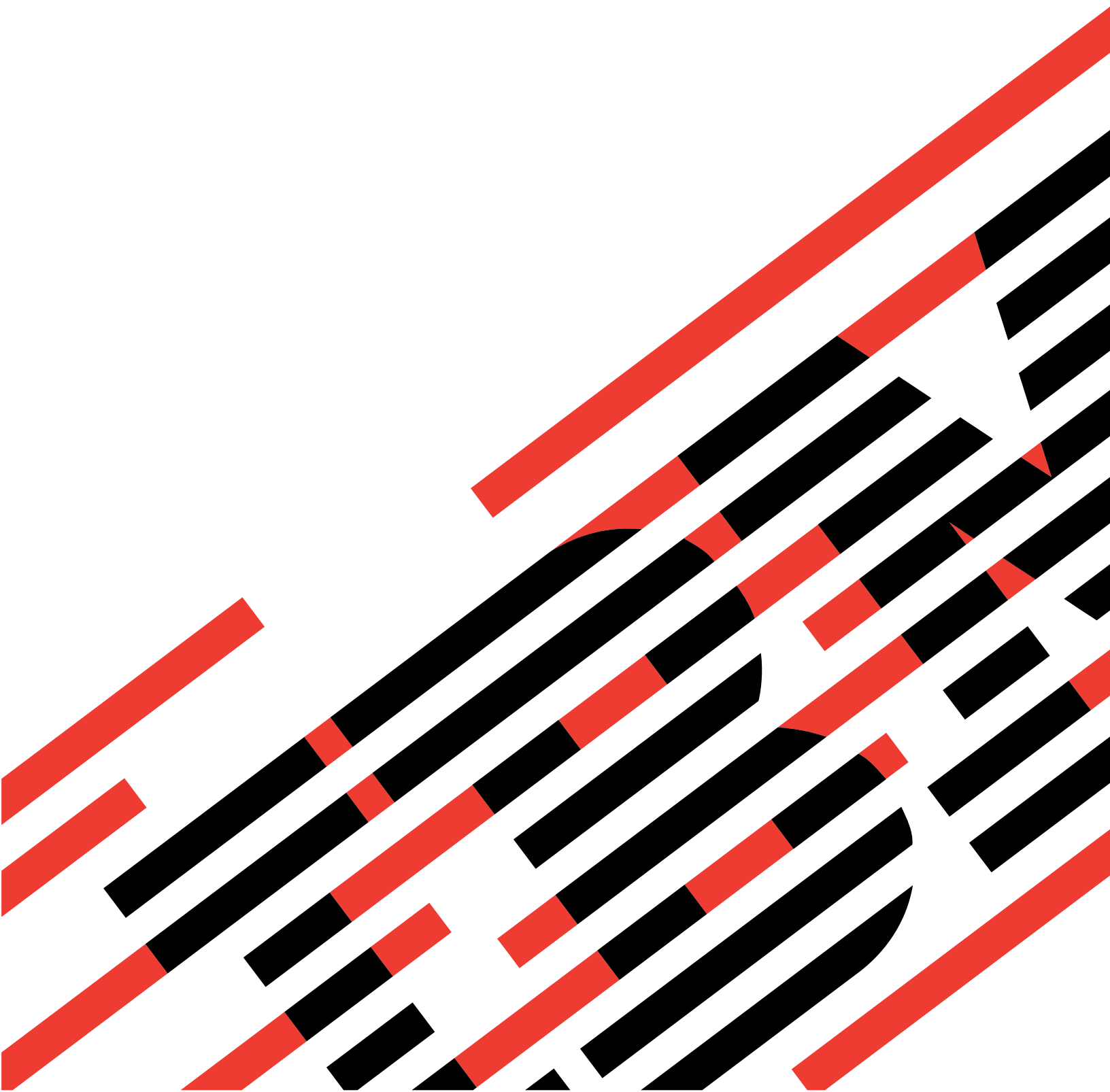




pSeries 650

## Service Guide

SA38-0612-01







pSeries 650

## Service Guide

SA38-0612-01

### **Second Edition (May 2003)**

Before using this information and the product it supports, read the information in "Safety Notices" on page xi, Appendix A, "Environmental Notices", on page 605, and Appendix B, "Notices", on page 607.

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## Safety Notices

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

- xi
- 105
- 483

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:

- 57
- 57
- 105
- 483
- 568
- 560

For a translation of the safety notices contained in this book, see the *System Unit Safety Information*, order number SA23-2652.

---

## Electrical Safety

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

### 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.**

**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.**  
D06

### CAUTION:

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

### DANGER

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

**CAUTION:**

This unit has more than one power supply cord. Follow procedures for removal of power from the system when directed.

C28

**CAUTION:**

Energy hazard, remove power before servicing.

C22

**CAUTION:**

Energy hazard, remove all jewelry before servicing.

C29

---

## 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 650, 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.

MAPs that are common to all systems are contained in the *@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.

---

## ISO 9000

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

---

## Highlighting

The following highlighting conventions are used in this book:

<b>Bold</b>	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.
<i>Italics</i>	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.

---

## References to AIX Operating System

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

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

---

## 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](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**.

---

## Related Publications

The following publications are available:

- The *System Unit Safety Information*, order number SA23-2652, contains translations of safety information used throughout this book.
- The *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, contains information on how to set up and cable the hardware system console and verify system operation.
- The *IBM Hardware Management Console for pSeries Maintenance Guide*, order number SA38-0603, contains MAPS, removal and replacement procedures, error codes, and parts information that help trained service representatives diagnose and repair the hardware system console.
- The *@server pSeries 650 Installation Guide*, order number SA38-0610, contains information on how to set up and cable the system, install and remove options, and verify system operation.
- The *@server pSeries 650 User's Guide*, order number SA38-0611, contains information on how to use the system, use diagnostics, use service aids, and verify system operations.
- The *pSeries 7311 Model D10 and Model D20 Service Guide*, order number SA38-0627, contains removal and replacement procedures, and parts information that help trained service representatives repair the 7311 Model D10 I/O Subsystem and the 7311 Model D20 I/O Subsystem.
- The *@server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, contains common diagnostic procedures, error codes, service request numbers, and failing function codes. This manual is intended for trained service technicians.
- The *Adapters, Devices, and Cable Information for Multiple Bus Systems*, order number SA38-0516, contains information about adapters, external devices, and cabling. This manual is intended to supplement information found in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.
- The *PCI Adapter Placement Reference*, order number SA38-0538, contains information regarding slot restrictions for adapters that can be used in this system.
- The *Site and Hardware Planning Information*, order number SA38-0508, contains information to help you plan your installation.
- The *Electronic Service Agent For pSeries and RS/6000 User's Guide*, order number LCD4-1060, contains information for use by the service representative to help set up and use the Service Director package.
- The *AIX Installation Guide and Reference*, order number SC23-4389, describes how to install the operating system, to use a network server, as well as how to install the operating system or diagnostics on systems connected to a network.

---

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- @server
- Electronic Service Agent
- IBM
- pSeries
- RS/6000
- Service Director
- LANstreamer

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---

## Chapter 1. Reference Information

This chapter provides an overview of the @server pSeries 650, including a logical description and a physical overview of the system. Additional details pertaining to the 7311 Model D10 I/O Subsystem and 7311 Model D20 I/O Subsystem are also provided. They include the following:

- Memory overview and ordering rules
- General description of the operator panel
- Cabling rules
- System location rules and descriptions
- Powering on and powering off the system
- Power flow
- Data flow

---

### pSeries 650 Overview

The pSeries 650 is a multiprocessor, multibus system packaged in one processor subsystem drawer and up to eight I/O subsystem drawers. The @server pSeries 650 processor subsystem drawer is 8 EIA units high and can be mounted in a 19-inch rack. The processor subsystem drawer houses the processors, memory, and a base set of I/O. Four 2-way processor card slots provide 2, 4, 6, and/or 8-way pSeries 650 configurations.

Eight DDR (double data rate) memory DIMM slots are available on each processor card. Memory DIMMs must be installed in quads. DIMM quads are available in 2 GB (4x512 MB), 4GB (4x1 GB), and 8 GB (4x2 GB) sizes. The resulting total system memory is from 2 GB up to 64 GB.

The processor subsystem drawer also contains the following:

- Seven hot-pluggable PCI-X slots utilizing a PCI adapter cassette mechanism
- Internal Ultra3 SCSI and external SCSI connections
- 10/100 Ethernet (ISA-based)
- Keyboard and mouse ports
- Four serial ports
- Two hardware management console ports
- Four hot-pluggable DASD bays
- Two hot-pluggable media bays
- Diskette drive
- Service processor
- One (up to four) RIO or RIO-2 I/O expansion ports

The I/O capacity of the system can be expanded by the addition of up to three additional RIO or RIO-2 expansion cards and up to eight PCI-X I/O subsystem drawers. Both the 7311 Model D10 I/O Subsystem and the 7311 Model D20 I/O Subsystem are supported in pSeries 650 systems.

The @server pSeries 650 system supports up to eight logical partitions. Logical partitioning requires the use of a Hardware Management Console (HMC). The HMC operates outside the scope of any single operating system image and is used to manage and monitor the platform resources as well as provide a service focal point.

The HMC is not required if the system resources are not to be divided among multiple logical partitions. When booted in the traditional "full system partition", the system console may be a serially attached TTY

terminal or a display attached to the system. Even if the HMC is attached, you may choose to boot a "full system partition". With the HMC attached and the system booted into a "full system partition", defined profiles of logical partitions are unavailable.

**Note:** When attempting to service the pSeries 650, be sure to determine where the system console resides.

Capacity Upgrade on Demand, CUoD, of processors and memory is supported on the @server pSeries 650 system. These resources can be added during runtime without the need to reboot the system.

Cables are used to connect the processor subsystem to the I/O subsystem drawers. These cables include:

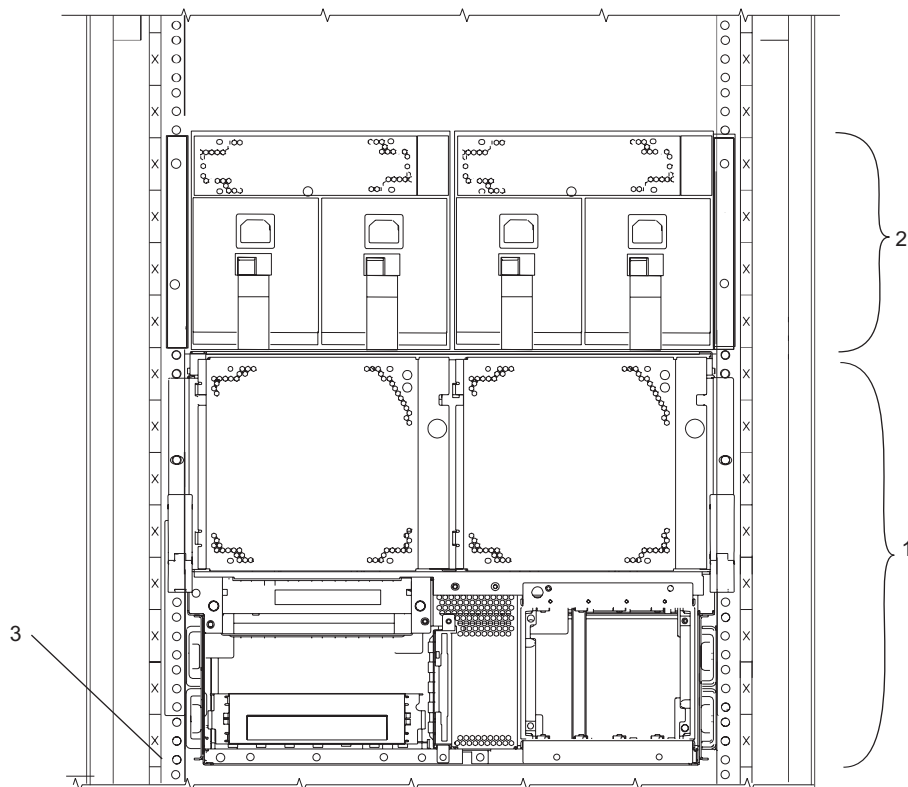
- SPCN (System Power Control Network) cables
- RIO (Remote Input Output) cables

---

## pSeries 650 System Locations

The pSeries 650 consists of one base processor subsystem in a rack. Up to eight additional I/O subsystems may be added in the same rack. These components are connected by cables that transmit data and control signals.

The following figure shows the 7038 Model 6M2 processor subsystem drawer installed in a rack with two 7311 Model D10 I/O Subsystems installed above it.

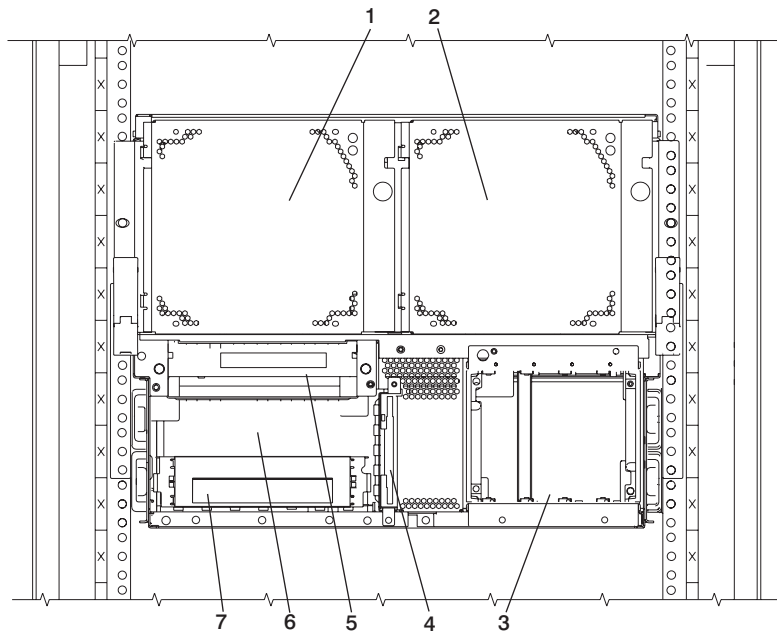


- |   |                                   |   |                    |
|---|-----------------------------------|---|--------------------|
| 1 | 7038 Model 6M2 System Unit Drawer | 3 | Rack-Mounting Rail |
| 2 | Two 7311 Model D10 I/O Subsystems |   |                    |

## 7038 Model 6M2 Processor Subsystem Locations

This section provides a front view and a rear view of the processor subsystem with descriptions and locations for each part of the processor subsystem.

### 7038 Model 6M2 Processor Subsystem Front View



- |   |                                |   |                |
|---|--------------------------------|---|----------------|
| 1 | Fan 3                          | 5 | Operator Panel |
| 2 | Fan 4                          | 6 | Media Bay 1    |
| 3 | Disk drive bay (four-position) | 7 | Media Bay 2    |
| 4 | Diskette Drive                 |   |                |

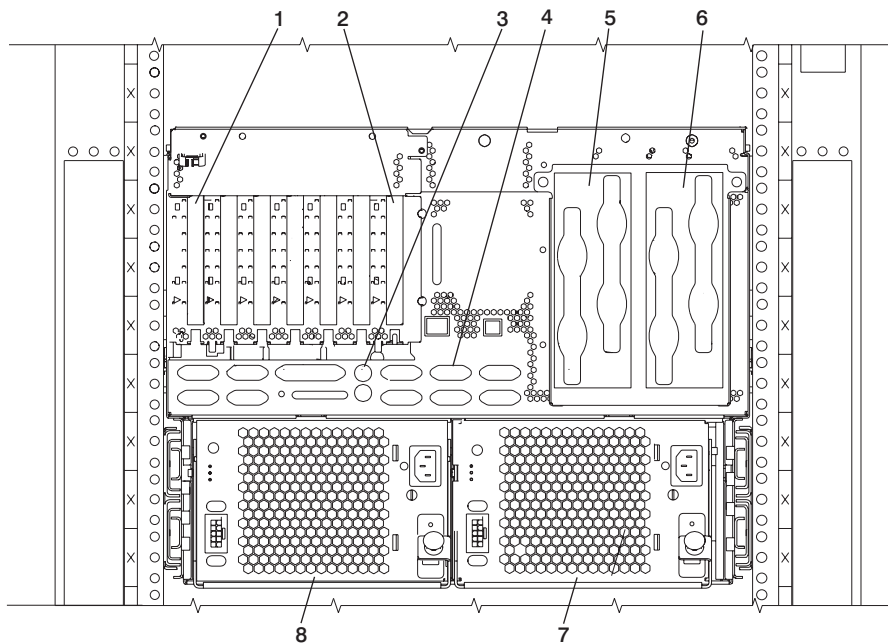
### Processor Subsystem Power

The 7038 Model 6M2 processor subsystem has two redundant power supplies. One of these power supplies is capable of providing the necessary voltages and currents independent of the other power supply. The left and right power-supply output voltages are connected and monitored by the power distribution board contained in the processor subsystem.

The left and right power supplies are hot-pluggable and may be changed one at a time while the system is operational. Each power supply provides 5V dc, 3.3V dc, -12V dc, and 5V dc standby. The following table describes power-related LED indicators that are available on a processor subsystem with an I/O subsystem attached. The right and left power supply LED descriptions apply to power supplies in the processor subsystem and I/O subsystems.

Status of LED	Operator Panel LED (processor subsystem)	Right Power Supply LED	Left Power Supply LED
Off	No power connected	No power connected or system power connected, not turned on, power supply detects no faults	No power connected or system power connected, not turned on, power supply detects no faults
On, fast blinking green, on for one second, off for one second	System power connected, power-on initiated	System power connected, not turned on, power supply detected fault	System power connected, not turned on, power supply detected fault
On, slow blinking green, on for two seconds, off for two seconds	System power connected, but power is not turned on	System power connected, not turned on, power supply detected system power control network fault	System power connected, not turned on, power supply detected system power control network fault
On, steady green	System power connected and turned on	System power connected and turned on	System power connected and turned on

## 7038 Model 6M2 Processor Subsystem Rear View



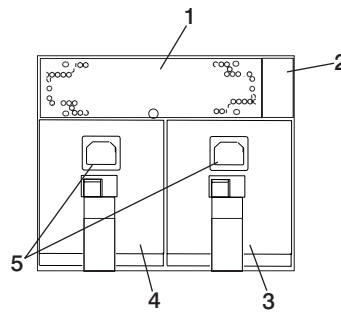
- |   |  |   |   |
|---|--|---|---|
| 1 | PCI adapter slot 1   | 5 | RIO connector card 1                              |
| 2 | PCI adapter slot 7   | 6 | RIO connector card 2                              |
| 3 | Mouse port (upper),<br>keyboard port (lower)                         | 7 | Power supply 2,<br>fan 2 attached to power supply |
| 4 | Native I/O ports; see "Processor Subsystem<br>I/O Ports" on page 31. | 8 | Power supply 1,<br>fan 1 attached to power supply |

## I/O Subsystem Locations

Either the 7311 Model D10 I/O Subsystem or the 7311 Model D20 I/O Subsystem can be used to extend the capabilities of the 7038 Model 6M2. This section shows the locations for I/O subsystems. A front view, a rear view, descriptions, and locations for each part of the subsystem is shown. For more information about the I/O subsystems, see the *pSeries 7311 Model D10 and Model D20 Service Guide*, order number SA38-0627.

### 7311 Model D10 I/O Subsystem Front View

The following figure shows the I/O subsystem from the front.

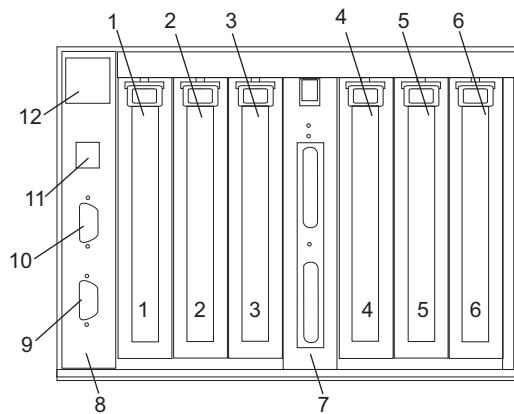


- 1 Cooling Fan
- 2 Power cord channel

- 3 Power Supply 1, Power Supply 2
- 4 Power cord receptacles

### 7311 Model D10 I/O Subsystem Rear View

The following figure shows the I/O subsystem from the rear.

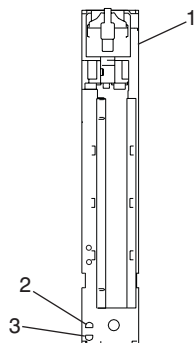


- 1 PCI adapter slot 1

- 2 PCI-X adapter slot 2
- 3 PCI-X adapter slot 3
- 4 PCI-X adapter slot 4
- 5 PCI-X adapter slot 5
- 6 PCI-X adapter slot 6

- 7 RIO bus adapter card  
Upper connector 0  
Lower connector 1
- 8 SPCN connector card
- 9 Lower SPCN connector J16
- 10 Upper SPCN connector J15
- 11 Rack beacon connector
- 12 Power cord channel

The green and amber LEDs (viewed on the rear of the PCI adapter cassette when installed) are used to indicate the state of the PCI slot during removal and replacement of an adapter. The following table describes the LED states and their definitions.



Green PCI Slot LED Indication	Amber PCI Slot LED	PCI Slot Power/Status	Definition
On	Off	On/No action	The PCI slot power is on and the slot is operational. Do not remove or install adapters.
On	Flashing	On/Identify	The PCI slot power is on, and the slot has been identified by the software or firmware. Do not remove or install adapters.
Off	Flashing	Off/Action	The PCI slot power is off, and the slot has been identified by the software or firmware. Perform PCI adapter remove, replace, or install if directed by the PCI hot-plug procedures.
Off	Off	Off/No power	The PCI slot power is off. If the system power is off, perform non-hot-plug PCI adapter remove, replace, or install procedure.

## I/O Subsystem Power

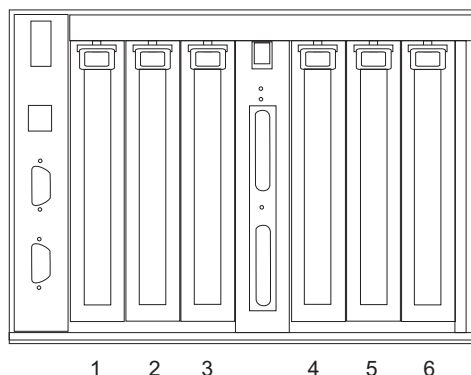
7311 Model D10 I/O Subsystems have two redundant power supplies. One of these power supplies is capable of providing the necessary voltages and currents independent of the other power supply. The left and right power supply output voltages are connected and monitored by the I/O backplane contained in the I/O subsystem. Both power supplies are hot-pluggable and may be changed one at a time while the system is operational. Each power supply provides 5V dc, 3.3V dc, -12V dc, and 5V dc standby.

The following table describes power-related LED indicators that are available on a system with an attached I/O drawer. The processor subsystem's operator panel LED is described below. The right and left power supply LED descriptions apply to power supplies in the processor subsystem and I/O subsystems.

Status of LED	Operator Panel LED (on processor subsystem)	Right Power Supply LED	Left Power Supply LED
Off	No power connected	No power connected or system power connected, not turned on, power supply detects no faults	No power connected or system power connected, not turned on, power supply detects no faults
On, fast blinking green, on for one second, off for one second	System power connected, power-on initiated	System power connected, not turned on, power supply detected fault	System power connected, not turned on, power supply detected fault
On, slow blinking green, on for two seconds, off for two seconds	System power connected, but power is not turned on	System power connected, not turned on, power supply detected system power control network fault	System power connected, not turned on, power supply detected system power control network fault
On, steady green	System power connected and turned on	System power connected and turned on	System power connected and turned on

## I/O Subsystem PHB and PCI Slot Locations

Each 7311 Model D10 I/O Subsystem has a two PHBs through which the PCI slots are connected.



Slot	PHB	Slot Characteristics
1	1	64-bit 5V, 33 MHz
2	1	64-bit 3.3V, 133 MHz
3	1	64-bit 3.3V, 133 MHz
4	2	64-bit 3.3V, 133 MHz
5	2	64-bit 3.3V, 133 MHz
6	2	64-bit 3.3V, 133 MHz

---

## Subsystem Positioning and Cabling

I/O subsystems can be installed in a standard 19-inch EIA rack in any location. The cables that connect the subsystems allow some flexibility in drawer placement, but the I/O subsystems should be located above the processor subsystem to which they are connected in the same rack.

Up to eight I/O subsystems can be connected to a processor subsystem. Use the following guidelines:

- Each I/O subsystem connects to the processor subsystem using one system power control network (SPCN) cable loop.
- Each I/O subsystem connects to the processor subsystem using one or more remote I/O (RIO) cable loops.
- Lowest cost configurations allow up to four I/O subsystems connected to the processor subsystem using a single RIO loop.
- Optimum performance is achieved when each I/O drawer is connected to the processor subsystem through its own RIO loop.

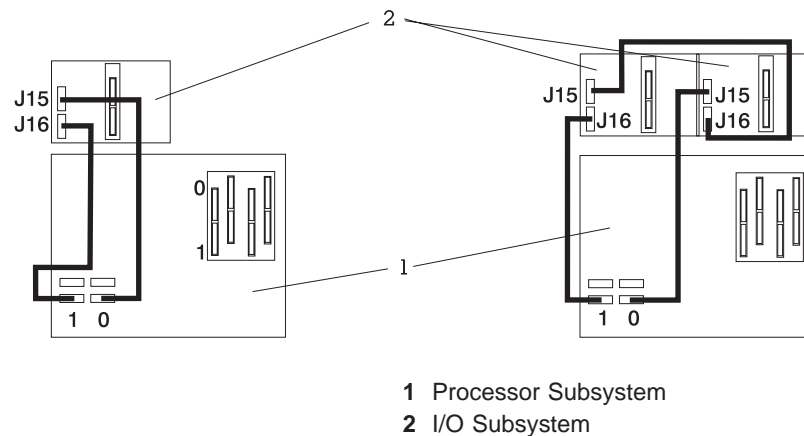
### SPCN Cabling

I/O subsystem SPCN cables are connected to the processor subsystem unit in a loop configuration. The SPCN cables are connected in a loop so that the system has two paths to each I/O subsystem. Up to eight I/O subsystems are supported on one SPCN loop.

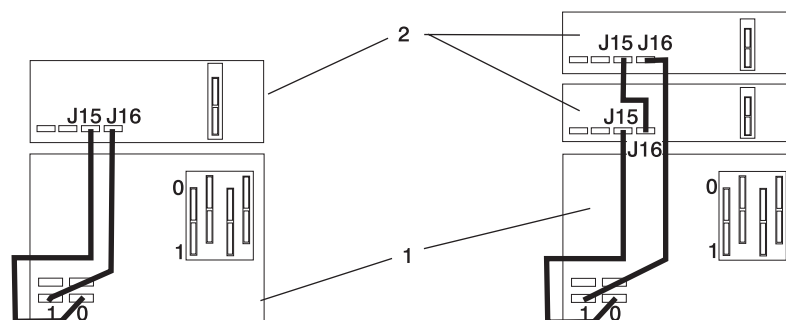
#### One I/O Subsystem, Two I/O Subsystems

The illustrations on the left show one I/O subsystem connected to the processor subsystem. The illustrations on the right show two I/O subsystems connected to the processor subsystem using one SPCN loop.

#### *Processor Subsystem Connected to One or Two Model D10 I/O Subsystems:*



#### *Processor Subsystem Connected to One or Two Model D20 I/O Subsystems:*





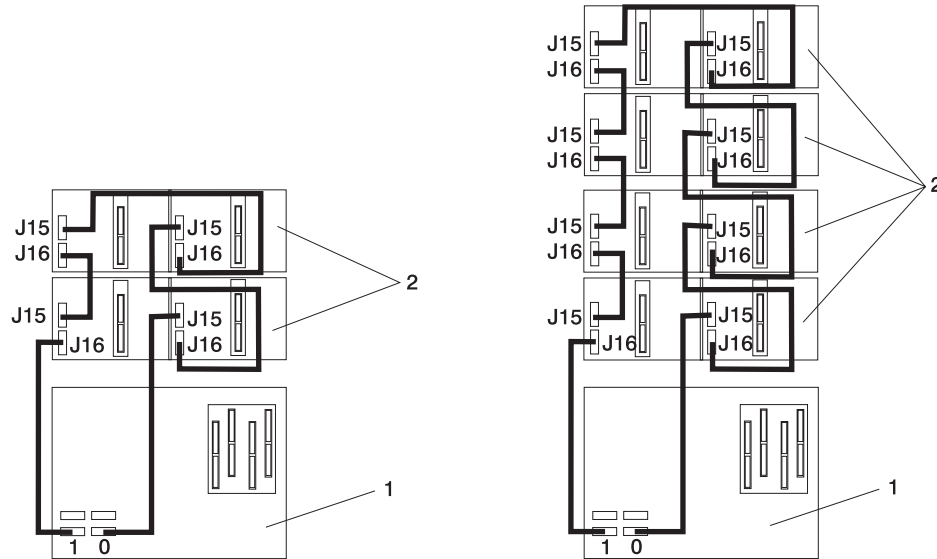
## 1 Processor Subsystem

## 2 I/O Subsystem

## Four I/O Subsystems, Eight I/O Subsystems

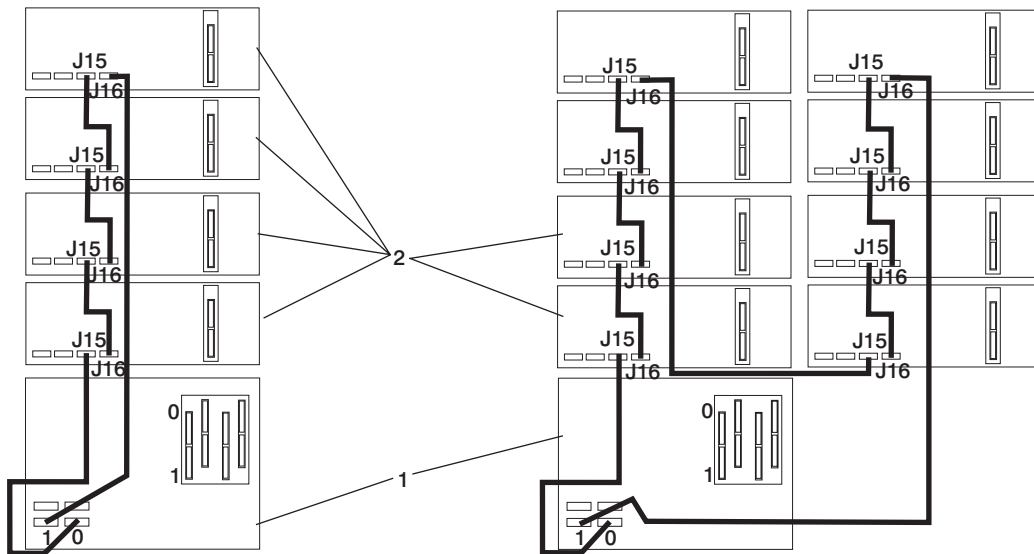
The illustration on the left shows four I/O subsystems connected to the processor subsystem using one SPCN loop. The illustration on the right shows eight I/O subsystems connected to the processor subsystem using one SPCN loop.

