cables to the disk drive backplane.
7. Replace the PCI adapter cooling fan stabilizing cage by installing the two tabs located on the bottom edge of the cage into their mating slots located on the chassis. Secure the cage to the chassis with a retaining screw.
8. Replace the PCI adapter cooling fans as described in "Hot-Swap Fan Assembly Replacement" on page 403.
9. Replace all hot-plug disk drives as described in "Hot-Plug Disk Drive Replacement" on page 412.
10. Replace the media device support shelf.
11. Replace all previously removed media drives, ensuring that the media drives are returned to the same media bay from which they were removed. Refer to "Media Replacement" on page 408, if necessary.
12. 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 363.
13. Replace the PCI riser card as described in "PCI Riser Card Replacement" on page 417.
14. Replace the PCI adapters as described in "Adding or Replacing a Non-Hot-Pluggable PCI Adapter" on page 387.
15. Reconnect all adapter cables, located at the rear of the system unit.
16. Reconnect the power source to the system.
17. Replace the front bezel as described in "Front Bezel Replacement (Model 6C4)" on page 381 or "Front Bezel Replacement (Model 6E4)" on page 382.
18. Power on the system as described in "Starting the System without an HMC Attached" on page 364.
19. Replace the service access cover as described in "Covers" on page 370.
20. If you are servicing a Model 6C4, place the system drawer into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.
21. If you are servicing a Model 6C4, close the front and rear rack doors.
22. If you are servicing a Model 6E4, close the bezel door.

Operator Panel

Before performing the following procedure, read "Safety Notices" on page xi.

Operator Panel Removal

To remove the operator panel, do the following:

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.
2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.
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, on a Model 6E4, remove the bezel door as described in "Bezel Door Removal" on page 380.
5. Remove the front bezel as described in "Front Bezel Removal (Model 6C4)" on page 381 or "Front Bezel Removal (Model 6E4)" on page 382.
6. If you are servicing a Model 6E4, remove the top cap as described in "Top Cap Removal (Model 6E4)" on page 371.
7. If you are servicing a Model 6C4, remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370.
8. Locate the operator panel, as shown in the following illustrations.
9. Remove the two retaining screws, located along the bottom edge of the operator panel.
10. Disconnect the power / signal cable from the back of the operator panel.
11. Remove the operator panel by grasping the edges of the panel and pulling it out of its bay.

Model 6C4
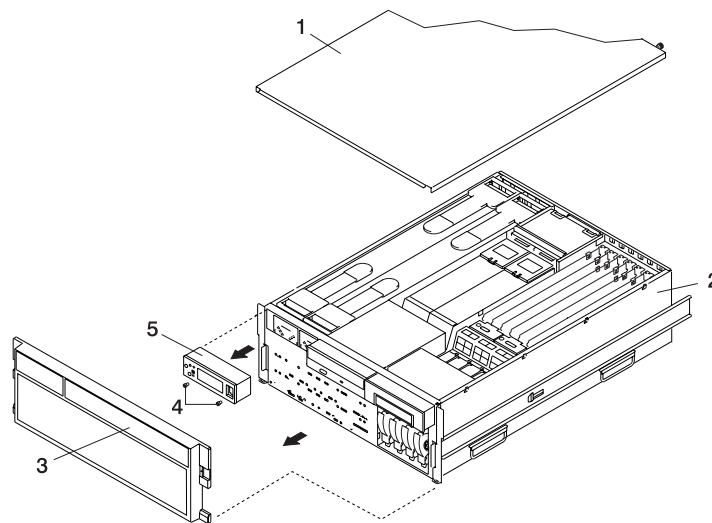
1 Service Access Cover (drawer)		**4** Operator Panel Retaining Screws	
2 System Unit		**5** Operator Panel	
3 Front Bezel			
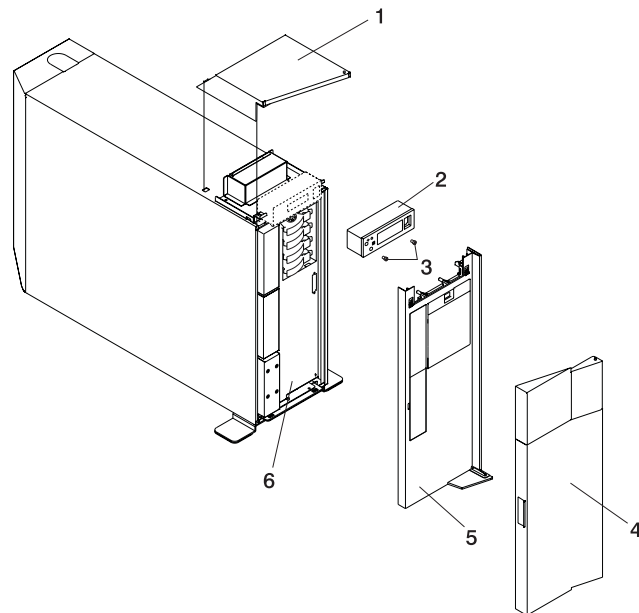
Model 6E4

1	Top Cap	**4**	Front Bezel
2	Operator Panel	**5**	Bezel Door
3	Operator Panel Retaining Screws	**6**	Model 6E4

Operator Panel Replacement

Attention: If you are replacing the operator panel with a new FRU, you must write the system VPD information (machine type, model number, and serial number) into the VPD module. You must contact the support center to obtain instructions and the necessary password to enter the information into the VPD module.

Note: Refer to "System Vital Product Data (VPD) Update Procedure" on page 425 for the correct procedure.

To replace the operator panel, do the following:
1. Carefully slide the operator panel back into the system bay.
2. Connect the signal and power cable to the connector on the new operator panel.
3. Secure the operator panel with the two retaining screws previously removed.
4. Replace the service access cover, as described in "Service Access Cover Replacement (Model 6C4)" on page 370.
5. If you are servicing a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.
6. Reconnect all system power cables.
7. Replace the front bezel as described in "Front Bezel Replacement (Model 6C4)" on page 381 or "Front Bezel Replacement (Model 6E4)" on page 382.
8. If necessary replace the bezel door as described in "Bezel Door Replacement" on page 380.
9. If you are servicing a Model 6E4, replace the top cap as described in "Top Cap Replacement (Model 6E4)" on page 371.
10. Power on the system as described in "Starting the System without an HMC Attached" on page 364.
11. If the Model 6C4 has successfully powered on, close the rack doors.

    If the Model 6E4 has successfully powered on, close the bezel door.

System Vital Product Data (VPD) Update Procedure

If you replaced the operator panel with a new FRU, perform the following procedure to ensure that the VPD is correct.

1. After you install the new operator panel, wait for the `OK` message to display in the operator panel display.

2. Start the Service Processor Firmware menu.

```
                        Service Processor Firmware
                        Firmware Level: xxxxxxxx
                      Copyright 1999, IBM Corporation


                              Main Menu
                       1. Service Processor Setup
                       2. System Power Control Menu
                       3. System Information Menu
                       4. Language Selection
                       5. Call In/Call Out Setup
                       6. Set System Name
                      99. Exit from Menu




    1>
```
Command Prompt
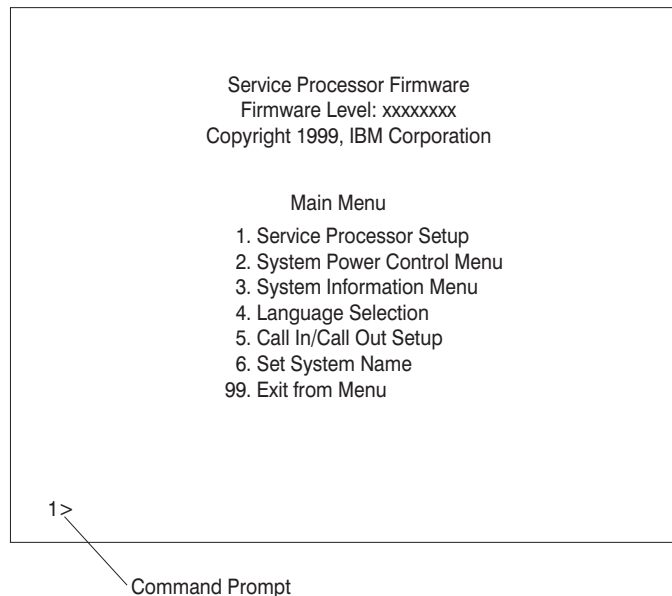
3. At the command prompt, type the code that accesses the hidden menus. If necessary, call your local support center to obtain the code.

```
    This menu is for IBM Authorized use only. If you
    have not been authorized to use this menu, please
    discontinue use immediately.

    Press Return to continue, or X to return to menu 1.
```

4. Press Return to continue.

```
    VPD Serial Number is not programmed.

    Enter the VPD Serial Number (7 ASCII digits): xxxxxxx
```

5. Type the VPD serial number.

   Note: The serial number *must* be entered correctly. Enter the last seven digits only. Do not include the dash (-) in the serial number as a digit. If the serial number is not entered correctly, a new operator panel must be ordered and installed.

   ```
   VPD Serial Number has been programmed
   successfully.

   The current TM field is:  xxxx-xxx
   Do you want to change the TM field (y/n)?
   ```

6. Type **y** (yes) if the system unit's type/model (TM) you are working on is different from the one listed on the screen.

7. Type the machine type and model number of the system unit.

   ```
   Enter the TM data (8 ASCII digits):  xxxx-xxx
   TM has been programmed successfully

   The current MN field is 1980
   Do you want to change the MN field (y/n)?
   ```

8. The **MN** field is for manufacturing use only. Enter **n** (no) in this field.

9. Enter 99 at the command line of the Main Menu to exit.

Processor Card

Before performing the following procedure, read "Safety Notices" on page xi.

Processor Card Removal
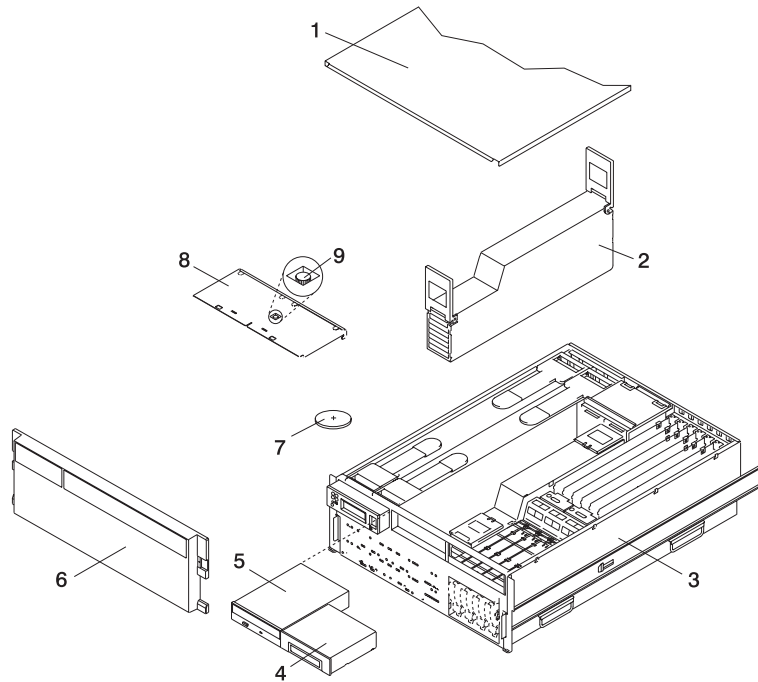
To remove the processor card, do the following:

1. On a Model 6C4, open the front and rear rack doors and put the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.

2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.

3. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

4. Remove the front bezel as described in "Front Bezel Removal (Model 6C4)" on page 381 or "Front Bezel Removal (Model 6E4)" on page 382.

5. Disconnect all power and signal cables from the media drives, located in media bay 1 and media bay 2. Then remove the media drives as described in "Media Removal" on page 405.

6. Remove the media device support shelf by loosening the thumbscrew and grasping the back edge of the shelf, sliding it back, then lifting it up and out of the system chassis.

   Note: The support leg located on the bottom of the support shelf is used to deactivate a microswitch. The microswitch is located on the CEC backplane and when deactivated, cuts off power to many of the components and connectors located on the CEC backplane. This support shelf must be correctly seated and secured in position after any new FRU is added to the system and you perform a system boot.

7. 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 363.

8. Grasp the ends of both processor assembly release handles. Lift each handle until it is perpendicular (90 degrees) to the top of the processor assembly. By placing the handle perpendicular to the top of the processor assembly, the base or hinged portion of each handle acts as a cam and will gently pry the processor card connector from the docking connector located on the CEC backplane.

9. Remove the processor assembly from the system unit.

   Attention: To prevent damage to the card and the card connectors, open or close the retention latches at the same time.

10. Lay the processor assembly, cover-side up, on a flat, static-protective surface.

11. From the bottom of the processor assembly, lift the side access cover. Four hinges hold the cover to the top of the processor assembly. Pivot the cover up to reveal the memory DIMMs or DIMM connectors.

12. Remove all memory DIMMs as described in "Memory DIMM Removal" on page 432. Put the DIMMs in a safe place (you will need to install these DIMMs onto the new processor card).

Model 6C4
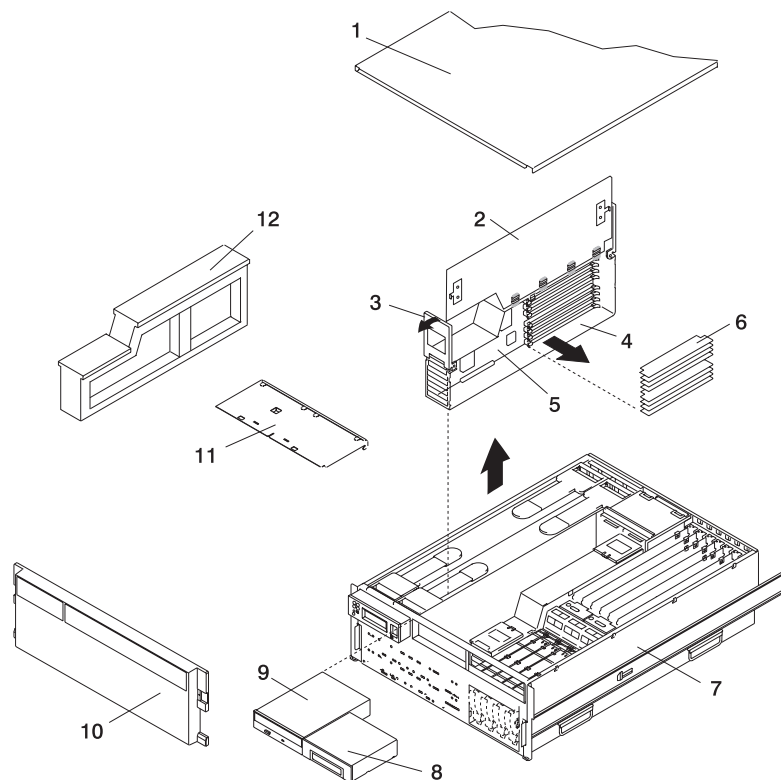
1	Service Access Cover	**7**	Model 6C4
2	Processor Access Cover	**8**	Optional Media Device (for example: Diskette Drive or Tape Drive)
3	Processor Assembly Lifting and Release Handles	**9**	IDE CD-ROM Drive
4	Processor Assembly	**10**	Front Bezel
5	Processor Card	**11**	Media Device Support Shelf
6	Memory DIMMs	**12**	Processor Filler

Model 6E4

1	Model 6E4	**9**	Service Access Cover
2	Media Device Support Shelf	**10**	Outer Side Cover
3	Media Carrier Trays	**11**	Processor Access Cover
4	Optional Media Device (for example: Diskette Drive or Tape Drive)	**12**	Processor Assembly Lifting and Release Handles
5	IDE CD-ROM Drive	**13**	Processor Card
6	Front Bezel	**14**	Processor Assembly
7	Bezel Door	**15**	Memory DIMMs
8	Processor Filler		

Adding or Replacing a Processor Card

Notes:

1. Adding an additional processor card or installing a new processor card into your system may require the updating of the system firmware.

2. 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 363.

3. If your system is configured with one processor card, place the card into location U0.1-P1-C1 on the CEC backplane. The remaining processor connector must have the processor filler panel in place. The filler panel protects the connector located on the CEC backplane from dust or damage and assists in airflow and cooling.

4. If a second processor is to be added to your system, remove the protective filler panel from the system, and install the new processor assembly into the secondary processor bay location U0.1-P1-C2.

   Use only processor cards of the same type and speed when adding, replacing or upgrading processor cards in your system.

   The processor cards can be configured in any one of following combinations:

   - One 1-way processor card
   - Two 1-way processor cards
   - One 2-way processor card
   - Two 2-way processor cards

To add or replace a processor card, do the following:

1. From the bottom of the processor assembly, lift the processor access cover. Four hinges hold the cover to the top of the processor assembly. Pivot the cover up to reveal the memory DIMMs or DIMM connectors. Install the memory DIMMs as described in "Memory DIMMs" on page 432.

2. Pivot the processor access cover back into the closed position.

3. Grasp the release handles located on top of the processor assembly. Pivot the handle upward to 90 degrees. This action puts the handle cams into the correct position to help seat the processor card connector into the docking connector located on the CEC backplane.

   Attention: To prevent damage to the processor assembly and the processor card connector, open or close both release handles at the same time.

4. Align the processor card connector with the docking connector located on the CEC backplane.

5. Carefully insert the processor assembly into the system.

6. As the processor connector is seated into its CEC backplane docking connector, begin lowering the processor assembly release handles. This action correctly seats and locks the processor assembly to the CEC backplane.

7. If necessary, replace the processor filler panel.

8. Replace the media device support shelf. Tighten the thumbscrew located on the support shelf.

   Note: When replacing the media device support shelf, ensure that the lower support leg, located on the bottom side of the support shelf, activates the microswitch located on the CEC backplane. Failure to do so results in the system not being able to power on.

9. Replace all removed media drives, ensuring that the media drives removed are returned to the same media bay locations from which they were removed. Refer to "Media Replacement" on page 408.