### Processor Subsystem Connected to Four or Eight Model D10 I/O Subsystems:



- 1 Processor Subsystem
- 2 I/O Subsystem

### Processor Subsystem Connected to Four or Eight Model D20 I/O Subsystems:



- 1 Processor Subsystem
- 2 I/O Subsystem

## RIO Cabling

I/O subsystems are connected to the processor subsystem through remote I/O (RIO) cable loops. The cable loops are connected to ports that are on the rear of the processor subsystem. The RIO cables are connected in loops so that the system has two paths to each I/O subsystem when more than one I/O drawer is in a loop.

If only one I/O subsystem is in a RIO loop and both the processor subsystem and the I/O subsystem are RIO-2 capable, the RIO-2 cables are used as one two-cable path to the I/O subsystem. In this cable configuration, the data rate is increased by a factor of 2.

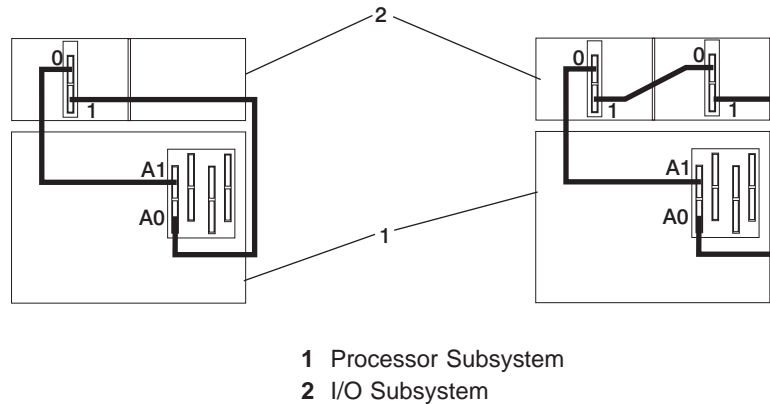
- A maximum of eight Model D10 drawers are supported on one processor subsystem.
- A maximum of eight Model D20 I/O drawers are supported on one processor subsystem.
- If both D10 and D20 I/O drawers are connected to the same processor subsystem, the total number of I/O subsystems supported is eight.
- The maximum number of I/O subsystems supported on one RIO loop is four.
- The D10 and D20 I/O drawers must be on separate RIO loops.
- The D10 with RIO cabling and D10 with RIO-2 cabling can share one RIO loop.
- The D20 with RIO cabling and D20 with RIO-2 cabling can share one RIO loop.

The system can have up to four RIO loops. A total of eight I/O drawers can be connected to the processor subsystem in a variety of cabling configurations. For optimum performance, connect the RIO loops in a configuration that distributes multiple I/O drawers among as many RIO loops as possible. A dedicated RIO loop for each I/O drawer can provide optimum performance. Some examples of valid cabling examples follow.

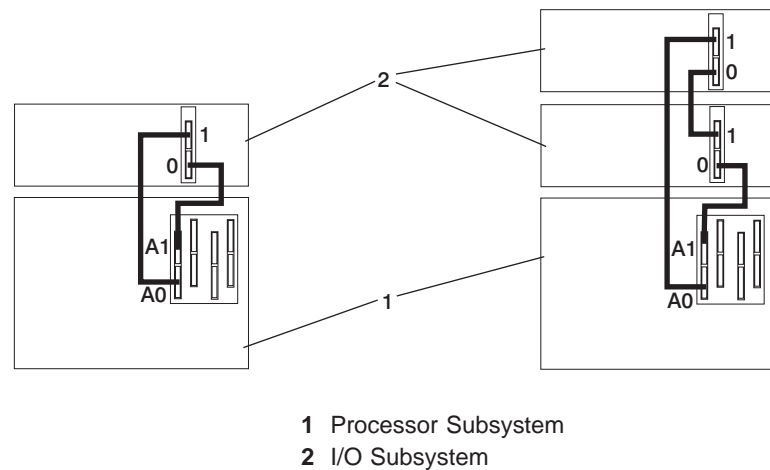
## One I/O Subsystem or Two I/O Subsystems

The illustration on the left shows one I/O subsystem drawer connected to the processor subsystem. The illustration on the right shows two I/O subsystem drawers connected to the system unit using one RIO loop.

### *Processor Subsystem Connected to One or Two Model D10 I/O Subsystems:*



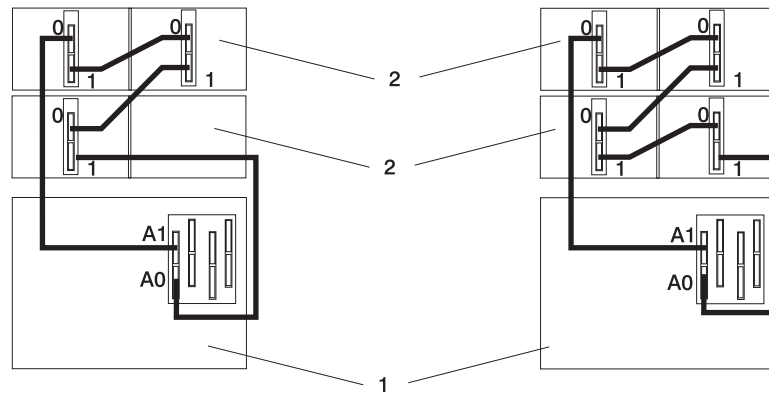
### *Processor Subsystem Connected to One or Two Model D20 I/O Subsystems:*



## Three I/O Subsystems or Four I/O Subsystems

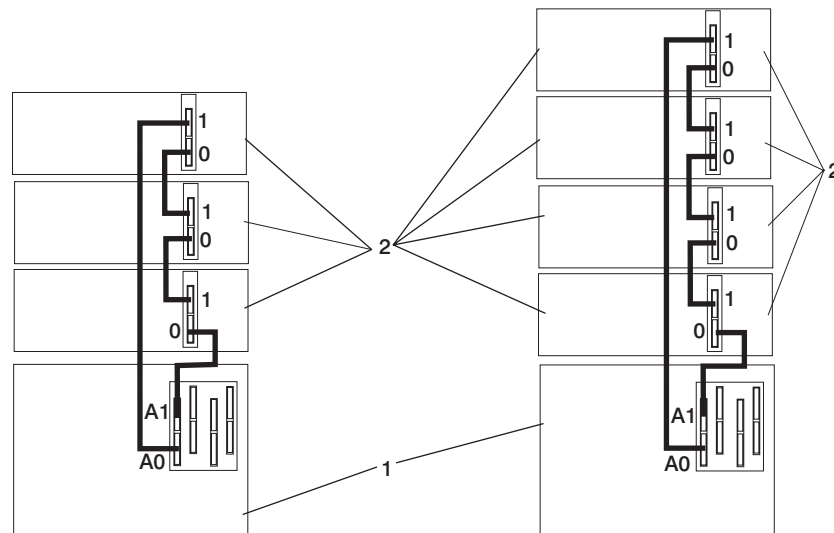
The illustration on the left shows three I/O subsystem drawers connected to the system unit using one RIO loop. The illustration on the right shows four I/O subsystem drawers connected to the system unit using one RIO loop.

***Processor Subsystem Connected to Three or Four Model D10 I/O Subsystems:***



- 1 Processor Subsystem
- 2 I/O Subsystem

***Processor Subsystem Connected to Three or Four Model D20 I/O Subsystems:***

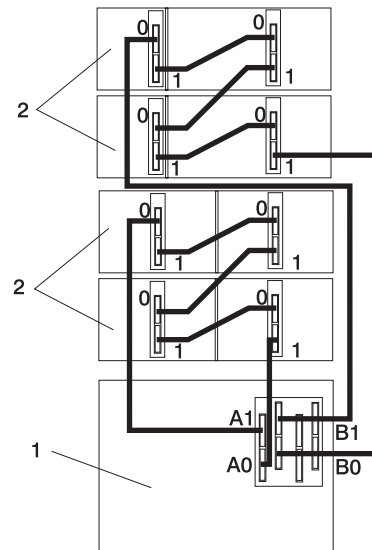


- 1 Processor Subsystem
- 2 I/O Subsystem

**Eight I/O Subsystems with Two RIO Loops**

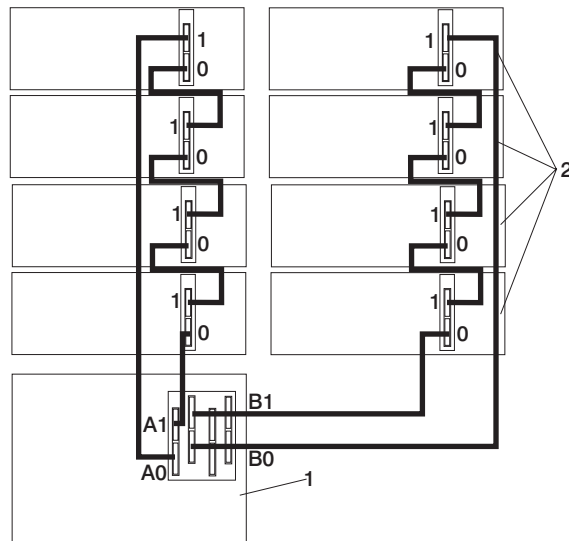
The following illustrations show eight I/O subsystem drawers connected to the processor subsystem unit using two RIO loops.

**Processor Subsystem Connected to Eight Model D10 I/O Subsystems:**



- 1 Processor Subsystem
- 2 I/O Subsystem

**Processor Subsystem Connected to Eight Model D20 I/O Subsystems:**

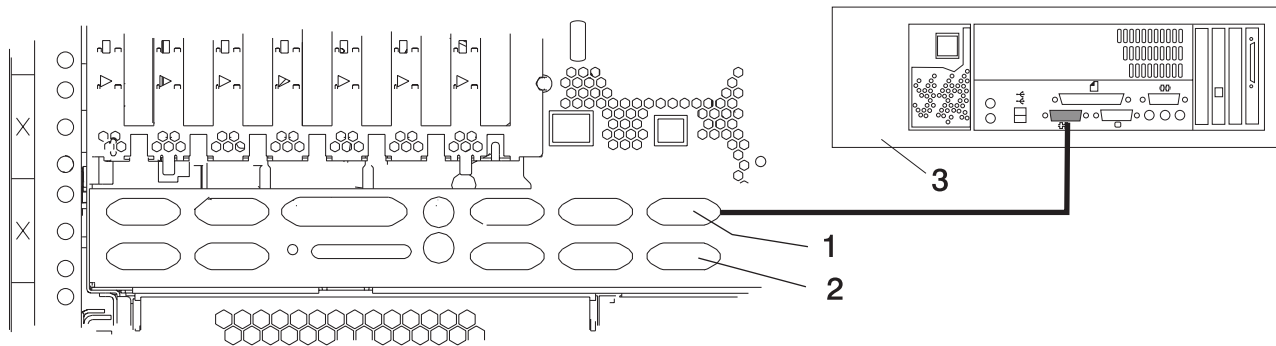


- 1 Processor Subsystem

- 2 I/O Subsystem

## IBM Hardware Management Console for pSeries (HMC) to the HMC Connector

To connect your HMC to the pSeries 650, connect a serial cable into a serial port on the HMC. The port can be either a serial port on the back of the HMC or a serial port on an 8-port or 128-port async adapter. Connect the other end of the serial cable into the HMC1 connector located on the rear of the processor subsystem. The following illustration shows the location of the serial ports on the back of the HMC and the HMC connectors located on the processor subsystem.



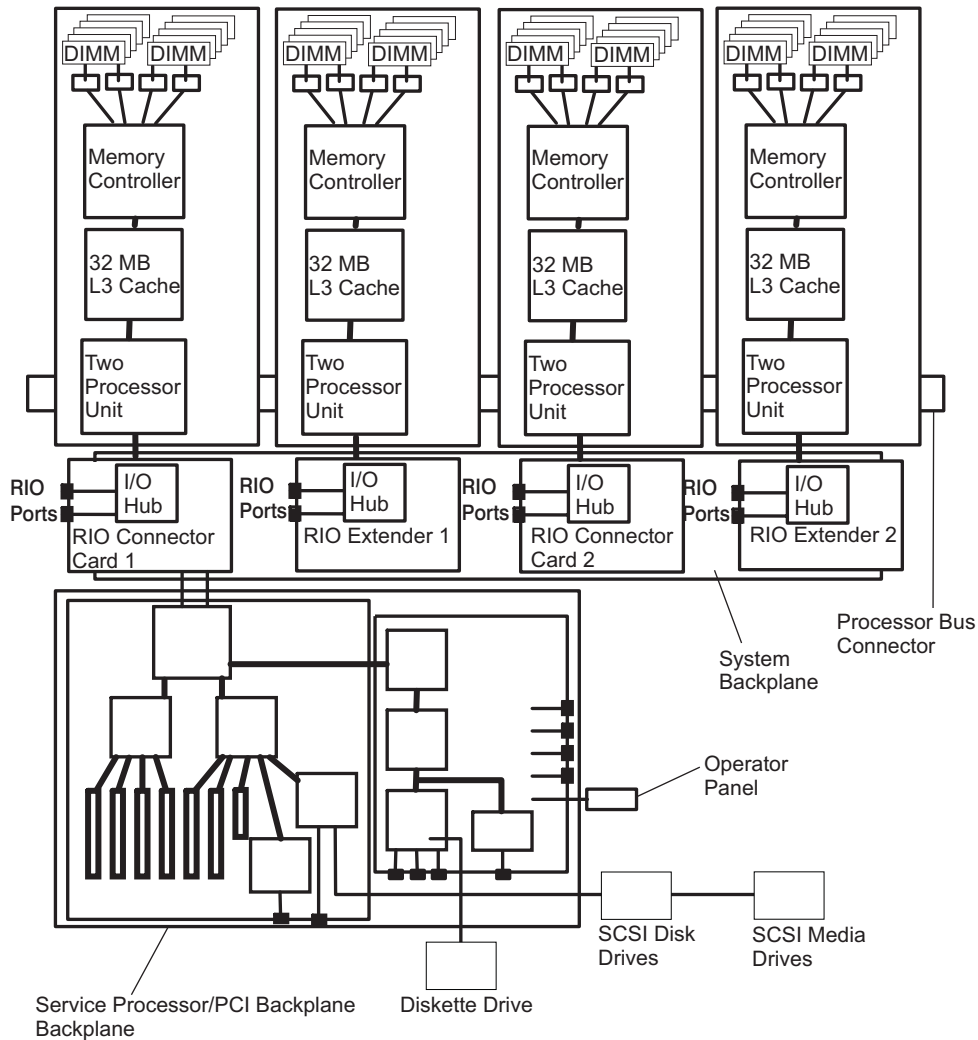
- 1 HMC (HSC) Port 1,  
Location: U0.1-P2/S5
- 2 HMC (HSC) Port 2,  
Location: U0.1-P2/S6
- 3 HMC

### Optional 8-Port or 128-Port Async Adapters

Up to two optional async adapters can be installed in the HMC. The adapters have breakout boxes that allow connection to serial cables that connect to the managed system's HMC ports.

## pSeries 650 Data Flow

The following figure shows the data flow for the system.



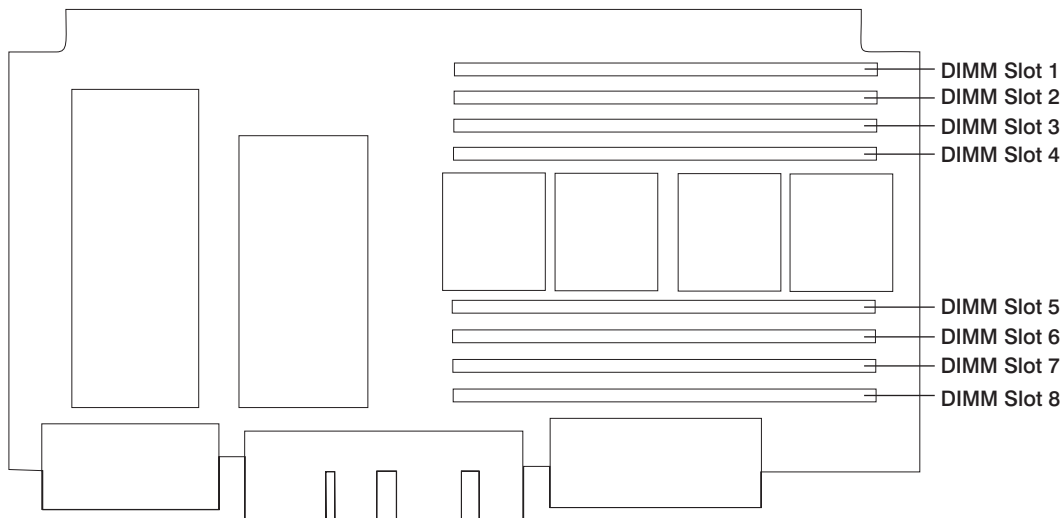


## System Memory

The main memory for the pSeries 650 consists of memory DIMMs plugged into the processor cards. Each processor card has eight DDR memory DIMM slots for system memory. The memory DIMMs must be installed in quads. DIMM quads are available in 2 GB (4x512 MB), 4GB (4x1 GB), and 8 GB (4x2 GB) sizes. The resulting total system memory ranges from 2 GB up to 64 GB.

## Processor Card DIMM Locations

The following figure identifies the memory slots located on the processor cards.



For optimum performance, the memory must be installed in the system in a balanced configuration, in that each processor card that is installed in the system, regardless of type, must have the same amount of memory installed. In addition, the following basic rules apply:

- DIMMs must be installed in groups of four DIMMs (quads).
- A quad of DIMMs must be all of the same size.
- Quads are populated in DIMM slots 1, 3, 6, and 8 first and then slots 2, 4, 5, and 7.

## Initial System Memory Configurations

The following tables show memory configurations that are balanced for optimum system performance.

The values in the following tables describe the memory quads that are installed on each processor card to make the total system memory balanced. For example, an entry of “4” indicates a single memory quad of 4 GB; four 1-GB DIMMs (one quad) are installed on one processor card. An entry of “4+2” indicates two memory quads; one of 4 GB plus one of 2 GB, both installed on one processor card. In this case, there is a total of 6 GB of memory installed on a processor card.

The memory DIMMs represented by the number on the left side of the equation, 4 in the previous example, should be installed in DIMM slots 1, 3, 6, and 8 of the processor card.

Total Memory	One Processor Card	Two Processor Cards		Three Processor Cards			Four Processor Cards			
		1st	2nd	1st	2nd	3rd	1st	2nd	3rd	4th
2 GB	2									
4 GB	4									
	2+2	2	2							

Total Memory	One Processor Card	Two Processor Cards		Three Processor Cards			Four Processor Cards			
		1st	2nd	1st	2nd	3rd	1st	2nd	3rd	4th
6 GB	4+2									
				2	2	2				
8 GB	8									
	4+4	4	4							
		4	2+2							
		2+2	4							
		2+2	2+2				2	2	2	2
10 GB	8+2									
12 GB	8+4									
		4+2	4+2	4	4	2+2				
				4	2+2	4				
				2+2	4	4				
				4	4	4				
				4	2+2	2+2				
				2+2	4	2+2				
				2+2	2+2	4				
				2+2	2+2	2+2				
16 GB	8+8	8	8							
		4+4	4+4				4	4	4	4
							4	4	4	2+2
							4	4	2+2	4
							4	2+2	4	4
							2+2	4	4	4
							2+2	4	4	2+2
							2+2	4	2+2	4
							2+2	2+2	4	4
							4	4	2+2	2+2
							4	2+2	4	2+2
							4	2+2	2+2	4
							4	2+2	2+2	2+2
							2+2	4	2+2	2+2
							2+2	2+2	4	2+2
							2+2	2+2	2+2	4
							2+2	2+2	2+2	2+2
18 GB				4+2	4+2	4+2				
20 GB		8+2	8+2							

Total Memory	One Processor Card	Two Processor Cards		Three Processor Cards			Four Processor Cards			
		1st	2nd	1st	2nd	3rd	1st	2nd	3rd	4th
24 GB		8+4	8+4							
				8	8	8				
				8	8	4+4				
				8	4+4	8				
				4+4	8	8				
				8	4+4	4+4				
				4+4	4+4	8				
				4+4	8	4+4				
				4+4	4+4	4+4				
							4+2	4+2	4+2	4+2
30 GB				8+2	8+2	8+2				
32 GB		8+8	8+8				8	8	8	8
							8	8	8	4+4
							8	8	4+4	8
							8	4+4	8	8
							4+4	8	8	8
							4+4	8	8	4+4
							4+4	8	4+4	8
							4+4	4+4	8	8
							8	8	4+4	4+4
							8	4+4	8	4+4
							8	4+4	4+4	8
							8	4+4	4+4	4+4
							4+4	4+4	4+4	8
							4+4	4+4	8	4+4
							4+4	8	4+4	4+4
							4+4	4+4	4+4	4+4
36 GB				8+4	8+4	8+4				
40 GB							8+2	8+2	8+2	8+2
48 GB				8+8	8+8	8+8				
							8+4	8+4	8+4	8+4
64 GB							8+8	8+8	8+8	8+8

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## Hardware Management Console (HMC)

The Hardware Management Console (HMC) provides the tools that are needed to manage the 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:

- Creating and maintaining a multiple partition environment
- Detecting, reporting, and storing changes in hardware conditions
- Acting as a service focal point for service representatives to determine an appropriate service strategy

Partitioning the system is similar to partitioning a hard drive. When you partition a hard drive, you divide a single hard drive so that the operating system recognizes it as a number of separate hard drives. The same holds true for the HMC's partitioning capabilities, except the HMC allows you to divide the system's processors, memory, and I/O. On each of these divisions, you can load an operating system and use each partition as you would a separate physical machine. This division of system resources is called a *logical partition* or *LPAR*.

Partitioning provides users with the ability to split a single system into several independent systems, each capable of running applications in multiple, independent environments simultaneously. For example, partitioning enables a user to run a single application using different sets of data on separate partitions, as if it were running independently on separate physical systems.

Service representatives use Service Focal Point (SFP), an application that runs on the HMC, to start and end their service calls. SFP provides service representatives with serviceable event, 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.

## Partition Standby and Full System Partition Power-On Options

Booting a system in partition standby is markedly different from booting a system in the traditional single-machine full system partition. In partition standby, the system sets aside memory that is used for partition management.

## Partition Standby Memory Issues

Unique issues are associated with assigning memory to each partition created in partition standby. In partition standby, the HMC allocates a portion of each assigned memory block to the system.

## Page Table Memory Usage

Each partition requires a minimum of 256 megabytes (MB) of system memory to function correctly. When you start creating partitions, the system sets aside 256 MB of contiguous memory for its own use, and allocates another 256 MB of contiguous memory for each 16 GB allocated.

Partition page tables are an additional memory requirement for a partition to operate. The memory used by page tables for a partition is added to the total logical memory size of a partition to determine the total memory requirements for one partition. The partition page table is outside of a partition's accessible memory. The partition page table must be constructed with contiguous real system memory segments. Use the following table to help you keep track of the system's page table memory usage:

Partition Memory Size (256 MB increments)	Partition Page Table Size (4 16-byte entries per 4 K real page)	Partition Page Table Alignment	Assigned Memory Segments (256 MB)
256 MB	16 MB	16 MB	1
1 GB	16 MB	16 MB	1
1 GB - 2 GB	32 MB	32 MB	1
2 GB - 4 GB	64 MB	64 MB	1
4 GB - 8 GB	128 MB	128 MB	1
8 GB - 16 GB	256 MB	256 MB	1
16 GB - 32 GB	512 MB	512 MB	2
32 GB - 64 GB	1 GB	1 GB	4

In a full system partition, the operating system uses all of the installed memory; the system does not set aside contiguous memory for its own use.

For more information about how to allocate memory to partitions, refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.

## Partition Requirements

The maximum number of partitions is limited by the system memory and the number of available processors. To activate a partition, you need a *minimum* of the following:

- Each partition must have a minimum of one processor.
- Each partition must be assigned a minimum of 0.25 GB (256 MB) memory.
- To run the partition with an operating system, one network adapter is required for error reporting to the Service Focal Point (SFP) function on the HMC and dynamic LPAR interface.
- Each partition must have one device on which the operating system resides.

**Note:** To perform dynamic operations on partitions, the operating system must be capable of running dynamic partitions. AIX 5.2 and later versions of AIX are capable of performing dynamic operations. At the time of publication, Linux is not capable of performing dynamic operations.

A single partition can utilize all available processors. All of the available memory can be allocated to a single partition with the following considerations:

1. The system must have more than 32 GB of memory installed to run an AIX 5.1 partition with more than 16 GB of memory allocated to it.
2. The system must have more than 48 GB of memory installed to run two AIX 5.1 partitions with more than 16 GB of memory allocated to them.
3. The maximum available memory must allow for firmware overhead.

If the **Small Real Mode** option is chosen on the HMC, AIX 5.2 and Linux do not have the preceding memory requirements.

## Special Consideration for Determining Memory Allocation for Logical Partitions

To function correctly, system firmware requires a portion of real memory. The amount of memory overhead for firmware varies depending on the total memory installed in the system, the number of I/O expansion drawers attached, and the firmware level on the system. Use the following table to determine firmware overhead:

Available System Memory	Firmware Overhead usage
2 GB to 16 GB	0.75 to 1 GB

Available System Memory	Firmware Overhead usage
18 GB to 32 GB	1 to 1.25 GB
34 GB to 48 GB	1.25 to 1.75 GB
50 GB to 64 GB	1.5 to 2 GB

Before calculating the memory that is available for partitions, the appropriate memory overhead must be subtracted from the system memory.

### Memory Placement Considerations for LPAR Environment

If the system is running AIX 5.1 in LPAR mode and partitions with more than 16 GB of memory are desired, special consideration must be given to DIMM placement.

Allocating a partition with more than 16 GB of memory requires the following:

- The system must have more than 33 GB of memory to run one AIX 5.1 partition with 16 GB or more of memory allocated to it, and the first processor card must have a minimum of 16 GB of memory.
- The system must have more than 49 GB of memory to run two AIX 5.1 partitions with 16 GB or more assigned to them, and the first and second processor card must each have a minimum of 16 GB of memory.

**Note:** Memory configurations of new systems have balanced memory across all processors for optimum performance. Memory quads may have to be reconfigured to allow AIX 5.1 partitions to function with more than 16 GB of memory allocated to them.

If the system is running AIX 5.2 or Linux, selecting **Small Real Mode** when setting the memory profile in a partition allows a partition with more than 16 GB of memory to be created regardless of the memory configuration.

The following table details the number of logical partitions that can be created based on the amount of memory installed in the system, the amount of memory allocated to the partitions, the version of the operating system, and the version of the system firmware.

Total Memory	Approximate Memory Overhead Required by Firmware	Approximate Usable Partition Memory	Maximum Number of Partitions: AIX 5.1 Partitions ≤ 16GB and Partitions > 16GB (see Notes 1 and 2)	Maximum Number of Partitions: AIX 5.2 (or later) or Linux All partition sizes (see Notes 1, 3, and 4)
4 GB	.75 to 1 GB	3 to 3.25 GB	8 and 0	8
8 GB	.75 to 1 GB	7 to 7.25 GB	8 and 0	8
16 GB	.75 to 1 GB	15 to 15.25 GB	8 and 0	8
24 GB	1 to 1.25 GB	22.75 to 23 GB	8 and 0	8
32 GB	1 to 1.25 GB	30.75 to 31 GB	8 and 0	8
48 GB	1.25 to 1.75 GB	46.25 to 46.75 GB	8 and 1	8
64 GB	1.5 to 2 GB	62 to 62.5 GB	8 and 2	8

#### Notes:

1. All partition maximum numbers are subject to availability of sufficient processor, memory, and I/O resources to support that number of partitions. For example, a system with eight processors can support a maximum of eight partitions.

2. Memory sizes for systems running partitions with AIX 5.1, if the firmware and HMC release levels are at the 10/2002 release level (or later). Do not select the HMC partition profile option for **Small Real Mode Address Region** for AIX 5.1 partitions. These numbers reflect the maximum when running only AIX 5.1 partitions, but AIX 5.1 and AIX 5.2 partitions can be mixed, and can allow for additional partitions to be run (up to the maximum of eight).
3. Memory sizes for systems running partitions with AIX 5.2 (or later) or Linux, if the firmware and HMC release levels are at the 10/2002 release level (or later). Select the HMC partition-profile option for **Small Real Mode Address Region** for these partitions.
4. AIX 5.2, when run with the **Small Real Mode Address Region** partition-profile option, requires that the maximum memory setting is no greater than 64 times the minimum memory setting. For example, if the minimum memory setting is 256 MB, the maximum memory setting cannot be greater than 16 GB. Otherwise, AIX does not start.

---

## Powering the System On and Off

For procedures to power on and power off the system for various system configurations and operating systems see “Stopping the System without an HMC Attached” on page 484 and “Starting the System Without an HMC Attached” on page 485.

---

## Power-On Self-Test

After power is turned on and before the operating system is loaded, the partition does a power-on self-test (POST). This test performs checks to ensure that the hardware is functioning correctly before the operating system is loaded. During the POST, a POST screen displays, and POST indicators display on the system console. If an HMC is used to manage the system the POST indicators display on the HMC’s virtual terminal. 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 partition is preparing to load the operating system. The POST indicators are words that display on the system console. Each time that the firmware starts another step in the POST, a POST indicator word displays on the system console. The POST screen displays the following words:

<b>Memory</b>	Memory test
<b>Keyboard</b>	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.
<b>Network</b>	Self-test on network adapters
<b>SCSI</b>	Adapters are being initialized
<b>Speaker</b>	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 boot modes used for configuring the system and diagnosing problems. The system will beep to remind you to press the POST key (if desired) at the appropriate time. The keys are described as follows:

### 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 partition 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.

The default boot sequence is:

1. Diskette
2. CD-ROM
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 boot list, which can be set in the AIX service aids.

---

## System Attention LED

The system attention LED, on the operator panel turns on when an entry is made in the service processor error log, indicating that intervention or service is needed. The error entry gets transmitted to:

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

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 70.



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## Logical and Physical Locations

The pSeries 650 system uses physical location codes in conjunction with AIX location codes to provide mapping of the failing field replaceable units (FRUs). The location codes are produced by the system's firmware and the AIX operating system.

When the operating system is Linux, there are no Linux location codes, but physical location codes may appear 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 format for the location code is a string of alphanumeric characters separated by a dash (-), slash (/), pound sign (#) or period (.) character. The base location is all of the information preceding the slash (/) or pound sign (#). The base location identifies a device that is connected to or plugged into the parent. Extended location information follows the slash (/). Extended location information identifies a device that is part of the parent, a connector, or a cable. Cable information follows the pound sign (#). Cable information identifies a cable that is connected to parent. The following are examples:

- P1-C1 identifies a processor card C1 (MCM) plugged into planar (backplane) P1.
- P1-M1 identifies a memory card (book) M1 plugged into planar (backplane) P1.
- P1-H2/S1 identifies serial port 1 controller on planar (backplane) P1, the connector for serial port 1, the cable attached to serial port 1 would be represented by a # sign after the S1.
- P1-I2/E3 identifies a Ethernet controller 3 on the card in slot 2 (I2) on planar (backplane) P1, the connector for Ethernet controller 3, or the cable attached to Ethernet controller 3.
- P1-I2#E3 identifies the cable attached to Ethernet controller 3 on the card in slot 2 (I2) on planar (backplane) P1.