10. Reconnect all power and signal cables to their respective media drives.

11. Replace the front bezel as described in "Front Bezel Replacement (Model 6C4)" on page 381 or "Front Bezel Replacement (Model 6E4)" on page 382.

12. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

13. On a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

14. Power on the system as described in "Starting the System without an HMC Attached" on page 364.

15. If the Model 6C4 has successfully powered on, close the rack doors.

    If the Model 6E4 has successfully powered on, close the bezel door.

Memory DIMMs

Before performing the following procedures, read "Safety Notices" on page xi.

Memory DIMM Removal

To remove the memory DIMMs, do the following:

1. On a Model 6C4, open the front and rear rack doors and put the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.

2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.

3. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

4. Remove the front bezel as described in "Front Bezel Removal (Model 6C4)" on page 381 or "Front Bezel Removal (Model 6E4)" on page 382.

5. Disconnect all power and signal cables from the media drives, located in media bay 1 and media bay 2. Remove the media drives as described in "Media Removal" on page 405.

6. Remove the media device support shelf by loosening the thumbscrew and grasping the back edge of the shelf, sliding it back, then lifting it up and out of the system chassis.

   Note: The support leg located on the bottom of the support shelf is used to deactivate a microswitch. The microswitch is located on the CEC backplane and when deactivated, cuts off power to many of the components and connectors located on the CEC backplane. This support shelf must be correctly seated and secured in position after any new FRU is added to the system and you perform a system boot.

7. 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 363.

8. Grasp the end of both processor assembly release handles. Lift each handle until it is perpendicular (90 degrees) to the top of the processor assembly. By placing the handle perpendicular to the top of the processor assembly, the base or hinged portion of each handle acts as a cam and will gently pry the processor card connector from the docking connector located on the CEC backplane.

9. Remove the processor assembly from the system unit.

10. Lay the processor assembly, cover-side up, on a flat, static-protective surface.

11. From the bottom of the processor assembly, lift the side access cover. Four hinges hold the cover to the top of the processor assembly. Pivot the cover up to reveal the memory DIMMs or DIMM connectors.

Model 6C4

1	Service Access Cover	**7**	Model 6C4
2	Processor Access Cover	**8**	Optional Media Device (for example: Diskette Drive, Tape Drive)
3	Processor Assembly Lifting and Release Handle	**9**	IDE CD-ROM Drive
4	Processor Assembly	**10**	Front Bezel
5	Processor Card	**11**	Media Device Support Shelf
6	Memory DIMMs		

Model 6E4

1	Model 6E4	**9**	Service Access Cover
2	Media Device Support Shelf	**10**	Outer Side Cover
3	Media Carrier Trays	**11**	Processor Access Cover
4	Optional Media Device (for example: Diskette Drive or Tape Drive)	**12**	Processor Assembly Lifting and Release Handles
5	IDE CD-ROM Drive	**13**	Processor Card
6	Front Bezel	**14**	Processor Assembly
7	Bezel Door	**15**	Memory DIMMs
8	Processor Filler		

12. Locate the memory DIMMs, and determine which DIMM you want to remove.

   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 OR 2, 4, 5, and 7. See the following illustration.
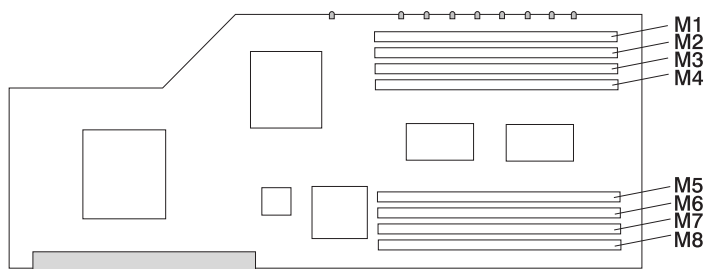
Number	Description	Location Code
M1	Memory slot 1 (J2A)	U0.1-P1-C1-M1
M2	Memory slot 2 (J2B)	U0.1-P1-C1-M2
M3	Memory slot 3(J3A)	U0.1-P1-C1-M3
M4	Memory slot 4(J3B)	U0.1-P1-C1-M4
M5	Memory slot 5(J1B)	U0.1-P1-C1-M5
M6	Memory slot 6(J1A)	U0.1-P1-C1-M6
M7	Memory slot 7(J0B)	U0.1-P1-C1-M7
M8	Memory slot 8(J0A)	U0.1-P1-C1-M8
Note: The location code column indicates the location codes for processor card 1. If your system is configured for processor card 2, substitute C2 in place of C1.		

   Attention: To prevent damage to the memory DIMM and the memory DIMM connectors, open or close the retention latches at the same time.

13. Remove the memory DIMM by pushing the tabs out and then down. The tabs' camming action forces the memory DIMM out of the connector.

14. Pull the memory DIMM out of the connector as shown in the following illustration.
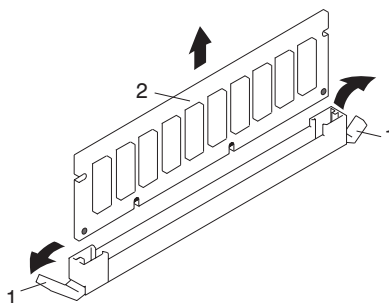
1 Connector Tabs (unlocked position)
2 Memory DIMM

Memory DIMM Replacement

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 363.
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.
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 groups of 4 (quads).
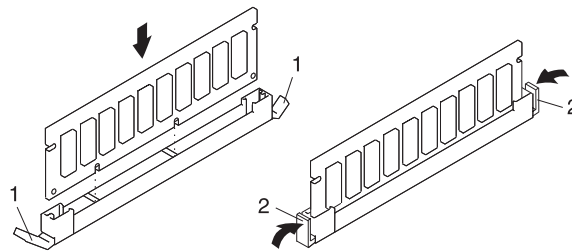
1 Locking Tabs (unlocked position)
2 Locking Tabs (locked position)

7. Pivot the processor access cover back into the closed position.
8. Grasp the release handles located on top of the processor assembly. Pivot the handle upward to 90 degrees. This action puts the handle cams into the correct position to help seat the processor card connector into the docking connector located on the CEC backplane.

   Attention: To prevent damage to the processor assembly and the processor card connector, open or close both release handles at the same time.
9. Align the processor card connector with the docking connector located on the CEC backplane.
10. Carefully insert the processor assembly into the system.
11. As the processor connector is seated into its CEC backplane docking connector, begin lowering the processor assembly release handles. This action correctly seats and locks the processor assembly to the CEC backplane.
12. If necessary, replace the processor filler panel.
13. Replace the media device support shelf. Tighten the thumbscrew located on the support shelf.

    Note: When replacing the support shelf, ensure that the lower support leg activates the microswitch located on the CEC backplane. Failure to do so results in the system not being able to power on.
14. Replace all removed media drives, ensuring that the media drives removed are returned to the same media bay locations from which they were removed. Refer to "Media Replacement" on page 408.
15. Reconnect all power and signal cables to their respective media drives.
16. Replace the front bezel as described in "Front Bezel Replacement (Model 6C4)" on page 381 or "Front Bezel Replacement (Model 6E4)" on page 382.
17. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.
18. On a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.
19. Power on the system as described in "Starting the System without an HMC Attached" on page 364.
20. If the Model 6C4 has successfully powered on, close the rack doors.

    If the Model 6E4 has successfully powered on, close the bezel door.

Replacing the Battery

Before performing the following procedure, read "Safety Notices" on page xi.

CAUTION:

A lithium battery can cause fire, explosion, or severe burn. Do not recharge, disassemble, heat above 100°C (212°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 present a risk of fire or explosion.

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

Dispose of the battery according to local regulations.

To replace the system's battery, do the following:

1. On a Model 6C4, open the front and rear rack doors and put the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.

2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.

3. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

4. Remove the front bezel as described in "Front Bezel Removal (Model 6C4)" on page 381 or "Front Bezel Removal (Model 6E4)" on page 382.

5. Disconnect and label all power and signal cables from the media drives, located in media bay 1 and media bay 2. Then remove the media drives as described in "Media Removal" on page 405. Note the location of each media drive removed.

6. Remove the media device support shelf by loosening the thumbscrew and grasping the back edge of the shelf, sliding it back, then lifting it up and out of the system chassis.

   Note: The support leg located on the bottom of the support shelf is used to deactivate a microswitch. The microswitch is located on the CEC backplane and when deactivated, cuts off power to many of the components and connectors located on the CEC backplane. This support shelf must be correctly seated and secured in position after any new FRU is added to the system and you perform a system boot.

7. Remove processor assembly 1 as described in "Processor Card Removal" on page 427.

   Note: Processor assembly 1 is the processor assembly that is closest to the power supplies. See the following illustration.

   Model 6C4

   1 Service Access Cover
   2 Processor Assembly 1
   3 Model 6C4
   4 Media Device (for example: Tape Drive or Diskette Drive)
   5 IDE CD-ROM Drive

   6 Front Bezel
   7 Battery (positive (+) side facing up)
   8 Media Device Support Shelf
   9 Captive Thumbscrew

Model 6E4

1	Model 6E4	**7**	Media Device Support Shelf
2	Media Carrier Trays	**8**	Captive Thumbscrew
3	Media Device (for example: Tape Drive or Diskette Drive)	**9**	Battery (positive (+) side facing up)
4	IDE CD-ROM Drive	**10**	Service Access Cover
5	Front Bezel	**11**	Outer Side Cover
6	Bezel Door	**12**	Processor Assembly

8. Locate the battery on the CEC backplane as shown in the following illustration.

9. 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 it up and away from the CEC backplane.

   Note: The battery's plastic mount connections are soldered to the CEC backplane. If the battery mount is damaged or removed, permanent damage can result to the CEC backplane.
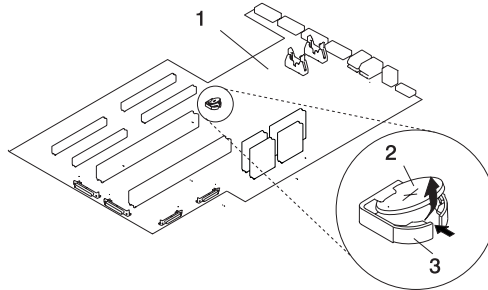
1 CEC backplane
2 Battery
3 Battery Plastic Mount

10. Replace the battery with (FRU) part number 00P3903 or equivalent.

11. 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.

12. Gently insert the new battery into its plastic mount.

13. Replace processor assembly 1 as described in "Adding or Replacing a Processor Card" on page 430.

14. Replace the media device support shelf. Tighten the thumbscrew located on the support shelf.

    Note: When replacing the support shelf, ensure that the lower support leg activates the microswitch located on the CEC backplane. Failure to do so results in the system not being able to power on.

15. Replace all media drives, ensuring that the media drives removed are returned to the same media bay from which they were removed as described in "Media Replacement" on page 408.

16. Reconnect all power and signal cables to their respective media drives.

17. Replace the front bezel as described in "Front Bezel Replacement (Model 6C4)" on page 381 or "Front Bezel Replacement (Model 6E4)" on page 382.

18. Replace the service access cover, as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

19. If you are servicing a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

20. Turn on the system power.

21. 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.

    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.

Power Supplies

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

This system drawer has power supplies that have hot-swap capabilities. To use this feature, you *must* have two power supplies in place.

Before performing any of the following procedures, read and understand all of the safety notices beginning with "Safety Notices" on page xi.

Non-Hot-Swap Power Supply Removal

If you are servicing a system that has only one power supply installed, you must follow the non-hot-swap power supply removal procedure. Systems that were configured with one power supply at the factory have a power supply filler panel. The filler panel protects the vacant power supply connector from dust or damage.

To remove a non-hot-swap power supply, do the following:

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.

2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.

3. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

4. Remove the power cable from the rear of the power supply.

5. Wait at least 10 seconds before performing the next step.

6. Grasp the ends of both power supply handles, and slide the retractable spring-activated portion of each handle toward its hinged base. This action releases the locking tab located on the bottom side of each release handle. See the following illustration.

1 Power Supply
2 Locking Tab Receiver Hole
3 Retractable Spring-Activated Portion of the Handle

7. Lift the handle until it is perpendicular (90 degrees) to the top of the power supply. By placing the handle perpendicular to the top of the power supply, the base or hinged portion of each handle acts as a cam and will gently pry the power supply from its connector located on the CEC backplane.

1a	Outer Side Cover (Model 6E4 Only)	**4**	Power Supply Filler Panel
1	Service Access Cover	**5a**	Model 6C4
2	Power Supply #1 (Primary)	**5b**	Model 6E4
3	Power Supply Release Handle		

8. After the power supply is released from its connector, pull the power supply out of the system.

Note: During normal operation, each power-supply bay must have either a power supply or filler panel installed for proper cooling.

Non-Hot-Swap Power Supply Replacement

To replace a non-hot-swap power supply, do the following:

1. Grasp the handles located on top of the new power supply. Pivot the handles upward to 90 degrees. This action puts the handle cams into the correct position to help seat the power supply into its connector.

2. Carefully insert the new power supply into the bay originally used by the faulty power supply.

3. Lower the power supply release 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.

   Note: Improper operation of the spring-activated portion of the power supply handles can result in the following:

   - The retractable spring remains compressed - This situation keeps the handle from locking the power supply in its seated position. To eliminate this problem, lower the handle into the locked position, and push the spring activated handle end toward the locking tab. This action forces the spring latch to mat with the locking tab in the spring-latch receiver hole.

   - The locking tab receiver is bent - Before lowering the handle to lock the power supply into the seated position, ensure that the locking tab located on top of the power supply in the receiver hole is not bent. Before the spring latch will seat onto the locking tab, the locking tab, if bent, must be straightened.

1	Spring Latch	**4**	Power Supply
2	Spring-Activated Handle End	**5**	Spring-Latch Receiver Hole
3	Power Supply Release Handle	**6**	Locking Tab

4. Plug the power cable into the back of the power supply.

5. Reconnect the power source to the system.

6. The green AC Good LED located on the power supply comes on solid.

7. Replace the service access cover as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376. If you are servicing a Model 6E4, go to step 10.

   If you are servicing a Model 6C4, go to step 8.

8. Push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

9. Route the cables through the cable-management arm.

10. Power on the system drawer as described in "Starting the System without an HMC Attached" on page 364.

11. After the Model 6C4 has successfully powered on, close the rack doors.

    After the Model 6E4 has successfully powered on, close the bezel door.

Hot-Swap Power Supply Removal

Before performing this procedure, read the following "Safety Notices" on page xi.

If you are servicing a system that has two power supplies installed, you can replace each power supply (one at a time) without shutting down the system.

To remove a hot-swap power supply, do the following:

Note: You do not need to turn off the power to the system to install hot-swap power supplies.

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.
2. Visually check the power supply LEDs. If the amber LED is lit, suspect that power supply to be faulty.
3. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.
4. Remove the power cable from the rear of the faulty power supply.
5. Wait at least 10 seconds before performing the next step.
6. Grasp the ends of both power supply handles, and slide the retractable spring-activated portion of each handle toward its hinged base. This action releases the locking tab located on the bottom side of each release handle. See the following illustration.

1 Power Supply
2 Locking Tab Receiver Hole
3 Retractable Spring-Activated Portion of the Handle

7. Lift the handle until it is perpendicular (90 degrees) to the top of the power supply. By placing the handle perpendicular to the top of the power supply, the base or hinged portion of each handle acts as a cam and will gently pry the power supply from its connector located on the CEC backplane.
8. After the power supply is released from its connector, pull the power supply out of the system.
9. If you are not replacing the power supply, do the following:
   a. Install a power-supply filler panel.

      Note: During normal operation, each power-supply bay must have either a power supply or filler panel installed for proper cooling.
   b. Disconnect the removed power supply's power cable from either the power distribution panel or electrical outlet.
10. Verify that the green DC Good LED on the remaining power supply is lit. The green LED indicates that the power supply is operating correctly.
11. Replace the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.
12. On a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.
13. On a Model 6C4, close the rack doors.

    On a Model 6E4, close the bezel door.
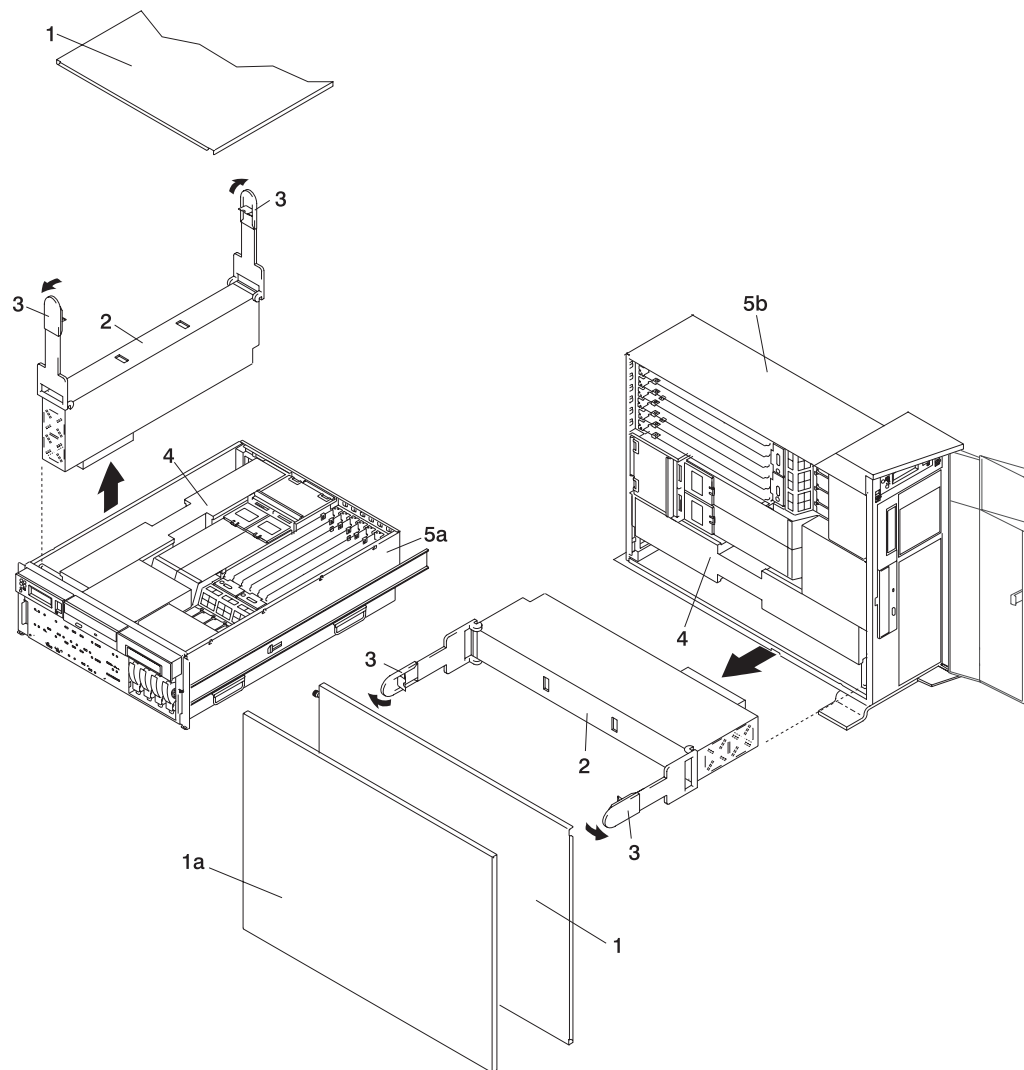
1a Outer Side Cover (Model 6E4 Only)
 1 Service Access Cover
 2 Power Supply #1 (Primary)
 3 Power Supply Release Handle

4 Power Supply Filler Panel
5a Model 6C4
5b Model 6E4

Hot-Swap Power Supply Replacement

Note: This note applies only to systems running the AIX operating system.