The period (.) identifies sublocations (SCSI addresses, cables). The following are examples:

- P1-C1.1 identifies processor 1 on processor card (MCM) plugged into planar (backplane) P1.
- P2-Z1-A3.1 identifies a SCSI device with SCSI address of LUN 1 at SCSI ID 3 attached to SCSI bus 1 from planar (backplane) 2.
- P1-I2#E3.2 identifies the second in a series of cables attached to Ethernet controller 3 on the card in slot 2 (I2) on planar (backplane) P1.

Depending on the AIX and firmware levels, AIX diagnostics may include the extended location information when identifying a planar (backplane) or card. The extended location information or cable information is always included when identifying a cable or connector. Location codes with extended location information that are displayed without a description identifying the devices always identify the cable attached to the port.

## 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 217, a location code for a failing part may also be specified. If the location code includes a blank space followed by a lowercase x followed by a number, this is an error code with multiple FRU callouts. This error can typically happen with memory books or processors, and may involve mixed types of parts. In this case, check the system’s configuration for FRU part numbers to determine the appropriate set of FRUs.

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

You can 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. Notice that the FRU part number information for processors and memory books may be 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:

- Rack identify beacon LED (optional rack status beacon)
- Processor subsystem drawer identify LED
- I/O subsystem identify LED
- RIO port identify LED
- FRU identify LED
- Power subsystem FRUs
- Processor 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 processor subsystem 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 under in the “System Information Menu” on page 432. See “System Information Menu” on page 432 for information on how to use the LED Control Menu.

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

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

1. If the system is configured as a full system partition, the system may be booted to the open firmware prompt and the command **FRU-LED-MENU** entered. A menu will appear that will allow you to turn on the desired FRU identify LED. See the “System Power Control Menu” on page 428 for instructions on setting the boot mode to enable the boot to the open firmware prompt.
2. If the system is logically partitioned, the HMC must be attached. There is a function at the HMC that allows any FRU identify LED to be flashed. See the “Hardware Service Functions” section of the

"Service Focal Point" chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, for instructions on activating and deactivating a FRU identify LED.

## AIX Location Codes

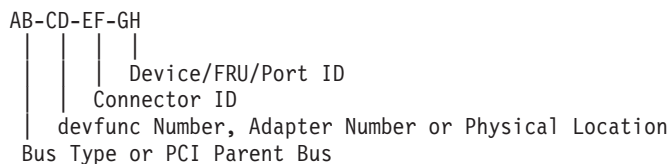
**Attention:** When the operating system is Linux, there are no Linux location codes, but physical location codes may appear in the Linux error logs.

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

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



- The AB value identifies a bus type or PCI parent bus as assigned by the firmware.
- The CD value identifies adapter number, 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 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). The location codes therefore uniquely identify multiple adapters on individual PCI cards.

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

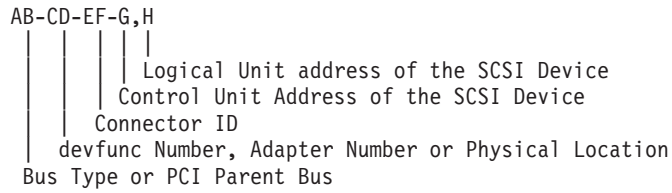
GH is used to identify a port, device, or FRU. For example:

- 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 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

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



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 and AIX location codes are:

PCI adapter in first I/O subsystem, slot 1:

- Physical location code U0.2-P1-I1
- AIX location code 29-0B

PCI adapter in fifth I/O subsystem, slot 1:

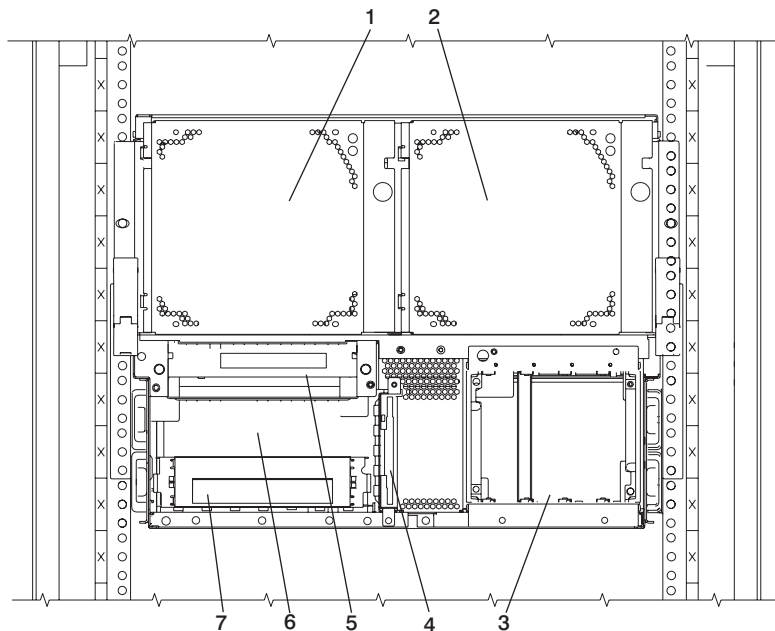
- Location Code U0.6-P1-I1
- AIX location Code 5Z-08

## AIX and Physical Location Code Reference Tables

**Attention:** When the operating system is Linux, there are no Linux location codes, but physical location codes may appear in the Linux error logs.

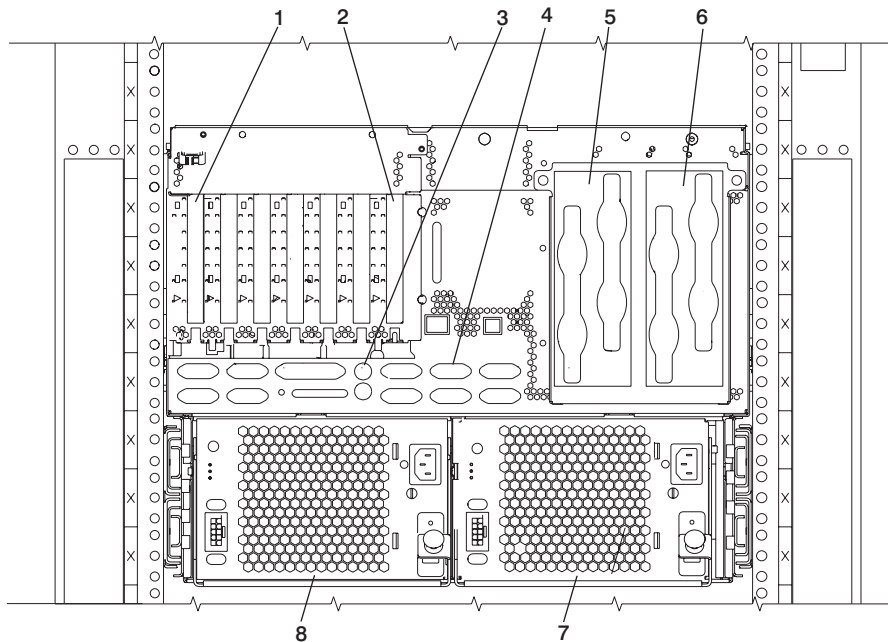
The following illustrations show the location codes that are used to identify the major functional units in the pSeries 650. The following figure shows the base system unit locations.

### Processor Subsystem Front



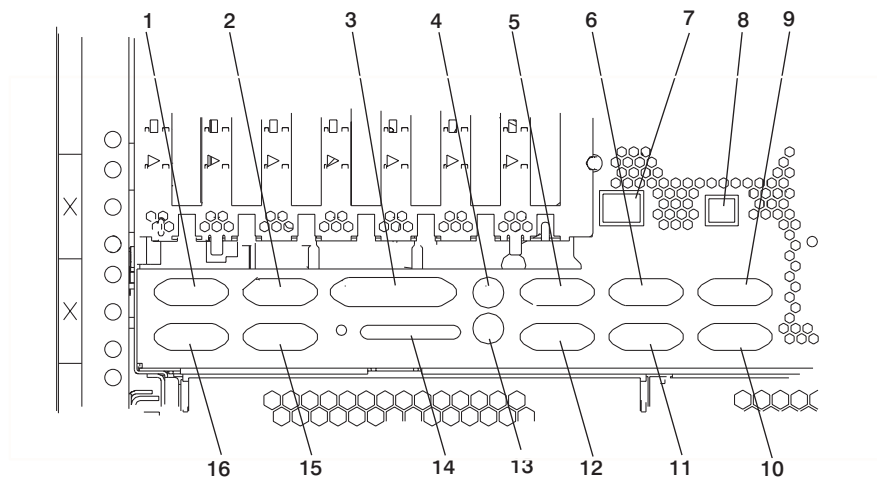
- |   |   |
|---|---|
| <b>1</b> Fan 3,<br>Location: U0.1-F3  | <b>5</b> Operator Panel,<br>Location: U0.1-L1               |
| <b>2</b> Fan 4,<br>Location: U0.1-F4  | <b>6</b> Optional Media Bay D02,<br>Location: U0.1-P2/Z1-A1 |
| <b>3</b> Disk Drive Bay,<br>Location: U0.1-P2/Z1-AF<br>Internal Disk Drive 1<br>Location: U0.1-P2/Z1-A8<br>Internal Disk Drive 2<br>Location: U0.1-P2/Z1-A9<br>Internal Disk Drive 3<br>Location: U0.1-P2/Z1-AA<br>Internal Disk Drive 4<br>Location: U0.1-P2/Z1-AB | <b>7</b> DVD-ROM Drive,<br>Location: U0.1-P2/Z1-A0          |
| <b>4</b> Diskette Drive D03,<br>Location: U0.1-P2-D1  |   |

## Processor Subsystem Rear



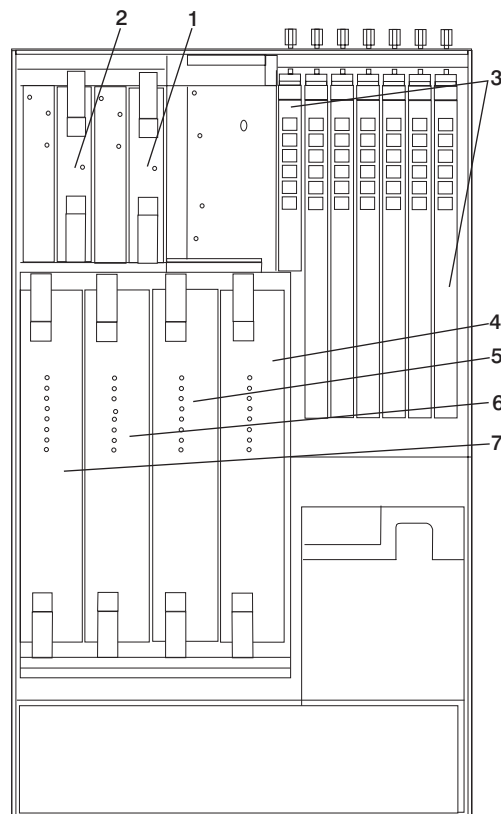
- |  |   |
|--|---|
| <p><b>1</b> PCI adapter slot 1,<br/>Location: U0.1-P2/I1</p> <p><b>2</b> PCI Adapter Slot 7,<br/>Location: U0.1-P2/I7</p> <p><b>3</b> Mouse Port (upper),<br/>Location: U0.1-P2/O1<br/>Keyboard Port (lower),<br/>Location: U0.1-P2/K1</p> <p><b>4</b> Native I/O ports; see "Processor Subsystem<br/>I/O Ports" on page 31.</p> | <p><b>5</b> RIO connector card 1<br/>Location: U0.1-P1-H1<br/>RIO connector extender card 1<br/>Location: U0.1-P1-H1.1</p> <p><b>6</b> RIO connector card 2<br/>Location: U0.1-P1-H2<br/>RIO connector extender card 2<br/>Location: U0.1-P1-H2.1</p> <p><b>7</b> Power Supply 2, Location: U0.1-V2<br/>Fan 2 attached to power supply,<br/>Location: U0.1-F2</p> <p><b>8</b> Power Supply 1,<br/>Location: U0.1-V1<br/>Fan 1 attached to power supply,<br/>Location: U0.1-F1</p> |
|--|---|

## Processor Subsystem I/O Ports



<b>1</b>	UPS I2C Port, Location: U0.1-P2/Q9	<b>9</b>	(HMC) HSC Port 1, Location: U0.1-P2/S5
<b>2</b>	EPO Op PNL I2C Port, Location: U0.1-P2/Q10	<b>10</b>	(HMC) HSC Port 2, Location: U0.1-P2/S6
<b>3</b>	Reserved	<b>11</b>	Serial Port 3, Location: U0.1-P2/S3
<b>4</b>	Mouse Port, Location: U0.1-P2/O1	<b>12</b>	Serial Port 4, Location: U0.1-P2/S4
<b>5</b>	Serial Port 2 Location: U0.1-P2/S2	<b>13</b>	Keyboard Port, Location: U0.1-P2/K1
<b>6</b>	Serial Port 1 Location: U0.1-P2/S1	<b>14</b>	External SCSI Port Location: U0.1-P2/Z2
<b>7</b>	Ethernet Port Location: U0.1-P2/E1	<b>15</b>	SPCN 0/J15, Location: U0.1-P2/Q12
<b>8</b>	Rack Indicator Port, Location: U0.1-P2/Q13	<b>16</b>	SPCN 1/J16, Location: U0.1-P2/Q11

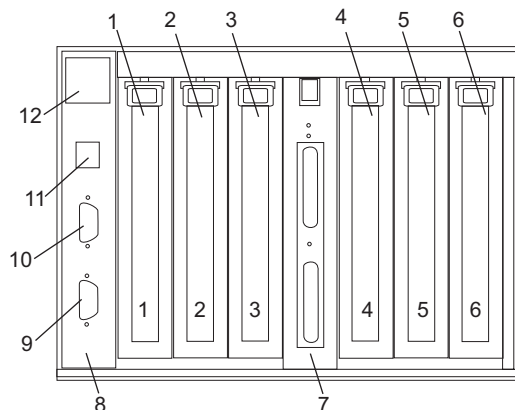
## Processor Subsystem From the Top



- |  |  |
|--|--|
| <p><b>1</b> RIO connector card<br/>Location: U0.1-P1-H1</p> <p><b>2</b> RIO connector card<br/>Location: U0.1-P1-H2</p> <p><b>3</b> PCI Adapter Slot 1-7, Location: U0.1-P2/1-7</p> <p><b>4</b> Processor/Memory Card<br/>Location: U0.1-P1-C1</p> | <p><b>5</b> Processor/Memory Card<br/>Location: U0.1-P1-C2</p> <p><b>6</b> Processor/Memory Card<br/>Location: U0.1-P1-C3</p> <p><b>7</b> Processor/Memory Card<br/>Location: U0.1-P1-C4</p> |
|--|--|



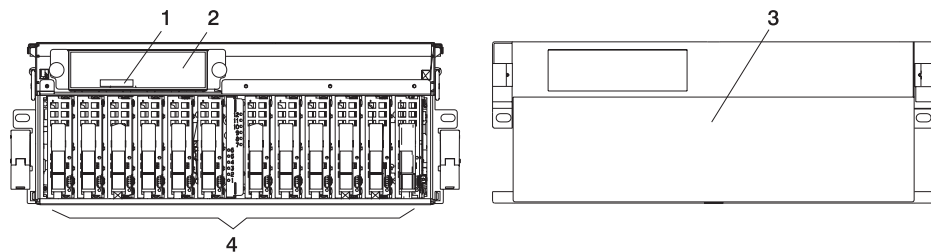
## 7311 Model D10 I/O Subsystem Rear Locations



- |   |   |
|---|---|
| <b>1</b> PCI adapter slot 1<br>U0. <i>dd</i> -P1-I1   | <b>7</b> RIO bus adapter card<br>U0. <i>dd</i> -P1.1                              |
| <b>2</b> PCI-X adapter slot 2<br>U0. <i>dd</i> -P1-I2 | <b>8</b> SPCN connector card<br>U0. <i>dd</i> -P1 (part of the I/O backplane FRU) |
| <b>3</b> PCI-X adapter slot 3<br>U0. <i>dd</i> -P1-I3 | <b>9</b> SPCN Connector 2/J16<br>U0. <i>dd</i> -P1/Q5                             |
| <b>4</b> PCI-X adapter slot 4<br>U0. <i>dd</i> -P1-I4 | <b>10</b> SPCN Connector 1/J15<br>U0. <i>dd</i> -P1/Q4                            |
| <b>5</b> PCI-X adapter slot 5<br>U0. <i>dd</i> -P1-I5 | <b>11</b> Rack beacon connector   |
| <b>6</b> PCI-X adapter slot 6<br>U0. <i>dd</i> -P1-I6 | <b>12</b> Power cord channel  |

**Note:** In the preceding table, *dd* is equal to the number assigned to each I/O subsystem by the connected processor subsystem's SPCN firmware.

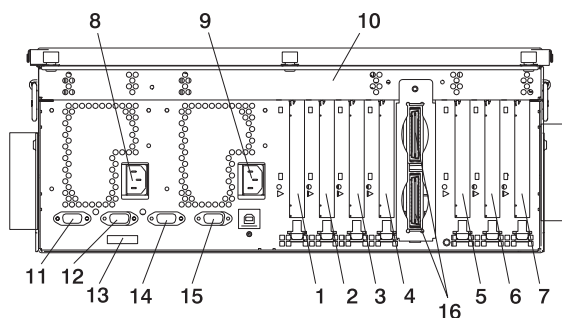
## Model D20 Front View



- 1 Serial Number
- 2 Operator Panel

- 3 Model D20 Front Bezel
- 4 Disk Drives (maximum quantity 12 )

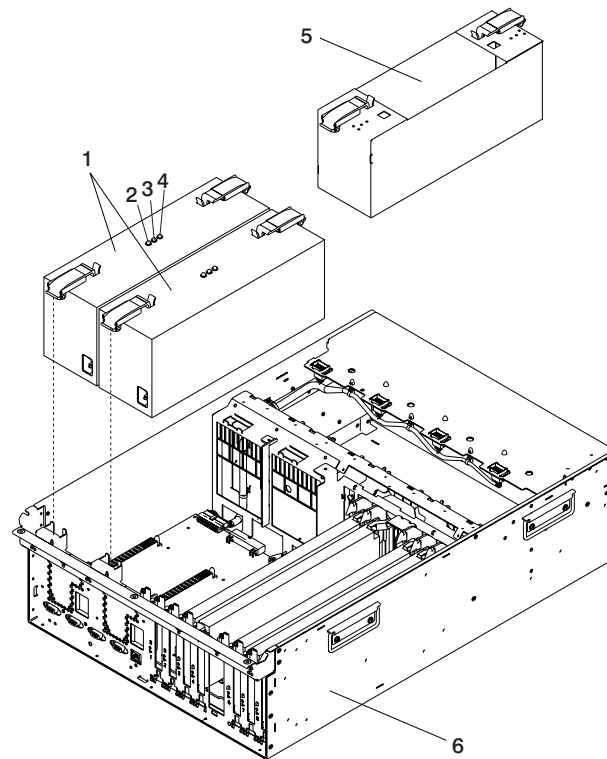
## Model D20 Rear View



- 1 PCI-X Expansion Slot 1
- 2 PCI-X Expansion Slot 2
- 3 PCI-X Expansion Slot 3
- 4 PCI-X Expansion Slot 4
- 5 PCI-X Expansion Slot 5
- 6 PCI-X Expansion Slot 6
- 7 PCI-X Expansion Slot 7
- 8 Redundant Power Supply Receptacle

- 9 Primary Power Supply
- 10 Model D20 I/O Drawer
- 11 Connector J11 (Not Used)
- 12 Connector J14 (Not Used)
- 13 Rear Serial Number Label
- 14 Connector J15 (SPCN 3)
- 15 Connector J16 (SPCN 4)
- 16 RIO Connectors
  - Upper Connector = 1
  - Lower Connector = 0

## Model D20 Power Supply Locations

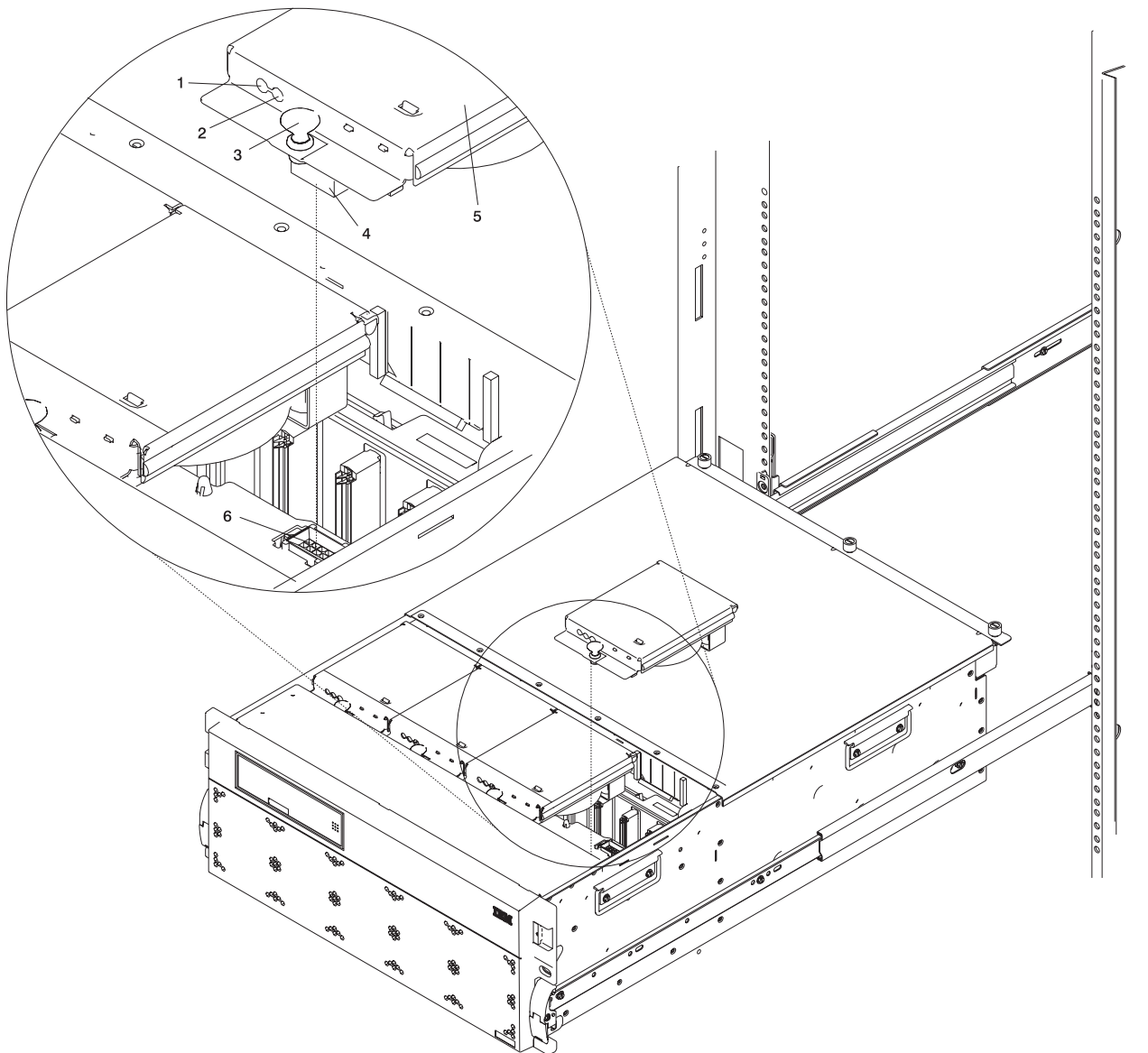


- 1 Power Supplies
- 2 Amber Fault/Identify LED
- 3 Green DC Good LED

- 4 Green AC Power LED
- 5 Power Supply Filler
- 6 Model D20 I/O Drawer

## Model D20 Blower Locations

The following illustration identifies the I/O subsystem cooling blowers. Each blower has a green power LED and an amber identify LED located on the front blower housing. The green LED indicates that a blower has power and is operating correctly. The amber LED is in the identify state when blinking.



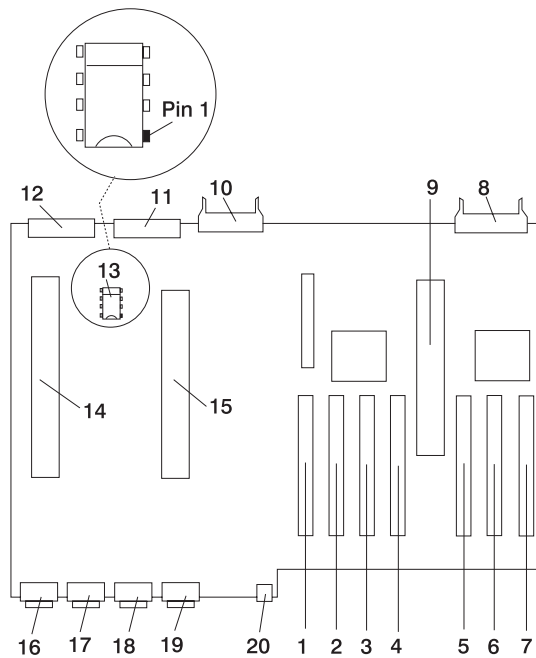
- 1 Green LED
- 2 Amber LED
- 3 Snap Button

- 4 Blower Connector
- 5 Hot-Plug Blower Assembly
- 6 Docking Connector

## Model D20 I/O Backplane Locations

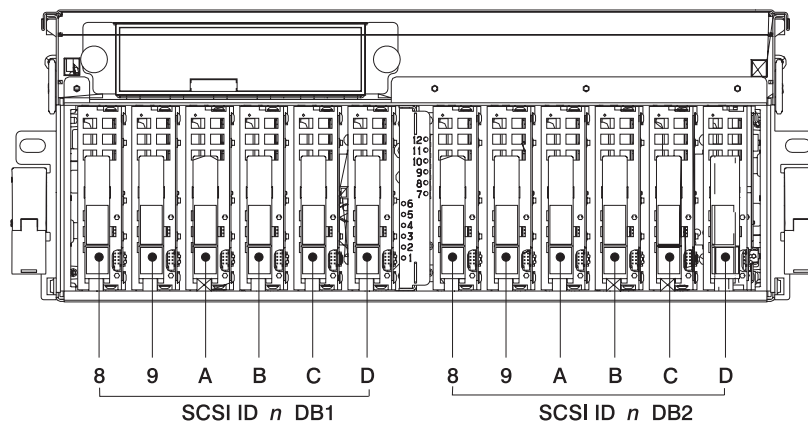
The following illustration of the I/O backplane identifies the primary connectors used in your subsystem.

**Note:** Before replacing the I/O backplane, note the position of pin 1 on the VPD module.



- |   |   |
|---|---|
| 1 PCI-X Adapter Connector 1                                 | 11 Disk Drive Power Connector             |
| 2 PCI-X Adapter Connector 2                                 | 12 Cooling Blower Connector               |
| 3 PCI-X Adapter Connector 3                                 | 13 VPD Module                             |
| 4 PCI-X Adapter Connector 4                                 | 14 Redundant Power Supply Connector       |
| 5 PCI-X Adapter Connector 5                                 | 15 Primary Power Supply Connector         |
| 6 PCI-X Adapter Connector 6                                 | 16 Connector J11 (Not Used)               |
| 7 PCI-X Adapter Connector 7                                 | 17 Connector J14 (Not Used)               |
| 8 Operator Panel Connector                                  | 18 Connector J15 (SPCN 3)                 |
| 9 RIO Bus Adapter Connector                                 | 19 Connector J16 (SPCN 4)                 |
| 10 Disk Drive System Power Control Network (SPCN) Connector | 20 4-pin Connector, Rack Beacon Connector |

## Model D20 SCSI IDs and Bay Locations



Index	Bay Location	Drive Name	SCSI Bus ID
8 DB1	D01	Hot-Plug Disk Drive	8 - DB1
9 DB1	D02	Hot-Plug Disk Drive	9 - DB1
A DB1	D03	Hot-Plug Disk Drive	A - DB1
B DB1	D04	Hot-Plug Disk Drive	B - DB1
C DB1	D05	Hot-Plug Disk Drive	C - DB1
D DB1	D06	Hot-Plug Disk Drive	D - DB1
8 DB2	D07	Hot-Plug Disk Drive	8 - DB2
9 DB2	D08	Hot-Plug Disk Drive	9 - DB2
A DB2	D09	Hot-Plug Disk Drive	A - DB2
B DB2	D10	Hot-Plug Disk Drive	B - DB2
C DB2	D11	Hot-Plug Disk Drive	C - DB2
D DB2	D12	Hot-Plug Disk Drive	D - DB2

**Note:** 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.

## FRU Identify LEDs

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

- Rack identify beacon LED (optional rack status beacon)
- Processor subsystem drawer identify LED
- I/O subsystem identify LED
- RIO port identify LED
- FRU identify LED
- Power subsystem FRUs
- Processor 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 processor subsystem 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 under in the “System Information Menu” on page 432. See “System Information Menu” on page 432 for information on how to use the LED control menu.

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

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

1. If the system is configured as a full system partition, the system may be booted to the open firmware prompt and the command **FRU-LED-MENU** entered. A menu will appear that will allow you to turn on the desired FRU identify LED. See the “System Power Control Menu” on page 428 for instructions on setting the boot mode to enable the boot to the open firmware prompt.
2. If the system is logically partitioned, the HMC must be attached. There is a function at the HMC that allows any FRU identify LED to be flashed. See the “Hardware Service Functions” section of the “Service Focal Point” chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, for instructions on activating and deactivating a FRU identify LED.

The following tables contain location codes that are used to identify functional units in @server pSeries 650 systems. The location codes identify physical parts of the system.

**Attention:** When the operating system is Linux, there are no Linux location codes, but physical location codes might appear in the Linux error logs.

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
Rack Frame	(MT/M Serial#) U0			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
<b>Processor Subsystem Drawer Locations</b>				
Processor Subsystem drawer	(MT/M Serial #) U0.1			
Power supply fan	U0.1-F1			
Power supply fan	U0.1-F2			
Cooling fan 3	U0.1-F3			
Cooling fan 4	U0.1-F4			
Operator Panel	U0.1-L1			
Processor Subsystem Temperature Sensor on Operator Panel	U0.1-L1			
Processor Subsystem VPD Module on Operator Panel	U0.1-L1-N1			
Processor backplane	U0.1-P1			
Processor Card 1	U0.1-P1-C1			
Processor Card 2	U0.1-P1-C2			
Processor Card 3	U0.1-P1-C3			
Processor Card 4	U0.1-P1-C4			
Memory DIMM 1 - Processor card 1	U0.1-P1-C1-M1			
Memory DIMM 2 - Processor card 1	U0.1-P1-C1-M2			
Memory DIMM 3 - Processor card 1	U0.1-P1-C1-M3			
Memory DIMM 4 - Processor card 1	U0.1-P1-C1-M4			
Memory DIMM 5 - Processor card 1	U0.1-P1-C1-M5			
Memory DIMM 6 - Processor card 1	U0.1-P1-C1-M6			
Memory DIMM 7 - Processor card 1	U0.1-P1-C1-M7			
Memory DIMM 8 - Processor card 1	U0.1-P1-C1-M8			
Memory DIMM 1 - Processor card 2	U0.1-P1-C2-M1			



FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
Memory DIMM 2 - Processor card 2	U0.1-P1-C2-M2			
Memory DIMM 3 - Processor card 2	U0.1-P1-C2-M3			
Memory DIMM 4 - Processor card 2	U0.1-P1-C2-M4			
Memory DIMM 5 - Processor card 2	U0.1-P1-C2-M5			
Memory DIMM 6 - Processor card 2	U0.1-P1-C2-M6			
Memory DIMM 7 - Processor card 2	U0.1-P1-C2-M7			
Memory DIMM 8 - Processor card 2	U0.1-P1-C2-M8			
Memory DIMM 1 - Processor card 3	U0.1-P1-C3-M1			
Memory DIMM 2 - Processor card 3	U0.1-P1-C3-M2			
Memory DIMM 3 - Processor card 3	U0.1-P1-C3-M3			
Memory DIMM 4 - Processor card 3	U0.1-P1-C3-M4			
Memory DIMM 5 - Processor card 3	U0.1-P1-C3-M5			
Memory DIMM 6 - Processor card 3	U0.1-P1-C3-M6			
Memory DIMM 7 - Processor card 3	U0.1-P1-C3-M7			
Memory DIMM 8 - Processor card 3	U0.1-P1-C3-M8			
Memory DIMM 1 - Processor card 4	U0.1-P1-C4-M1			
Memory DIMM 2 - Processor card 4	U0.1-P1-C4-M2			
Memory DIMM 3 - Processor card 4	U0.1-P1-C4-M3			
Memory DIMM 4 - Processor card 4	U0.1-P1-C4-M4			
Memory DIMM 5 - Processor card 4	U0.1-P1-C4-M5			
Memory DIMM 6 - Processor card 4	U0.1-P1-C4-M6			
Memory DIMM 7 - Processor card 4	U0.1-P1-C4-M7			
Memory DIMM 8 - Processor card 4	U0.1-P1-C4-M8			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
RIO connector card 1	U0.1-P1-H1			
RIO connector card 1, upper connector	U0.1-P1-H1/Q1			
RIO connector card 1, upper cable	U0.1-P1-H1/Q1#			
RIO connector card 1, lower connector	U0.1-P1-H1/Q2			
RIO connector card 1, lower cable	U0.1-P1-H1/Q2#			
RIO connector extender card 1	U0.1-P1-H1.1			
RIO connector extender card 1, upper connector	U0.1-P1-H1.1/Q3			
RIO connector extender card 1, upper cable	U0.1-P1-H1.1/Q3#			
RIO connector extender card 1, lower connector	U0.1-P1-H1.1/Q4			
RIO connector extender card 1, lower cable	U0.1-P1-H1.1/Q4#			
RIO connector card 2	U0.1-P1-H2			
RIO connector card 2, upper connector	U0.1-P1-H2/Q5			
RIO connector card 2, upper cable	U0.1-P1-H2/Q5#			
RIO connector card 2, lower connector	U0.1-P1-H2/Q6			
RIO connector card, lower cable	U0.1-P1-H2/Q6#			
RIO connector extender card 2	U0.1-P1-H2.1			
RIO connector extender card 2, upper connector	U0.1-P1-H2.1/Q7			
RIO connector extender card 2, upper cable	U0.1-P1-H2.1/Q7#			
RIO connector extender card 2, lower connector	U0.1-P1-H2.1/Q8			
RIO connector extender card 2, lower cable	U0.1-P1-H2.1/Q8#			
Service processor/PCI backplane	U0.1-P2			
Time and date module on service processor/PCI backplane	U0.1-P2			
ISA bus on service processor/PCI backplane	U0.1-P2	1G-18		
Diskette Port	U0.1-P2/D1	01-D1		

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
Diskette Drive	U0.1-P2-D1	01-D1-00-00		
Integrated Ethernet Controller Ent	U0.1-P2/E1	1c-08		
PHB0 on service processor/PCI backplane	U0.1-P2			
EADS controller under PHB0 on service processor/PCI backplane	U0.1-P2	10-10, 10-12, 10-14, 10-16		
PCI Slot 1	U0.1-P2/I1			
PCI Slot 1 Card	U0.1-P2-I1	11-08		
PCI Slot 2	U0.1-P2/I2			
PCI Slot 2 Card	U0.1-P2-I2	14-08		
PCI Slot 3	U0.1-P2/I3			
PCI Slot 3 Card	U0.1-P2-I3	1A-08		
PCI Slot 4	U0.1-P2/I4			
PCI Slot 4 Card	U0.1-P2-I4	1D-08		
PHB 2 on service processor/PCI backplane	U0.1-P2			
EADS_X under PHB2	U0.1-P2	1Y-10, 1Y-12, 1Y-13, 1Y-14, 1Y-16		
PCI Slot 5	U0.1-P2/I5			
PCI Slot 5 Card	U0.1-P2-I5	1j-08		
PCI Slot 6	U0.1-P2/I6			
PCI Slot 6 Card	U0.1-P2-I6	1n-08		
PCI Slot 7	U0.1-P2/I7			
PCI Slot 7 Card	U0.1-P2-I7	1f-08		
Keyboard Port	U0.1-P2/K1	01-K1-00		
Keyboard	U0.1-P2/K1-K1	01-K1-00-00		
Mouse Port	U0.1-P2/O1	01-K1-01		
Mouse	U0.1-P2/O1-O1	01-K1-01-00		
Telco_I2C-UPS/J14	U0.1-P2/Q9			
EPO-Oppanel_I2C/J11	U0.1-P2/Q10			
SPCN Port 0/J15	U0.1-P2/Q12			
SPCN Port 1/J16	U0.1-P2/Q11			
Rack Indicator connector	U0.1-P2/Q13			
Serial Port 1	U0.1-P2/S1	01-S1		
Serial Port 2	U0.1-P2/S2	01-S2		
Serial Port 3	U0.1-P2/S3	01-S3		
Serial Port 4	U0.1-P2/S4	01-S4		
HMC Connector 1	U0.1-P2/S5			
HMC Connector 2	U0.1-P2/S6			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
Battery	U0.1-P2-V3			
Platform Firmware	U0.1-P2/Y1			
SCSI Controller internal connector Z1	U0.1-P2/Z1	1Z-08		
DVD Drive	U0.1-P2/Z1-A0	1Z-08-00-0,0		
Tape Drive	U0.1-P2/Z1-A1	1Z-08-00-1,0		
Internal DASD 1	U0.1-P2/Z1-A8	1Z-08-00-8,0		
Internal DASD 2	U0.1-P2/Z1-A9	1Z-08-00-9,0		
Internal DASD 3	U0.1-P2/Z1-AA	1Z-08-00-10,0		
Internal DASD 4	U0.1-P2/Z1-AB	1Z-08-00-11,0		
SES for DASD in Processor Subsystem drawer	U0.1-P2/Z1-AF	1Z-08-00-15,0		
SCSI Controller ext connector Z2	U0.1-P2/Z2	1Z-09		
Fabric card	U0.1-P3			
4-pack DASD backplane	U0.1-P4			
DASD daughter card	U0.1-P4			
Removable media card	U0.1-P5			
Power supply V1	U0.1-V1			
Power supply V2	U0.1-V2			

## I/O Subsystem Locations

The tables in this section contain the AIX and physical 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, then 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, then 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 shows what each part of a location code means.

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 nothing but the AIX location code, you might determine the associated I/O subsystem *dd* number by performing the following steps.

At the AIX command prompt do the following:

1. Enter the command **lsdev -Ccadapter |pg**.

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

2. Enter the command **lsslot -c pci |pg**.

This list relates the AIX logical name of all resources to location code. Look for 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 26) that corresponds to the location code.

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
<b>First Model D10 I/O Subsystem (1) Locations</b>				
I/O subsystem 1 drawer	U0.dd			
I/O backplane	U0.dd-P1			
RIO connector riser card	U0.dd-P1.1			
RIO port 0 (upper connector)	U0.dd-P1.1/Q1			
RIO port 0 cable	U0.dd-P1.1/Q1#			
RIO port 1 (lower connector)	U0.dd-P1.1/Q2			
RIO port 1 cable	U0.dd-P1.1/Q2#			
PHB1	U0.dd-P1			
EADS_X under PHB1	U0.dd-P1	28-10, 28-12, 28-16		
PCI slot 1	U0.dd-P1/I1			
PCI slot 1 adapter	U0.dd-P1-I1	29-08		
PCI slot 2	U0.dd-P1/I2			
PCI slot 2 adapter	U0.dd-P1-I2	2C-08		
PCI slot 3	U0.dd-P1/I3			
PCI slot 3 adapter	U0.dd-P1-I3	2M-08		
PHB2	U0.dd-P1			
EADS_X under PHB2	U0.dd-P1	2Q-10, 2Q-12, 2Q-16		
PCI slot 4	U0.dd-P1/I4			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
PCI slot 4 adapter	U0.dd-P1-I4	2R-08		
PCI slot 5	U0.dd-P1/I5			
PCI slot 5 adapter	U0.dd-P1-I5	2U-08		
PCI slot 6	U0.dd-P1/I6			
PCI slot 6 adapter	U0.dd-P1-I6	2d-08		
Power supply 1 (with 2 fans)	U0.dd-V1			
Power supply 2 (with 2 fans)	U0.dd-V2			
Cooling blower fan 5	U0.dd-F5			
Rack indicator connector (4 pins)	U0.dd-P1/Q3			
SPCN connector 1	U0.dd-P1/Q4			
SPCN connector 2	U0.dd-P1/Q5			
VPD drawer	U0.dd			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
<b>Second Model D10 I/O Subsystem (2) Locations</b>				
I/O subsystem 2 drawer	U0.dd			
I/O backplane	U0.dd-P1			
RIO connector riser card	U0.dd-P1.1			
RIO port 0 (upper connector)	U0.dd-P1.1/Q1			
RIO Port 0 Cable	U0.dd-P1.1/Q1#			
RIO port 1 (lower connector)	U0.dd-P1.1/Q2			
RIO port 1 cable	U0.dd-P1.1/Q2#			
PHB1	U0.dd-P1			
EADS_X under PHB1	U0.dd-P1	38-10, 38-12, 38-16		
PCI slot 1	U0.dd-P1/I1			
PCI slot 1 adapter	U0.dd-P1-I1	31-08		
PCI slot 2	U0.dd-P1/I2			
PCI slot 2 adapter	U0.dd-P1-I2	34-08		
PCI slot 3	U0.dd-P1/I3			
PCI slot 3 adapter	U0.dd-P1-I3	3D-08		
PHB2	U0.dd-P1			
EADS_X under PHB2	U0.dd-P1	3G-10, 3G-12, 3G-16		
PCI slot 4	U0.dd-P1/I4			
PCI slot 4 adapter	U0.dd-P1-I4	3H-08		

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
PCI slot 5	U0.dd-P1/I5			
PCI slot 5 adapter	U0.dd-P1-I5	3L-08		
PCI slot 6	U0.dd-P1/I6			
PCI slot 6 adapter	U0.dd-P1-I6	3V-08		
Power supply 1 (with 2 fans)	U0.dd-V1			
Power supply 2 (with 2 fans)	U0.dd-V2			
Cooling blower fan 5	U0.dd-F5			
Rack indicator connector (4 pins)	U0.dd-P1/Q3			
SPCN connector 1	U0.dd-P1/Q4			
SPCN connector 2	U0.dd-P1/Q5			
VPD drawer	U0.dd			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
<b>Third Model D10 I/O Subsystem (3) Locations</b>				
I/O subsystem 3 drawer	U0.dd			
I/O backplane	U0.dd-P1			
RIO connector riser card	U0.dd-P1.1			
RIO port 0 (upper connector)	U0.dd-P1.1/Q1			
RIO Port 0 Cable	U0.dd-P1.1/Q1#			
RIO port 1 (lower connector)	U0.dd-P1.1/Q2			
RIO port 1 cable	U0.dd-P1.1/Q2#			
PHB1	U0.dd-P1			
EADS_X under PHB1	U0.dd-P1	3r-10, 3r-12, 3r-16		
PCI slot 1	U0.dd-P1/I1			
PCI slot 1 adapter	U0.dd-P1-I1	3s-08		
PCI slot 2	U0.dd-P1/I2			
PCI slot 2 adapter	U0.dd-P1-I2	3v-08		
PCI slot 3	U0.dd-P1/I3			
PCI slot 3 adapter	U0.dd-P1-I3	45-08		
PHB2	U0.dd-P1			
EADS_X under PHB2	U0.dd-P1	48-10, 48-12, 48-16		
PCI slot 4	U0.dd-P1/I4			
PCI slot 4 adapter	U0.dd-P1-I4	49-08		
PCI slot 5	U0.dd-P1/I5			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
PCI slot 5 adapter	U0.dd-P1-I5	4C-08		
PCI slot 6	U0.dd-P1/I6			
PCI slot 6 adapter	U0.dd-P1-I6	4M-08		
Power supply 1 (with 2 fans)	U0.dd-V1			
Power supply 2 (with 2 fans)	U0.dd-V2			
Cooling blower fan 5	U0.dd-F5			
Rack indicator connector (4 pins)	U0.dd-P1/Q3			
SPCN connector 1	U0.dd-P1/Q4			
SPCN connector 2	U0.dd-P1/Q5			
VPD drawer	U0.dd			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
<b>Fourth Model D10 I/O Subsystem (4) Locations</b>				
I/O subsystem 4 drawer	U0.dd			
I/O backplane	U0.dd-P1			
RIO connector riser card	U0.dd-P1.1			
RIO port 0 (upper connector)	U0.dd-P1.1/Q1			
RIO Port 0 Cable	U0.dd-P1.1/Q1#			
RIO port 1 (lower connector)	U0.dd-P1.1/Q2			
RIO port 1 cable	U0.dd-P1.1/Q2#			
PHB1	U0.dd-P1			
EADS_X under PHB1	U0.dd-P1	4g-10, 4g-12, 4g-16		
PCI slot 1	U0.dd-P1/I1			
PCI slot 1 adapter	U0.dd-P1-I1	4h-08		
PCI slot 2	U0.dd-P1/I2			
PCI slot 2 adapter	U0.dd-P1-I2	4m-08		
PCI slot 3	U0.dd-P1/I3			
PCI slot 3 adapter	U0.dd-P1-I3	4w-08		
PHB2	U0.dd-P1			
EADS_X under PHB2	U0.dd-P1	50-10, 50-12, 50-16		
PCI slot 4	U0.dd-P1/I4			
PCI slot 4 adapter	U0.dd-P1-I4	51-08		
PCI slot 5	U0.dd-P1/I5			
PCI slot 5 adapter	U0.dd-P1-I5	54-08		



FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
PCI slot 6	U0.dd-P1/I6			
PCI slot 6 adapter	U0.dd-P1-I6	5D-08		
Power supply 1 (with 2 fans)	U0.dd-V1			
Power supply 2 (with 2 fans)	U0.dd-V2			
Cooling blower fan 5	U0.dd-F5			
Rack indicator connector (4 pins)	U0.dd-P1/Q3			
SPCN connector 1	U0.dd-P1/Q4			
SPCN connector 2	U0.dd-P1/Q5			
VPD drawer	U0.dd			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
<b>Fifth Model D10I/O Subsystem (5) Locations</b>				
I/O subsystem 5 drawer	U0.dd			
I/O backplane	U0.dd-P1			
RIO connector riser card	U0.dd-P1.1			
RIO port 0 (upper connector)	U0.dd-P1.1/Q1			
RIO Port 0 Cable	U0.dd-P1.1/Q1#			
RIO port 1 (lower connector)	U0.dd-P1.1/Q2			
RIO port 1 cable	U0.dd-P1.1/Q2#			
PHB1	U0.dd-P1			
EADS_X under PHB1	U0.dd-P1	5Y-10, 5Y-12, 5Y-16		
PCI slot 1	U0.dd-P1/I1			
PCI slot 1 adapter	U0.dd-P1-I1	5Z-08		
PCI slot 2	U0.dd-P1/I2			
PCI slot 2 adapter	U0.dd-P1-I2	5c-08		
PCI slot 3	U0.dd-P1/I3			
PCI slot 3 adapter	U0.dd-P1-I3	5n-08		
PHB2	U0.dd-P1			
EADS_X under PHB2	U0.dd-P1	5r-10, 5r-12, 5r-16		
PCI slot 4	U0.dd-P1/I4			
PCI slot 4 adapter	U0.dd-P1-I4	5s-08		
PCI slot 5	U0.dd-P1/I5			
PCI slot 5 adapter	U0.dd-P1-I5	5v-08		
PCI slot 6	U0.dd-P1/I6			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
PCI slot 6 adapter	U0.dd-P1-I6	65-08		
Power supply 1 (with 2 fans)	U0.dd-V1			
Power supply 2 (with 2 fans)	U0.dd-V2			
Cooling blower fan 5	U0.dd-F5			
Rack indicator connector (4 pins)	U0.dd-P1/Q3			
SPCN connector 1	U0.dd-P1/Q4			
SPCN connector 2	U0.dd-P1/Q5			
VPD drawer	U0.dd			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
<b>Sixth Model D10 I/O Subsystem (6) Locations</b>				
I/O subsystem 6 drawer	U0.dd			
I/O backplane	U0.dd-P1			
RIO connector riser card	U0.dd-P1.1			
RIO port 0 (upper connector)	U0.dd-P1.1/Q1			
RIO Port 0 Cable	U0.dd-P1.1/Q1#			
RIO port 1 (lower connector)	U0.dd-P1.1/Q2			
RIO port 1 cable	U0.dd-P1.1/Q2#			
PHB1	U0.dd-P1			
EADS_X under PHB1	U0.dd-P1	6Q-10, 6Q-12, 6Q-16		
PCI slot 1	U0.dd-P1/I1			
PCI slot 1 adapter	U0.dd-P1-I1	6R-08		
PCI slot 2	U0.dd-P1/I2			
PCI slot 2 adapter	U0.dd-P1-I2	6U-08		
PCI slot 3	U0.dd-P1/I3			
PCI slot 3 adapter	U0.dd-P1-I3	6d-08		
PHB2	U0.dd-P1			
EADS_X under PHB2	U0.dd-P1	6g-10, 6g-12, 6g-16		
PCI slot 4	U0.dd-P1/I4			
PCI slot 4 adapter	U0.dd-P1-I4	6h-08		
PCI slot 5	U0.dd-P1/I5			
PCI slot 5 adapter	U0.dd-P1-I5	6m-08		
PCI slot 6	U0.dd-P1/I6			
PCI slot 6 adapter	U0.dd-P1-I6	6w-08		

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
Power supply 1 (with 2 fans)	U0.dd-V1			
Power supply 2 (with 2 fans)	U0.dd-V2			
Cooling blower fan 5	U0.dd-F5			
Rack indicator connector (4 pins)	U0.dd-P1/Q3			
SPCN connector 1	U0.dd-P1/Q4			
SPCN connector 2	U0.dd-P1/Q5			
VPD drawer	U0.dd			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
<b>Seventh Model D10 I/O Subsystem (7) Locations</b>				
I/O subsystem 2 drawer	U0.dd			
I/O backplane	U0.dd-P1			
RIO connector riser card	U0.dd-P1.1			
RIO port 0 (upper connector)	U0.dd-P1.1/Q1			
RIO Port 0 Cable	U0.dd-P1.1/Q1#			
RIO port 1 (lower connector)	U0.dd-P1.1/Q2			
RIO port 1 cable	U0.dd-P1.1/Q2#			
PHB1	U0.dd-P1			
EADS_X under PHB1	U0.dd-P1	7G-10, 7G-12, 7G-16		
PCI slot 1	U0.dd-P1/I1			
PCI slot 1 adapter	U0.dd-P1-I1	7H-08		
PCI slot 2	U0.dd-P1/I2			
PCI slot 2 adapter	U0.dd-P1-I2	7L-08		
PCI slot 3	U0.dd-P1/I3			
PCI slot 3 adapter	U0.dd-P1-I3	7V-08		
PHB2	U0.dd-P1			
EADS_X under PHB2	U0.dd-P1	7Y-10, 7Y-12, 7Y-16		
PCI slot 4	U0.dd-P1/I4			
PCI slot 4 adapter	U0.dd-P1-I4	7Z-08		
PCI slot 5	U0.dd-P1/I5			
PCI slot 5 adapter	U0.dd-P1-I5	7c-08		
PCI slot 6	U0.dd-P1/I6			
PCI slot 6 adapter	U0.dd-P1-I6	7n-08		

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
Power supply 1 (with 2 fans)	U0.dd-V1			
Power supply 2 (with 2 fans)	U0.dd-V2			
Cooling blower fan 5	U0.dd-F5			
Rack indicator connector (4 pins)	U0.dd-P1/Q3			
SPCN connector 1	U0.dd-P1/Q4			
SPCN connector 2	U0.dd-P1/Q5			
VPD drawer	U0.dd			

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
<b>Eighth Model D10 I/O Subsystem (8) Locations</b>				
I/O subsystem 8 drawer	U0.dd			
I/O backplane	U0.dd-P1			
RIO connector riser card	U0.dd-P1.1			
RIO port 0 (upper connector)	U0.dd-P1.1/Q1			
RIO Port 0 Cable	U0.dd-P1.1/Q1#			
RIO port 1 (lower connector)	U0.dd-P1.1/Q2			
RIO port 1 cable	U0.dd-P1.1/Q2#			
PHB1	U0.dd-P1			
EADS_X under PHB1	U0.dd-P1	88-10, 88-12, 88-16		
PCI slot 1	U0.dd-P1/I1			
PCI slot 1 adapter	U0.dd-P1-I1	89-08		
PCI slot 2	U0.dd-P1/I2			
PCI slot 2 adapter	U0.dd-P1-I2	8C-08		
PCI slot 3	U0.dd-P1/I3			
PCI slot 3 adapter	U0.dd-P1-I3	8M-08		
PHB2	U0.dd-P1			
EADS_X under PHB2	U0.dd-P1	8Q-10, 3Q-12, 3Q-16		
PCI slot 4	U0.dd-P1/I4			
PCI slot 4 adapter	U0.dd-P1-I4	8R-08		
PCI slot 5	U0.dd-P1/I5			
PCI slot 5 adapter	U0.dd-P1-I5	8U-08		
PCI slot 6	U0.dd-P1/I6			
PCI slot 6 adapter	U0.dd-P1-I6	8d-08		

FRU Name	Location Code	AIX Location Code	Physical Connection	Logical Connection
Power supply 1 (with 2 fans)	U0.dd-V1			
Power supply 2 (with 2 fans)	U0.dd-V2			
Cooling blower fan 5	U0.dd-F5			
Rack indicator connector (4 pins)	U0.dd-P1/Q3			
SPCN connector 1	U0.dd-P1/Q4			
SPCN connector 2	U0.dd-P1/Q5			
VPD drawer	U0.dd			

FRU Name	Physical Location Code	AIX Location Code
<b>Model D20 I/O Drawer U0.dd (dd = any number from 2 through 63)</b>		
<b>First I/O Subsystem Location Codes</b>		
Rack frame	U0	
I/O drawer backplane	U0.dd-P1	
I/O subsystem drawer	U0.dd	
<b>RIO Bus Adapter</b>		
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#	
<b>PCI Bus Controller</b>		
PCI bus controller <b>PHB0</b>	U0.dd-P1	
PCI to PCI bridge EADS-X	U0.dd-P1	1r-10, 1r-12, 1r-16
<b>PCI Bus Controller PHB2</b>		
PCI bus controller <b>PHB2</b>	U0.dd-P1	
PCI to PCI bridge (EADS_X)	U0.dd-P1	2Q-10, 2Q-12, 2Q-14, 2Q-16
<b>Pluggable Adapter Slots</b>		
PCI slot 1	U0.dd-P1/I1	
PCI card in slot 1	U0.dd-P1-I1	2R-08
PCI slot 2	U0.dd-P1/I2	
PCI card in slot 2	U0.dd-P1-I2	2U-08
PCI slot 3	U0.dd-P1/I3	
PCI card in slot 3	U0.dd-P1-I3	2a-08
PCI slot 4	U0.dd-P1/I4	
PCI card in slot 4	U0.dd-P1-I4	2d-08
PCI slot 5	U0.dd-P1/I5	
PCI card in slot 5	U0.dd-P1-I5	1s-08

FRU Name	Physical Location Code	AIX Location Code
PCI slot 6	U0.dd-P1/I6	
PCI card in slot 6	U0.dd-P1/I6	1v-08
PCI slot 7	U0.dd-P1/I7	
PCI card in slot 7	U0.dd-P1/I7	25-08
<b>Power Supply</b>		
Power supply 1 (no internal blower)	U0.dd-V1	
Power supply 2 (no internal blower)	U0.dd-V2	
<b>Cooling Blowers</b>		
Cooling blower 1	U0.dd-F1	
Cooling blower 2	U0.dd-F2	
Cooling blower 3	U0.dd-F3	
Cooling blower 4	U0.dd-F4	
<b>SPCN Connectors</b>		
Reserved	U0.dd-P1/Q3	
Reserved	U0.dd-P1/Q4	
SPCN3 connector	U0.dd-P1/Q5	
SPCN4 connector	U0.dd-P1/Q6	
<b>Rack Indicator</b>		
Rack beacon (4-pin)	U0.dd-P1/Q7	
<b>Operator Panel</b>		
Operator panel	U0.dd-L1	
<b>Temperature Sensor</b>		
Temperature sensor (on operator panel)	U0.dd-L1	
<b>Disk Drive Backplanes</b>		
Disk drive backplane 1	U0.dd-P3	
Disk drive backplane 2	U0.dd-P4	
<b>Disk Drive Locations</b>		
Disk drive bay location are numbered from left to right with the left most bay being #1.		
Hot-swap disk drive bay 1	U0.dd-P1-lx/Zn-A8	Dependent on lx
Hot-swap disk drive bay 2	U0.dd-P1-lx/Zn-A9	Dependent on lx
Hot-swap disk drive bay 3	U0.dd-P1-lx/Zn-AA	Dependent on lx
Hot-swap disk drive bay 4	U0.dd-P1-lx/Zn-AB	Dependent on lx
Hot-swap disk drive bay 5	U0.dd-P1-lx/Zn-AC	Dependent on lx
Hot-swap disk drive bay 6	U0.dd-P1-lx/Zn-AD	Dependent on lx
Hot-swap disk drive bay 7	U0.dd-P1-ly/Zn-A8	Dependent on ly
Hot-swap disk drive bay 8	U0.dd-P1-ly/Zn-A9	Dependent on ly
Hot-swap disk drive bay 9	U0.dd-P1-ly/Zn-AA	Dependent on ly
Hot-swap disk drive bay 10	U0.dd-P1-ly/Zn-AB	Dependent on ly
Hot-swap disk drive bay 11	U0.dd-P1-ly/Zn-AC	Dependent on ly
Hot-swap disk drive bay 12	U0.dd-P1-ly/Zn-AD	Dependent on ly

FRU Name	Physical Location Code	AIX Location Code
<b>SCSI</b>		
SES0	U0.dd-P1-lx/Zn-AF	Dependent on lx
SES1	U0.dd-P1-ly/Zn-AF	Dependent on ly

FRU Name	Physical Location Code	AIX Location Code
<b>Model D20 I/O Drawer U0.dd (dd = any number from 2 through 63)</b>		
<b>Second I/O Subsystem Location Codes</b>		
Rack frame	U0	
I/O drawer backplane	U0.dd-P1	
I/O subsystem drawer	U0.dd	
<b>RIO Bus Adapter</b>		
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#	
<b>PCI Bus Controller</b>		
PCI bus controller <b>PHB0</b>	U0.dd-P1	
PCI to PCI bridge EADS-X	U0.dd-P1	2g-10, 2g-12, 2g-16
<b>PCI Bus Controller PHB2</b>		
PCI bus controller <b>PHB2</b>	U0.dd-P1	
PCI to PCI bridge (EADS_X)	U0.dd-P1	3G-10, 3G-12, 3G-14, 3G-16
<b>Pluggable Adapter Slots</b>		
PCI slot 1	U0.dd-P1/I1	
PCI card in slot 1	U0.dd-P1-I1	3H-08
PCI slot 2	U0.dd-P1/I2	
PCI card in slot 2	U0.dd-P1-I2	3L-08
PCI slot 3	U0.dd-P1/I3	
PCI card in slot 3	U0.dd-P1-I3	3S-08
PCI slot 4	U0.dd-P1/I4	
PCI card in slot 4	U0.dd-P1-I4	3V-08
PCI slot 5	U0.dd-P1/I5	
PCI card in slot 5	U0.dd-P1-I5	2h-08
PCI slot 6	U0.dd-P1/I6	
PCI card in slot 6	U0.dd-P1-I6	2m-08
PCI slot 7	U0.dd-P1/I7	
PCI card in slot 7	U0.dd-P1-I7	2w-08
<b>Power Supply</b>		
Power supply 1 (no internal blower)	U0.dd-V1	
Power supply 2 (no internal blower)	U0.dd-V2	
<b>Cooling Blowers</b>		

FRU Name	Physical Location Code	AIX Location Code
Cooling blower 1	U0.dd-F1	
Cooling blower 2	U0.dd-F2	
Cooling blower 3	U0.dd-F3	
Cooling blower 4	U0.dd-F4	
<b>SPCN Connectors</b>		
Reserved	U0.dd-P1/Q3	
Reserved	U0.dd-P1/Q4	
SPCN3 connector	U0.dd-P1/Q5	
SPCN4 connector	U0.dd-P1/Q6	
<b>Rack Indicator</b>		
Rack beacon (4-pin)	U0.dd-P1/Q7	
<b>Operator Panel</b>		
Operator panel	U0.dd-L1	
<b>Temperature Sensor</b>		
Temperature sensor (on operator panel)	U0.dd-L1	
<b>Disk Drive Backplanes</b>		
Disk drive backplane 1	U0.dd-P3	
Disk drive backplane 2	U0.dd-P4	
<b>Disk Drive Locations</b>		
Disk drive bay location are numbered from left to right with the left most bay being #1.		
Hot-swap disk drive bay 1	U0.dd-P1-lx/Zn-A8	Dependent on lx
Hot-swap disk drive bay 2	U0.dd-P1-lx/Zn-A9	Dependent on lx
Hot-swap disk drive bay 3	U0.dd-P1-lx/Zn-AA	Dependent on lx
Hot-swap disk drive bay 4	U0.dd-P1-lx/Zn-AB	Dependent on lx
Hot-swap disk drive bay 5	U0.dd-P1-lx/Zn-AC	Dependent on lx
Hot-swap disk drive bay 6	U0.dd-P1-lx/Zn-AD	Dependent on lx
Hot-swap disk drive bay 7	U0.dd-P1-ly/Zn-A8	Dependent on ly
Hot-swap disk drive bay 8	U0.dd-P1-ly/Zn-A9	Dependent on ly
Hot-swap disk drive bay 9	U0.dd-P1-ly/Zn-AA	Dependent on ly
Hot-swap disk drive bay 10	U0.dd-P1-ly/Zn-AB	Dependent on ly
Hot-swap disk drive bay 11	U0.dd-P1-ly/Zn-AC	Dependent on ly
Hot-swap disk drive bay 12	U0.dd-P1-ly/Zn-AD	Dependent on ly
<b>SCSI</b>		
SES0	U0.dd-P1-lx/Zn-AF	Dependent on lx
SES1	U0.dd-P1-ly/Zn-AF	Dependent on ly



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## Specifications

This section contains specifications for the @server pSeries 650 system.