> If a power supply is being replaced for a redundant failure, after the service repair action is completed, ask the customer to 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.

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 replace a hot-swap power supply, do the following:

1. If you are adding a new power supply to a system that was configured with only one power supply installed, remove the power-supply filler panel from power supply #2 bay.
2. Grasp the handle located on top of the new power supply. Pivot the handle upward to 90 degrees. This action puts the handle cams into the correct position to help seat the power supply into its connector.
3. Carefully insert the power supply into the same power supply bay from which the faulty power supply was just removed.
4. 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.

   Note: Improper operation of the spring-activated portion of the power supply handles can result in the following:
   - The retractable spring remains compressed - This situation keeps the handle from locking the power supply in its seated position. To eliminate this problem, lower the handle into the locked position, and push the spring activated handle end toward the locking tab. This action forces the spring latch to mat with the locking tab in the spring-latch receiver hole.
   - The locking tab receiver is bent - Before lowering the handle to lock the power supply into the seated position, ensure that the locking tab located on top of the power supply in the receiver hole is not bent. Before the spring latch will seat onto the locking tab, the locking tab, if bent, must be straightened.

1	Spring Latch	**4**	Power Supply
2	Spring-Activated Handle End	**5**	Spring-Latch Receiver Hole
3	Power Supply Release Handle	**6**	Locking Tab

5. Plug the power cable for the added power supply into the power cable connector located on the back of the power supply.

6. Reconnect the power source to the system. The green AC Good LED located on the power supply should come on solid.

7. Verify that the green DC Good LED on the power supply is lit. The green LED indicates that the power supply is operating correctly.

8. Replace the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

9. If you are servicing a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

10. On a Model 6C4, close the rack doors.

On a Model 6E4, close the bezel door.

Central Electronics Complex (CEC) Backplane

Before performing the following procedure, read the "Safety Notices" on page xi.

To perform this procedure, you must remove and install the PCI riser card. To remove or install the PCI riser card from its docking connectors, requires a considerable amount of force. If you are servicing a Model 6C4, it is strongly recommended that the system drawer be removed from the rack. If you are servicing a Model 6E4, it is strongly recommended that the system be placed on its side, on a flat and stable surface. To avoid potential breakage, the Model 6E4 stabilizer foot closest to the desktop or floor is free from resting on any surface.

CEC Backplane Removal

Attention: Before you remove or disconnect any components, record their location. Before removing the CEC backplane from the system for servicing or replacement, record the settings of any jumpers located on the CEC backplane.

To remove the CEC backplane (system board), do the following:

1. On a Model 6C4, open the front and rear rack doors and place the system into the service position as described in "Placing the Model 6C4 into the Service Position" on page 368.

   On a Model 6E4, open the bezel door.

2. Shut down the system as described in either "Stopping the System without an HMC Attached" on page 363 or "Stopping the System with an HMC Attached and AIX Installed" on page 363.

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. Label and disconnect all other cables located at the rear of the system unit.

5. Remove the front bezel as described in "Front Bezel Removal (Model 6C4)" on page 381 or "Front Bezel Removal (Model 6E4)" on page 382.

6. Remove the service access cover as described in "Service Access Cover Removal (Model 6C4)" on page 370 or "Service Access Cover Removal (Model 6E4)" on page 375.

7. Record the slot number and location of each adapter being removed.

8. 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 363.

9. Remove the PCI adapters as described in "Non-Hot-Pluggable PCI Adapter Removal" on page 385.

10. Disconnect all power and signal cables from the media drives, located in media bay 1 and media bay 2. Then remove the media drives as described in "Media Removal" on page 405.

11. Remove the media device support shelf by loosening the thumbscrew and grasping the back edge of the shelf, sliding it back, then lifting it up and out of the system chassis.

    Note: The support leg located on the bottom of the support shelf is used to deactivate a microswitch. The microswitch is located on the CEC backplane and when deactivated, cuts off power to many of the components and connectors located on the CEC backplane. This support shelf must be correctly seated and secured in position after any new FRU is added to the system and you perform a system boot.

12. Remove all processor cards or the processor filler panel as described in "Processor Card Removal" on page 427.

13. Remove all power supplies or the power supply filler panel as described in "Non-Hot-Swap Power Supply Removal" on page 441 or "Hot-Swap Power Supply Removal" on page 444.

14. Remove the PCI riser card as described in "PCI Riser Card Removal" on page 413.

15. Remove the PCI cooling fans as described in "Hot-Swap Fan Assembly Removal" on page 401.

16. Remove the PCI cooling fan's stabilizing bracket.

    Note: The bracket is secured to the CEC backplane with one hex-head screw and two alignment tabs.

17. Remove and label all remaining power, signal, and SCSI cables.

18. Remove the processor cooling fans as described in "Hot-Swap Fan Assembly Removal" on page 401.

19. Remove the processor cooling fan cage assembly by removing the two hex-head screws located at the base of the cage and the eight hex-head screws that screw in from the back of the system chassis.

20. Remove the 16 threaded standoffs that secure the rear connectors located on the CEC backplane to the back of the system chassis.

21. Remove the power supply and processor assembly front support bracket.

    Note: The bracket is secured to the system chassis with four hex-head screws.

22. Remove the plastic membrane that covers the CEC backplane.

23. Remove the CEC backplane retaining screws.

    Note: For the locations of the retaining screws, see the following CEC backplane illustration.
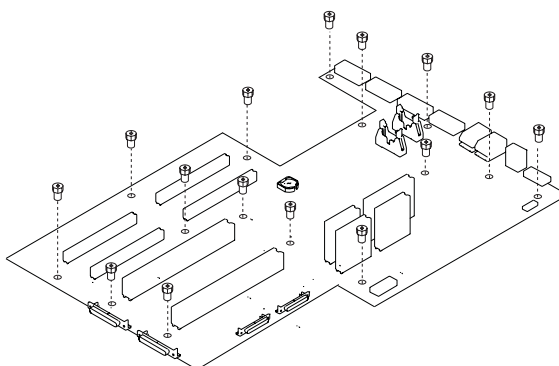
Note: Use care when removing the CEC backplane. Standoffs attached to the chassis base may damage the components attached to the bottom of the CEC backplane.

24. Slide the CEC backplane toward the front of the system (about 7 mm). A strip of sponge rubber attached to the back (bottom) of the CEC backplane will compress against an aluminum plate that is secured to the system chassis, preventing the CEC backplane from traveling forward any farther. This action allows the connectors located on the back of the CEC backplane to have enough room to clear the rear chassis bulkhead.
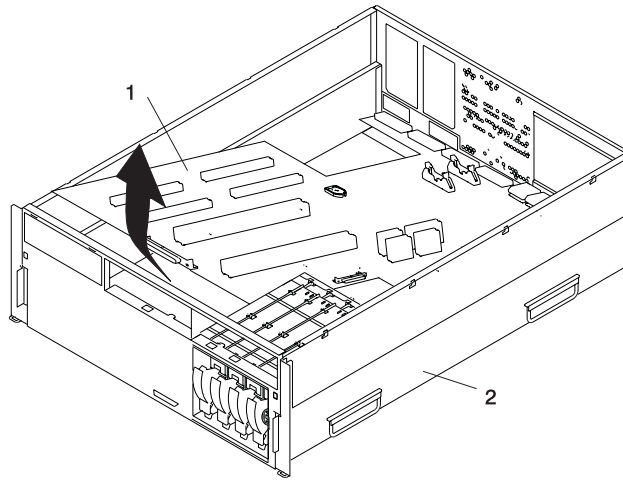
1 CEC Backplane
2 Model 6EC or Model 6E4

25. To remove the CEC from the chassis, lift the front edge of the CEC backplane and pull it out and away from the system chassis.
26. Put the CEC backplane in a safe place.
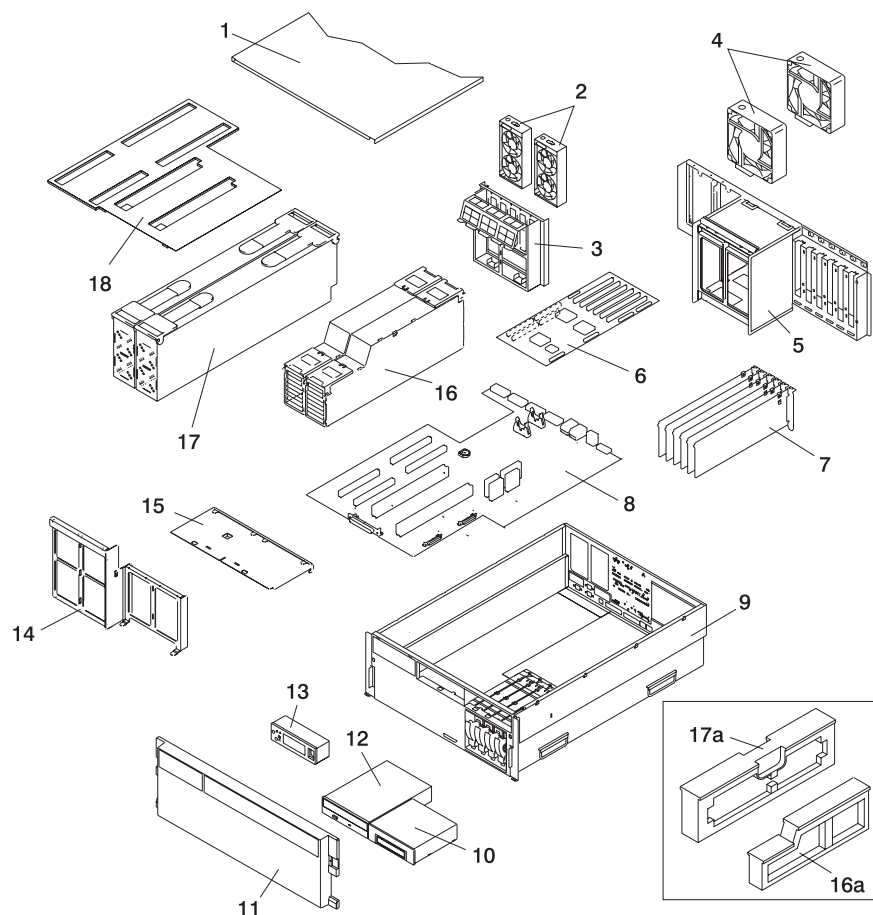
1   Service Access Cover (drawer)
2   Primary and Redundant PCI Cooling Fans
3   PCI Cooling Fan and Cable Management
    Bracket
4   Processor Cooling Fans

5   Processor Cooling Fan Cage
6   PCI Riser Card
7   PCI Adapters
8   CEC Backplane

9   Model 6C4 Chassis
10   Optional Media Device (for example diskette
    drive or tape drive)

11   Front Bezel
12   IDE CD-ROM Drive
13   Operator Panel

14   Front Power Supply and Processor Support
    Bracket
15   Media Device Support Shelf
16   Processor Assemblies 1 and 2
16a   Processor Filler Panel
17   Power Supply #1 (Primary)
    Power Supply #2 (Redundant)
17a   Power Supply Filler Panel
18   Plastic Membrane
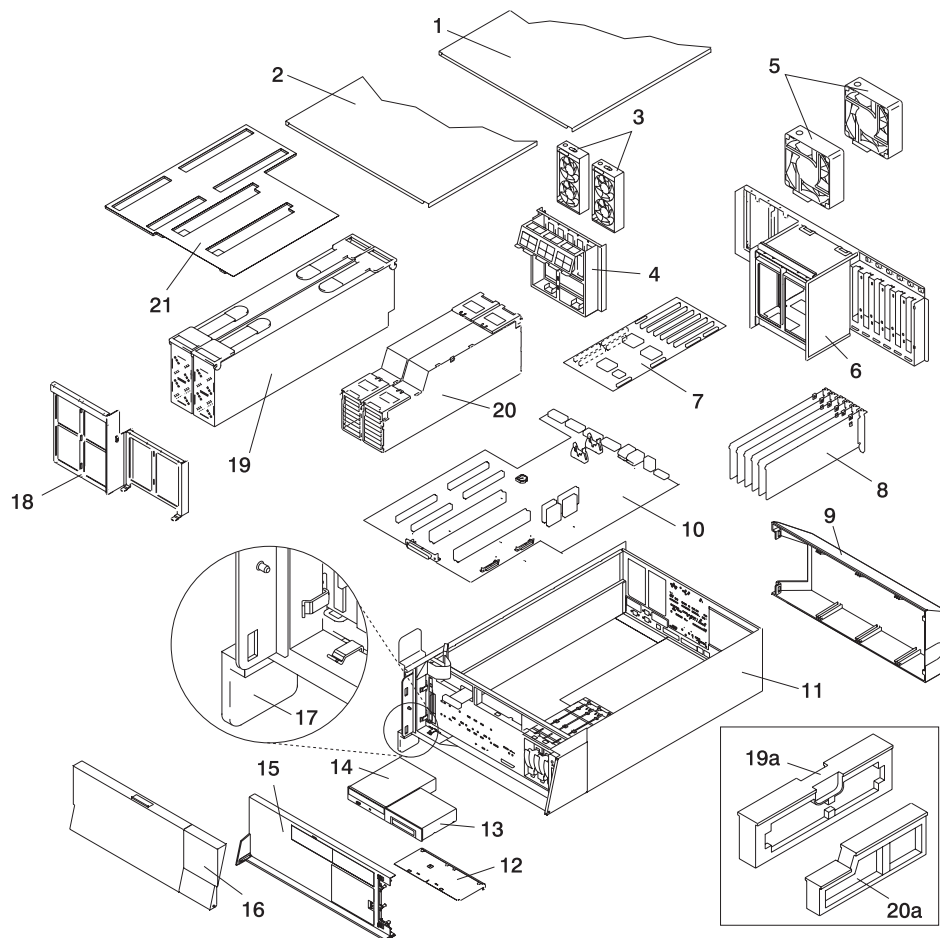
1	Outer Side cover	**13**	Optional Media Device (for example diskette drive or tape drive)
2	Service Access Cover	**14**	IDE CD-ROM Drive
3	PCI Cooling Fans	**15**	Bezel
4	PCI Cooling Fan and Cable Management Bracket	**16**	Bezel Door
5	Processor Cooling Fans	**17**	System Front Stabilizer Foot
6	Processor Cooling Fan Cage	**18**	Front Power Supply and Processor Support Bracket
7	PCI Riser Card	**19**	Power Supply #1 (Primary) Power Supply #2 (Redundant)
8	PCI Adapters	**19a**	Power Supply Filler Panel
9	Back Cover	**20**	Processor Assemblies 1 and 2
10	CEC Backplane	**20a**	Processor Filler Panel
11	Model 6E4	**21**	Plastic Membrane
12	Media Device Support Shelf		

CEC Backplane Replacement

To replace the CEC 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 363.

2. If necessary, remove the CEC backplane from the antistatic package.

3. Carefully grasp the CEC backplane along two edges, and align the retaining screw holes with its mating screw holes located on the system chassis.

   Note: Use care when replacing the CEC backplane. Standoffs attached to the chassis base may damage the components attached to the bottom of the CEC backplane.

4. Replace the CEC backplane and slide it toward the back of the system. Ensure that all of the back connectors located on the CEC backplane are positioned correctly through the rear chassis bulkhead.

5. Replace the retaining screws that secure the CEC backplane to the system chassis.

   Note: For proper alignment, insert all screws and finger-tighten only. Ensure the CEC backplane is not binding.

6. Tighten all CEC backplane retaining screws, including the 16 threaded standoffs that secure each connector to the back of the system chassis.

7. Reconnect all power, signal, and SCSI cables that attach to the CEC backplane.

8. Replace the plastic membrane over the CEC backplane.

9. Replace the front power supply and processor support bracket.

10. Replace the processor cooling fan cage assembly.

11. Replace the eight screws that secure the processor cooling fan cage assembly to the rear chassis.

12. Replace the 16 threaded standoffs that secure the CEC backplane rear connectors to the rear chassis.

13. Replace the processor cooling fans as described in "Hot-Swap Fan Assembly Replacement" on page 403.

14. Replace the PCI adapter cooling fan stabilizing cage by installing the two tabs located on the bottom edge of the cage into their mating slots located on the chassis. Secure the cage to the chassis with a retaining screw.

15. Replace the PCI cooling fans as described in "Hot-Swap Fan Assembly Replacement" on page 403.

16. Replace the PCI riser card as described in "PCI Riser Card Replacement" on page 417.

17. Replace all PCI Adapters as described in "Adding or Replacing a Non-Hot-Pluggable PCI Adapter" on page 387.

18. Replace the processor assembly and, if applicable, the processor assembly filler panel.

19. Replace the media device support shelf. Tighten the thumbscrew located on the media device support shelf.

   Note: When replacing the support shelf, ensure that the lower support leg activates the microswitch located on the CEC backplane. Failure to do so results in the system not being able to power on.

20. Replace all removed media drives, ensuring that the media drives removed are returned to the same media bay from which they were removed. Refer to "Media Replacement" on page 408, if necessary.

21. Reconnect all power and signal cables to their respective media drives.

22. Replace the power supplies and, if applicable, the power supply filler panel as described in "Non-Hot-Swap Power Supply Replacement" on page 443 or "Hot-Swap Power Supply Replacement" on page 446.

23. Replace the front bezel as described in "Front Bezel Replacement (Model 6C4)" on page 381 or "Front Bezel Replacement (Model 6E4)" on page 382.

24. Replace the service access cover, as described in "Service Access Cover Replacement (Model 6C4)" on page 370 or "Service Access Cover Replacement (Model 6E4)" on page 376.

25. If you are servicing a Model 6C4, push the system drawer back into the operating position as described in "Returning the Model 6C4 to the Operating Position" on page 369.

26. Reconnect all system power cables.

27. The service processor settings should have been set to their default values. If the service processor settings have not been set to their default values, the default values must be restored. To restore the default values settings, do one of the following:

    • Manually reset all settings.

    • If the service processor settings had previously been saved, The settings may be restored using the procedure in "Saving and Restoring Service Processor Settings" on page 310.

28. Check the firmware level that is on the new CEC backplane. Look at the top of the service processor main menu. If the firmware is not at the correct level, refer to "System Firmware Updates" on page 336.

29. Power on the system as described in "Starting the System without an HMC Attached" on page 364.

30. Reset the time and date.

31. 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.

32. If you are servicing a Model 6C4 and the system has successfully powered on, close the rack doors.

    If you are servicing a Model 6E4 and the system has successfully powered on, close the bezel door.

33. Check the firmware level on the new backplane; see "Determining the Level of Firmware on the System" on page 338. If the firmware is back-level, download the latest firmware from CORE or the Web. (See "System Firmware Updates" on page 336.)

Chapter 10. Parts Information

This chapter contains parts information for the pSeries 630 Model 6C4 and Model 6E4.

System Parts
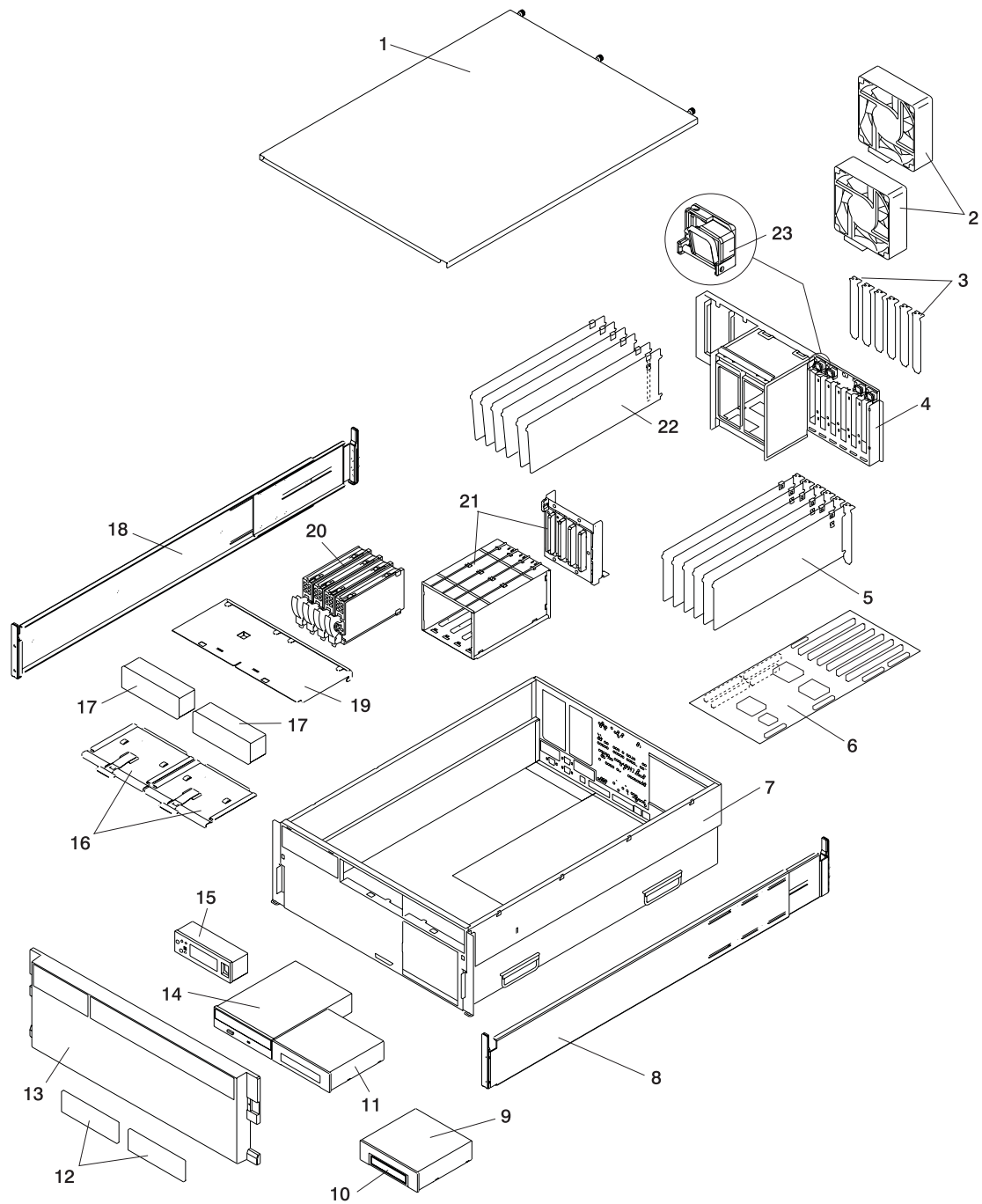
Index Number	FRU Part Number	Units Per Assembly	Description
1	N/A	1	Service Access Cover (drawer)
2	09P5865	Up to 2	Processor Cooling Fans
3	09P5887	(Up to 6)	EMC PCI-Slot Shield
4	N/A	1	Processor Cooling Fan Cage and Rear Bulk Head Assembly
5	See Note	Up to 6	PCI Adapters
6	09P5290	1	Six Slotted PCI Riser Card
	09P2702	1	Four Slotted PCI Riser Card (not shown)
7	N/A	1	Chassis
8	00P4988	1	Right Rack Extension Rail (Model 6C4 Only)
9	09P5902	1	Diskette Drive Cage (Optional)
10	76H4091 93F2361 02K3488	1	Diskette Drive (Optional)
11	See Note	1	Media Device (example: Tape Drive)
12	09P5874	Up to 2	Bezel Media Slot Filler
13	09P5872	1	Front Bezel (Model 6C4 Only)
14	See Note	1	IDE CD-ROM (optional)
15	00P3210	1	Operator Panel
16	00P2797	2	Media Carrier Trays
17	00P2801	Up to 2	Media Bay Filler
18	00P4989	1	Left Rack Extension Rail (Model 6C4 Only)
19	00P4133	1	Media Device Support Shelf
20	See Note	4	Disk Drives (4 Pack)
21	00P4132	1	Disk Drive Cage/Backplane Assembly
22	00P2799	Up to 6	PCI Plastic Light Pipe and Air Flow Separators
23	00P2800	Up to 6	PCI Card Lock Assemblies

Note: See *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* for part numbers.

System Parts (continued)
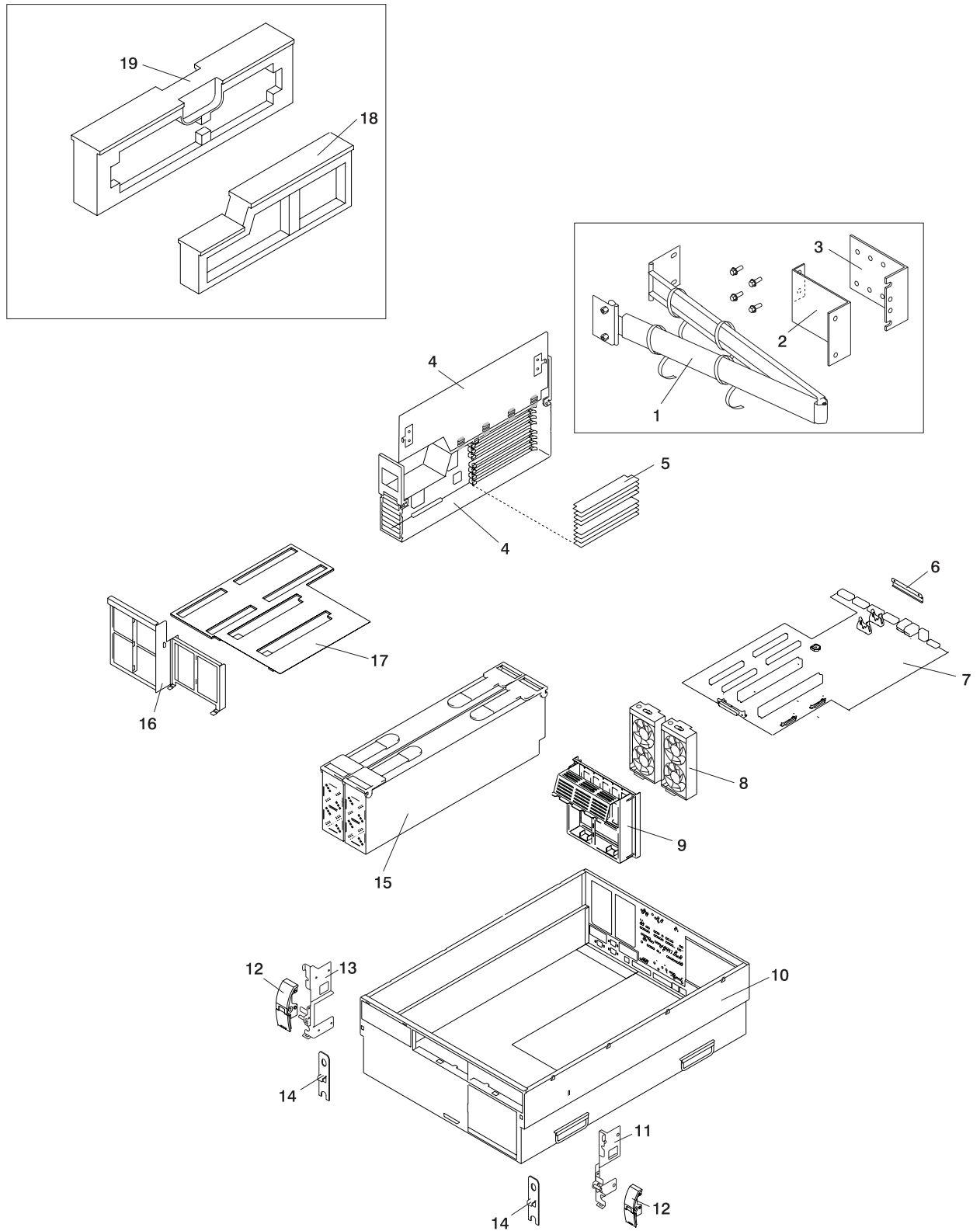
Index Number	FRU Part Number	Units Per Assembly	Description
1	21P4312	1	Cable Management Arm Assembly (Model 6C4 Only)
2	00P2806	1	Cable Carrier Support Bracket (Model 6C4 Only)
3	00P2807	1	Rack Flange Mounting Bracket (Model 6C4 Only)
4	00P2733	1	Processor Assembly, 1.45 GHz, 1-way
	00P2736	Up to 2	Processor Assembly, 1.45 GHz, 2-way
5	53P3224	Up to 16	256 MB DIMMs
	53P3226	Up to 16	512 MB DIMMs
	53P3230	Up to 16	1 GB DIMMs
	53P3232	Up to 16	2 GB DIMMs
6	00P3203	1 per RIO connector	RIO Connector Cover (only available on Model 6C4 that has not been upgraded to support an I/O subsystem)
7	00P4488	1	CEC Backplane
8	09P5866	2 Units	PCI Cooling Fans (2 Fans per Unit)
9	N/A	1	Internal Cable Management bracket
10	N/A	1	Chassis
11	00P4134	1	Right Release Latch Bracket (Model 6C4 Only)
12	09P5907	2	Release Latch (Model 6C4 Only)
13	00P4135	1	Left Release Latch Bracket (Model 6C4 Only)
14	00P2805	2	Latch Mounting Bracket (Model 6C4 Only)
15	00P4342	Up to 2	Power Supply (Redundant Power Supply is Optional)
16	N/A	1	Front Power Supply and Processor Assembly Support Bracket
17	N/A	1	Plastic separator
18	09P5893	1	Processor Filler
19	09P5892	1	Power Supply Filler
Not Shown	42F6841	Up to 2	AC Power Cable, (Power distribution bus to AC power supply, Model 6C4 only)

Note: See *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* for part numbers.

Model 6E4 Cover Set and Brackets
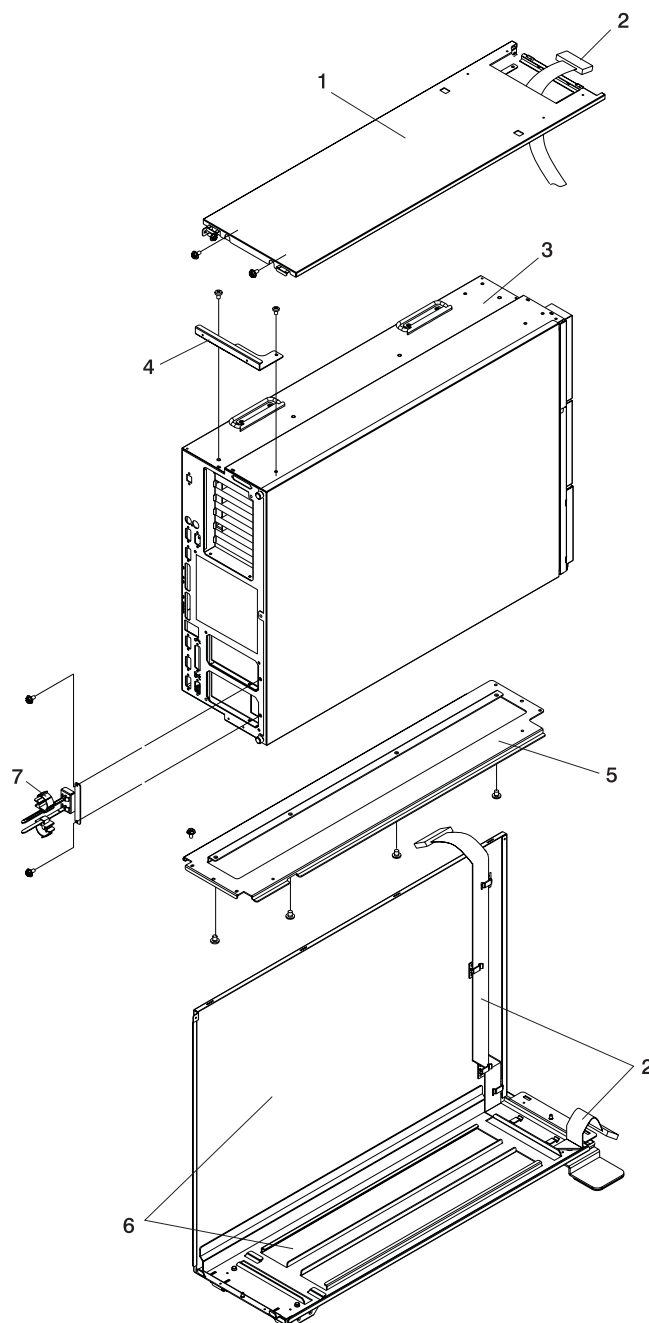
Index Number	FRU Part Number	Units Per Assembly	Description
1	00P3789	1	Top Cover Assembly (Model 6E4 Only)
2	00P3791	1	Operator Panel Extension Cable (Model 6E4 Only)
3	N/A	1	Model 6E4
4	00P3695	1	Top Cover Rear Mounting Bracket (Model 6E4 Only)
5	00P2810	1	System Bottom Mounting Plate (Model 6E4 Only)
6	00P3790	1	System Base and Right Cover Assembly (Model 6E4 Only)
7	00P3788	1	Power Cable Bracket (Model 6E4 Only)
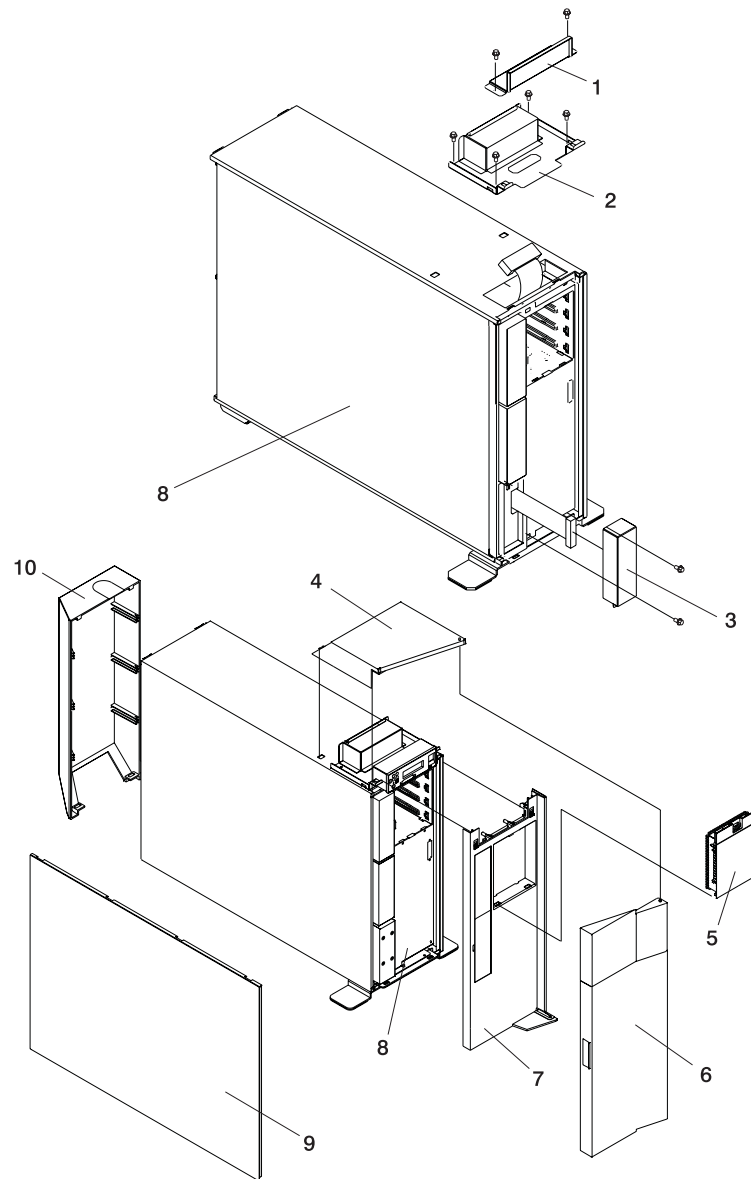
Index Number	FRU Part Number	Units Per Assembly	Description
1	00P3787	1	Operator Panel EMC Bracket (Model 6E4 Only)
2	00P2811	1	Operator Panel Bracket (Model 6E4 Only)
3	00P4637	1	Operator Panel EMC Filler (Model 6E4 Only)
4	00P2871	1	Top Cap (Model 6E4 Only)
5	00P2867	1	Disk Drive Access Cover (Model 6E4 Only)
6	00P2866	1	Front Door (Model 6E4 Only)
7	09P5884	1	Front Bezel (Model 6E4 Only)
8	N/A	1	Model 6E4
9	00P2593	1	Left Side Outer Access Cover (Model 6E4 Only)
10	00P2591	1	Rear Cover (Model 6E4 Only)