### pSeries 650 Physical Specifications and Loads

The following tables illustrate the physical, electrical and thermal, acoustical, and environmental characteristics of various pSeries 650 system configurations.

#### Power and Electrical Requirements

Redundant power line cords are standard on the pSeries 650. The system uses dual ac power cords. For maximum availability, each of the power cords should be fed from independent power grids to ensure that there is no single point of failure.

#### Checking the Facility Outlets and Power Source

##### CAUTION:

**Do not touch the receptacle or the receptacle faceplate with anything other than your test probes before you have met the requirements in step 8.**

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Performing the following will ensure that appropriate power will be used by the pSeries 650. The following checklist is for reference purposes, and will likely be performed by a service engineer prior to installation.

- \_\_\_ 1. The pSeries 650 is equipped to use 200-240 V ac. Check that the correct power source is available.
- \_\_\_ 2. Before system installation, locate and turn off the branch circuit CB (circuit breaker). Attach tag S229-0237, which reads "Do Not Operate."

**Note:** All measurements are made with the receptacle faceplate in the normally installed position.

- \_\_\_ 3. Some receptacles are enclosed in metal housings. On receptacles of this type, perform the following steps:
  - a. Check for less than 1 volt from the receptacle case to any grounded metal structure in the building, such as a raised-floor metal structure, water pipe, building steel, or similar structure.
  - b. Check for less than 1 volt from receptacle ground pin to a grounded point in the building.

**Note:** If the receptacle case or faceplate is painted, be sure the probe tip penetrates the paint and makes good electrical contact with the metal.

- \_\_\_ 4. Check the resistance from the ground pin of the receptacle to the receptacle case. Check resistance from the ground pin to building ground. The reading should be less than 1.0 ohm, which indicates the presence of a continuous grounding conductor.
- \_\_\_ 5. If any of the checks made in substeps 2 and 3 are not correct, remove the power from the branch circuit and make the wiring corrections; then check the receptacle again.

**Note:** Do not use the digital multimeter to measure grounding resistance.

- \_\_\_ 6. Check for infinite resistance between the phase pins. This is a check for a wiring short.

##### CAUTION:

**If the reading is other than infinity, do not proceed! Have the customer make necessary wiring connections before continuing. Do not turn on the branch circuit CB until all the above steps are satisfactorily completed.**

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- \_\_\_ 7. Remove tag S229-0237, which reads "Do Not Operate."

- \_\_\_ 8. Turn on the branch circuit CB. Measure for appropriate voltages between phases. If no voltage is present on the receptacle case or grounded pin, the receptacle is safe to touch.
- \_\_\_ 9. With an appropriate meter, verify that the voltage at the outlet is correct.
- \_\_\_ 10. Verify that the grounding impedance is correct by using the ECOS 1020, 1023, B7106, or an appropriately approved ground impedance tester.
- \_\_\_ 11. Turn off the branch circuit CB.
- \_\_\_ 12. Attach tag S229-0237, which reads "Do Not Operate."
- \_\_\_ 13. You are now ready to install and connect the power cables to the pSeries 650.

## Additional Installation Considerations

In the United States, installation must be made in accordance with Article 645 of the National Electric Code (NEC). In Canada, installation must be in accordance with Article 12-020 of the Canadian Electrical Code (CEC).

## Dimensions and Weight

**Note:** For information about connecting power cables to the PDUs in the rack, refer to *7014 Series Model T00 and T42 Rack Installation and Service Guide*, order number SA38-0577, and *Site and Hardware Planning Information*, order number SA38-0508.

Dimensions			
Height	351 mm (13.8 in)		
Width	445 mm (17.5 in.)		
Depth	760 mm (29.9 in.)		
Weight	93 kg (205 lbs)		
Electrical			
Power source loading (typical.)	8-way processor: 1.126 kVA		
Power source loading (max.)	8-way processor: 1.684 kVA		
Voltage range	200 to 240 V ac, V dc not supported		
Frequency	50 or 60 Hz		
Thermal output (typical)	8-way processor: 3,652Btu/hr		
Thermal output (max.)	8-way processor: 5,461 Btu/hr		
Power requirements (typical)	8-way processor: 1,070 watts		
Power requirements (max.)	8-way processor: 1600 watts		
Power factor	0.95		
Inrush current <sup>2</sup>	67 amps at 200 V ac, 60 Hz 87amps at 230 V ac, 50 Hz		
Maximum altitude <sup>3, 4</sup>	3048 m (10000 ft.)		
Temperature Requirements <sup>3</sup>	Operating 10 to 38°C 50 to 100°F)	Non-Operating 1 to 43°C (34 to 109°F)	Storage 1 to 60°C (34 to 140°F)
Humidity Requirements <sup>4</sup> (Noncondensing)	Operating 8 to 80%	Non-Operating 8 to 80%	Storage 5 to 80%
Wet Bulb	23°C (73°F)	27°C (81°F)	29°C (84.2°F)
Noise Emissions <sup>1, 5, 6</sup>	Operating	Idle	
L <sub>WAd</sub>	6.1 bels <sup>5</sup>	6.1 bels <sup>5</sup>	
<L <sub>pA</sub> > <sub>m</sub>	44 dBA <sup>6</sup>	44 dBA <sup>6</sup>	
Install/Air Flow	Maintenance of service clearance will allow proper air flow.		
Service Clearances	See the T00 and T42 service clearances in the <i>Site and Hardware Planning Information</i> , order number SA38-0508.		

1. See "Declared Acoustical Noise Emissions" on page 606 for definitions of noise emissions positions. See noise emissions note 4.
2. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
3. The upper limit of the dry bulb temperature must be derated 1°C per 137 m (450 ft.) above 915 m (3000 ft.).
4. The upper limit of the wet bulb temperature must be derated 1°C per 274 m (900 ft. ) above 305 m (1000 ft.).
5. The  $L_{WAd}$  emission increases to 6.5 bels with a configuration of one 7038-6M2 and four 7311-D10 drawers.
6. The  $L_{pA>m}$  emission increases to 48 dBA with a configuration of one 7038-6M2 and four 7311-D10 drawers.

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## 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 its safe operation.
- 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 rack. They should be in place and secure.
3. Gently rock the rack from side to side to verify the rack is stable.
4. Turn off the UEPO switch, turn off the circuit breakers on all optional IBF subsystems (if provided), then disconnect both power cords from the customer's receptacle.
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 air filters in the processor subsystem to ensure they are clean. Replace if necessary.
10. Check the voltage label on the back of the system to ensure that it matches the voltage at the outlet.
11. Check the external power cable for damage.
12. 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.
13. Perform the following checks on each device that has its own power cables:
  - a. Check for damage to the power cord.
  - b. Check for the correct 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.
14. Install the covers.



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## Chapter 2. Diagnostics Overview

pSeries 650 servers use an integrated set of software diagnostic procedures to facilitate system maintenance. This book and the *@server pSeries Diagnostic Information for Multiple Bus Systems* are the basis of the diagnostic procedures for pSeries 650 systems. In particular, chapters 3, 4, 5, and 10 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 it is required. This function can be accomplished through locally attached or network-attached devices, as appropriate.

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### Maintenance Analysis Procedures (MAPs)

Maintenance Analysis Procedures (MAPs) guide trained service representatives through the complex multitrack pSeries 650 system. These MAPs are the entry point for all isolation and error-recovery procedures. pSeries 650 systems use a set of integrated procedures, to which the MAPs are the primary entry point.

The MAPs are as follows:

- Entry MAP
- Quick Entry MAP
- Power MAP
- Problem Determination MAP
- Problem Isolation MAP
- Service Focal Point MAPs and Procedures

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 *@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 and cables to diagnose a power problem. The nature of power problems can be related to powering the system on and off, or power failures that can occur after power is turned on.

The Problem Isolation 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 or items.

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### System LEDs

LEDs provides a means to identify components in your system. See Chapter 12, "Fault and Attention LEDs", on page 601 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 70.

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## Checkpoints

pSeries 650 systems use various types of checkpoints, error codes, and SRNs that are referred to throughout this book (primarily in Chapters 3, 4 and 5). Depending on how system is partitioned, checkpoints are displayed on the physical operator panel or on the HMC virtual operator panel, or both.

- On an HMC-managed system, the checkpoints and error codes displayed on the physical operator panel are also displayed on the HMC virtual terminal associated with the managed system object.
- On a system operating as a full system partition, checkpoints and error codes display on the physical operator panel from the beginning of the power-on process through the completion of booting the operating system.
- On a partitioned system, checkpoints and error codes for a partition display on the HMC virtual operator panel associated with that logical partition. Checkpoints and error codes generated by logical partitions are not displayed on the managed system’s physical operator panel.

During boot up of a partitioned system, there is a global initialization phase where one of the system processors is in control and initializing all of the system resources. During this phase, Exxx codes will be displayed on both the physical operator panel and the HMC managed-system object. After the global initialization phase completes, LPAR... is displayed on the physical operator panel and the HMC managed-system object.

Each logical partition also has a partition initialization phase where one of the system processors assigned to that partition is initializing all the resource of that partition. Exxx codes will be displayed on the virtual terminal of the HMC logical partition object during this partition initialization phase.

Codes that may 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 codes are AIX progress codes and configuration codes. Location codes may also be shown on the operator panel display during this time. AIX progress codes do not appear when the operating system is Linux.

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

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 169. Each entry provides a description of the event and the recommended action if the system fails to advance.

SRNs are listed in the *Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.

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## FRU Isolation

For a list of error codes and recommended actions for each code, see Chapter 5, “Error Code to FRU Index”, on page 217. These actions can refer to Chapter 11, “Parts Information”, on page 577, Chapter 3, “Maintenance Analysis Procedures (MAPs)”, on page 73, 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 location codes, see “AIX and Physical Location Code Reference Tables” on page 29.

**Attention:** AIX location codes are not available when the operating system is Linux.

To look up part numbers and view component diagrams, see Chapter 11, “Parts Information”, on page 577. The beginning of the 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 compose @server pSeries 650 servers. The illustrations are ordered with processor subsystem components listed first, then I/O subsystem, and then accessories.

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## FRU Identify LEDs

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

- Rack identify beacon LED (optional rack status beacon)
- Processor subsystem drawer identify LED
- I/O subsystem identify LED
- RIO port identify LED
- FRU identify LED
  - Power subsystem FRUs
  - Processor 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 processor subsystem 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 under in the “System Information Menu” on page 432. See “System Information Menu” on page 432 for information on how to use the LED Control Menu.

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

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

- If the system is configured as a full system partition, the system may be booted to the open firmware prompt and the command **FRU-LED-MENU** entered. A menu will appear that will allow you to turn on the desired FRU identify LED. See the “System Power Control Menu” on page 428 for instructions on setting the boot mode to enable the boot to the open firmware prompt.
- If the system is logically partitioned, the HMC must be attached. There is a function at the HMC that allows any FRU identify LED to be flashed. See the “Hardware Service Functions” section of the “Service Focal Point” chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, for instructions on activating and deactivating a FRU identify LED.

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## Service Agent for the pSeries 650

Service support for the pSeries 650 can be enhanced through the use of the application program, known as service agent for the pSeries 650. This application provides a number of advantages for the pSeries 650 customer, including automatic error reporting and analysis without customer intervention. Everything needed to use the service agent on the pSeries 650 is shipped with the system or with the Hardware Management Console for pSeries.

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## 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 (both internal and external) of any unexpected changes in the system environment. In combination, the two features provide a flexible solution to automated system maintenance. For more information regarding the service processor, see Chapter 8, “Using the Service Processor”, on page 419.



For more information regarding the service agent application, see the *IBM Hardware Management Console for pSeries Installation and Operations Guide*.

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## 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.

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

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

The following errors are not reported to Service Focal Point:

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

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 correctly, generate a test error by doing the following:

1. In the partition, run diagnostics to test the managed system's operator panel.
2. When the diagnostics window asks you if you see 0000 on the managed system's operator panel, select **NO**. This action generates an error.
3. In the SRN window, press Enter to proceed.
4. When the system asks you if you want the error sent to Service Focal Point, select **YES**.

5. Type F3 to exit diagnostics.
6. Wait for one minute while the managed system sends the error to Service Focal Point.
7. Check the Serviceable Event window to ensure that the error was sent to Service Focal Point and that Service Focal Point reported the error. For more information about working with serviceable events, see "Working With Serviceable Events" on page 67.

## Service Focal Point Settings

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

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

### Automatic Call-Home Feature

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

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

- System Administrator
- Service Representative

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

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

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

### Setting Up Surveillance

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

You can configure how you want the HMC to survey the following:

- The number of disconnected minutes that are considered an outage
- The number of connected minutes you want the HMC to consider a recovery
- The number of minutes between outages that are considered a new incident

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

- System Administrator
- Service Representative

To set up surveillance, do the following:

1. In the Navigation area, click the **Service Applications** icon.
2. In the Navigation area, double-click the **Service Focal Point** icon.
3. In the Contents area, select **Service Focal Point Settings**.

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

### Enabling Surveillance Notifications

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

**Note:** You must further configure Service Agent to handle notifications sent by Service Focal Point. For more information about Service Agent, refer to the *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 at the top of the window.
5. Select one or more managed systems from the list, and click **Enable** or **Disable**. Surveillance notification is then either enabled or disabled for the selected managed systems.

## Working With Serviceable Events

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

### Viewing Serviceable Events

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

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

To view a serviceable event, do the following:

1. In the Navigation area, click the **Service Applications** icon.
2. In the Navigation area, double-click the **Service Focal Point** icon.
3. In the Contents area, click **Select Serviceable Event**.
4. Designate the set of serviceable events you want to view. When you are finished, click **OK**.
5. The Serviceable Event Overview window opens, and the entries displayed are ordered by time stamp. Each line in the Serviceable Event Overview window corresponds to one error within a serviceable

event. On this window, designate the set of serviceable events you want to view by specifying your search criteria (such as event status or error class).

**Note:** Only events that match *all* of the criteria that you specify are shown.

6. When you are finished, click **OK**.

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

## Viewing Serviceable Event Details

To view serviceable event details, do the following:

1. Perform the steps in “Viewing Serviceable Events” on page 67.
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”.
2. Click **Save EE Data**. To save extended error data for only *one* error associated with the serviceable event (rather than for the entire serviceable event), select the error from the lower table, and click **Error Details**. In the next menu, click **Manage EE Data**.

## Viewing and Adding Serviceable Event Comments

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

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

**Note:** You cannot edit or delete previous comments.

1. Perform the steps in “Viewing Serviceable Event Details” on page 68.
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 68.
2. Click **Close Event** from this window. The Serviceable Event Comments window opens.
3. Click **OK** to commit your comments. The Update FRU Information window displays. For information on completing this window, see “Updating Field Replaceable Unit (FRU) Information”. To close the serviceable event, click **OK** on the Update FRU Information window .

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

## Updating Field Replaceable Unit (FRU) Information

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

To update FRU information, do the following:

1. Perform the steps in “Viewing Serviceable Event Details” on page 68.
2. Click **FRU Information**. The Update FRU Information window opens.

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

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

## Replacing an Existing FRU

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

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

## Adding a New FRU

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

1. Perform the steps in “Updating Field Replaceable Unit (FRU) Information”.

2. Click **Add New FRU**.
3. Type the FRU's location code and its part number in the appropriate fields.
4. Click **Add to List**. The Update FRU Information window opens and displays the newly added FRU in the lower table.
5. Click **OK** or **Apply** to commit these changes to the serviceable event.

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

## Viewing Serviceable Event Partition Information

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

1. Perform the steps in "Viewing Serviceable Event Details" on page 68.
2. Click **Partition Information**.

## Activating and Deactivating FRU LEDs

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

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

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

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

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

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

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## 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 71.

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" on page 71.
- "Accessing Errors when a System is Running AIX and the Console is Not an HMC" on page 71.



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

## Accessing Errors when a System is Attached to an HMC

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

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

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

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

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

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

- If you performed “Step 1321-43” on page 95 in “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 88, return to “Step 1321-43” on page 95 to process any other symptoms.
- If you have not performed any of the steps in “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 88, go to step “Step 1321-1” on page 88 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 73 with the information noted from the error log.

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

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

- If you performed “Step 1321-43” on page 95 in “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 88, return to “Step 1321-43” on page 95 to process any other symptoms.
- If you have not performed any of the steps in “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 88, go to step “Step 1321-1” on page 88 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 *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.

## 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.



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## Chapter 3. Maintenance Analysis Procedures (MAPs)

This chapter contains Maintenance Analysis Procedures (MAPs) for the @server pSeries 650.

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### 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 programs from the hard drive are not available when the operating system is Linux.

If this system has a Hardware Management Console (HMC) with Service Focal Point (SFP), and you have not previously been directed to “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 88, go to “MAP 1321: Quick Entry MAP for Systems with Service Focal Point” on page 88. Otherwise, use the following table to help determine your next step.

**Notes:**

1. Licensed programs frequently rely on system information stored in the VPD module on the operator panel. If the MAPs indicate that the operator panel should be replaced, swap the VPD module from the old operator panel to the new one (see “Operator Panel” on page 573). If the old VPD module has to be replaced, call technical support for recovery instructions. If recovery is not possible, notify the system owner that new keys for licensed programs may be required.
2. If a network adapter is replaced, the network administrator must be notified so that the client IP addresses used by the system can be changed. In addition, the operating system configuration of the network controller may need to be changed in order to enable system startup. Also check to ensure that any client or system that addresses this system is updated.

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

SFP Name	Number of Digits in Error Code	Error code	Service Guide Name
Error Code	Any	Contains #	Menu Goal
Error Code	Any	Contains - (hyphen)	SRN
Error Code	5	Does not contain # or -	SRN
Error Code	6	Does not contain # or -	Error Code
Error Code	8	Does not contain # or -	Error Code, 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 described on "FRU Identify LEDs" on page 106.	Go to the Fast Path MAP in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
You do not have a symptom.	Go to MAP 0020 in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
You have an SRN.	Go to the Fast Path MAP in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
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 <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
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 <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
All other symptoms.	Go to "Quick Entry MAP" on page 75.

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## Quick Entry MAP

### Quick Entry MAP Table of Contents

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**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 129 unless you were already directed to any MAP 154x by the error code. Otherwise, call for support if the action(s) 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 410: Repair Checkout” in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Note:** If the only service actions you perform are on the HMC do not use MAP 410 to do the repair checkout.

Symptom	Action
<b>Service Actions</b>	
You have an open service event in the service action event log.	Go to "Service Focal Point" on page 65.
You have parts to exchange or a corrective action to perform.	<ol style="list-style-type: none"> <li>Go to Chapter 10, "Removal and Replacement Procedures", on page 483.</li> <li>Go to "MAP 0410: Repair Checkout" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>.</li> </ol>
You need to verify that a part exchange or corrective action corrected the problem.	Go to "MAP 0410: Repair Checkout" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
You need to verify correct system operation.	Go to "MAP 0410: Repair Checkout" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
<b>The rack indicator LED does not operate as described on "FRU Identify LEDs" on page 106.</b>	
The rack indicator LED does not turn on, but a drawer identify LED is on.	<ol style="list-style-type: none"> <li>Make sure the rack indicator LED is properly mounted to the rack.</li> <li>Make sure that the rack identify LED is properly cabled to the bus bar on the rack and to the drawer identify LED connector.</li> <li>Replace the following parts one at a time: <ul style="list-style-type: none"> <li>rack LED to bus bar cable.</li> <li>LED bus bar to drawer cable.</li> <li>LED bus bar.</li> <li>Call support.</li> </ul> </li> </ol>
<b>The system attention LED on the operator panel is on.</b>	
The system attention LED on the operator panel is on.	Go to "System Attention LED" on page 24 and perform the actions there.
<b>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.</b>	
A bouncing or scrolling ball remains on the operator panel display or the operator panel display is filled with dashes.	<ol style="list-style-type: none"> <li>If an ASCII terminal is available, connect it to the service processor/PCI backplane through serial port 1. <ol style="list-style-type: none"> <li>If the service processor menu is displayed, then: <ol style="list-style-type: none"> <li>Replace the operator panel assembly, location: U0.1-L1. Refer to "Operator Panel" on page 573.</li> <li>Replace the service processor/PCI backplane, Location: U0.1-P2. Refer to "Service Processor/PCI Backplane" on page 553.</li> </ol> </li> <li>If the service processor menu is not displayed, then replace the service processor/PCI backplane, Location: U0.1-P2. Refer to "Service Processor/PCI Backplane" on page 553.</li> </ol> </li> <li>If an ASCII terminal is not available, replace the following, one at a time, in the sequence listed: <ol style="list-style-type: none"> <li>Operator panel assembly, location: U0.1-L1. Refer to "Operator Panel" on page 573.</li> <li>Service processor/PCI backplane, Location: U0.1-P2. Refer to "Service Processor/PCI Backplane" on page 553.</li> </ol> </li> </ol>

Symptom	Action
You have a blank display on the operator panel. Other LEDs on the operator panel appear to behave normally.	<ol style="list-style-type: none"> <li>1. Ensure that the processor subsystem to operator panel cable is connected properly.</li> <li>2. Replace the operator panel assembly, Location: U0.1-L1. Refer to "Operator Panel" on page 573.</li> <li>3. Replace the service processor/PCI backplane, Location: U0.1-P2. Refer to "Service Processor/PCI Backplane" on page 553.</li> </ol>
You have a blank display on the operator panel. Other LEDs on the operator panel are off.	Go to "MAP 1520: Power" on page 105.
<b>8-Digit Error Codes</b>	
You have an 8-digit error code displayed	<ol style="list-style-type: none"> <li>1. Look up the error code in the table in "Checkpoints and Error Codes Index" on page 221.</li> <li>2. Look up the service action event (SAE) log. If the FRU has been changed other than the one in step 1, look at the most recent one.</li> </ol>
<b>System stops with an 8-digit number displayed</b>	
The system stops with an 8-digit error code displayed when booting.	<ol style="list-style-type: none"> <li>1. Look up the error code in the table in "Checkpoints and Error Codes Index" on page 221.</li> <li>2. Look up the SAE log. If the FRU has been changed other than the one in step 1, look at the most recent one.</li> </ol>
<b>System stops with a 4-digit number displayed that does not begin with 0 or 2.</b>	
The system stops with a 4-digit checkpoint.	Go to "Checkpoints and Error Codes Index" on page 221. If you do not find the error code there, go to the Fast Path MAP in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
<b>System stops with a 3-digit number displayed (see below for 888 sequence)</b>	
The system stops with a 3-digit error code.	<p>Add 101- to the left of the three digits to create an SRN. Go to <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>.</p> <p>If there is a location code displayed under the 3-digit error code, then look at location to see if it matches failing component that the SRN pointed to. If they do not match, perform the action from Diagnostic Information for Multiple Bus System first. If the problem still exists, then replace the failing component from that location code.</p>
<b>Hardware Management Console (HMC) Problem</b>	

Symptom	Action
Hardware Management Console (HMC) cannot be used to manage a managed system, or the connection to the managed system is failing.	<p>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:</p> <ol style="list-style-type: none"> <li>1. Check the connections (serial cable) between the HMC and the managed system. Correct any cabling errors if found. If an 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.</li> <li>2. Verify that any connected HMC is connected to the managed system by checking the Management Environment of the HMC.  <b>Note:</b> 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.</li> <li>3. Go to the Entry MAP in the <i>IBM Hardware Management Console for pSeries Maintenance Guide</i>, order number SA38-0603.</li> <li>4. If you cannot fix the problem using the HMC tests in the <i>IBM Hardware Management Console for pSeries Maintenance Guide</i>, there might be a problem with the service processor/PCI backplane. Replace the service processor/PCI backplane, Location: U0.1-P2.</li> </ol>
Hardware management console (HMC) cannot call out using the attached modem and the customer's telephone line.	<p>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:</p> <ol style="list-style-type: none"> <li>1. Check the connections between the HMC and the modem and telephone line. Correct any cabling errors if found.</li> <li>2. Go to the Entry MAP in the <i>IBM Hardware Management Console for pSeries Maintenance Guide</i>, order number SA38-0603.</li> </ol>
<b>There is a Display Problem (Distortion, Blurring, Etc.)</b>	

Symptom	Action
All display problems.	<ol style="list-style-type: none"> <li>1. If using the Hardware Management Console, go to the <i>IBM Hardware Management Console for pSeries Maintenance Guide</i>, order number SA38-0603.</li> <li>2. If using a graphics display: <ol style="list-style-type: none"> <li>a. Go to the problem determination procedures for the display.</li> <li>b. If you do not find a problem, replace the display adapter.</li> </ol> </li> <li>3. If using an ASCII terminal: <ol style="list-style-type: none"> <li>a. Make sure that the ASCII terminal is connected to S1.</li> <li>b. If problems persist, go to the problem determination procedures for the terminal.</li> <li>c. If you do not find a problem, replace the service processor/PCI backplane, Location: U0.1-P2.</li> </ol> </li> </ol>
<b>Power and Cooling Problems</b>	
The base processor-subsystem drawer will not power on and no error codes are available.	Go to "Map 1521: The Base Processor Subsystem Drawer Will Not Power On and No Error Codes are Available" on page 107.
The power light does not come on or stay on. (both the operator panel power-on LED and the I/O subsystem indicator panel power LEDs do not come on or stay on).	<ol style="list-style-type: none"> <li>1. Check service processor error log.</li> <li>2. Go to "MAP 1520: Power" on page 105.</li> </ol>
A rack or a rack-mounted unit will not power on.	<ol style="list-style-type: none"> <li>1. Check service processor error log.</li> <li>2. Go to "MAP 1520: Power" on page 105.</li> </ol>
You have a power problem.	<ol style="list-style-type: none"> <li>1. Check service processor error log.</li> <li>2. Go to "MAP 1520: Power" on page 105.</li> </ol>
The system attention LED on the operator panel is on and there is no error code displayed.	<ol style="list-style-type: none"> <li>1. Check service processor error log.</li> <li>2. Go to "MAP 1520: Power" on page 105.</li> </ol>
<b>888 Sequence in Operator Panel Display</b>	
An 888 sequence is displayed in the media subsystem operator panel display.	Go to the Fast Path MAP in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
<b>Other Symptoms or Problems</b>	
One or more partitions do not boot.	Go to "MAP 1020: Problem Determination" on page 82.
The operator panel displays OK and the fans and blowers are off.	The service processor is ready. The system is waiting for power-on.
All of the system POST indicators are displayed on the system console, the system pauses and then restarts. The term <i>POST indicators</i> 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" on page 214.
The system stops and all of the POST indicators are displayed on the system console. The term <i>POST indicators</i> 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" on page 214.

Symptom	Action
The system stops and the message STARTING SOFTWARE PLEASE WAIT... is displayed on the firmware console.	Go to Chapter 4, "Checkpoints", on page 169.
The system does not respond to the password being entered or the system login prompt is displayed when booting in service mode.	<ol style="list-style-type: none"> <li>1. If the password is being entered from the Hardware Management Console (HMC), go to the <i>IBM Hardware Management Console for pSeries Maintenance Guide</i>.</li> <li>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: <ol style="list-style-type: none"> <li>a. Keyboard cable</li> <li>b. Keyboard</li> <li>c. Service processor/PCI backplane Location: U0.1-P2</li> </ol> </li> <li>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 service processor/PCI backplane Location: U0.1-P2</li> </ol>
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.	<p>Reseat the operator panel cable. If the problem is not resolved, replace in the following order:</p> <ol style="list-style-type: none"> <li>1. Operator panel assembly. Swap the VPD module from the old operator panel to the new operator panel (see notes on page 73).</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
The SMS configuration list or boot sequence selection menu shows more SCSI devices attached to a controller/adaptor than are actually attached.	<p>A device may be set to use the same SCSI bus ID as the control adapter. Note the ID being used by the controller/adaptor (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.</p> <p>If settings do not appear to be in conflict:</p> <ol style="list-style-type: none"> <li>1. Go to "MAP 1542: I/O Problem Isolation" on page 129</li> <li>2. Replace the SCSI cable.</li> <li>3. Replace the device.</li> <li>4. Replace the SCSI adapter</li> </ol> <p><b>Note:</b> 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.</p>



Symptom	Action
The System Management Services menu is displayed.	<p>The device or media you are attempting to boot from may be faulty.</p> <ol style="list-style-type: none"> <li>1. Check the SMS error log for any errors. To check the error log: <ul style="list-style-type: none"> <li>• Choose error log</li> <li>• If an error is logged, check the time stamp.</li> <li>• If the error was logged during the current boot attempt, record it.</li> <li>• Look up the error in Chapter 5, "Error Code to FRU Index" and do the listed action.</li> <li>• If no recent error is logged in the error log, continue to the next step below.</li> </ul> </li> <li>2. 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).</li> <li>3. Go to "Boot Problems" on page 214.</li> </ol>
You suspect a cable problem.	Go to <i>Adapters, Devices, and Cable Information for Multiple Bus Systems</i> .
All other problems.	Go to "MAP 1020: Problem Determination" on page 82.

---

## 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 *@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 432). The server may have been set up by using the HMC. Check the Service Action Event (SAE) log in the Service Focal Point. The SAE log may have recorded one or more symptoms in the Service Focal Point. To avoid unnecessary replacement of the same FRU for the same problem, it is necessary to check the SAE log for evidence of prior service activity on the same subsystem.

The service processor may have been set by the user to monitor system operations and to attempt recoveries. You can disable these actions while you diagnose and service the system. If the system was set up according to the recommendations of the *@server pSeries 650 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.

If you disable the service processor settings, make notes of their current settings so that you can restore them before you leave.

In system is set to power on using one 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 8, “Using the Service Processor”, on page 419.

Surveillance	From the service processor Setup Menu, go to the Surveillance Setup Menu and disable surveillance. (Surveillance is automatically 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: 1. Number of reboot attempts to <b>0</b> (zero) 2. Use OS-Defined restart policy to <b>No</b> 3. Enable supplemental restart policy to <b>No</b> .
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. (Call-out is automatically disabled when the system is booted to operate with multiple logical partitions (also known as a partitioned system).

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

### Step 1020-1

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

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

1. Run diagnostics on any partition. 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.
2. Run diagnostics on the failing partition. 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.
3. Power off the system. Refer to “Stopping the System without an HMC Attached” on page 484.
4. Load the standalone diagnostics in service mode to test the full system partition; refer to Chapter 6, “Using the Online and Standalone Diagnostics”, on page 407.
5. 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.
6. 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
One or more partitions do not boot.	<ol style="list-style-type: none"> <li>1. Check service processor error log. If an error is indicated, go to the “Entry MAP” on page 73.</li> <li>2. Check the Serviceable Action Event (SAE) log, refer to “Working With Serviceable Events” on page 67. If there is a Service Action Event, perform the recommended actions or go the “Entry MAP” on page 73.</li> </ol>
The rack identify LED does not operate properly.	Go to the “Entry MAP” on page 73.
The system stopped and a code is displayed on the operator panel.	Go to the “Entry MAP” on page 73.
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 in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
The power good LED does not come on or does not stay on, or you have a power problem.	Go to “MAP 1520: Power” on page 105.
The system login prompt is displayed.	<p>You may not have pressed the correct key or you may not have pressed the key soon enough when you were to trying to indicate a service mode IPL of the diagnostic programs. If this is the case, start again at the beginning of this step.</p> <p><b>Note:</b> Perform the system shutdown procedure before turning off the system.</p> <p>If you are sure you pressed the correct key in a timely manner, go to “Step 1020-2” on page 85.</p>
The system does not respond when the password is entered.	Go to “Step 1020-2” on page 85.