System Internal Cables

The following diagrams show the system cable connections. The first diagram illustrates the routing of the internal power cables. The second diagram illustrates the routing of the signal cables.

Internal Power Cable Routing Diagram
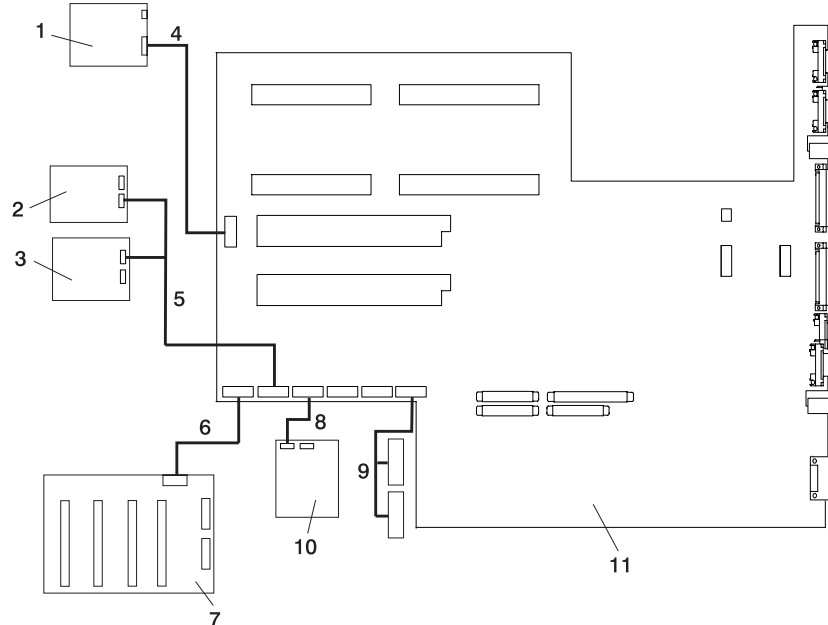
Index Number	FRU Part Number	Units Per Assembly	Description
1	00P3210	1	Operator Panel
2	See Note	1	IDE CD-ROM
3	See Note	Up to 2	SCSI Media Device
4	09P5870	1	CEC Backplane to Operator Panel Signal / Power Cable
5	09P5867	1	2-drop Power Cable from CEC Backplane to IDE CD-ROM and other SCSI Media Devices
6	09P5888	1	CEC Backplane to Disk Drive Backplane Power Cable
7	00P4132	1	Disk Drive Backplane
8	09P5864	1	Diskette Drive to CEC Backplane Power Cable
9	09P5900	1	PCI Cooling Fans #3 and #4 Power Cable
10	See Note	1	Diskette Drive
11	00P4488	1	CEC Backplane

Notes:

1. For more information on power cables, go to "External AC Power Cables" on page 44.

2. See *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* for part numbers.

Note:

Internal Signal Cable Routing Diagram
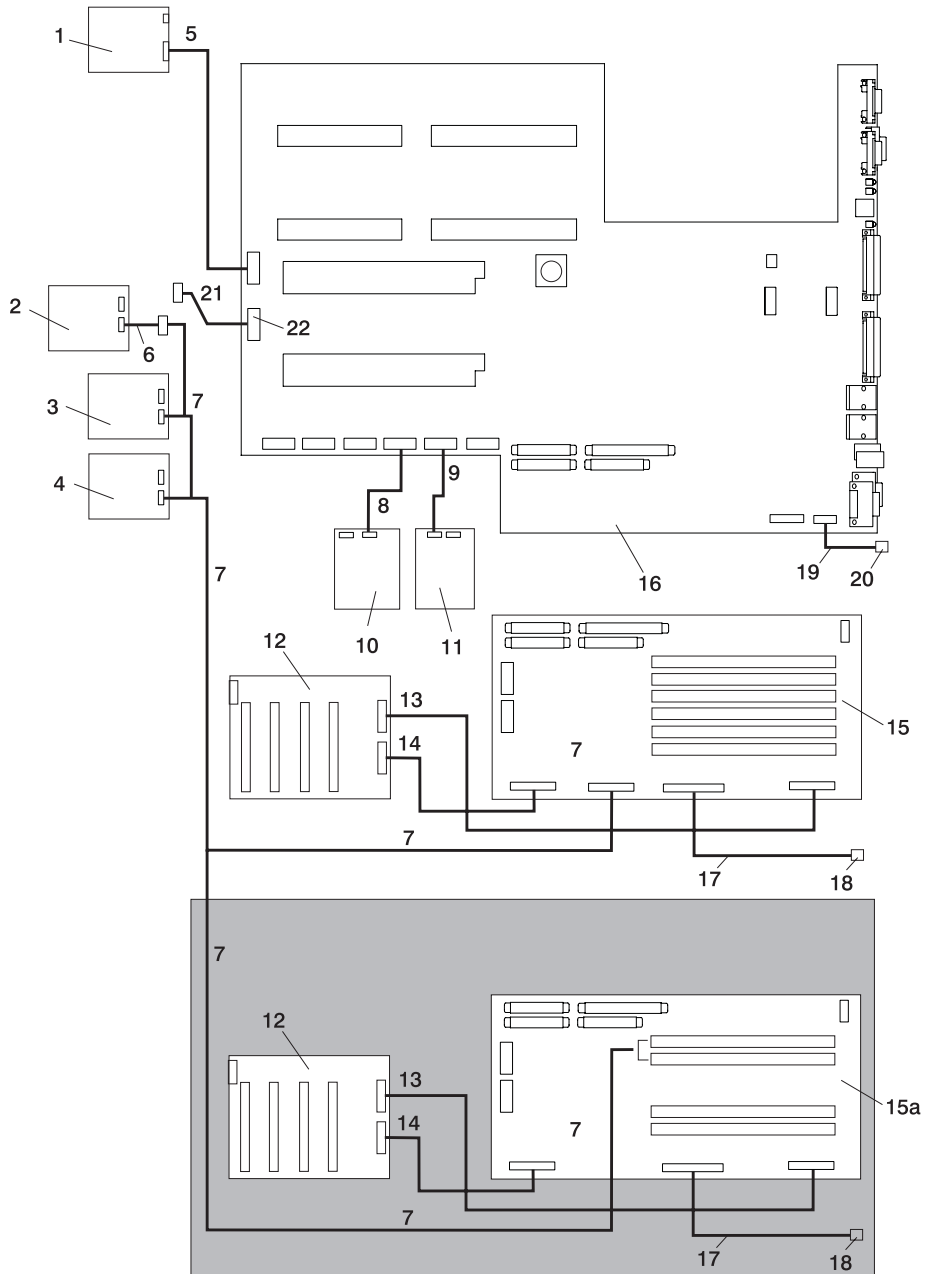
Index Number	FRU Part Number	Units Per Assembly	Description
1	00P3210	1	Operator Panel
2	See Note	1	SCSI Media Device (50-Pin)
3	See Note	1	SCSI Media Device (68-Pin)
4	See Note	1	SCSI Media Device (68-Pin)
5	09P5870	1	CEC Backplane to Operator Panel Signal / Power Cable
5	00P3791	1	Operator Panel Extension Cable (7028 Model 6E4 Only)
5	00P3822	1	Operator Panel Interposer (7028 Model 6E4 Only)
6		1	SCSI Media 50-pin to 68-pin Converter Cable
7	09P5862	1	Integrated SCSI Media Device Signal Cable
8	09P5863	1	CEC Backplane Connector to Diskette Drive Signal Cable
9	09P5868	1	CEC Backplane to IDE CD-ROM Signal Cable
10	See Note	1	Diskette Drive
11	See Note	1	IDE CD-ROM
12	00P4132	1	Disk Drive Backplane
13	09P5895	1	PCI Riser Card to Disk Drive Backplane Signal Cable (50 pin)
14	09P5889	1	PCI Riser Card to Disk Drive Backplane Signal Cable (68 pin)
15	09P5290	1	6 Slotted PCI Riser Card
15a	09P2702	1	4 Slotted PCI Riser Card
16	00P4488	1	CEC Backplane
17	09P5869	1	PCI Riser Card to External SCSI Signal Cable
18	N/A	1	External SCSI Port
19	09P5899	1	CEC Backplane to Rack Indicator Signal Cable
20	N/A	1	Rack Indicator Port
21	00P3200	1	CEC Backplane to Debug Port Signal Cable
22	N/A	1	Debug Parallel Port

Note: See *RS/6000 @server pSeries Diagnostic Information for Multiple Bus Systems* for part numbers.

Power Cable
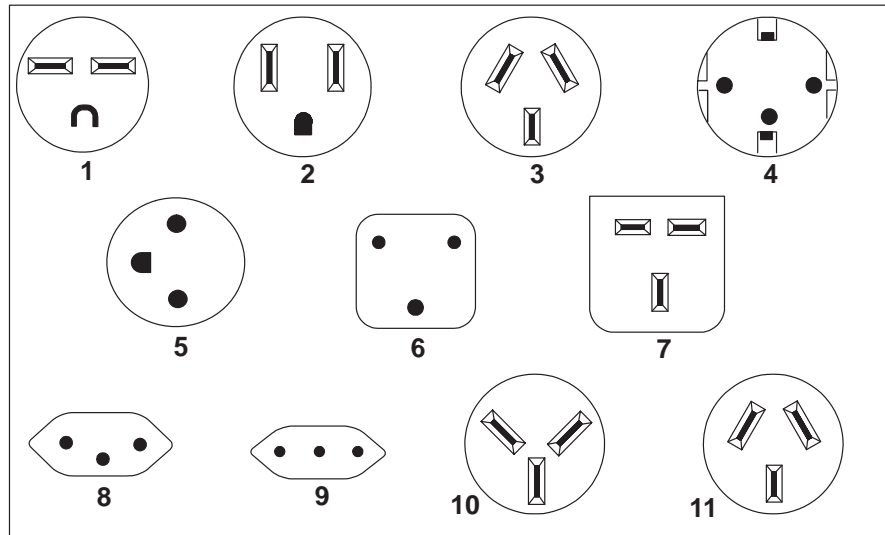
Index	Part Number	Country or Region
1	1838574	Bahamas, Barbados, Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Philippines, Taiwan, Thailand, Trinidad, Tobago, U.S.A. (except Chicago), 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 6C4 only)

Keyboards and Mouse (White)
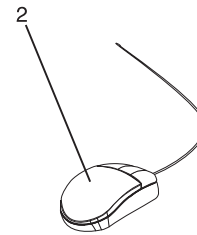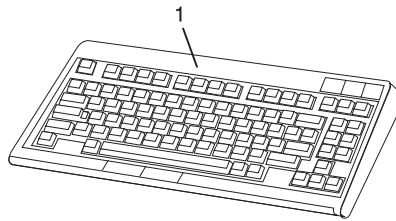
Index Number	FRU Part Number	Units Per Assembly	Description
1	93H8120	1	Keyboard, 101 United States English (ID 103P)
	93H8123	1	Keyboard, 102 Spanish (ID 171)
	93H8125	1	Keyboard, 102 Arabic (ID 238)
	08L0904	1	Keyboard, 102 Belgium French (ID 120)
	08L0905	1	Keyboard, 102 Belgium (ID 120)
	08L0906	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)
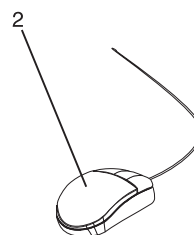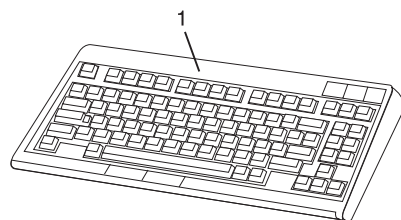
Index Number	FRU Part Number	Units Per Assembly	Description
1	07L9446	1	Keyboard, 101 United States English (ID 103P)
	07L9447	1	Keyboard, 102 Canada French (ID 058)
	07L9448	1	Keyboard, 102 Canada French (ID 445)
	07L9449	1	Keyboard, 102 Spanish (ID 171)
	07L9450	1	Keyboard, 104 Brazil Portuguese (ID 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. Fault and Attention LEDs

This chapter contains information about fault 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).
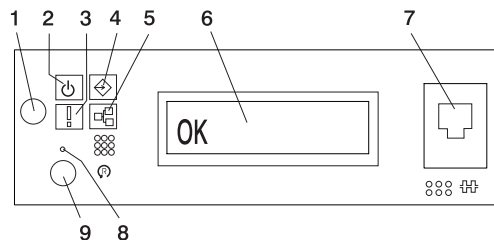
1 Power-On Button		**6** Operator Panel Display
2 Power LED		**7** (FS1) Front Serial Connector (RJ-48 Connector)
3 Attention LED		**8** Service Processor Reset Switch (Pinhole)
4 SCSI Port Activity		**9** System Reset Button
5 Ethernet Port Activity		

Number	Component Name	Component Description
1	Power-On Button	Turns the system power on and off.
2	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 button is pressed until the power-on LED goes from blinking to on solid. During the transition period, you may observe the blinking intervals accelerate.
3	Attention LED	Normal State - LED is off.
4	SCSI Port Activity	Normal State - LED is on when there is SCSI activity.
5	Ethernet Port Activity	Normal State - LED is on when there is Ethernet activity.
6	Operator Panel Display	Displays current status of system startup, or diagnostic information in the event of a hardware problem.
7	Front Serial Connector (FS1)	Serial port uses RJ-48 connector. Use to plug in external devices at the front of the system unit.
8	Service Processor Reset Switch (Pinhole)	Service Personnel Use
9	System Reset Button	Resets the system

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, or processor). LEDs are either green or amber.