Symptom	Action
The system stopped. A POST indicator is displayed on the system console and an eight-digit error code is not displayed.	<p>If the POST indicator represents:</p> <ol style="list-style-type: none"> <li>1. Memory, do a slow boot. If an error code points to memory, replace that memory book and run slow boot again.</li> <li>2. Keyboard <ol style="list-style-type: none"> <li>a. Replace the keyboard cable.</li> <li>b. Replace the keyboard.</li> <li>c. Replace the service processor/PCI backplane, location U0.1-P2.</li> <li>d. Go to "MAP 1542: I/O Problem Isolation" on page 129</li> </ol> </li> <li>3. Network, go to "MAP 1542: I/O Problem Isolation" on page 129.</li> <li>4. SCSI, go to "MAP 1542: I/O Problem Isolation" on page 129.</li> <li>5. Speaker <ol style="list-style-type: none"> <li>a. Replace the operator panel.</li> <li>b. Replace the service processor/PCI backplane, Location: U0.1-P2.</li> <li>c. Go to "MAP 1542: I/O Problem Isolation" on page 129</li> </ol> </li> </ol>
The System Management Services menu is displayed.	Go to "Step 1020-4" on page 86.
All other symptoms.	If you were directed here from the Entry MAP, go to "MAP 1542: I/O Problem Isolation" on page 129. Otherwise, find the symptom in the "Entry MAP" on page 73.

## 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.	Record error code M0KB D001; then go to "Step 1020-3".
Type 102 keyboard (W.T.). Identified by the size of the Enter key. The Enter key extends into two horizontal rows.	Record error code M0KB D002; then go to "Step 1020-3".
Type 106 keyboard. (Identified by the Japanese characters.)	Record error code M0KB D003; then go to "Step 1020-3".
ASCII terminal keyboard	Go to the documentation for this type of ASCII terminal and continue with problem determination.

## Step 1020-3

Take the following actions:

1. Find the eight-digit error code in Chapter 5, "Error Code to FRU Index", on page 217.

**Note:** If the eight-digit error code is not listed in Chapter 5, "Error Code to FRU Index", look for it in the following:

- Any supplemental service manuals for attached devices
- The diagnostic problem report screen for additional information
- The Service Hints service aid
- The CEREADME file (by using the Service Hints service aid)

**Note:** Service aids can be found in *@server pSeries Diagnostic Information for Multiple Bus Systems*.

2. Perform the action listed.

## Step 1020-4

1. Turn off, then turn on the system unit.
2. When the keyboard indicator (the word **keyboard**) displays, press the 1 key on a directly attached keyboard or the 1 key on an ASCII terminal or 1 key on the HMC.
3. When the System Management Services menus appear, check the error log for any errors.
  - a. Choose View Error Log
  - b. If an error is logged, check the time stamp.
  - c. If the error was logged during the current boot attempt, record it.
  - d. Look up the error in the Chapter 5, "Error Code to FRU Index", on page 217 and do the listed action.
  - e. If no recent error is logged in the error log, go to "MAP 1542: I/O Problem Isolation" on page 129.

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## 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 88.

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 96.

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

### Notes:

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

### Step 1321-1

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

#### Does the system have an HMC attached?

**No** Go to "Step 1321-23" on page 91.

**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 65.

#### Does the HMC appear to operate correctly?

**No** Go to "Quick Entry MAP" on page 75, 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 95.

**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 90.

### 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 89.

**Yes** Go to "Step 1321-8" on page 89.



## Step 1321-8

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

## Step 1321-9

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

## Step 1321-10

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

**No** Go to “Step 1321-13”.

**Yes** Go to “Step 1321-11”.

## Step 1321-11

**Do any of the error codes from “Step 1321-8” of the form 4xxB xxxx, A0D-34x, or A1D-34x have the same first two characters on the left as the first two characters on the left of the error code recorded in “Step 1321-1” on page 88 that sent you to this MAP?**

**No** Go to “Step 1321-13”.

**Yes** Record the error codes from “Step 1321-8” of the form 4xxB xxxx, A0D-34x, or A1D-34x that have the same first two characters on the left as the first two characters on the left of the error code recorded in “Step 1321-1” on page 88 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 88, 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 88, 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 65.

## Step 1321-15

**Are there any service action events that are closed?**

**No** Go to the table in “Entry MAP” on page 73.

**Yes** Go to “Step 1321-16” on page 90.

## 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 88?**

**No** Go to the table in “Entry MAP” on page 73.

**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 73.

**Yes** Replace the next FRU of same error codes or symptoms of the closed service action events. Go to “MAP 0410: Repair Checkout” in *@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 88.

**Yes** Go to “MAP 0410: Repair Checkout” in *@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 1321-30” on page 93.

**Yes**      Go to “Step 1321-24”.

**Attention:** “Step 1321-24” through “Step 1321-36” on page 94 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

Record any RTAS messages found in the Linux system log in Step 1321-24. Ignore all other messages in the Linux system log. If the system is configured with more than one logical partition with Linux installed, repeat “Step 1321-24” 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 entering the following command:

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

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

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

## Step 1321-27

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

## Step 1321-28

Examine the extended data in both logs.

The following is an example of the Linux extended data.

```
<3>RTAS daemon started
<3>RTAS: ----- event-scan begin -----
<3>RTAS: Location Code: U0.1-P1-C2
<4>RTAS: Log Debug: 04
4b2726fb04a00011702c001400000000000000000f1800001001801d3ffffff0100000000000042343138
202020203830303432364642384541343030303030 030303030303030
<4>RTAS: Log Debug: D2
5046413405020da000001000271400100000033434d50204441544100000100000000000010000f180000153595
32044415441000000000000000200216271501050920021627150105092002063715010509535243204441544170
2c0014000000000000000020018820201d3820000000000000000000000000000000000000000000000000000
000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
000000000000000000004350542044415441702cff08000000001c000000702cf0080000000080000000702cf10070
2cf200702c000400000800702c01040bf2002e702c02040c1ffbf702c0300702c1000702c11040bf2002e702c12040
c1ffbf702c1300702ca000702ca108000000000000a03c702ca20800000000000effc702cb000702cb10800000000
0000a03c702cb2080000000000000effc702cc000702cc108000000000000a03c702cc208000000000000effc702c3
000702c31080000000000000003702c320800000000000000007b702c800000702c81080000000020e27a39702c820800
000000ffeffff702cd000702cd1080000000010004010702cd20800000000777f3fffffffffffffffffffffffffff
ffffffffffffffffffff
<3>RTAS: WARNING: (FULLY RECOVERED) type: INTERN_DEV_FAIL
<3>RTAS: initiator: UNKNOWN target: UNKNOWN
<3>RTAS: Status: unrecoverable new
<3>RTAS: Date/Time: 20020905 15372200
<3>RTAS: CPU Failure
<3>RTAS: Internal error (not cache)
<3>RTAS: CPU id: 0
<3>RTAS: Failing element: 0x0000
<3>RTAS: ----- event-scan end -----
```

## Step 1321-29

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

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

If the system is configured with more than one logical partition with Linux installed, repeat "Step 1321-28" on page 92 and "Step 1321-29" for all logical partitions that have Linux installed.

## Step 1321-30

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

**No** Go to "Step 1321-31".

**Yes** Go to the "Quick Entry MAP" on page 75 with each recorded error code or symptom. Perform the indicated actions one at a time for each error code until the problem has been corrected. If all recorded error codes have been processed and the problem has not been corrected, go to "Step 1321-31".

## Step 1321-31

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

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

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

1. If there is no HMC, attach the laptop computer and cable to serial port 1 on the processor subsystem.
2. When OK displays in the operator panel, press a key on the virtual terminal on the laptop computer. The service processor menus are available on the attached laptop computer or on the HMC.
3. Examine the service processor (SP) error log. Record all error codes and messages written to the SP error log. Go to "Step 1321-32".
4. If the service processor menus are not available, go to "Step 1321-33".

## Step 1321-32

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

## Step 1321-33

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

**No** Go to "Step 1321-41" on page 95.

**Yes** Go to the "Quick Entry MAP" on page 75 with each error code or symptom you have recorded. Perform the indicated actions, one at a time, until the problem has been corrected. If all recorded error codes have been processed and the problem has not been corrected, go to "Step 1321-41" on page 95.

## Step 1321-34

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

## Step 1321-35

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

## Step 1321-36

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

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

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

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

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

## Step 1321-37

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

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

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

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

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

## 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 1321-36”?**

**No** Go to “Step 1321-39” on page 95.

**Yes** There may be a problem with an I/O device. Go to "MAP 1542: I/O Problem Isolation" on page 129. In MAP 1542, when instructed to boot the system, boot a full system partition.

## Step 1321-39

Boot the AIX standalone diagnostics, and run diagnostics in problem determination mode on all resources. Be sure to boot a full system partition. Ensure that AIX diagnostics was run on all known resources. You may need to select each resource individually and run diagnostics on each resource one at a time. 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** Go to "Step 1321-43".

**Yes** Go to the table in "Entry MAP" on page 73 with each error code or SRN you have recorded. Until the problem has been corrected, perform the indicated actions, one at a time, for each SRN or error code not already processed in "Step 1321-37" on page 94. If all recorded SRNs or error codes have been processed and the problem has not been corrected, go to "Step 1321-43".

## Step 1321-40

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

**No** Go to "Step 1321-14" on page 89.

**Yes** Go to "Step 1321-22" on page 90.

## Step 1321-41

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

**No** Go to "Step 1321-34" on page 94.

**Yes** Replace, one at a time, all parts whose location code was recorded in Steps 1321-1, 1321-22, 1321-25, 1321-27, 1321-29, 1321-31, and 1321-32 that have not been replaced. Power off the system before replacing a part. After replacing the part, power on the system to check if the problem has been corrected. Go to "Step 1321-42" when the problem has been corrected, or all parts in the location codes list have been replaced.

## Step 1321-42

### Was the problem corrected in Step 1321-41?

**No** Go to "Step 1321-34" on page 94.

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

## Step 1321-43

### Were any other symptoms recorded in step 1321-1?

**No** Call support.

**Yes** Go to the "Quick Entry MAP" on page 75 with each symptom you have recorded. Perform the indicated actions for all recorded symptoms, one at a time, until the problem has been corrected. If all recorded symptoms have been processed and the problem has not been corrected, call support.

---

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

### 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 65. 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 72. 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 99 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 97.

### 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 89.

**Yes** Go to "Step 1321-9" on page 89.



## 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 96?

**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 96 in the list of FRUs for this service action event?

**No** Go to “Step 1322-33” on page 99.

**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 98.

**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 98.

## 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 97. If you are referred to the list of partition(s) obtained in “Step 1322-11” on page 97 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 97 empty?**

**No**      Go to “Step 1322-26”.

**Yes**      Go to “Step 1322-33” on page 99.

## Step 1322-26

**Does the list of all partition(s) you recorded in “Step 1322-11” on page 97 contain more than one entry?**

**No**      Go to “Step 1322-33” on page 99.

**Yes**      Go to “Step 1322-27” on page 99.

## Step 1322-27

Is the error class recorded in “Step 1322-6” on page 96 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 97, 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 97 been processed?

**No** Go to “Step 1322-28” to process the next partition in the list you recorded in “Step 1322-11” on page 97.

**Yes** Go to “Step 1322-33”.

## Step 1322-33

Have all the serviceable events recorded in “Step 1322-4” on page 96 been processed?

**No** Go to “Step 1322-5” on page 96 and process the next service action event in the list of serviceable events recorded in “Step 1322-4” on page 96.

**Yes** Go to “Step 1322-34” on page 100.

## Step 1322-34

While processing all service action events, were you directed to “Step 1322-14” on page 97?

**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 72. 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 97, 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 sysplana0.
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 97 been processed?

**No** Go to “Step 1322-35” to process the next partition in the list you recorded in “Step 1322-14” on page 97.

**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 72. 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 1420: Recovery Procedures for Hot-Pluggable PCI Adapters

This procedure is used to locate problems that might occur when performing a PCI adapter hot-plug operation.

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

Recovery Procedures for Hot-Pluggable PCI Adapters	
Symptom/Reference Code	Action
Partition will not boot rendering PCI hot-plug manager useless.	Go to "MAP 1421: Partition Will Not Boot Due to Faulty Adapter".
Partition boots, but PCI adapter is not recognized and slot status is empty.	Go to "MAP 1422: Slot is Empty Even When Populated" on page 102.

## MAP 1421: Partition Will Not Boot Due to Faulty Adapter

### Step 1421-1

The entire system must be shut down and powered off to repair.

**Does the customer wish to restore the partition by isolating the faulty adapter without powering off the entire system?**

**No**      Go to "Step 1421-12" on page 102.

**Yes**      Go to "Step 1421-2".

### Step 1421-2

At the HMC, view the resources assigned to the partition that will not boot.

### Step 1421-3

Remove the faulty resource from the partition that will not boot. Record the slot location and the adapter type.

### Step 1421-4

Attempt to boot the partition.

**Does the partition boot?**

**No**      Go to "Step 1421-12" on page 102.

**Yes**      Go to "Step 1421-5".

### Step 1421-5

Shut down the partition.

### Step 1421-6

Is the PCI slot power LED of the location recorded in “Step 1421-3” on page 101 on?

**No** Go to “Step 1421-7”.

**Yes** Go to “Step 1421-12”.

### Step 1421-7

Are there any empty PCI slots attached to the system that are not assigned to any partitions?

**No** Go to “Step 1421-12”.

**Yes** Go to “Step 1421-8”.

### Step 1421-8

Assign the available empty and unassigned slot to the partition that will not boot.

### Step 1421-9

Insert a new adapter of the same type recorded in “Step 1421-3” on page 101 into the slot assigned in “Step 1421-8”.

### Step 1421-10

Move any external cabling from the adapter in the slot recorded in “Step 1421-3” on page 101 to the adapter in the slot assigned in “Step 1421-8”.

### Step 1421-11

Attempt to boot the partition.

### Does the partition boot?

**No** Go to “Step 1421-12”.

**Yes** Partition and all resources are operational. Schedule repair for the slot recorded in “Step 1421-3” on page 101 with the customer. Go to “MAP 0410: Repair Checkout” in the *@server pSeries Diagnostic Information for Multiple Bus Systems*. **This ends the procedure.**

### Step 1421-12

Cannot isolate the adapter without powering off the entire system. Schedule repair for the slot recorded in “Step 1421-3” on page 101 with the customer. **This ends the procedure.**

## MAP 1422: Slot is Empty Even When Populated

### Step 1422-1

Record the I/O drawer and slot location of the slot that is populated with an adapter but shows empty in the PCI hot-plug manager. Also record the adapter type.

### **Step 1422-2**

Is the PCI slot power LED of the location recorded in “Step 1422-1” on page 102 on?

**No** Go to “Step 1422-3”.

**Yes** Go to “Step 1422-7”.

### **Step 1422-3**

Disconnect any external cables from the adapter identified in “Step 1422-1” on page 102.

### **Step 1422-4**

Remove the adapter identified in “Step 1422-1” on page 102.

### **Step 1422-5**

Follow the procedure “Installing a Hot-Pluggable PCI Adapter” on page 502 to add a new adapter at the location recorded in “Step 1422-1” on page 102. The new adapter should be the same type as that removed in “Step 1422-1” on page 102. Return to “Step 1422-6” after the new adapter is added.

### **Step 1422-6**

Did the PCI hot-plug procedure successfully add a new adapter at the location recorded in “Step 1422-1” on page 102?

**No** Go to “Step 1422-7”.

**Yes** Go to “MAP 0410: Repair Checkout” in the *@server pSeries Diagnostic Information for Multiple Bus Systems*. **This ends the procedure.**

### **Step 1422-7**

Shut down the partition that the faulty slot is assigned to.

### **Step 1422-8**

Is the PCI slot power LED of the location recorded in “Step 1422-1” on page 102 on?

**No** Go to “Step 1422-9”.

**Yes** Go to “Step 1422-14” on page 104

### **Step 1422-9**

Are there any empty PCI slots attached to the system that are not assigned to any partitions?

**No** Go to “Step 1422-14” on page 104.

**Yes** Go to “Step 1422-10”.

### **Step 1422-10**

Assign the available empty and unassigned slot to the partition that the faulty slot is assigned to.

### **Step 1422-11**

Insert a new adapter of the same type recorded in "Step 1422-1" on page 102 into the slot assigned in "Step 1422-10" on page 103.

### **Step 1422-12**

Move any external cabling from the adapter in the slot recorded in "Step 1422-1" on page 102 to the adapter in the slot assigned in "Step 1422-10" on page 103.

### **Step 1422-13**

Attempt to boot the partition.

**Does the partition boot?.**

**No**      Go to "Step 1422-14".

**Yes**      Partition and all resources are operational. Schedule repair for the slot recorded in "Step 1422-1" on page 102 with the customer. Go to "MAP 0410: Repair Checkout" in the *@server pSeries Diagnostic Information for Multiple Bus Systems*. **This ends the procedure.**

### **Step 1422-14**

Cannot repair the adapter without powering off the entire system. Schedule repair for the slot recorded in "Step 1422-1" on page 102 with the customer. **This ends the procedure.**



---

## MAP 1520: Power

This procedure is used to locate power problems in the CEC drawer, I/O drawer(s) or rack. If a problem is detected, this procedure helps you isolate the problem to a failing unit.

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

### 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

### CAUTION:

Energy hazard, remove power before servicing. Disconnect two power supply cords.

C23

## FRU Identify LEDs

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

- Rack identify beacon LED (optional rack status beacon)
- Processor Subsystem drawer identify LED
- I/O drawer identify LED
- RIO port identify LED
- FRU identify LED
- Power subsystem FRUs
- Processor Subsystem 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 processor subsystem or I/O drawer identify LED, and the corresponding rack identify LED to locate the failing FRU more easily. Any identify LED in the system may be flashed by using the service processor LED Control Menu contained in the “System Information Menu” on page 432. See “System Information Menu” on page 432 for information on how to use the LED Control Menu.

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

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

1. If the system is configured as a full partition, the system may be booted to the open firmware prompt and the command **FRU-LED-MENU** was entered. A menu will appear that will allow you to turn on the desired FRU identify LED. See the “System Power Control Menu” on page 428 for instructions on setting up the boot mode to enable the boot to the open firmware prompt.
2. If the system is logically partitioned, the HMC must be attached. There is a function at the HMC that allows any FRU identify LED to be flashed. See the “Hardware Service Functions” section of the “Service Focal Point” chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590 for instructions on activating and/or deactivating a FRU identify LED.

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

Symptom	Action
<b>Power Problems</b>	
The base system drawer will not power on and no error codes are available.	Go to “Map 1521: The Base Processor Subsystem Drawer Will Not Power On and No Error Codes are Available” on page 107.
The I/O drawer does not become powered on.	Go to “Map 1522: Cannot Power On the I/O Drawer” on page 114.
You have been directed here by the SPCN Error Codes table and the error code is 1011 1B0x.	Go to “Map 1523: The SPCN Error Codes Table Directed You Here and the Error Code is 1011 1B0x” on page 123.

## Map 1521: The Base Processor Subsystem Drawer Will Not Power On and No Error Codes are Available

### Step 1521-1

Attempt to power on the base system drawer (see "Powering Off and Powering On the System" on page 484)

**Does the base system drawer power on?**

**No** Go to "Step 1521-2".

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

### Step 1521-2

Examine the power supply LEDs at the rear of the base system drawer.

**Are the green AC Good LEDs of both power supplies of the base system drawer on solid?**

**No** Go to "Step 1521-8" on page 108.

**Yes** Go to "Step 1521-3".

### Step 1521-3

**Is the amber fault LED of any power supply of the base system drawer on solid?**

**No** Go to "Step 1521-4".

**Yes** Go to "Step 1521-21" on page 111.

### Step 1521-4

**Is the amber fault LED of any power supply of the base system drawer blinking?**

**No** Go to "Step 1521-5".

**Yes** Go to "Step 1521-23" on page 112.

### Step 1521-5

**Is the green DC good LED of any power supply of the base system drawer off solid?**

**No** Go to "Step 1521- 25" on page 112.

**Yes** Go to "Step 1521-6".

### Step 1521-6

**Are the green DC good LEDs of both power supplies of the base system drawer off solid?**

**No** Go to "Step 1521-7".

**Yes** Go to "Step 1521- 25" on page 112.

### Step 1521-7

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. Reinstall the power supply with the green DC good LED off solid.
2. Remove the power supply installed in step 1 and then replace the other power supply.
3. Replace the service processor/PCI backplane.

**Does the base system drawer power on?**

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

**No** Go to the 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*

### Step 1521-8

**Is this machine connected to dc power?**

**No** Go to "Step 1521-12" on page 109.

**Yes** Go to "Step 1521-9".

### Step 1521-9

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

**No** Reset the popped breaker by first turning off, then turning on.

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

**Yes** Go to "Step 1521-10".

### Step 1521-10

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1521-11".

### Step 1521-11

**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 base system 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 1521-17" on page 110.

### Step 1521-12

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

**No** Reset the popped breaker.

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

**Yes** Go to "Step 1521-13".

### Step 1521-13

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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1521-14".

### Step 1521-14

Follow the ac power cable(s) from the base system drawer to the appropriate power distribution unit.

Is the power distribution unit power LED on?

**No** Go to "Step 1521-18" on page 111.

**Yes** Go to "Step 1521-15".

### Step 1521-15

**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 base system 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1521-16" on page 110.

## Step 1521-16

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 base system 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 1521-17”.

## Step 1521-17

Replace the following in the base system 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:

- Operator panel
- Base system power supply 1
- Power supply fan 1
- Base system power supply 2
- Power supply fan 2
- Service processor/PCI 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

### Step 1521-18

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1521-19".

### Step 1521-19

**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 base system 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 1521-20".

**Yes** Replace the power distribution unit.

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

### Step 1521-20

**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 *@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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

### Step 1521-21

**Are the amber fault LEDs of both power supplies of the base system drawer on solid?**

**No** Go to "Step 1521-22".

**Yes** Go to "Step 1521- 25" on page 112.

### Step 1521-22

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 from above.
3. Replace the service processor/PCI backplane.

**Does the base system drawer power on?**

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

**No**     Go to "Step 1521-22" on page 111 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Step 1521-23**

**Are the amber fault LEDs of both power supplies of the base system drawer blinking?**

**No**     Go to "Step 1521-24".

**Yes**     Go to "Step 1521- 25".

**Step 1521-24**

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 from above.
4. Replace the service processor/PCI backplane.

**Does the base system drawer power on?**

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

**No**     Go to "Step 1521-24", 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Step 1521- 25**

Disconnect the ac power cable (dc power cable for a dc-powered system) to each power supply of the base system drawer and remove the following components from the base system, one at a time, in the sequence listed:

1. Processor card(s)
2. RIO adapter card(s)
3. PCI adapter card(s)
4. DASD device(s)
5. Media bay device(s)

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

**Does the base system drawer power-on?**

**No**     Go to "Step 1521-28" on page 113.

**Yes**     Go to "Step 1521-26" on page 113.



### Step 1521-26

Reinsert the following components in the base system 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. Processor card(s)
2. RIO adapter card(s)
3. PCI adapter card(s)
4. DASD device(s)
5. Media bay device(s)

#### Does the base system power-on?

**No** Replace the defective component just reinserted.

Reinsert any remaining components in this step.

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

**Yes** Go to "Step 1521-27".

### Step 1521-27

**Have all components in step "Step 1521-26" been reinserted?**

**No** Go to "Step 1521-26" to reinsert the next component.

**Yes** The symptom has changed. Call your next level of support for assistance.

**This ends the procedure.**

### Step 1521-28

Replace the following in the base system drawer, one at a time, disconnecting the ac power cable (dc power cable in 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 power supply after replacement:

1. Service processor/PCI backplane
2. Processor backplane

#### Does the base system power on?

**No** Go to "Step 1521-29".

**Yes** Reinsert the components removed in "Step 1521- 25" on page 112.

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

### Step 1521-29

**Have all cards in the previous step been replaced?**

**No** Go to "Step 1521-28".

**Yes** Call your next level of support for assistance.

**This ends the procedure.**

## Map 1522: Cannot Power On the I/O Drawer

### Step 1522-1

Attempt to power on the I/O drawer (see "Powering Off and Powering On the System" on page 484)

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

### Step 1522-2

Examine the power supply LEDs 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 115.

**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 119.

### 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 120.

### Step 1522-5

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

**No** Go to "Step 1522- 25" on page 121.

**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 solid?**

**No** Go to "Step 1522-7" on page 115.

**Yes** Go to "Step 1522- 25" on page 121.

### Step 1522-7

Replace the items in the following list one at a time. Turn off the power 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 solid.
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 *@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 116.

**Yes** Go to "Step 1522-9".

### Step 1522-9

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

**No** Reset the popped breaker by first turning off, then turning on.

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

**Yes** Go to "Step 1522-11" on page 116.

## 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 118.

## Step 1522-12

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

**No** Reset the popped breaker.

**This ends the procedure.** Go to “MAP 0410: Repair Checkout” in the *@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 *@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 118.

**Yes** Go to “Step 1522-15” on page 117.

## 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 1522-16” on page 118.

## 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 *@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 *@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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 1522-19” on page 119.

## 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 *@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 *@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 *@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 120.

**Yes** Go to “Step 1522- 25” on page 121.

### 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 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 "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 *@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" on page 121.

### 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 from above.
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 *@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 122.

**Yes** Go to "Step 1522-26".

### 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 in this step.

**This ends the procedure.** Go to "MAP 0410: Repair Checkout" in the *@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 the I/O drawer backplane. Disconnect the power cable to each power supply before replacement and then reconnect the power cable to each power supply after replacement:

### Does the I/O drawer power on?

**No** Call your next level of support for assistance. **This ends the procedure.**

**Yes** Reinsert the components removed in "Step 1522- 25" on page 121.

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

## 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(s)
  - e. Media bay device(s)
4. Reconnect the ac power cables (dc power cables in a dc-powered system) to the base system drawer.
5. Turn on the power.

**Is the error code 1011 1B0x displayed?**

**No** Go to “Step 1523-7” on page 126.

**Yes** Go to “Step 1523-5” on page 125.

### Step 1523-2

1. Turn off the power.
2. Replace the base system power supply 2, location: U0.1-V2, with a new power supply.
3. Turn on the power.

**Is the error code 1011 1B0x displayed?**

**No** Go to “Step 1523-3” on page 124.

**Yes** Go to “Step 1523-4” on page 124

### Step 1523-3

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

### Step 1523-4

1. Turn off the power.
2. Remove the new power supply, just installed in base system power supply 2 and restore the original power supply to base system power supply 2.
3. Replace the base system power supply 1, location: U0.1-V1, with the new power supply.
4. Turn on the power.

#### Is the error code 1011 1B0x displayed?

**No**      **This ends the procedure.** Go to "MAP 0410: Repair Checkout" in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes**      Carefully check all cables for cuts and nicks and replace if necessary. If no cable problems are found, replace the base system backplane, location: U0.1-P1. This ends the procedure. Go to "MAP 0410: Repair Checkout" in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.

### Step 1523-5

1. Turn off the power.
2. Remove base system fan 3. Disregard any error code for the processor subsystem fan if it occurs during this step.
3. 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1523-6".

### Step 1523-6

1. Turn off the power.
2. Reinstall base system fan 3 that was removed in "Step 1523-5".
3. Remove base system fan 4. Disregard any error code for the processor subsystem fan 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1523-2" on page 123.

## 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 123, 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1523-8

### Have all the cards that were removed in "Step 1523-1" on page 123 been reinstalled?

**No** Go to "Step 1523-7" and reinstall the next card in the list.

**Yes** The symptoms have changed. **This ends the procedure.** Go to "MAP 0410: Repair Checkout" in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.

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## 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:

- Rack identify beacon LED (optional rack status beacon)
- Processor Subsystem drawer identify LED
- I/O drawer identify LED
- RIO port identify LED
- FRU identify LED
- Power subsystem FRUs
- Processor Subsystem 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 processor subsystem or I/O drawer identify LED, and the corresponding rack identify LED to locate the failing FRU more easily. Any identify LED in the system may be flashed by using the service processor LED Control Menu contained in the "System Information Menu" on page 432. See "System Information Menu" on page 432 for information on how to use the LED Control Menu.

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

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

1. If the system is configured as a full partition, the system may be booted to the open firmware prompt and the command **FRU-LED-MENU** was entered. A menu will appear that will allow you to turn on the desired FRU identify LED. See the "System Power Control Menu" on page 428 for instructions on setting up the boot mode to enable the boot to the open firmware prompt.
2. If the system is logically partitioned, the HMC must be attached. There is a function at the HMC that allows any FRU identify LED to be flashed. See the "Hardware Service Functions" section of the "Service Focal Point" chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, for instructions on activating and/or deactivating a FRU identify LED.

Problem Isolation Procedures	
Symptom/Reference Code/Checkpoint	Action
You were sent here by the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> book.	Go to "MAP 1542: I/O Problem Isolation" on page 129.
406x 00B7	Go to "MAP 154B: Insufficient Hardware Resources Problem Isolation" on page 164.

Problem Isolation Procedures	
Symptom/Reference Code/Checkpoint	Action
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 157.
406x 0EB0	Go to "MAP 1541: JTAG Problem Isolation".
1011 8400, 1011 8401, 1011 8402, 1011 8409, 1011 840A, 1011 840B, 406x 0CA5, B1xx 4643, B1xx 4644, B1xx 4645, B1xx 4646, B1xx 4648	Go to "MAP 154A: I2C Bus Problem Isolation" on page 161.
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 B1xx 4660, B1xx 4661, B1xx 4662	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
B1xx 4634	Go to "MAP 154C: SPCN Cable Problem Isolation" on page 165.

## MAP 1541: JTAG Problem Isolation

### Step 1541-1

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

### Step 1541-2

Turn off the power.

### Step 1541-3

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

- First location code item recorded, if any, "Step 1541-1".
- Second location code item recorded, if any, in "Step 1541-1".
- Third location code item recorded, if any, in "Step 1541-1".
- Fourth location code item recorded, if any, in "Step 1541-1".
- Replace the service processor/PCI backplane at U0.1-P2.
- RIO connector card 1 at location U0.1-P1-H1 if not recorded in "Step 1541-1".
- RIO extender card 1 at location U0.1-P1-H1.1 if not recorded in "Step 1541-1".
- RIO connector card 2 at location U0.1-P1-H2 if not recorded in "Step 1541-1".
- RIO extender card 2 at location U0.1-P1-H2.1 if not recorded in "Step 1541-1".
- 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-M $n$  ( $n$  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-M $n$  ( $n$  equals 1 to 8), if not recorded in "Step 1541-1".
- Processor card at location U0.1-P1-C3 if not recorded in "Step 1541-1".
- All memory DIMMS on processor card 3 at location U0.1-P1-C3-M $n$  ( $n$  equals 1 to 8), if not recorded in "Step 1541-1".
- Processor card at location U0.1-P1-C4 if not recorded in "Step 1541-1".
- All memory DIMMS on processor card 4 at location U0.1-P1-C4-M $n$  ( $n$  equals 1 to 8), if not recorded in "Step 1541-1".
- Fabric card at location U0.1-P3, if not recorded in "Step 1541-1".