Green LEDs indicate either of the following:

* Electrical power is present.
* Activity is occurring 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 on 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	LED Color	OFF	ON	Blink
Power and Packaging LEDs						
Rack Indicator	Drawer Sum	Top of Rack	Amber (1x)	Normal	Fault	Identify
	AC Input		Green (1x)	No Input	AC Good	N/A
System Unit	Attention	Operator Panel + Rear	Amber (2x)	Normal	Fault	Identify
	Power	Operator Panel + Rear	Green (2x)	No AC	System Powered On	• Standby • Transition of Power from Standby to Power-On (Blinking intervals may accelerat before remaining on solid)
Fans	Identify	Fan Top	Amber (4x)	Normal	Fault	N/A
Power Supply (AC)	Input Source	Power Supply Front + Top	Green (1x)	No Input	AC Input Good	N/A
	Fault	Power Supply Front + Top	Amber (1x)	Normal	Fault	Fast Blink - Identify Slow Blink - SPCN communication failure .25 Hz
	DC Output Good	Power Supply Front + Top	Green (1x)	DC Off	DC Good	Standby
Disk Drives (DASD)	Activity	DASD Board	Green (4x)	No Activity	Activity	N/A
	Remove Identify	DASD Board	Amber (4x)	Normal	Action	Identify
Optional Media	No LED					
Electronics Component LEDs						
PCI Adapter Connectors (Slots)	Activity	Chassis Rear, Inside System Next to Adapter	Green	Refer to the PCI Adapter Table on page 473.		
	Identify	Chassis Rear, Inside System Next to Adapter	Amber	Refer to the PCI Adapter Table on page 473.		
Memory DIMMs	Identify	Processor Housing (Top)	Amber (8x)	Normal	Identify	
CEC Backplane	Identify	CEC Backplane	Amber (1x)	Normal	Identify	
Processor Board	Identify	Processor Housing (Top)	Amber (1x)	Normal	Identify	

Unit (FRU)	LED Function	Location	LED Color	OFF	ON	Blink
Unit (FRU)	LED Function	Location	LED Color	OFF	ON	Blink
PCI Riser Card	Identify	PCI Riser Card	Amber (1x)	Normal	Identify	
Disk Drive Backplane	No LED					
Port LED Indicators						
RIO Port	Identify	CEC Backplane	Amber (2x)	Normal	N/A	Identify
SCSI Port	Activity	Operator Panel	Green (1x)	No Activity	Activity	
Ethernet Port Ethernet 1, Ethernet 2	Mode	Chassis Rear	Green (2x)	10 Mbit Mode	100 Mbit Mode	
	Activity	Chassis Rear	Green (2x)	No Activity	Activity	
	Activity	Operator Panel	Green (1x)	No Activity	Activity	

See the following illustration for Ethernet connector LED locations on the rear of the Model 6C4 and Model 6E4.
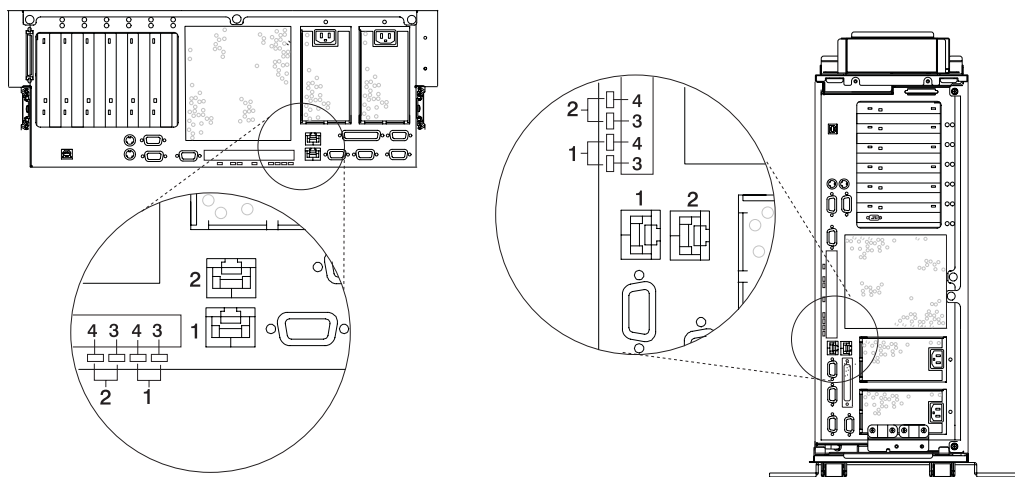
1 Ethernet 1 Connector and LED
2 Ethernet 2 Connector and LED
3 Mode LED
  10 Mbit - Off
  100 Mbit - On
4 Activity LED
  On - Receiving Information
  Off - Not Receiving Information

See the following illustration for RIO connector LED locations on the rear of the Model 6C4 and Model 6E4.
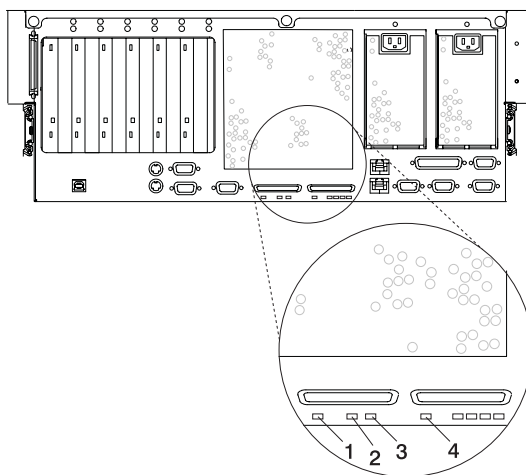
1 RIO-G 0 Identify LED
2 System Drawer Rear Power LED
3 System Drawer Rear Attention LED
4 RIO-G 1 Identify LED

The following table explains the meaning of the on and off status of the PCI-X adapter LEDs.

PCI Adapter Table				
LED	Inactivity	Active	Identify	Action
Green + Amber (2 LEDs)	Green - Off Amber - Off	Green - On Amber - Off	Green - On Amber - Blinking	Green - Off Amber - Blinking

Resetting the LEDs

After the repair action is completed, do the following:

1. Log in as root user.
2. At the command line, type `diag`.
3. Select **Task Selection**.
4. Select **Log Repair Action**.
5. Select the device that was repaired.
6. Press F10 to exit diagnostics.

If the Attention LED remains on after you have completed the repair action and reset the LEDs, call for service support.

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)		Declared A-Weighted Sound Pressure Level, <LpAm>(dB) at 1 meter Bystander Position	
	Operating	Idling	Operating	Idling
6E4 (Deskside)	6.0	5.9	42	41
6C4 (Rack Drawer)	6.1	6.0	44	43

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. 7028 Model 6E4 levels apply to the following system configurations: 2 way 1 gigahertz processor, 2 disk drives, 2048 GB of RAM, non-redundant power supply (One power supply, 1 processor fan).

4. 7028 Model 6C4 levels apply to the following hardware configurations: 2 way 1 gigahertz processor, 2 disk drives, 2048 GB of RAM, redundant power supply (Two 645 watt power supplies, 2 processor fans).

5. 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.

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

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Information concerning products made by other than the manufacturer was obtained from the suppliers of those products, their published announcements, or other publicly available sources. The manufacturer has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to products made by other than the manufacturer. Questions on the capabilities of products made by other than the manufacturer should be addressed to the suppliers of those products.

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).

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 309.
5. Set the system name. See "Privileged User Menus" on page 311.
6. Enable surveillance. See "Service Processor System Monitoring - Surveillance" on page 341.
7. Configure Call-In/Call-Out. See "Call-In/Call-Out Setup Menu" on page 329.
8. Exit the service processor menus.
9. Unplug the power cord from the system.
10. Attach modems (if needed). See "Accessing the Service Processor Menus Remotely" on page 310.
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 480
    - Call-Out, see "Testing Call-Out" on page 480
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" on page 481.

The system should be powered off as a result of the "Service Processor Setup Checklist" on page 479.

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 521 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 332) and customer voice (on page 332). 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 331 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 6C4 Rack Installation Inventory" on page 485.

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	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)	

This table continues on the following page.

This table continued from the previous page.

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 following illustration shows the minimum space required. The amount of space needed by the units during service is indicated by the dotted line in the following figure.

For multiple racks placed side by side, the left and right clearances apply only to the leftmost and rightmost rack.

Rack Configuration
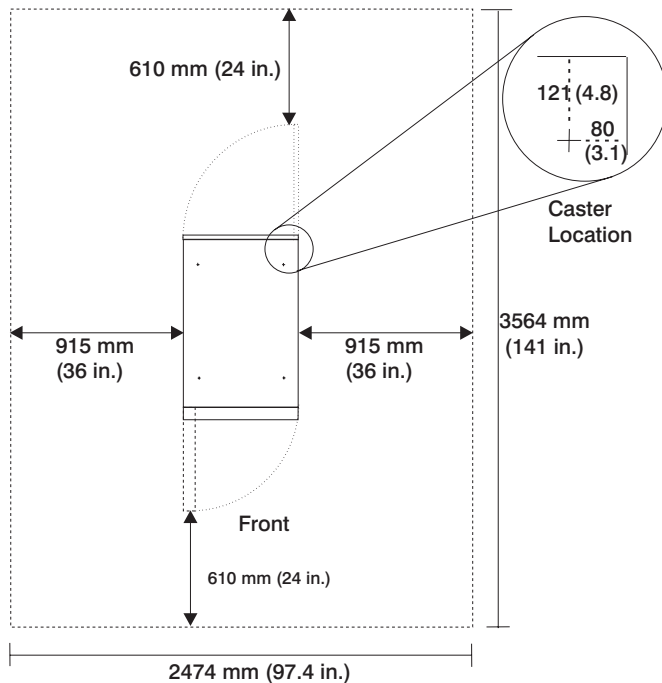
Note: Rack units are large and heavy and are not easily moved. Because maintenance activities require access at both the front and back, allow for extra room. The footprint shows the radius of the swinging doors on the rack.

Model 6C4 Rack Installation Inventory

☐ Books, CD-ROM and Other Media
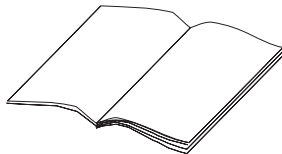
☐ ″About Your Machine″ Document
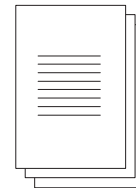
☐ Power Cables (1 standard, 2 optional)
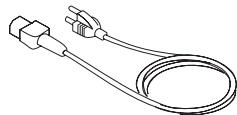
☐ 9-Pin to 25-Pin Serial Converters (2) (optional)
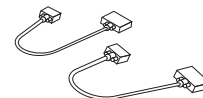
□ ASCII Terminal (optional)
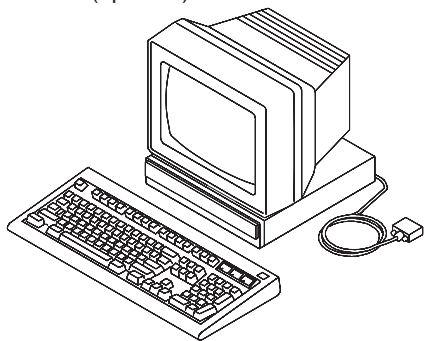
□ Display, Cable (optional), and Cable Toroid (optional)
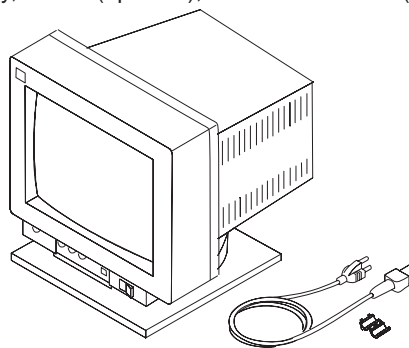
□ Mouse (optional)
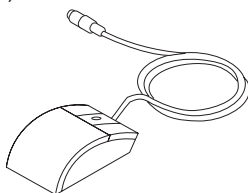
□ Keyboard (optional), Wrist/Palm Rest (optional)
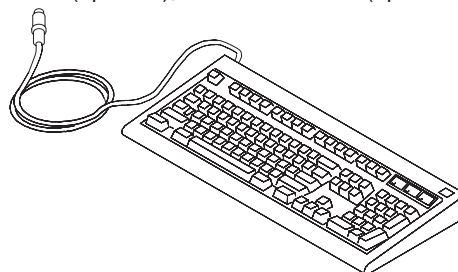
□ Model 6C4
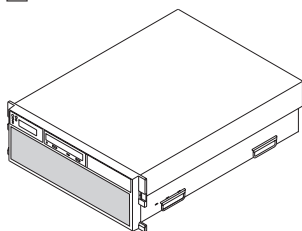
□ Rack-Mounting Template
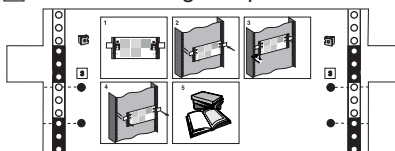
□ 2 Slide Rail Assemblies
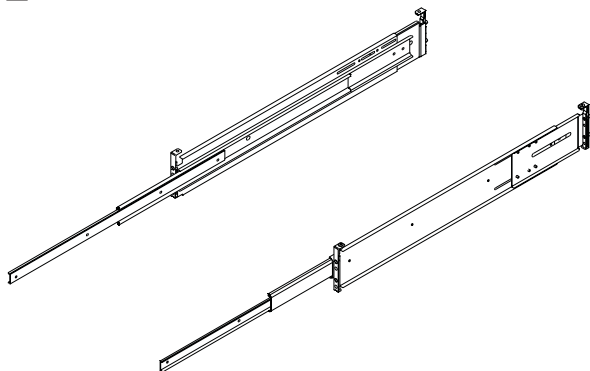
□ Cable Management Arm
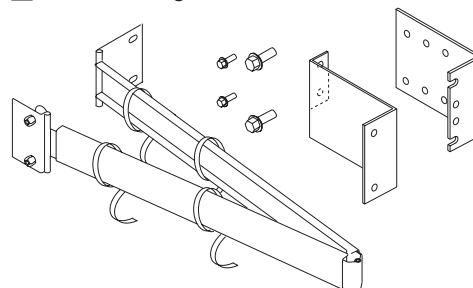
☐ Rack-Mounting Kit contains:
8 system to rail screws
8 rail to rack screws
2 nut clips
2 latch-mounting brackets
2 system-retaining thumbscrews
alignment pin bracket kit
8 assorted alignment pins
1 strip of self-adhesive placement dots
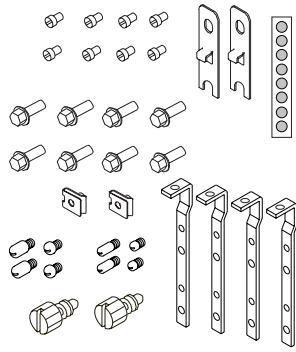
☐ RJ-48 to 9-Pin Converter Cable (1)
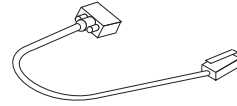
Read the Rack Safety Instructions

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 6C4, 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

Attaching 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.
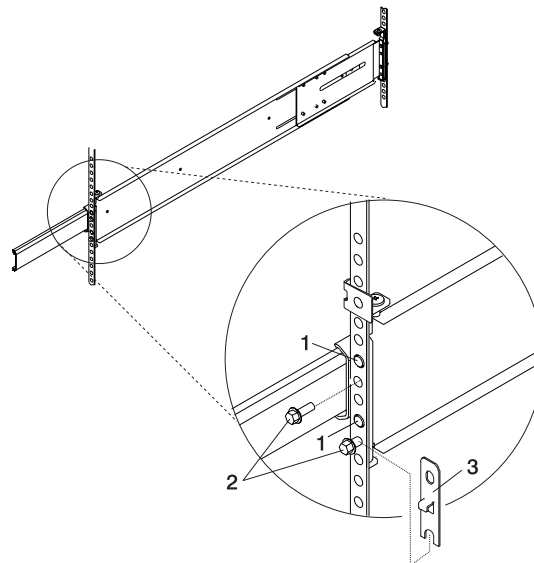
To install the rack-mounting hardware into the rack, do the following:

1. Locate the rack-mounting hardware kit, rack-mounting template, and the system rails that were shipped with your system.
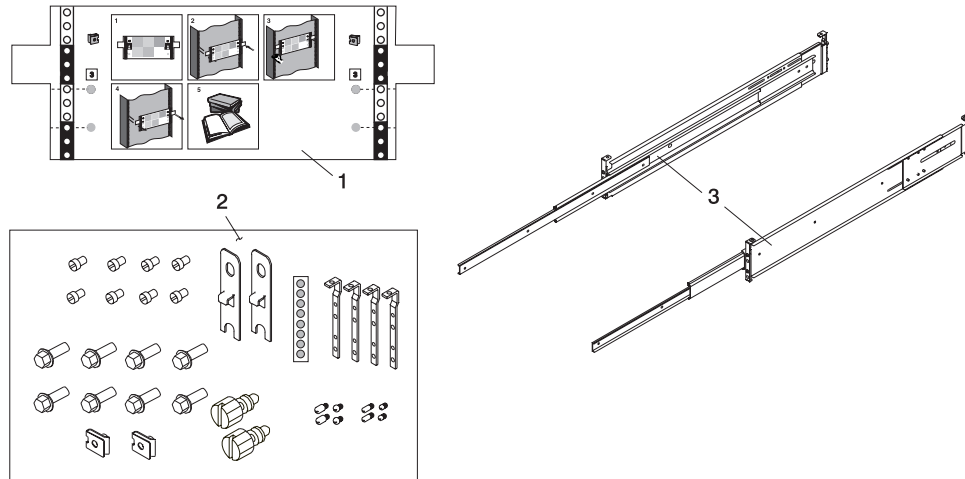
1 Rack-Mounting Template
2 Rack-Mounting Hardware Kit
3 System Rail Assemblies

Notes:

a. 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 are labeled on the front lower corner, left or right. The back of the rails can be identified by the two large alignment pins and the rail-length adjusting plate. The top of the rails can be identified by the screws located on the top of the front and rear rail flange. See the following illustration.

b. The rack-mounting hardware kit has four changeable rail-alignment brackets and two sets of alignment pins. If the alignment pins that came adjoined to the rails do not fit your rack, remove the brackets from the rails. To remove the alignment-pin bracket from each of the rails, do the following:

   1) Remove the screw located on top of the rail-bracket assembly.

   2) Slide the top of the alignment pin bracket from beneath the front-rail bracket.

   3) Lift the bottom tab out of the front-rail bracket slot.

   After determining the correct size of the alignment pin to use, mount the alignment pins onto the replacement brackets. Install the replacement brackets onto the rails. Rail bracket assembly procedure is the reverse of the removal procedure.

c. Always mount the brackets that contain the short alignment pins onto the front of the rail.
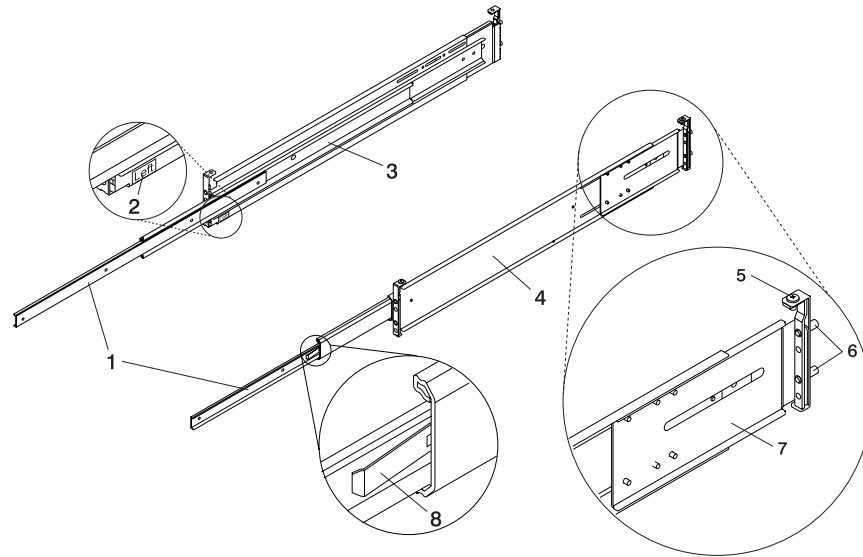
1	Left and Right Inner Rails	**5**	Top-Rail Flange Screw (Rear)
2	Left Rail Label	**6**	Rear-Rail Alignment Pins
3	Left Rail Assembly	**7**	Rail-Length Adjusting Plate
4	Right Rail Assembly	**8**	Inner-Rail Safety Release Latch

2. Remove the front rack door, and if necessary, remove the rear rack door. 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. If you do not have a rack-mounting template, go to step 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.

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.

4. 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 an EIA unit 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.
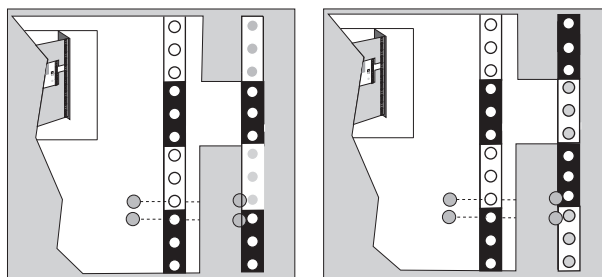
To use the rack mounting template, do the following:

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.

b. Install the nut clips into the holes as indicated by the template. The nut clips aid in securing the system drawer to the rack while in transit.

> **Note:** Whenever a populated rack is being moved, secure your system drawers with two retaining thumbscrews threaded through the nut clips. This action secures the system front bezel and system chassis to the rack.
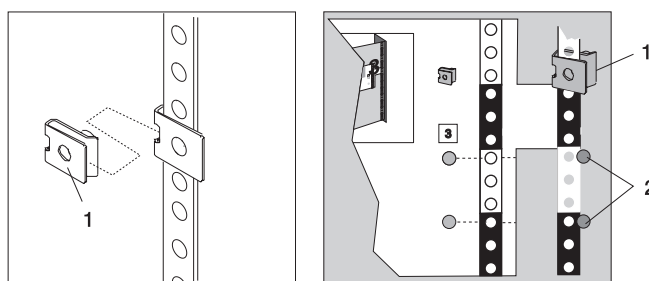
| **1** Nut Clip | **2** Self-Adhesive Dots |

c. 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.

d. Remove the rack-mounting template from the front of the rack. The front of your rack should now contain two nut clips and four self-adhesive dots.

e. 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.

f. 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.

g. Do not install any nut clips on the rack's rear flange as indicated by the rack mounting template.

h. 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.

i. Continue to step 5.

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.
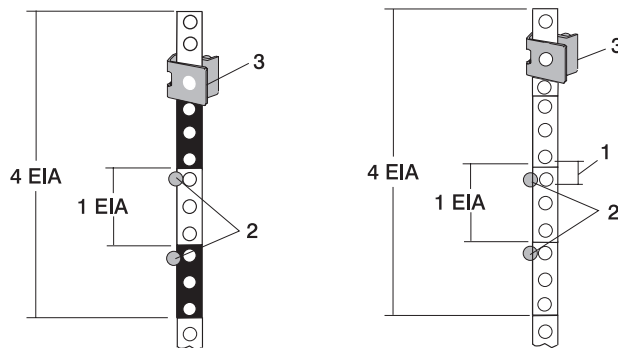
| **1** Self-Adhesive Dot Placement | **3** Nut Clip |
| **2** EIA Unit Hole Spacing | |

5. 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.

   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. Secure a nut clip to the rack, four holes up from the top dot (bottom hole of the top EIA unit). The nut clip aids in securing your system drawer to the rack while in transit.

      Notes:

      1) If you are counting the holes, begin with the hole identified by the top dot and count up four holes. Place the nut clip next to the fourth hole.

      2) Whenever a populated rack is being moved, secure the system drawers with two retaining thumbscrews threaded through the nut clips. This action secures the system front bezel and system chassis to the rack.

      3) When counting from the nut clip to the bottom dot, there is an 8-hole span.

   e. Repeat substeps a through d to the corresponding holes located on the left side of the rack.

6. Before installing the system rail assemblies into your rack, you must first determine the type of system rail assembly shipped with your Model 6C4. To determine the system rail assembly type, do the following:

   a. Unpack the system rail assemblies.

   b. Fully extend the inner and middle rail sections of each rail assembly.

   c. Does the middle rail section of each system rail assembly have a retaining screw clearance hole drilled through it as shown in the following illustration? If so, go to "System Rail Assembly (Type 1)" on page 494.
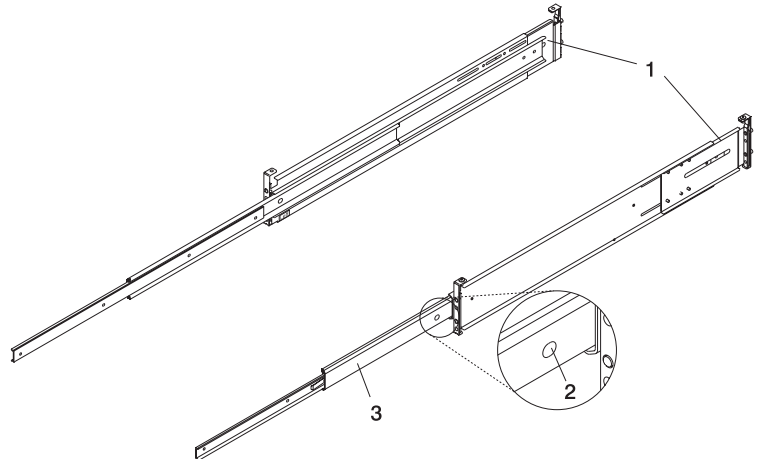
| **1** System Rail Assembly (Type 1) | **3** Middle Rail Section |
| **2** Rail to System Retaining Screw Clearance Hole | |

   d. If your system rail assemblies *do not* have a clearance hole drilled through the middle rail section, as shown in the following illustration, go to "System Rail Assembly (Type 2)" on page 497.
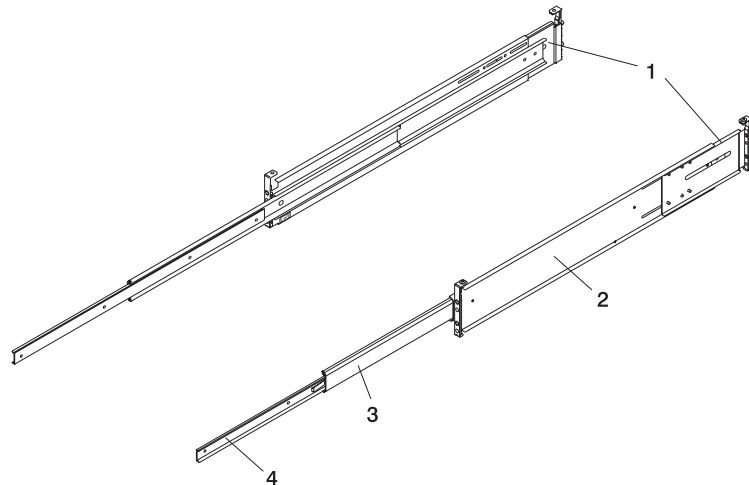
| **1** System Rail Assembly (Type 2) | **3** Middle Rail Section |
| **2** Outer Rail Section | **4** Inner Rail Section |

System Rail Assembly (Type 1)

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 system rail assembly (type 1), do the following:

1. Select the right rail assembly.
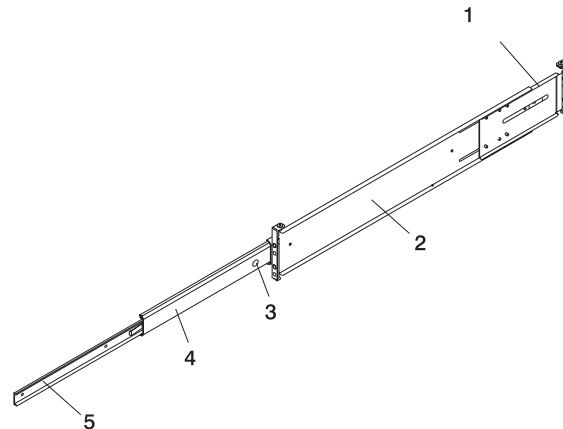
1	Right Rail Assembly (Type 1)	**4**	Middle Rail Section
2	Outer Rail Section	**5**	Inner Rail Section
3	Rail to System Retaining Screw Clearance Hole		

> **Note:** 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 are labeled on the front lower corner, left or right. The back of the rails can be identified by the two large alignment pins and the rail-length adjusting plate. The top of the rails can be identified by the screws located on the top of the front and rear rail flange.

2. Position yourself at the front of the rack.
3. 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.
4. Insert the rail's front-alignment pins into the rack front flange holes identified by the self-adhesive placement dots previously installed. Ensure that the EIA location is the same from front to back and the rails are level from front to back.
5. Loosely thread one of the rail-retaining screws into the rail's bottom screw hole. The screw hole is located one position below the bottom alignment pin.
6. Locate one of the latch brackets, and place the bottom slot of the latch bracket over the rail-retaining screw.

1 Front Slide Rail Alignment Pin
2 Retaining Screws
3 Latch Bracket

7. Finger-tighten a second retaining screw through the top screw hole of the latch bracket. After the latch bracket is in place, ensure that both screws are finger-tight.

   Attention: Do not tighten any of the screws more than finger-tight until instructed to do so. Tightening the screws prevents the rails from self-aligning when the system drawer is attached.

8. Go to the back of the rack.

9. Loosen, but *do not remove*, the six retaining screws that secure the rail-length adjusting plate to the rail.

   Note: The rail-length adjusting plate should not move freely when loosened.

1 Rail-Length Adjusting Plate
2 Retaining Screws for Rail-Length Adjusting Plate

10. Facing the back of the rack, ensure that the right rail's two alignment pins are positioned in the correct EIA unit's holes. Use two rack-retaining screws to attach the rail brackets to the rack flanges. Finger-tighten both screws.

11. Using a screwdriver, tighten the six screws that secure the rail-length adjusting plate.

1 Rail Assembly (Labeled ″Left″ in the Front Lower Corner)
2 Rack to Cable Management Arm Bracket
3 Top Rear Alignment Pin
4 Bottom Screw
5 Top Screw

12. Locate the bracket that attaches the cable management arm to the rack flange.
13. Repeat substeps 1 through 11 when installing the left rail.
14. Position the bracket's bottom hole over the rail's top alignment pin.

    Note: The bracket's bottom slot should now align with the top screw hole of the rail flange.
15. Attach a second retaining screw through the screw hole located below the top alignment pin. Finger-tighten the screw.
16. Using a screwdriver, tighten the six screws that secure the rail-length adjusting plate.
17. After both rails have been installed, ensure that none of the rail's front retaining screws are more than finger-tight. The rails must be level from front to back and from left to right.
18. The rails are now completely installed. All screws used to attach the rails to the rack must be finger-tight only.

    Notes:
    a. Both slide rails *must* be completely retracted into the rack.
    b. The rails *must* be level from front to back and from left to right.
19. Read and understand the following caution notices, then go to "Installing the Model 6C4 into the Rack Enclosure" on page 501.
    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

System Rail Assembly (Type 2)

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 system rail assembly (type 2), do the following:

1. Beginning with the right slide rail, remove the right inner rail, as shown in the following illustration.
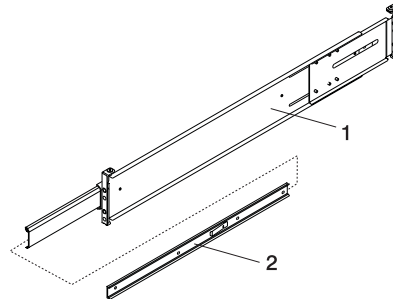
1 Right Outer Rail Assembly
2 Right Inner Rail

2. Position yourself at the front of the rack.
3. Facing the rack, note the EIA number of the previously installed self-adhesive dots. Insert the rail's rear-alignment pins into the corresponding EIA unit holes located on the rear flange.
4. Insert the rail's front-alignment pins into the rack front flange holes that have been identified by the self-adhesive placement dots. Ensure that the EIA number is the same from front to back.
5. Loosely thread one of the rail-retaining screws into the rail's bottom screw hole. The screw hole is located one position below the bottom alignment pin.
6. Locate one of the latch brackets, and place the bottom slot of the latch bracket over the rail-retaining screw. Finger-tighten the screw.

1 Front Slide Rail Alignment Pin
2 Retaining Screws
3 Latch Bracket

7. Finger-tighten a second retaining screw through the top screw hole of the latch bracket. After the latch bracket is in place, ensure that both screws are finger-tight.

   Attention: Do not tighten any of the screws more than finger-tight until instructed to do so. Tightening the screws prevents the rails from self-aligning when the system drawer is attached.

8. Go to the back of the rack.

9. Loosen, but *do not remove*, the six retaining screws that secure the rail-length adjusting plate to the rail.

   Note: The rail-length adjusting plate should not move freely when loosened.

   1 Rail-Length Adjusting Plate
   2 Retaining Screws for Rail-Length Adjusting Plate

10. Facing the back of the rack, ensure that the right rail's two alignment pins are positioned in the correct EIA unit's holes. Use two rack-retaining screws to attach the rail brackets to the rack flanges. Finger-tighten both screws.

11. Using a screwdriver, tighten the six screws that secure the rail-length adjusting plate.

12. Locate the bracket that attaches the cable management arm to the rack flange.

13. Repeat substeps 1 through 11 when installing the left rail.
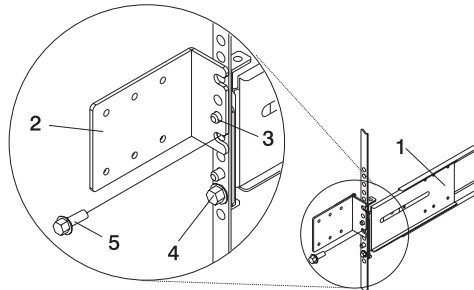
   1 Rail Assembly (Labeled ″Left″ in the Front Lower Corner)
   2 Rack to Cable Management Arm Bracket
   3 Top Rear Alignment Pin
   4 Bottom Screw
   5 Top Screw

14. Position the bracket's bottom hole over the rail's top alignment pin.

   Note: The bracket's bottom slot should now align with the top screw hole of the rail flange.

15. Attach a second retaining screw through the screw hole located below the top alignment pin. Finger-tighten the screw.

16. Using a screwdriver, tighten the six screws that secure the rail-length adjusting plate.

17. After both rails have been installed, ensure that none of the rail's front retaining screws are more than finger-tight. The rails must be level from front to back and from left to right.

18. The rails are now completely installed. All screws used to attach the rails to the rack must be finger-tight only.

    Notes:

    a. Both slide rails *must* be completely retracted into the rack.

    b. The rails *must* be level from front to back and from left to right.

19. Read and understand the following caution notices, then go to "Installing the Model 6C4 into the Rack Enclosure" on page 501.

    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 6C4 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 without an HMC Attached" on page 363.
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 about 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 6C4 into the Rack Enclosure

Attention: 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.

Choose one of the following system installation procedures. The installation procedure you choose depends on the type of system rail assembly that was installed into your rack.

- If your system rail assemblies are type 1, go to "Install the Model 6C4 onto a System Rail Assembly (Type 1)".
- If your system rail assemblies are type 2, go to "Install the Model 6C4 onto a System Rail Assembly (Type 2)" on page 503.

Install the Model 6C4 onto a System Rail Assembly (Type 1)
Attention: When installing this unit in 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 6C4 onto a system rail assembly (type 1), do the following:

1. Ensure both rails are in the retracted position in the rack.
2. Using three persons, grasp the two handles located on each side of the system drawer, and lift the system drawer.
3. Place the system drawer on top of the retracted slide rails.

   Note: Built-in ledges located on each side of the system prevent the system from falling past the slide rails.
4. Push the system all the way into the rack.
5. Pull the system out of the rack until you can see the second screw hole located on the inner rail. Notice that the inner rails followed the system drawer out of the rack.
6. Align the second screw hole, located on the inner rail, with the second threaded screw hole, located on the side of the system drawer. Secure the system drawer to the inner rail with M3 screws.
7. Align the front screw holes of each rail with the threaded screw holes on the system drawer. Secure each screw hole with M3 screws.
8. To secure the third and fourth M3 retaining screws to the system, do the following:
   a. Pull the system drawer from the rack.

      Attention: *Do not* pull the system drawer out past the safety latches.
   b. Align the rail to system retaining-screw access hole located on the middle rail to the third position retaining screw hole located on the inner rail.
   c. Secure an M3 screw into each rail's third position retaining screw hole.
   d. Align the rail to system retaining-screw access hole located on the middle rail to the fourth position retaining screw hole located on the inner rail.
   e. Secure an M3 screw into each rail's fourth position retaining screw hole.
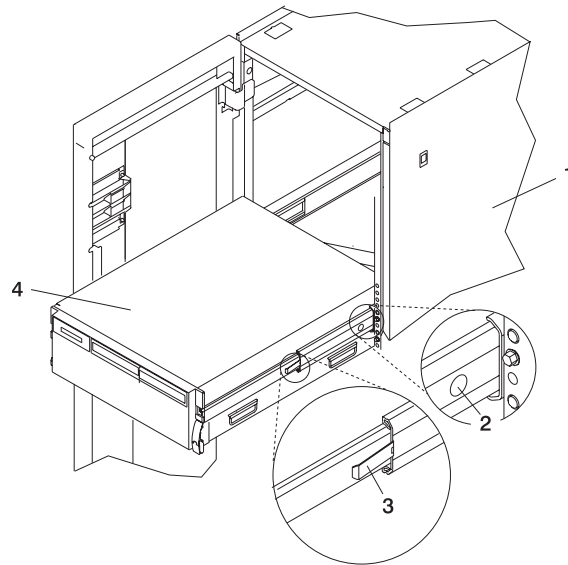
1	Rack Enclosure	**3**	Safety Release Latch
2	System Retaining-Screw Access Hole	**4**	Model 6C4

9. Tighten all eight M3 screws, securing the inner rail to the system drawer side.

10. Push the system drawer about halfway back into the rack. Use a screwdriver or similar tool to tighten the front four M7 16-mm screws that secure the system rail assemblies to the rack's front flange.