### Step 1541-4

Turn on the power.



### Step 1541-5

Did the system stop with the same error code as recorded in “Step 1541-1” on page 128?

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

### Step 1541-6

Have all the cards listed in “Step 1541-3” on page 128 been replaced?

**Yes** Go to “Step 1541-7”.

**No** Go to “Step 1541-2” on page 128.

### Step 1541-7

Turn off the power.

### Step 1541-8

**Attention:** Before replacing the processor backplane, call for support.

Replace the processor backplane at U0.1-P1.

### Step 1541-9

Turn on the power.

### Step 1541-10

Did the system stop with the same error code as recorded in “Step 1541-1” on page 128?

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

Return the system to its original configuration.

Go to “MAP 0410: Repair Checkout” in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 1541-11”.

### Step 1541-11

Turn off the power.

### Step 1541-12

Call for support.

**This ends the procedure.**

## 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 a SCSI 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 432).
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: <ol style="list-style-type: none"> <li>a. Number of reboot attempts to <b>0</b> (zero)</li> <li>b. Use OS-Defined restart policy to <b>No</b></li> <li>c. Enable supplemental restart policy to <b>No</b>.</li> </ol>
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 “Performing Slow Boot” on page 217. “Performing Slow Boot” describes the procedure for booting online diagnostics (pressing the 6 key between the **keyboard** and **speaker** indicators) and the following procedure requires booting standalone diagnostics (pressing the 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 407.

### 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” on page 214.

**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 the system console screen displayed?**

**No** Go to "Step 1542-3".

**Yes** Go to "Step 1542-4".

**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" on page 130. 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 "Checkpoints and Error Codes Index" on page 221 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 73. 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** The boot attempts that follow will attempt to isolate any remaining I/O subsystem problems with missing devices. Ignore any codes that may display on the operator panel unless stated otherwise. Go to "Step 1542-5" on page 132.

## 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 1542-32” on page 152.

**Yes** Go to “Step 1542-6”.

## Step 1542-6

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

**Attention:** The 7311 Model D10 I/O Subsystem and the 7311 Model D20 I/O Subsystem may both be connected to the pSeries 650. However, both models cannot be looped on the same processor subsystem RIO ports. The remaining steps in this MAP refer to I/O subsystem RIO port connector 0 and RIO port connector 1. The MAP location codes of these ports are for the 7311 Model D10 I/O Subsystem. The location codes of these ports are different for the 7311 Model D20 I/O Subsystem. The 7311 Model D10 I/O Subsystem is a half-wide drawer and the MAP refers to left and right side subsystems. The 7311 Model D20 I/O Subsystem is full width. Therefore left and right does not apply to the 7311 Model D20 I/O Subsystem. Refer to the table below to determine the RIO port location codes and the rack position to use in the MAP for the 7311 Model D20 I/O Subsystem.

	7311 Model D10 I/O Subsystem	7311 Model D20 I/O Subsystem
I/O subsystem RIO port 0	U0.x-P1.1/Q1	U0.x-P1.1/Q2
I/O subsystem RIO port 1	U0.x-P1.1/Q2	U0.x-P1.1/Q1
Valid rack locations for this MAP	Left side Right side	Assume left side only

**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 8 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 port 0 of RIO connector card1 (U0.1-P1-H1/Q1).
3. If the RIO cable in substep 2 is connected to the right side I/O subsystem, disconnect the right side I/O subsystem port connector 0 (U0.x-P1.1/Q1). The RIO cable that was connected to RIO port 0 of RIO connector card 1 in the base system should now be loose and can be removed. Record the location of this I/O subsystem and that it is “not looped right.” Go to substep 5.
4. If the RIO cable in substep 2 is connected to the left side I/O subsystem, disconnect the left side I/O subsystem port connector 0 (U0.x-P1.1/Q1). The RIO cable that was connected to RIO port 0 of RIO connector card 1 in the base system should now be loose and can be removed. Record the location of this I/O subsystem. Go to substep 8.
5. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2), and reconnect it to RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1).
6. At the I/O subsystem recorded in substep 3, disconnect the I/O port connector 1 (U0.x-P1.1/Q2) and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1).
7. Verify that a single RIO cable connects base system RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1) to the I/O subsystem recorded in substep 3 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 134.
8. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the I/O subsystem recorded in substep 4. If the RIO cable attached to the I/O port connector 1 of the I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the I/O subsystem identified in substep 4 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. Go to substep 13 on page 133.

9. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the I/O subsystem recorded in substep 4 on page 132 connects to port 1 of RIO connector card 1 (U0.1-P1-H1/Q2) of the base system, record that the I/O subsystem is "not looped left."
10. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2), and reconnect it to RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1).
11. At the I/O subsystem recorded in substep 4 on page 132, disconnect the I/O port connector 1 (U0.x-P1.1/Q2) and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1).
12. Verify that a single RIO cable connects base system RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1) to the I/O subsystem recorded in substep 4 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 134.
13. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped one" I/O subsystem) identified in substep 8 on page 132. If the RIO cable attached to the I/O port connector 1 of the "looped one" I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the next I/O subsystem identified in substep 8 on page 132, is "looped two" and record the location of the I/O subsystem that is connected to I/O port connector 1 of the "looped two" subsystem. Go to substep 18.
14. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped one" I/O subsystem) identified in substep 8 on page 132, connects to port 1 of RIO connector card 1 (U0.1-P1-H1/Q2) of the base system, record that the next I/O subsystem is "looped two."
15. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2), and reconnect it to RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1).
16. At the "looped two" I/O subsystem recorded in substep 14, disconnect the I/O port connector 1 (U0.x-P1.1/Q2) and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 132.
17. Verify that a single RIO cable connects base system RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1) to the I/O subsystem recorded in substep 4 on page 132 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 134.
18. Examine the connection at I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped two" I/O subsystem) identified in substep 13. If the RIO cable attached to the I/O port connector 1 of the "looped two" I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the next I/O subsystem identified in substep 13, is "looped three" and record the location of the I/O subsystem that is connected to I/O port connector 1 of the "looped three" subsystem. Go to to substep 23.
19. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped two" I/O subsystem) identified in substep 13 connects to port 1 of RIO connector card 1 (U0.1-P1-H1/Q2) of the base system, record that the next I/O subsystem is "looped three."
20. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2) and reconnect it to RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1).
21. At the "looped three" I/O subsystem recorded in substep 19, disconnect the I/O port connector 1 (U0.x-P1.1/Q2) and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 132.
22. Verify that a single RIO cable connects base system RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1) to the I/O subsystem recorded in substep 4 on page 132 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 134.
23. The RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped three" I/O subsystem) identified in substep 18 must connect to port 1 of RIO connector card 1 (U0.1-P1-H1/Q2) of the base system, record that the next I/O subsystem is "looped four." A maximum of four I/O subsystems can be looped on a single pair of base system RIO ports.

24. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2), and reconnect it to RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1).
25. At the "looped four" I/O subsystem recorded in substep 23 on page 133, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 132.
26. Verify that a single RIO cable connects base system RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1) to the I/O subsystem recorded in substep 4 on page 132 port connector 0 (U0.x-P1.1/Q1).
27. If an I/O subsystem was "looped two" verify that the "looped one" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped two" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
28. If an I/O subsystem was "looped three" verify that the "looped two" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped three" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
29. If an I/O subsystem was "looped four" verify that the "looped three" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped four" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
30. At this point, a chain of one to four I/O subsystems is attached to RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1) of the base system.
31. Turn on the power to boot standalone diagnostics from CD.
32. If the Please define the System Console screen is displayed, follow directions to select the system console.
33. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *@server pSeries Diagnostic Information for Multiple Bus Systems* if necessary)
34. 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 135.

**Yes** The RIO cable that was removed in substep 3 on page 132 or 4 on page 132 above is defective. Replace the RIO cable.

If four I/O subsystems are chained to RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1) of the base system, connect the new RIO cable from the "looped four" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2).

If three I/O subsystems are chained to RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1) of the base system, connect the new RIO cable from the "looped three" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2).

If two I/O subsystems are chained to RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1) of the base system, connect the new RIO cable from the "looped two" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2).

If the I/O subsystem was "not looped left" connect the new RIO cable from the I/O subsystem recorded in substep 3 I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2).

If the I/O subsystem was "not looped right," connect the new RIO cable from the I/O subsystem recorded in substep 4 on page 132 I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2).

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



## Step 1542-7

The pSeries 650 Model 6M2 server may have up to four I/O subsystems attached to each of the four pairs of RIO ports of the base system. 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 port 0 of RIO connector card 1 (U0.1-P1-H1/Q1). Record all connections.
3. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2). Record all connections.
4. At the base system, disconnect the cable connection at RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3), if present. Record all connections.
5. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4), if present. Record all connections.
6. At the base system, disconnect the cable connection at RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5), if present. Record all connections.
7. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6), if present. Record all connections.
8. At the base system, disconnect the cable connection at RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7), if present. Record all connections.
9. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8), if present. Record all connections.
10. 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 *@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 prompt 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 1542-32" on page 152.

**Yes** Go to "Step 1542-21" on page 141.

### Step 1542-9

For any I/O subsystem attached to the RIO card of the base system defined in the step that sent you to this step ("Step 1542-9"): **If the I/O subsystem was recorded as "looped one," "not looped left," or "not looped right," are there any adapters in slots 1, 2, 3, 4, 5, or 6 (location codes U0.x-P1-I1 through I6), or for a 7311 Model D20 I/O Subsystem, slots 1-7 (location codes U0.x-P1-I1 through I7)?**

**No** Go to "Step 1542-10".

**Yes** Go to "Step 1542-13" on page 137.

### Step 1542-10

For any I/O subsystem attached to the RIO card of the base system defined in the step that sent you to "Step 1542-9": **If the I/O subsystem was recorded as "looped two," are there any adapters in slots 1, 2, 3, 4, 5, or 6 (location codes U0.x-P1-I1 through I6), or for a 7311 Model D20 I/O Subsystem, slots 1-7 (location codes U0.x-P1-I1 through I7)?**

**No** Go to "Step 1542-11".

**Yes** Go to "Step 1542-14" on page 137.

### Step 1542-11

For any I/O subsystem attached to the RIO card of the base system defined in the step that sent you to "Step 1542-9": **If the I/O subsystem was recorded as "looped three," are there any adapters in slots 1, 2, 3, 4, 5, or 6 (location codes U0.x-P1-I1 through I6), or for a 7311 Model D20 I/O Subsystem, slots 1-7 (location codes U0.x-P1-I1 through I7)?**

**No** Go to "Step 1542-12".

**Yes** Go to "Step 1542-15" on page 138.

### Step 1542-12

For any I/O subsystem attached to the RIO card of the base system defined in the step that sent you to "Step 1542-9": **If the I/O subsystem was recorded as "looped four," are there any adapters in slots 1, 2, 3, 4, 5, or 6 (location codes U0.x-P1-I1 through I6), or for a 7311 Model D20 I/O Subsystem, slots 1-7 (location codes U0.x-P1-I1 through I7)?**

**No** Go to "Step 1542-22" on page 142.

**Yes** Go to "Step 1542-16" on page 138.



### Step 1542-13

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 1, 2, 3, 4, 5, and 6 (location codes Ux.y-P1-I1 through I6) from the I/O subsystem, or for a 7311 Model D20 I/O Subsystem, slots 1-7 (location codes U0.x-P1-I1 through I7).
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 *@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 136.

**Yes** Go to "Step 1542-17" on page 139.

### Step 1542-14

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 1, 2, 3, 4, 5, and 6 (location codes Ux.y-P1-I1 through I6) from the I/O subsystem, or for a 7311 Model D20 I/O Subsystem, slots 1-7 (location codes U0.x-P1-I1 through I7).
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 *@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 1542-11" on page 136.

**Yes** Go to "Step 1542-17" on page 139.

## Step 1542-15

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 1, 2, 3, 4, 5, and 6 (location codes Ux.y-P1-I1 through I6) from the I/O subsystem, or for a 7311 Model D20 I/O Subsystem, slots 1-7 (location codes U0.x-P1-I1 through I7).
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 *@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 1542-12" on page 136.

**Yes** Go to "Step 1542-17" on page 139.

## Step 1542-16

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 1, 2, 3, 4, 5, and 6 (location codes Ux.y-P1-I1 through I6) from the I/O subsystem, or for a 7311 Model D20 I/O Subsystem, slots 1-7 (location codes U0.x-P1-I1 through I7).
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 *@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 140.

**Yes** Go to "Step 1542-17" on page 139.

### Step 1542-17

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 *@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 1542-18".

**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 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

### Step 1542-18

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 *@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** The I/O subsystem backplane is defective. Replace the I/O subsystem backplane (U0.x-P1). Go to "Step 1542-20" on page 141.

**Yes** The adapter was defective. Go to "Step 1542-20" on page 141.

## Step 1542-19

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", "not looped right", or "not looped left" I/O subsystem attached to the RIO card of the base system defined in the step that sent you to "Step 1542-9" on page 136.
  - b. I/O subsystem backplane of any "looped two" I/O subsystem attached to the RIO card of the base system defined in the step that sent you to "Step 1542-9" on page 136.
  - c. I/O subsystem backplane of any "looped three" I/O subsystem attached to the RIO card of the base system defined in the step that sent you to "Step 1542-9" on page 136.
  - d. I/O subsystem backplane of any "looped four" I/O subsystem attached to the RIO card of the base system defined in the step that sent you to "Step 1542-9" on page 136.
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 *@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. Continue repeating 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 1542-20" on page 141.

## Step 1542-20

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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1542-21

1. Turn off the power.
2. At the base system, reconnect the cable connection at RIO port 0 of RIO connector card 1 (U0.1-P1-H1/Q1) recorded in "Step 1542-7" on page 135.
3. At the base system, reconnect the cable connection at RIO port 1 of RIO connector card 1 (U0.1-P1-H1/Q2) recorded in "Step 1542-7" on page 135.
4. Reconnect the power cables to the I/O subsystems that were found attached to the base system RIO ports mentioned in substeps 2 and 3 above. All I/O subsystems that were attached to the base system RIO port 0 of RIO connector card 1 and RIO port 1 of RIO connector card 1 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 8.
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 *@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 136 to isolate I/O problems attached to the base system RIO connector card 1 (U0.1-P1-H1).

**Yes** Go to "Step 1542-22" on page 142.

## Step 1542-22

Reconnect the next I/O subsystem in the configuration that you recorded in earlier in “Step 1542-7” on page 135. Use the following table to determine the next base system RIO card to use to reconnect the I/O subsystem(s).

Current Base System RIO Card	New Base System RIO Card	Go to:
RIO connector card 1 (U0.1-P1-H1)	RIO extender card 1 (U0.1-P1-H1.1)	“Step 1542-23”
RIO extender card 1 (U0.1-P1-H1.1)	RIO connector card 2 (U0.1-P1-H2)	“Step 1542-26” on page 145
RIO connector card 2 (U0.1-P1-H2)	RIO extender card 2 (U0.1-P1-H2.1)	“Step 1542-29” on page 148
RIO extender card 2 (U0.1-P1-H2.1)	N/A	“Step 1542-26” on page 145

**Note:** The I/O subsystems should be cabled as shown in “Subsystem Positioning and Cabling” on page 8.

## Step 1542-23

1. Turn off the power.
2. At the base system, reconnect the cable connection at RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3) recorded in “Step 1542-7” on page 135, if present.
3. At the base system, reconnect the cable connection at RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4) recorded in “Step 1542-7” on page 135, if present.
4. Reconnect the power cables to the I/O subsystems that were found attached to the base system RIO ports mentioned in substeps 2 and 3 above. All I/O subsystems that were attached to the base system RIO port 0 of RIO extender card 1 and RIO port 1 of RIO extender card 1 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 8.
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 *@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?

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

**No** Go to “Step 1542-24” to isolate I/O problems attached to the base system RIO extender card 1 (U0.1-P1-H1.1).

**Yes** Go to “Step 1542-22”.

## Step 1542-24

Examine the base system RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3).

**Are there any I/O subsystems attached to this connector of the base system?**

**No** Go to “Step 1542-26” on page 145.

**Yes** Go to “Step 1542-25” on page 143.

## Step 1542-25

**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 8 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 port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3). Follow this RIO cable to a RIO connector of an I/O subsystem at the other end.
3. If the RIO cable in substep 2 is connected to the right side I/O subsystem, disconnect the right side I/O subsystem port connector 0 (U0.x-P1.1/Q1). The RIO cable that was connected to RIO port 0 of RIO extender card 1 in the base system should now be loose and can be removed. Record the location of this I/O subsystem and that it is "not looped right." Go to substep 5.
4. If the RIO cable in substep 2 is connected to the left side I/O subsystem, disconnect the left side I/O subsystem port connector 0 (U0.x-P1.1/Q1). The RIO cable that was connected to RIO port 0 of RIO extender card 1 in the base system should now be loose and can be removed. Record the location of this I/O subsystem. Go to substep 8.
5. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4), and reconnect it to RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3).
6. At the I/O subsystem recorded in substep 3, disconnect the I/O port connector 1 (U0.x-P1.1/Q2) and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1).
7. Verify that a single RIO cable connects base system RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3) to the I/O subsystem recorded in substep 3 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 144.
8. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the I/O subsystem recorded in substep 4. If the RIO cable attached to the I/O port connector 1 of the I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the I/O subsystem identified in substep 4 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 13.
9. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the I/O subsystem recorded in substep 4 connects to port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4) of the base system, record that the I/O subsystem is "not looped left."
10. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4), and reconnect it to RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3).
11. At the I/O subsystem recorded in substep 4, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1).
12. Verify that a single RIO cable connects base system RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3) to the I/O subsystem recorded in substep 4 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 144.
13. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped one" I/O subsystem) identified in substep 8. If the RIO cable attached to the I/O port connector 1 of the "looped one" I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the next I/O subsystem identified in substep 8 is "looped two" and record the location of the I/O subsystem that is connected to I/O port connector 1 of the "looped two" subsystem. Go to substep 18 on page 144.
14. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped one" I/O subsystem) identified in substep 8 connects to port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4) of the base system, record that the next I/O subsystem is "looped two."
15. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4), and reconnect it to RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3).



16. At the "looped two" I/O subsystem recorded in substep 14 on page 143, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 143.
17. Verify that a single RIO cable connects base system RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3) to the I/O subsystem recorded in substep 4 port connector 0 (U0.x-P1.1/Q1). Go to substep 27.
18. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped two" I/O subsystem) identified in substep 13 on page 143. If the RIO cable attached to the I/O port connector 1 of the "looped two" I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the next I/O subsystem identified in substep 13 on page 143 is "looped three" and record the location of the I/O subsystem that is connected to I/O port connector 1 of the "looped three" subsystem. Go to substep 23.
19. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped two" I/O subsystem) identified in substep 13 on page 143 connects to port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4) of the base system, record that the next I/O subsystem is "looped three."
20. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4), and reconnect it to RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3).
21. At the "looped three" I/O subsystem recorded in substep 19, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 143.
22. Verify that a single RIO cable connects base system RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3) to the I/O subsystem recorded in substep 4 port connector 0 (U0.x-P1.1/Q1). Go to substep 27.
23. The RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped three" I/O subsystem) identified in substep 18 must connect to port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4) of the base system. Record that the next I/O subsystem is "looped four." A maximum of four I/O subsystems can be looped on a single pair of base system RIO ports.
24. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4), and reconnect it to RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3).
25. At the "looped four" I/O subsystem recorded in substep 23, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 143.
26. Verify that a single RIO cable connects base system RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3) to the I/O subsystem recorded in substep 4 on page 143 port connector 0 (U0.x-P1.1/Q1).
27. If an I/O subsystem was "looped two," verify that the "looped one" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped two" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
28. If an I/O subsystem was "looped three," verify that the "looped two" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped three" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
29. If an I/O subsystem was "looped four," verify that the "looped three" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped four" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
30. At this point a chain of one to four I/O subsystems are attached to RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3) of the base system.
31. Turn on the power to boot standalone diagnostics from CD.
32. If the Please define the System Console screen is displayed, follow directions to select the system console.



33. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *@server pSeries Diagnostic Information for Multiple Bus Systems* if necessary).
34. 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 136 to further isolate I/O problems attached to the base system RIO extender card 1. (U0.1-P1-H1.1).

**Yes** The RIO cable that was removed in substep 3 on page 143 or 4 on page 143 above is defective. Replace the RIO cable.

If four I/O subsystems are chained to RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3) of the base system, connect the new RIO cable from the "looped four" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4).

If three I/O subsystems are chained to RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3) of the base system, connect the new RIO cable from the "looped three" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4).

If two I/O subsystems are chained to RIO port 0 of RIO extender card 1 (U0.1-P1-H1.1/Q3) of the base system, connect the new RIO cable from the "looped two" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4).

If the I/O subsystem was "not looped left," connect the new RIO cable from the I/O subsystem (recorded in substep 3 on page 143) I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4).

If the I/O subsystem was "not looped right," connect the new RIO cable from the I/O subsystem (recorded in substep 4 on page 143) I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO extender card 1 (U0.1-P1-H1.1/Q4).

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

## Step 1542-26

1. Turn off the power.
2. At the base system, reconnect the cable connection at RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5) recorded in "Step 1542-7" on page 135, if present.
3. At the base system, reconnect the cable connection at RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6) recorded in "Step 1542-7" on page 135, if present.
4. Reconnect the power cables to the I/O subsystems that were found attached to the base system RIO ports mentioned in substeps 2 and 3 above. All I/O subsystems that were attached to the base system RIO port 0 of RIO connector card 2 and RIO port 1 of RIO connector card 2 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 8.
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 *@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 1542-27” to isolate I/O problems attached to the base system RIO connector card 2 (U0.1-P1-H2).

**Yes** Go to “Step 1542-22” on page 142.

### Step 1542-27

Examine the base system RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5).

#### Are there any I/O subsystems attached to this connector of the base system?

**No** Go to “Step 1542-29” on page 148.

**Yes** Go to “Step 1542-28”.

### Step 1542-28

**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 8 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 port 0 of RIO connector card 2 (U0.1-P1-H2/Q5). Follow this RIO cable to a RIO connector of an I/O subsystem at the other end.
3. If the RIO cable in substep 2 above is connected to the right side I/O subsystem, disconnect the right side I/O subsystem port connector 0 (U0.x-P1.1/Q1). The RIO cable that was connected to RIO port 0 of RIO connector card 2 in the base system should now be loose and can be removed. Record the location of this I/O subsystem and that it is “not looped right”. Go to substep 5.
4. If the RIO cable in substep 2 above is connected to the left side I/O subsystem, disconnect the left side I/O subsystem port connector 0 (U0.x-P1.1/Q1). The RIO cable that was connected to RIO port 0 of RIO connector card 2 in the base system should now be loose and can be removed. Record the location of this I/O subsystem. Go to substep 8.
5. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6), and reconnect it to RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5).
6. At the I/O subsystem recorded in substep 3, disconnect the I/O port connector 1 (U0.x-P1.1/Q2) and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1).
7. Verify that a single RIO cable connects base system RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5) to the I/O subsystem recorded in substep 3 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 147.
8. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the I/O subsystem recorded in substep 4. If the RIO cable attached to the I/O port connector 1 of the I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the I/O subsystem identified in substep 4 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. Go to substep 13.
9. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the I/O subsystem recorded in substep 4 connects to port 1 of RIO connector card 2 (U0.1-P1-H2/Q6) of the base system, record that the I/O subsystem is “not looped left.”
10. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6), and reconnect it to RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5).
11. At the I/O subsystem recorded in substep 4, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1).
12. Verify that a single RIO cable connects base system RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5) to the I/O subsystem recorded in substep 4 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 147.
13. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the “looped one” I/O subsystem) identified in substep 8. If the RIO cable attached to the I/O port connector 1 of the “looped one” I/O subsystem

- connects to the I/O port connector 0 of another I/O subsystem, record that the next I/O subsystem identified in substep 8 on page 146 is "looped two," and record the location of the I/O subsystem that is connected to I/O port connector 1 of the "looped two" subsystem. Go to substep 18.
14. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped one" I/O subsystem) identified in substep 8 on page 146 connects to port 1 of RIO connector card 2 (U0.1-P1-H2/Q6) of the base system, record that the next I/O subsystem is "looped two."
  15. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6), and reconnect it to RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5).
  16. At the "looped two" I/O subsystem recorded in substep 14, disconnect the I/O port connector 1 (U0.x-P1.1/Q2) and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 146.
  17. Verify that a single RIO cable connects base system RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5) to the I/O subsystem recorded in substep 4 on page 146 port connector 0 (U0.x-P1.1/Q1). Go to substep 27.
  18. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped two" I/O subsystem) identified in substep 13 on page 146. If the RIO cable attached to the I/O port connector 1 of the "looped two" I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the next I/O subsystem identified in substep 13 on page 146 is "looped three," and record the location of the I/O subsystem that is connected to I/O port connector 1 of the "looped three" subsystem. Go to substep 23.
  19. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped two" I/O subsystem) identified in substep 13 on page 146 connects to port 1 of RIO connector card 2 (U0.1-P1-H2/Q6) of the base system, record that the next I/O subsystem is "looped three."
  20. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6), and reconnect it to RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5).
  21. At the "looped three" I/O subsystem recorded in substep 19, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 146.
  22. Verify that a single RIO cable connects base system RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5) to the I/O subsystem recorded in substep 4 on page 146 port connector 0 (U0.x-P1.1/Q1). Go to substep 27.
  23. The RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped three" I/O subsystem) identified in substep 18 must connect to port 1 of RIO connector card 2 (U0.1-P1-H2/Q6) of the base system. Record that the next I/O subsystem is "looped four." A maximum of four I/O subsystems can be looped on a single pair of base system RIO ports.
  24. At the base system, disconnect the cable connection at RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6), and reconnect it to RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5).
  25. At the "looped four" I/O subsystem recorded in substep 23, disconnect the I/O port connector 1 (U0.x-P1.1/Q2) and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 146.
  26. Verify that a single RIO cable connects base system RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5) to the I/O subsystem recorded in substep 4 on page 146 port connector 0 (U0.x-P1.1/Q1).
  27. If an I/O subsystem was "looped two," verify that the "looped one" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped two" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).

28. If an I/O subsystem was "looped three," verify that the "looped two" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped three" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
29. If an I/O subsystem was "looped four," verify that the "looped three" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped four" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
30. At this point, a chain of one to four I/O subsystems are attached to RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5) of the base system.
31. Turn on the power to boot standalone diagnostics from CD.
32. If the Please define the System Console screen is displayed, follow directions to select the system console.
33. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *@server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
34. 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 136 to further isolate I/O problems attached to the base system RIO connector card 2. (U0.1-P1-H2).

**Yes** The RIO cable that was removed in substep 3 on page 146 or 4 on page 146 above is defective. Replace the RIO cable.

If four I/O subsystems are chained to RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5) of the base system, connect the new RIO cable from the "looped four" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6).

If three I/O subsystems are chained to RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5) of the base system, connect the new RIO cable from the "looped three" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6).

If two I/O subsystems are chained to RIO port 0 of RIO connector card 2 (U0.1-P1-H2/Q5) of the base system, connect the new RIO cable from the "looped two" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6).

If the I/O subsystem was "not looped left," connect the new RIO cable from the I/O subsystem recorded in substep 3 on page 146 I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6).

If the I/O subsystem was "not looped right," connect the new RIO cable from the I/O subsystem recorded in substep 4 on page 146 I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO connector card 2 (U0.1-P1-H2/Q6).

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

## Step 1542-29

1. Turn off the power.
2. At the base system, reconnect the cable connection at RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7) recorded in "Step 1542-7" on page 135, if present.
3. At the base system, reconnect the cable connection at RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8) recorded in "Step 1542-7" on page 135, if present.
4. Reconnect the power cables to the I/O subsystems that were found attached to the base system RIO ports mentioned in substeps 2 and 3 above. All I/O subsystems that were attached to the base system RIO port 0 of RIO extender card 2 and RIO port 1 of RIO extender card 2 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 8.
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 *@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 1542-30" to isolate I/O problems attached to the base system RIO extender card 2 (U0.1-P1-H2.1).

**Yes** Go to "Step 1542-22" on page 142.

### Step 1542-30

Examine the base system RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7).

**Are there any I/O subsystems attached to this connector of the base system?**

**No** Go to "Step 1542-32" on page 152.

**Yes** Go to "Step 1542-31".

### Step 1542-31

**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 8 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 port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7). Follow this RIO cable to a RIO connector of an I/O subsystem at the other end.
3. If the RIO cable in substep 2 above is connected to the right side I/O subsystem, disconnect the right side I/O subsystem port connector 0 (U0.x-P1.1/Q1). The RIO cable that was connected to RIO port 0 of RIO extender card 2 in the base system should now be loose and can be removed. Record the location of this I/O subsystem and that it is "not looped right." Go to substep 5.
4. If the RIO cable in substep 2 above is connected to the left side I/O subsystem, disconnect the left side I/O subsystem port connector 0 (U0.x-P1.1/Q1). The RIO cable that was connected to RIO port 0 of RIO extender card 2 in the base system should now be loose and can be removed. Record the location of this I/O subsystem. Go to substep 8.
5. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8) and reconnect it to RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7).
6. At the I/O subsystem recorded in substep 3, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1).
7. Verify that a single RIO cable connects base system RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7) to the I/O subsystem recorded in substep 3 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 151.
8. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the I/O subsystem recorded in substep 4. If the RIO cable attached to the I/O port connector 1 of the I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the I/O subsystem identified in substep 4 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. Go to substep 13 on page 150.



9. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the I/O subsystem recorded in substep 4 on page 149 connects to port 1 of RIO extender card 1 (U0.1-P1-H2.1/Q8) of the base system, record that the I/O subsystem is "not looped left."
10. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8), and reconnect it to RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7).
11. At the I/O subsystem recorded in substep 4 on page 149, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1).
12. Verify that a single RIO cable connects base system RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7) to the I/O subsystem recorded in substep 4 on page 149 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 151.
13. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped one" I/O subsystem) identified in substep 8 on page 149. If the RIO cable attached to the I/O port connector 1 of the "looped one" I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the next I/O subsystem identified in substep 8 on page 149 is "looped two" and record the location of the I/O subsystem that is connected to I/O port connector 1 of the "looped two" subsystem. Go to substep 18.
14. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped one" I/O subsystem) identified in substep 8 on page 149 connects to port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8) of the base system, record that the next I/O subsystem is "looped two."
15. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8), and reconnect it to RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7).
16. At the "looped two" I/O subsystem recorded in substep 14, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 149.
17. Verify that a single RIO cable connects base system RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7) to the I/O subsystem recorded in substep 4 on page 149 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 151.
18. Examine the connection at the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped two" I/O subsystem) identified in substep 13. If the RIO cable attached to the I/O port connector 1 of the "looped two" I/O subsystem connects to the I/O port connector 0 of another I/O subsystem, record that the next I/O subsystem identified in substep 13 is "looped three" and record the location of the I/O subsystem that is connected to I/O port connector 1 of the "looped three" subsystem. Go to substep 23.
19. If the RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped two" I/O subsystem) identified in substep 13 connects to port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8) of the base system, record that the next I/O subsystem is "looped three."
20. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8), and reconnect it to RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7).
21. At the "looped three" I/O subsystem recorded in substep 19, disconnect the I/O port connector 1 (U0.x-P1.1/Q2), and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 149.
22. Verify that a single RIO cable connects base system RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7) to the I/O subsystem recorded in substep 4 on page 149 port connector 0 (U0.x-P1.1/Q1). Go to substep 27 on page 151.
23. The RIO cable attached to the I/O port connector 1 (U0.x-P1.1/Q2) of the next I/O subsystem (the I/O subsystem that is connected to I/O port connector 1 of the "looped three" I/O subsystem) identified in substep 18 must connect to port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8) of the base system, record that the next I/O subsystem is "looped four." A maximum of four I/O subsystems can be looped on a single pair of base system RIO ports.