11. Push the system drawer completely into the rack. Use a screwdriver or similar tool to tighten the rear four M7 16-mm screws that secure the system rail assemblies to the rack's rear flange.

> **Note:** After the system rail assemblies are installed, do not extend each rail section past its safety release latch. 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.

12. Tighten the two M3 screws that secure each rail-length adjusting plate.

13. Slowly slide the system drawer back and forth on the rails, watching for any signs of binding.

14. For additional stability needed when transporting the rack, fasten the system drawer to the rack enclosure by inserting an M8 16-mm thumbscrew through the bezel and chassis bracket, and screwing it to the rack flange with a screw clip nut.
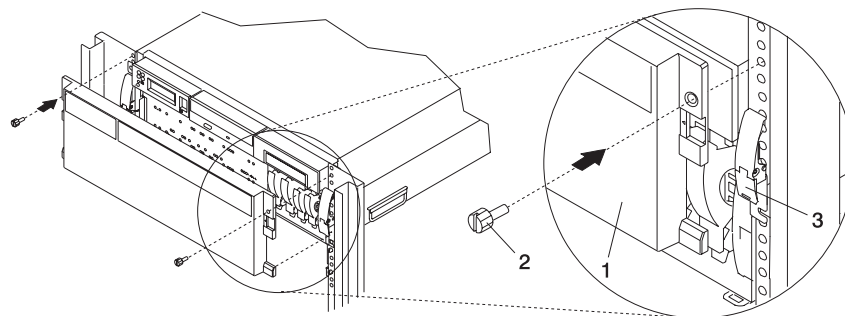
1 Model 6C4 Front Bezel
2 M8 16-mm Thumbscrew
3 System Drawer Release Latch

Install the Model 6C4 onto a System Rail Assembly (Type 2)

To install the Model 6C4 onto a system rail assembly (type 2), do the following:

1. Using eight M3 rail to system retaining screws, four 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	Outer Rail Section	**4**	M3 Rail to System Retaining Screws
2	Middle Rail Section	**5**	Safety Latch
3	Inner Rail Section	**6**	Model 6C4
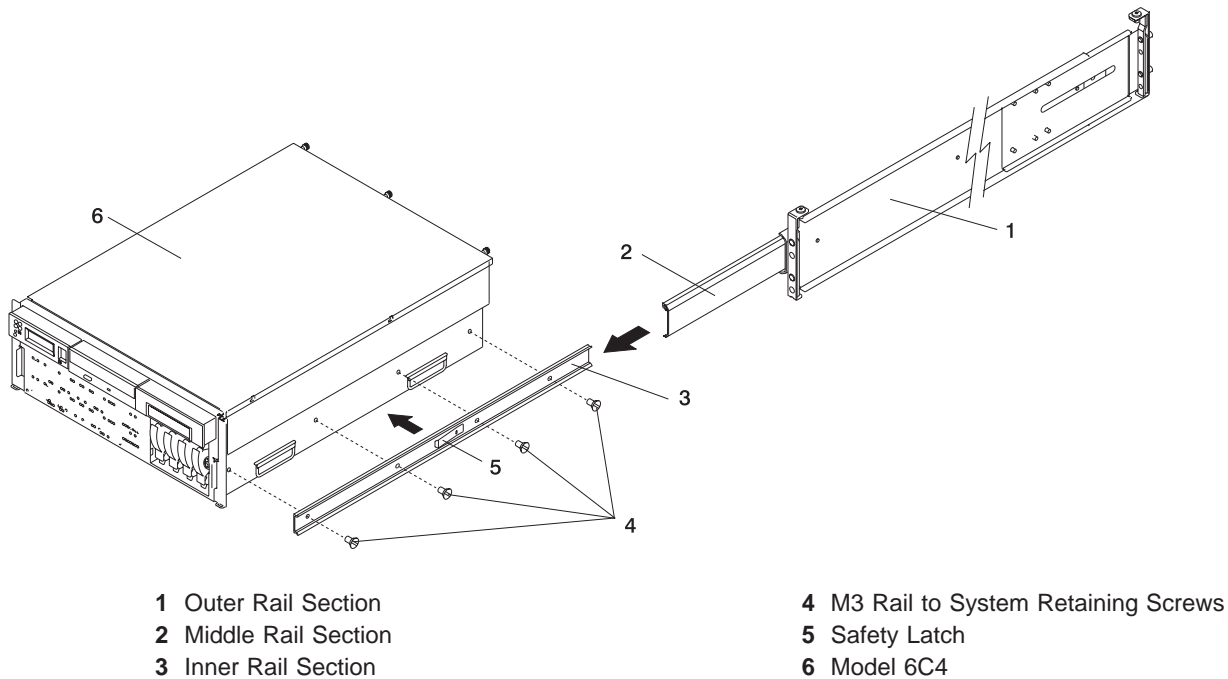
> **Note:** The safety release latch, located on each inner rail, is mounted onto the side of the system facing away from the system drawer. See the illustration on page 490.

2. Using three persons, grasp the two handles located on each side of the system drawer, and lift the system drawer.

3. Insert the inner rails located on the system drawer into the rails mounted in the rack.

    Attention: When matching the inner rails to the outer rails, ensure that both rail faceplates glide past each other. *Do not*, under any circumstances, force the rails. If the system drawer does not glide freely into the rack, completely remove the drawer from the outer rails. After the drawer is clear of the outer rails, reposition the system, then reinsert the inner rails. Repeat this process until the system drawer glides freely into the rack.

4. Simultaneously press the safety latches, located on each side of the system drawer, and push the system into the rack.
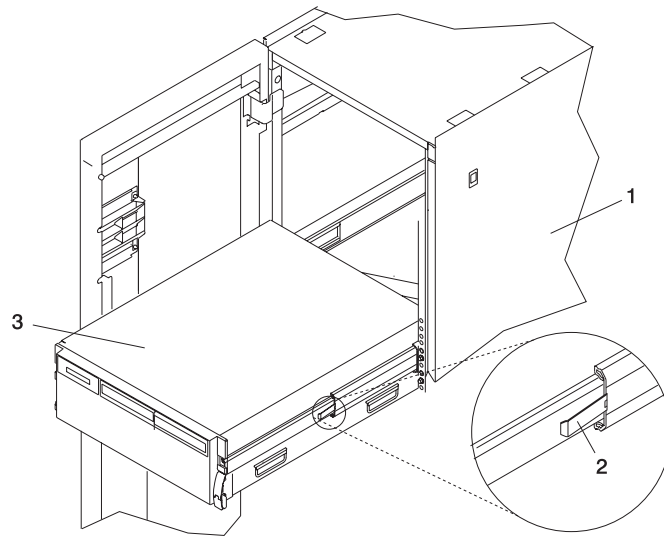
| **1** Rack Enclosure | **3** Model 6C4 |
| **2** Safety Release Latch | **4** |

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 rear four 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 eight 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 an M8 16-mm thumbscrew through the bezel and chassis bracket, and screwing it to the rack flange with a screw clip nut.
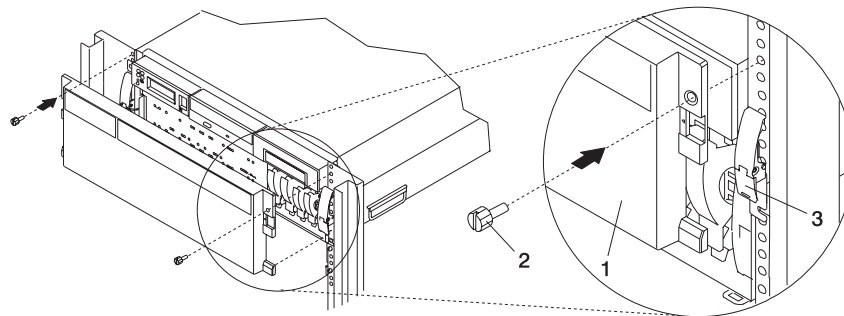
1 Model 6C4 Front Bezel
2 Thumbscrew
3 System Drawer Release Latch

Installing the Cable-Management Arm

To install the Model 6C4 cable-management arm, do the following:

1. Attach the cable carrier support bracket to the back of the chassis with two screws.

2. Place the two captive snap buttons, located on the cable-management arm, into the unlocked (pulled out) position.

3. Align and insert the two captive snap buttons into the holes located on the cable carrier support bracket. Push in on the head of the snap buttons to lock them into position.
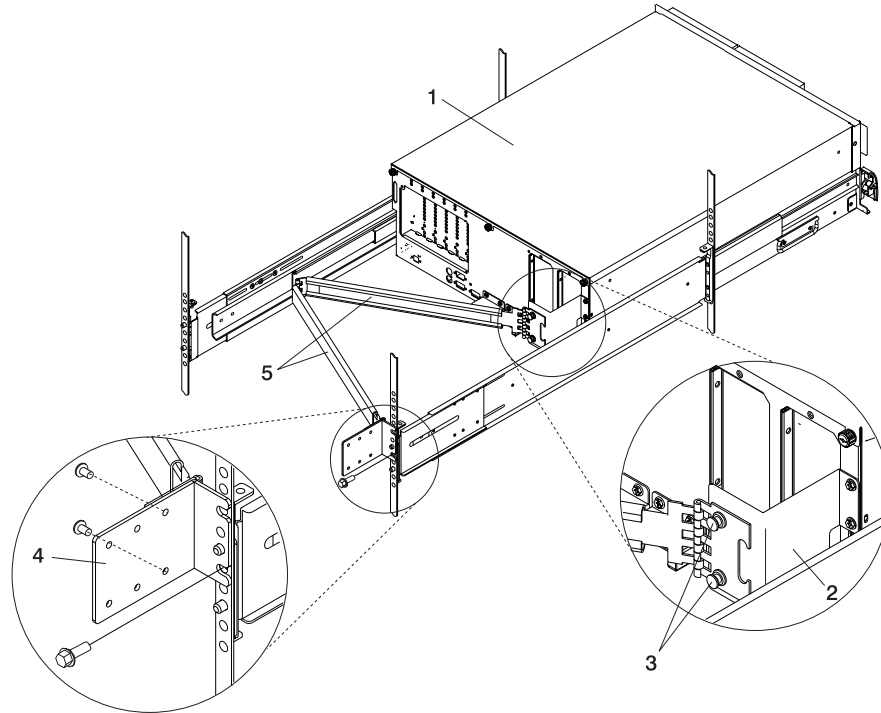
1	Model 6C4	**4**	Rack Flange Mounting Bracket
2	Cable Carrier Support Bracket	**5**	Cable Management Arm
3	Captive Snap Button (Qty. 2)		

4. Open the cable-management arm so that the hinged mounting plate lies flat against the flange-mounting bracket.

5. Align the holes, located on the cable-management arm mounting plate, with the threaded holes on the rack-flange mounting bracket. Secure the bracket with two screws.

   Note: To avoid any binding of the cable-management arm, ensure that the cable-management arm is level.

Appendix E. Installing 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.

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.
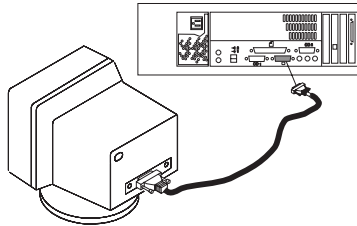
2. If a label for the monitor was shipped with your system, attach the label to the bottom-right corner of the monitor.

3. Attach the power cables to the monitor as shown in the following illustration. 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.
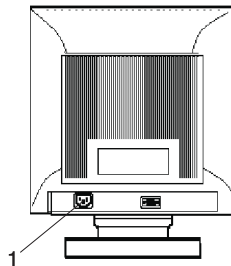
4. Connect the mouse and keyboard to their connectors, as shown in the following illustration.
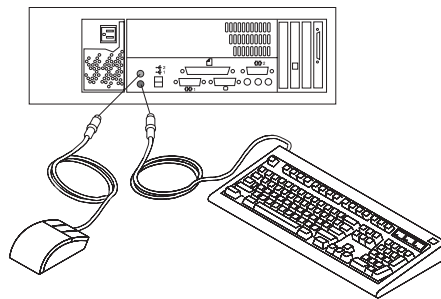
5. Connect the HMC serial cable into the HMC1 connector located on the back of your system unit. For two HMCs, connect the redundant HMC serial cable into the HMC2 connector located on the back of your system unit. The following illustration shows the location of the serial ports on the back of the HMC, as well as HMC1 and HMC2 connectors located on back of your system unit.
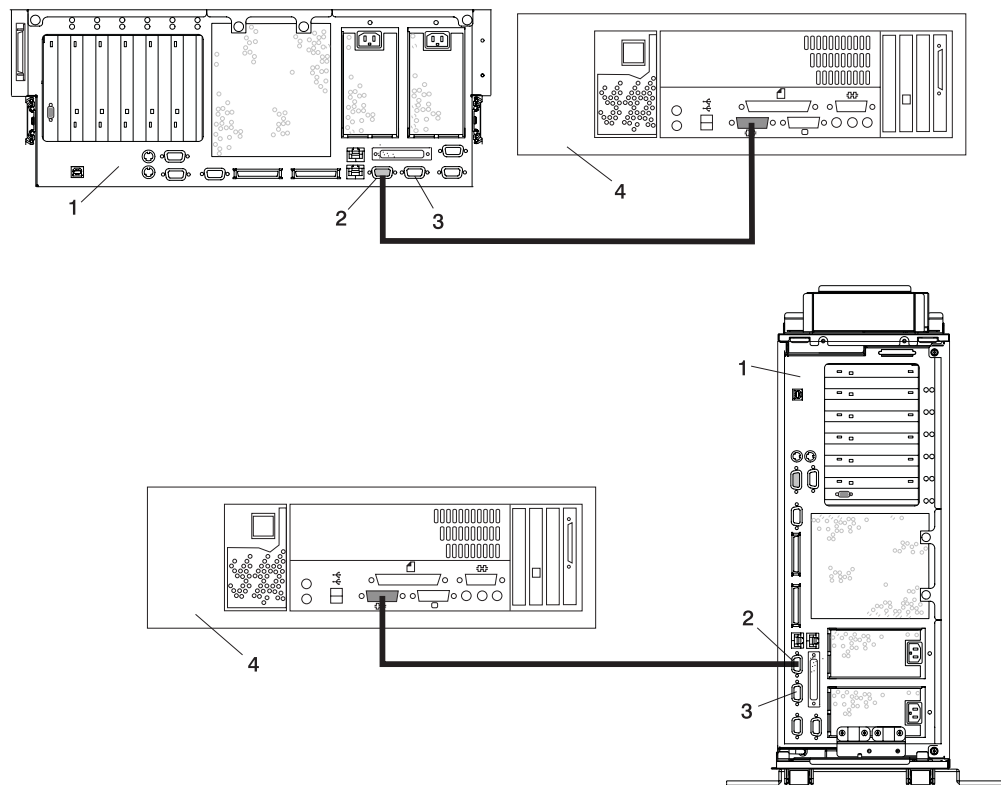
1 Model 6C4 or Model 6E4
2 HMC1 Connector
3 HMC2 Connector
4 Hardware Management Console (HMC)

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.
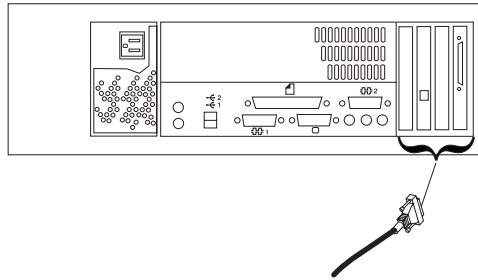
Connect the External Modem

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 514.

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.
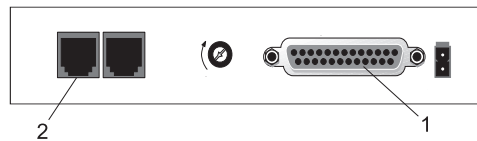
1 External HMC Modem
2 External Modem Connector

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.
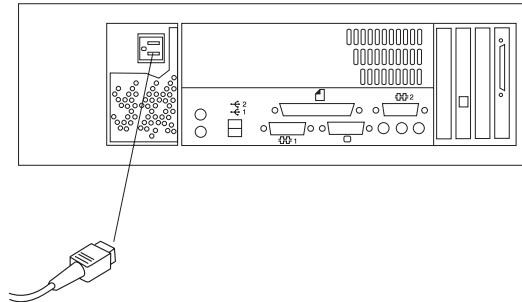
2. Plug in the power cables for the monitor, HMC, and modem into electrical outlets.

Configure the Network

To configure the network, do the following:

* 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.
* Select the **System Configuration** Application in the Navigation area.
* Select **Customize Network Settings** in the Contents area.
* Type the appropriate network information in the **IP Address**, **Name Services**, and **Routing** tabs on the Network Configuration window.
* Select **OK**.

For more information on configuring the network, refer to the *IBM Hardware Management Console for pSeries Maintenance 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 pSeries Maintenance Guide*, order number SA38-0590 for more information on the previous roles.

Note:

- The Inventory Scout listening port is set by starting the **invscoutd** daemon on the AIX images. This port will default to 808.
- 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 *IBM Hardware Management Console for pSeries Maintenance 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 *IBM Hardware Management Console for pSeries Maintenance Guide*, order number SA38-0590.

Appendix F. 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 on page 518.

    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 520 for the correct switch settings.

    If No, continue with step 2 on page 518.

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 519 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 521 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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Service Guide**

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