24. At the base system, disconnect the cable connection at RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8), and reconnect it to RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7).
25. At the "looped four" I/O subsystem recorded in substep 23 on page 150, disconnect the I/O port connector 1 (U0.x-P1.1/Q2) and reconnect to the I/O port connector 0 (U0.x-P1.1/Q1) of the "looped one" I/O subsystem identified in substep 8 on page 149.
26. Verify that a single RIO cable connects base system RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7) to the I/O subsystem recorded in substep 4 on page 149 port connector 0 (U0.x-P1.1/Q1).
27. If an I/O subsystem was "looped two" verify that the "looped one" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped two" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
28. If an I/O subsystem was "looped three" verify that the "looped two" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped three" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
29. If an I/O subsystem was "looped four" verify that the "looped three" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) is connected to the "looped four" I/O subsystem I/O port connector 0 (U0.x-P1.1/Q1).
30. At this point a chain of one to four I/O subsystems are attached to RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7) of the base system.
31. Turn on the power to boot standalone diagnostics from CD.
32. If the Please define the System Console screen is displayed, follow directions to select the system console.
33. Use the Display Configuration and Resource List to list all attached devices and adapters (refer to the *@server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, if necessary).
34. 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 136 to further isolate I/O problems attached to the base system RIO extender card 2 (U0.1-P1-H2.1).

**Yes** The RIO cable that was removed in substep 3 on page 146 or 4 on page 146 above is defective. Replace the RIO cable.

If four I/O subsystems are chained to RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7) of the base system, connect the new RIO cable from the "looped four" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8).

If three I/O subsystems are chained to RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7) of the base system, connect the new RIO cable from the "looped three" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2) to base system RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8).

If two I/O subsystems are chained to RIO port 0 of RIO extender card 2 (U0.1-P1-H2.1/Q7) of the base system, connect the new RIO cable from the "looped two" I/O subsystem I/O port connector 1 (U0.x-P1.1/Q2), to base system RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8).

If the I/O subsystem was "not looped left," connect the new RIO cable from the I/O subsystem recorded in substep 3 on page 146 I/O port connector 1 (U0.x-P1.1/Q2), to base system RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8).

If the I/O subsystem was "not looped right," connect the new RIO cable from the I/O subsystem recorded in substep 4 on page 146 I/O port connector 1 (U0.x-P1.1/Q2), to base system RIO port 1 of RIO extender card 2 (U0.1-P1-H2.1/Q8).

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

### Step 1542-32

Are there any adapters in slots 1, 2, 3, 4, 5, 6, or 7 (location codes U0.1-P1-I1 through I7) in the base system?

**No** Go to "Step 1542-33".

**Yes** Go to "Step 1542-35".

### Step 1542-33

Replace the service processor/PCI backplane, location U0.1-P2

### Step 1542-34

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 *@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 1542-38" on page 153.

**Yes** Go to "Step 1542-20" on page 141.

### Step 1542-35

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 U0.1-P1-I1 through I7) 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 *@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 1542-33".

**Yes** Go to "Step 1542-36".

### Step 1542-36

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 on 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 *@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 1542-37".

**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 1542-20" on page 141.

### Step 1542-37

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 *@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 1542-33" on page 152.

**Yes** Go to "Step 1542-20" on page 141.

### Step 1542-38

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 *@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. Continue repeating 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 1542-20" on page 141.

## MAP 1547: RIO Adapter Card Problem Isolation

### Step 1547-1

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

### Step 1547-2

Turn off the power.

### Step 1547-3

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

- First location code item recorded, if any, in "Step 1547-1".
- Second location code item recorded, if any, in "Step 1547-1".
- RIO connector card 1 at location U0.1-P1-H1, if not recorded in "Step 1547-1".
- RIO extender card 1 at location U0.1-P1-H1.1, if not recorded in "Step 1547-1".
- RIO connector card 2 at location U0.1-P1-H2, if not recorded in "Step 1547-1".
- RIO extender card 2 at location U0.1-P1-H2.1, if not recorded in "Step 1547-1".

### Step 1547-4

Turn on the power.

### Step 1547-5

**Did the system stop with the same error code as recorded in "Step 1547-1"?**

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1547-6".

### Step 1547-6

**Have all the cards listed in "Step 1547-3" been replaced?**

**No** Go to "Step 1547-2".

**Yes** Go to "Step 1547-7".

### Step 1547-7

Turn off the power.

### Step 1547-8

**Attention:** Before replacing the processor backplane, call for support.

Replace the processor backplane at U0.1-P1.

### Step 1547-9

Turn on the power.

### Step 1547-10

Did the system stop with the same error code as recorded in "Step 1547-1" on page 154?

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1547-11".

### Step 1547-11

Turn off the power.

### Step 1547-12

Call for support.

**This ends the procedure.**

## MAP 1548: Memory and Processor Problem Isolation

### Step 1548-1

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

### Step 1548-2

Turn off the power.

### Step 1548-3

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

- First location code item recorded, if any, in "Step 1548-1".
- Second location code item recorded, if any, in "Step 1548-1".
- Third location code item recorded, if any, in "Step 1548-1".
- Fourth location code item recorded, if any, in "Step 1548-1".
- If the error code recorded in "Step 1548-1" is of the form 450x xxxx or 4B2x xxxx then replace the processor card at location U0.1-P1-C1, if not recorded in "Step 1548-1".
- If the error code recorded in "Step 1548-1" is of the form 450x xxxx or 4B2x xxxx then replace the processor card at location U0.1-P1-C2, if not recorded in "Step 1548-1".
- If the error code recorded in "Step 1548-1" is of the form 450x xxxx or 4B2x xxxx then replace the processor card at location U0.1-P1-C3, if not recorded in "Step 1548-1".
- If the error code recorded in "Step 1548-1" is of the form 450x xxxx or 4B2x xxxx then replace the processor card at location U0.1-P1-C4, if not recorded in "Step 1548-1".
- If the error code recorded in "Step 1548-1" is of the form 4B2x xxxx then replace the fabric card at location U0.1-P3, if not recorded in "Step 1548-1".
- If the error code recorded in "Step 1548-1" is of the form 450x xxxx then replace all memory DIMMS on processor card 1 at location U0.1-P1-C1-Mn (*n* equals 1 to 8), if not recorded in "Step 1548-1".
- If the error code recorded in "Step 1548-1" is of the form 450x xxxx then replace all memory DIMMS on processor card 2 at location U0.1-P1-C2-Mn (*n* equals 1 to 8), if not recorded in "Step 1548-1".
- If the error code recorded in "Step 1548-1" is of the form 450x xxxx then replace all memory DIMMS on processor card 3 at location U0.1-P1-C3-Mn (*n* equals 1 to 8), if not recorded in "Step 1548-1".
- If the error code recorded in "Step 1548-1" is of the form 450x xxxx then replace all memory DIMMS on processor card 4 at location U0.1-P1-C4-Mn (*n* equals 1 to 8), if not recorded in "Step 1548-1".
- Service processor/PCI backplane at location U0.1-P2, if not recorded in "Step 1548-1".

### Step 1548-4

Turn on the power.

### Step 1548-5

Did the system stop with the same error code as recorded in “Step 1548-1” on page 155?

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 1548-6”.

### Step 1548-6

Have all the cards listed in “Step 1548-3” on page 155 been replaced?

**No** Go to “Step 1548-2” on page 155.

**Yes** Go to “Step 1548-7”.

### Step 1548-7

Turn off the power.

### Step 1548-8

**Attention:** Before replacing the processor backplane, call for support.

Replace the processor backplane at U0.1-P1.

### Step 1548-9

Turn on the power.

### Step 1548-10

Did the system stop with the same error code as recorded in “Step 1548-1” on page 155?

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 1548-11”.

### Step 1548-11

Turn off the power.

### Step 1548-12

Call for support. **This ends the procedure.**

## 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 1549-8" on page 158.
406x 0EB3	Go to "Step 1549-12" on page 158.
406x 0EB4	Go to "Step 1549-24" on page 160.
406x 0EB5	Go to "Step 1549-20" on page 159.
406x 0EB6	Go to "Step 1549-24" on page 160.
406x 0EB7	Go to "Step 1549-24" on page 160.
406x 0EB8	Go to "Step 1549-24" on page 160.
406x 0EB9	Go to "Step 1549-24" on page 160.
406x 0EBA	Go to "Step 1549-16" on page 159.
406x 0EBB	Go to "Step 1549-24" on page 160.
406x 0EBC	Go to "Step 1549-24" on page 160.

### 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".
- Service processor/PCI backplane at U0.1-P2, if not recorded 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".
- Processor card 3 at U0.1-P1-C3, if not recorded in "Step 1549-1".
- Processor card 4 at U0.1-P1-C4, 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"?**

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1549-7" on page 158.

### Step 1549-7

Have all the cards listed in “Step 1549-4” on page 157 been replaced?

**No** Go to “Step 1549-28” on page 160.

**Yes** Go to “Step 1549-2” on page 157.

### Step 1549-8

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

- First location code item recorded, if any, in “Step 1549-1” on page 157.
- Second location code item recorded, if any, in “Step 1549-1” on page 157.
- Third location code item recorded, if any, in “Step 1549-1” on page 157.
- Service processor/PCI backplane at U0.1-P2, if not recorded in “Step 1549-1” on page 157.
- Processor card 1 at U0.1-P1-C1, if not recorded in “Step 1549-1” on page 157.
- Processor card 2 at U0.1-P1-C2, if not recorded in “Step 1549-1” on page 157.
- Processor card 3 at U0.1-P1-C3, if not recorded in “Step 1549-1” on page 157.
- Processor card 4 at U0.1-P1-C4, if not recorded in “Step 1549-1” on page 157.

### Step 1549-9

Turn on the power.

### Step 1549-10

Did the system stop with the same error code as recorded in “Step 1549-1” on page 157?

**No** The book or module just replaced was defective. **This ends the procedure.**

Return the system to its original configuration. Go to “MAP 0410: Repair Checkout” in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 1549-11”.

### Step 1549-11

Have all the cards listed in “Step 1549-8” been replaced?

**No** “Step 1549-2” on page 157.

**Yes** Go to “Step 1549-28” on page 160.

### Step 1549-12

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

- First location code item recorded, if any, in “Step 1549-1” on page 157.
- Second location code item recorded, if any, in “Step 1549-1” on page 157.
- Third location code item recorded, if any, in “Step 1549-1” on page 157.
- Processor card 1 at U0.1-P1-C1, if not recorded in “Step 1549-1” on page 157.
- Processor card 2 at U0.1-P1-C2, if not recorded in “Step 1549-1” on page 157.
- Service processor/PCI backplane at U0.1-P2, if not recorded in “Step 1549-1” on page 157.

### Step 1549-13

Turn on the power.

### Step 1549-14

Did the system stop with the same error code as recorded in “Step 1549-1” on page 157?

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1549-15".

### **Step 1549-15**

**Have all the cards listed in "Step 1549-12" on page 158 been replaced?**

**No** Go to "Step 1549-2" on page 157.

**Yes** Go to "Step 1549-28" on page 160.

### **Step 1549-16**

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

- First location code item recorded, if any, in "Step 1549-1" on page 157.
- Second location code item recorded, if any, in "Step 1549-1" on page 157.
- Third location code item recorded, if any, in "Step 1549-1" on page 157.
- Processor card 3 at U0.1-P1-C3, if not recorded in "Step 1549-1" on page 157.
- Processor card 4 at U0.1-P1-C4, if not recorded in "Step 1549-1" on page 157.
- Service processor/PCI backplane at U0.1-P2, if not recorded in "Step 1549-1" on page 157.

### **Step 1549-17**

Turn on the power.

### **Step 1549-18**

**Did the system stop with the same error code as recorded in "Step 1549-1" on page 157?**

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 1549-19".

### **Step 1549-19**

**Have all the cards listed in "Step 1549-16" been replaced?**

**No** Go to "Step 1549-2" on page 157.

**Yes** Go to "Step 1549-28" on page 160.

### **Step 1549-20**

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

- First location code item recorded, if any, in "Step 1549-1" on page 157.
- Second location code item recorded, if any, in "Step 1549-1" on page 157.
- Third location code item recorded, if any, in "Step 1549-1" on page 157.
- RIO connector card 1 at location U0.1-P1-H1, if not recorded in "Step 1549-1" on page 157.
- RIO extender card 1 at location U0.1-P1-H1.1, if not recorded in "Step 1549-1" on page 157.
- RIO connector card 1 at location U0.1-P1-H2, if not recorded in "Step 1549-1" on page 157.
- RIO extender card 2 at location U0.1-P1-H2.1, if not recorded in "Step 1549-1" on page 157.
- Service processor/PCI backplane at U0.1-P2, if not recorded in "Step 1549-1" on page 157.

### **Step 1549-21**

Turn on the power.

### **Step 1549-22**

**Did the system stop with the same error code as recorded in "Step 1549-1" on page 157?**

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 1549-23”.

### **Step 1549-23**

**Have all the cards listed in “Step 1549-20” on page 159 been replaced?**

**No** Go to “Step 1549-2” on page 157.

**Yes** Go to “Step 1549-28”.

### **Step 1549-24**

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

- Replace the service processor/PCI backplane at U0.1-P2, if not recorded in “Step 1549-1” on page 157.
- First location code item recorded, if any, in “Step 1549-1” on page 157.
- Second location code item recorded, if any, in “Step 1549-1” on page 157.
- Third location code item recorded, if any, in “Step 1549-1” on page 157.

### **Step 1549-25**

Turn on the power.

### **Step 1549-26**

**Did the system stop with the same error code as recorded in “Step 1549-1” on page 157?**

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 1549-27”.

### **Step 1549-27**

**Have all the cards listed in “Step 1549-24” been replaced?**

**No** Go to “Step 1549-2” on page 157.

**Yes** Call for support. **This ends the procedure.**

### **Step 1549-28**

Turn off the power.

### **Step 1549-29**

**Attention:** Before replacing the system backplane, call for support.

Replace the system backplane at U0.1-P1.

### **Step 1549-30**

Turn on the power.

### **Step 1549-31**

**Did the system stop with the same error code as recorded in “Step 1549-1” on page 157?**

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 1549-32”.

### **Step 1549-32**

Call for support. **This ends the procedure.**



## MAP 154A: I2C Bus Problem Isolation

### Step 154A-1

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

### Step 154A-2

Turn off the power.

### Step 154A-3

Examine the following table and locate the error code that sent you to this MAP to determine your next step.

Error Code	Action
B1xx 4643	Go to "Step 154A-8" on page 162.
1011 8400, 1011 8401, 1011 8402, 1011 840A, 1011 840B, B1xx 4644, B1xx 4645, B1xx 4646, B1xx 4648, 1011 8409, 406x 0CA5,	Go to "Step 154A-4".

### Step 154A-4

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

- First location code item recorded, if any, in "Step 154A-1".
- Second location code item recorded, if any, in "Step 154A-1".
- RIO connector card 1 at location U0.1-P1-H1, if not recorded in "Step 154A-1".
- RIO extender card 1 at location U0.1-P1-H1.1, if not recorded in "Step 154A-1".
- RIO connector card 2 at location U0.1-P1-H2, if not recorded in "Step 154A-1".
- RIO extender card 2 at location U0.1-P1-H2.1, if not recorded in "Step 154A-1".
- Processor card at location U0.1-P1-C1 if not recorded in "Step 154A-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 154A-1".
- Processor card at location U0.1-P1-C2, if not recorded in "Step 154A-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 154A-1".
- Processor card at location U0.1-P1-C3, if not recorded in "Step 154A-1".
- All memory DIMMS on processor card 3 at location U0.1-P1-C3-Mn (*n* equals 1 to 8), if not recorded in "Step 154A-1".
- Processor card at location U0.1-P1-C4, if not recorded in "Step 154A-1".
- All memory DIMMS on processor card 4 at location U0.1-P1-C4-Mn (*n* equals 1 to 8), if not recorded in "Step 154A-1".
- Replace the service processor/PCI backplane at U0.1-P2, if not recorded in "Step 154A-1".
- Operator panel at U0.1-L1, if not recorded in "Step 154A-1".
- DASD backplane at U0.1-P4, if not recorded in "Step 154A-1".
- Media backplane at U0.1-P5, if not recorded in "Step 154A-1".
- Base system power supply 1 at U0.1-V1, if not recorded in "Step 154A-1".
- Base system power supply 2 at U0.1-V2, if not recorded in "Step 154A-1".
- Fabric backplane at U0.1-P3, if not recorded in "Step 154A-1".

### Step 154A-5

Turn on the power.

### Step 154A-6

**Did the system stop with the same error code as recorded in "Step 154A-1"?**

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 154A-7".

### **Step 154A-7**

**Have all the cards listed in "Step 154A-4" on page 161 been replaced?**

**No** Go to "Step 154A-2" on page 161.

**Yes** Go to "Step 154A-13".

### **Step 154A-8**

**Is the value recorded in "Step 154A-1" on page 161 for word 13 of this error code equal to A218xxxx, A219xxxx, A21Bxxxx, A220xxxx, A221xxxx, A222xxxx, or A223xxxx?**

**No** Go to "Step 154A-4" on page 161.

**Yes** Go to "Step 154A-9".

### **Step 154A-9**

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

- First location code item recorded, if any, in "Step 154A-1" on page 161.
- Second location code item recorded, if any, in "Step 154A-1" on page 161.
- Check the service processor-to-system backplane flex cable connections.
- If you are trying to turn on the identify LED replace the component at the location you selected..
- Service processor/PCI backplane, at location U0.1.P2, if not recorded in "Step 154A-1" on page 161.

### **Step 154A-10**

Turn on the power.

### **Step 154A-11**

**Did the system stop with the same error code as recorded in "Step 154A-1" on page 161?**

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to "Step 154A-12" on page 158.

### **Step 154A-12**

**Have all the cards listed in "Step 154A-9" been replaced?**

**No** Go to "Step 154A-2" on page 161.

**Yes** Go to "Step 154A-13".

### **Step 154A-13**

Turn off the power.

### **Step 154A-14**

**Attention:** Before replacing the system backplane, call for support.

Replace the system backplane at U0.1-P1.

### **Step 154A-15**

Turn on the power.

### **Step 154A-16**

**Did the system stop with the same error code as recorded in "Step 154A-1" on page 161?**

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes**     Go to “Step 154A-17”.

**Step 154A-17**

Turn off the power.

**Step 154A-18**

Call for support. **This ends the procedure.**

## MAP 154B: Insufficient Hardware Resources Problem Isolation

### Step 154B-1

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

### Step 154B-2

Turn off the power.

### Step 154B-3

Make sure the power is off on the base system drawer.

### Step 154B-4

**Attention:** Before replacing any parts examine the base system drawer for violation of any of the following configuration constraints.

- At least one 2-way processor is installed.
- At least one quad of DIMMs is installed on any of the installed processor cards at locations: U0.1-P1-Cx-My, where x is 1, 2, 3, or 4 and y is 1, 3, 6, and 8 on the same processor card.
- Quads are populated in DIMM slots 1, 3, 6, 8 first, and then 2, 4, 5, 7
- It is not required for capacity upgrade on demand processor cards to be activated in order for any memory on that card to be used.
- The RIO connector card 1 at location U0.1-P1-H1 is installed.

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

- First location code item recorded, if any, in "Step 154B-1".
- Second location code item recorded, if any, in "Step 154B-1".
- Third location code item recorded, if any, in "Step 154B-1".
- IF the value of word 13, recorded in "Step 154B-1", is 402F0000, 403F0000, or 40FF0000, replace the following, if installed:
  - Processor card 1 at location U0.1-P1-C1, if not recorded in "Step 154B-1".
  - Memory DIMMs at locations U0.1-P1-C1-M1, M3, M6, M8, if not recorded in "Step 154B-1".
  - Memory DIMMs at locations U0.1-P1-C1-M2, M4, M5, M7, if not recorded in "Step 154B-1".
- IF the value of word 13, recorded in "Step 154B-1", is 40600000, replace the RIO connector card at location U0.1-P1-H1, if not recorded in "Step 154B-1".
- IF the value of word 13, recorded in "Step 154B-1", is 41100000, replace the service processor/PCI backplane at location U0.1-P2, if not recorded in "Step 154B-1".
- Service processor/PCI backplane at U0.1-P2, if not replaced in a previous step.
- Processor backplane at U0.1-P1, if not recorded in "Step 154B-1".

### Step 154B-5

Turn on the power.

### Step 154B-6

**Did the system stop with the same error code as recorded in "Step 154B-1"?**

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

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

**Yes** Go to "Step 154B-7".

### Step 154B-7

**Have all the cards listed in "Step 154B-4" been replaced?**

**No** Go to "Step 154B-2".

**Yes** Go to “Step 154B-8”.

### Step 154B-8

Turn off the power.

### Step 154B-9

Ensure that the power is off on the base system drawer.

### Step 154B-10

**Attention:** Before replacing the processor backplane, call for support.

Replace the processor backplane at U0.1-P1.

### Step 154B-11

Turn on the power.

### Step 154B-12

**Did the system stop with the same error code as recorded in “Step 154B-1” on page 164?**

**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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

**Yes** Go to “Step 154B-13”.

### Step 154B-13

Turn off the power.

### Step 154B-14

Call for support. **This ends the procedure.**

## 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 you recorded in “Step 154C-1” in the following table and perform the indicated action. The I/O drawer connections in the following table are for the 7311 Model D10 I/O Subsystem. If the I/O drawer referred to in the table below is a 7311 Model D20 I/O Subsystem, use the location code(s) in parenthesis.

Word 13 value	Action
A780 xxxx	Replace the SPCN cable attached to U0.1-P2/Q12 of the base system drawer.
A781 xxxx	<ol style="list-style-type: none"><li>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 (U0.dd-P1/Q5).</li><li>Replace the SPCN cable attached to connector U0.dd-P1/Q5 (U0.dd-P1/Q6) of this I/O drawer.</li></ol>

Word 13 value	Action
A782 xxxx	<ol style="list-style-type: none"> <li>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 (U0.dd-P1/Q5).</li> <li>Trace the SPCN cable attached to connector U0.dd-P1/Q5 (U0.dd-P1/Q6) of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4 (U0.dd-P1/Q5).</li> <li>Replace the SPCN cable attached to connector U0.dd-P1/Q5 (U0.dd-P1/Q6) of this I/O drawer.</li> </ol>
A783 xxxx	<ol style="list-style-type: none"> <li>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 (U0.dd-P1/Q5).</li> <li>Trace the SPCN cable attached to connector U0.dd-P1/Q5 (U0.dd-P1/Q6) of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4 (U0.dd-P1/Q5).</li> <li>Trace the SPCN cable attached to connector U0.dd-P1/Q5 (U0.dd-P1/Q6) of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4 (U0.dd-P1/Q5).</li> <li>Replace the SPCN cable attached to connector U0.dd-P1/Q5 (U0.dd-P1/Q6) of this I/O drawer.</li> </ol>
A784 xxxx	<ol style="list-style-type: none"> <li>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 (U0.dd-P1/Q5).</li> <li>Trace the SPCN cable attached to connector U0.dd-P1/Q5 (U0.dd-P1/Q6) of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4 (U0.dd-P1/Q5).</li> <li>Trace the SPCN cable attached to connector U0.dd-P1/Q5 (U0.dd-P1/Q6) of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4 (U0.dd-P1/Q5).</li> <li>Trace the SPCN cable attached to connector U0.dd-P1/Q5 (U0.dd-P1/Q6) of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q4 (U0.dd-P1/Q5).</li> <li>Replace the SPCN cable attached to connector U0.dd-P1/Q5 (U0.dd-P1/Q6) of this I/O drawer.</li> </ol>
A785 xxxx	<ol style="list-style-type: none"> <li>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 (U0.dd-P1/Q6).</li> <li>Trace the SPCN cable attached to connector U0.dd-P1/Q4 (U0.dd-P1/Q5) of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q5 (U0.dd-P1/Q6).</li> <li>Trace the SPCN cable attached to connector U0.dd-P1/Q4 (U0.dd-P1/Q5) of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q5 (U0.dd-P1/Q6).</li> <li>Replace the SPCN cable attached to connector U0.dd-P1/Q4 (U0.dd-P1/Q5) of this I/O drawer.</li> </ol>
A786 xxxx	<ol style="list-style-type: none"> <li>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 (U0.dd-P1/Q6).</li> <li>Trace the SPCN cable attached to connector U0.dd-P1/Q4 (U0.dd-P1/Q5) of this I/O drawer back to an attached I/O drawer connector U0.dd-P1/Q5 (U0.dd-P1/Q6).</li> <li>Replace the SPCN cable attached to connector U0.dd-P1/Q4 (U0.dd-P1/Q5) of this I/O drawer.</li> </ol>
A787 xxxx	<ol style="list-style-type: none"> <li>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 (U0.dd-P1/Q6).</li> <li>Replace the SPCN cable attached to connector U0.dd-P1/Q4 (U0.dd-P1/Q5) of this I/O drawer.</li> </ol>
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 165?

- 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.
- Yes** If an I/O drawer will not power on, go to "Map 1522: Cannot Power On the I/O Drawer" on page 114. Otherwise, call service support.





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## 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 media subsystem operator panel and in a virtual terminal window on the HMC.

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### 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 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**

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

**Notes:**

1. Go to “MAP 1548: Memory and Processor Problem Isolation” on page 155 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.
  - For a four-digit code in the range of 8xxx-E4FF, E5Ex, or E700-EFFF, 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 129 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.
  - For a four-digit code in the range of E500 through E6FF (except E5Ex - see note 1 above), 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

Use the following table to determine where to find the checkpoint.

Symptom	Action
You have a code that is of the form 8xxx, 9xxx, Axxx, or Bxxx.	Go to “Service Processor Checkpoints” on page 173.
You have a code of the form Exxx.	Go to “Firmware Checkpoints” on page 180.
You have a four-character code that is NOT of the form 8xxx, 9xxx, Axxx, Bxxx, or Exxx.	Refer to the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> 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 180.

**Note:** A spinning (or twirling) slash displays in the upper-right corner of the operator panel display while some checkpoints are being displayed. If the slash stops spinning, a hang condition is indicated.

Table 1. Service Processor Checkpoints

Checkpoint	Description	Action/ Possible Failing FRU
8000	Test of the service processor DRAM	See note 1 on page 178.
8004	Verify base code checksum	See note 1 on page 178.
8008	Verify base code mirror checksum	See note 1 on page 178.
8009	Set NVRAM configuration in TITAN	See note 1 on page 178.
800F	Start base code	See note 1 on page 178.
8010	Start supervisor in base code	See note 1 on page 178.
8012	Initialize hardware interrupts	See note 1 on page 178.
8014	Allocate and initialize area in DRAM	See note 1 on page 178.
8016	Initialize debugger and build VPD	See note 1 on page 178.
8018	Initialize service processor interfaces	See note 1 on page 178.
801A	Initialize external FLASH load	See note 1 on page 178.
801B	Initialize and test ISA hub chip	See note 1 on page 178.
801C	Initialize and test SUPER I/O chip	See note 1 on page 178.
801F	Initialize diskette, verify VDASD and start operational loader	See note 1 on page 178.
809x	Related to recovery mode system firmware update from diskette	See note 3 on page 178.
8092	Diskette initialization during recovery mode system firmware update	See note 3 on page 178.
8098	Firmware image being read during recovery mode system firmware update	See note 3 on page 178.
809C	Firmware image being written during recovery mode system firmware update	See note 3 on page 178.
809F	Diskette error during recovery mode system firmware update	See note 3 on page 178.
8100	Start operational loader	See note 1 on page 178.
81xx	Load code into DRAM from VDASD (where xx = number of loads)	See note 1 on page 178.
81FE	Load service processor operating system	See note 1 on page 178.
81FF	Start service processor operating system	See note 1 on page 178.
9000	Primary service processor task initializing	See note 1 on page 178.
9009	System processor IPL has started	See note 1 on page 178.
9010	Primary service processor thread waiting for response	See note 1 on page 178.
9020	Service processor state set to pre-standby	See note 1 on page 178.

Table 1. Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
9021	Service processor state set to standby	See note 1 on page 178.
9022	Service processor state set to IPL	See note 1 on page 178.
9023	Service processor state set to runtime	See note 1 on page 178.
9024	Service processor state set to terminate	See note 1 on page 178.
9025	Service processor state set to DPO	See note 1 on page 178.
9030	Waiting for secondary thread acknowledgement	See note 1 on page 178.
9033	I/O base initialization	See note 1 on page 178.
9034	I2C initialization	See note 1 on page 178.
9035	ISA initialization	See note 1 on page 178.
9036	Mailbox initialization	See note 1 on page 178.
9037	SLLA initialization (VPD)	See note 1 on page 178.
9038	NVRAM initialization	See note 1 on page 178.
9039	Serial port initialization	See note 1 on page 178.
903A	Serial I/O initialization	See note 1 on page 178.
903B	SPCN initialization	See note 1 on page 178.
9051	End of reset/reload operation: service processor dump has completed	See note 1 on page 178.
9055	Start menus thread	See note 1 on page 178.
9060	Checking/configuring modem on serial port 0	See note 4 on page 178.
9061	Checking/configuring modem on serial port 1	See note 4 on page 178.
906A	Create mailbox processing thread	See note 1 on page 178.
906B	Create menu interface thread	See note 1 on page 178.
906C	Create general thread	See note 1 on page 178.
906D	Create SPCN thread	See note 1 on page 178.
9070	Create thread to control LEDs on I/O subsystems	See note 1 on page 178.
9071	Initialize thread to control LEDs on I/O subsystems	See note 1 on page 178.
9080	Start VPD collection program	See note 1 on page 178.
9081	Start SC VPD data collection	See note 1 on page 178.
9082	I2C/SPCN VPD data collection	See note 1 on page 178.
9083	End SC VPD data collection	See note 1 on page 178.
9084	End I2C/SPCN VPD data collection	See note 1 on page 178.
90FD	Waiting for IBIST to complete	See note 1 on page 178.
9101	Setup load source	See note 1 on page 178.
9102	Open load source	See note 1 on page 178.
9103	Verify open status of load source	See note 1 on page 178.

Table 1. Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
9104	Waiting for SPCN VPD collection to be completed	See note 1 on page 178.
9105	Load IPL LIDs	See note 1 on page 178.
9106	Initialize MOPs	See note 1 on page 178.
9107	System flush	See note 1 on page 178.
9108	Processor scan interface BATs and LBIST	See note 1 on page 178.
9109	ABIST	See note 1 on page 178.
910A	Non-processor scan interface BATs and LBIST	See note 1 on page 178.
910B	Wire test	See note 1 on page 178.
910C	Initialize main storage (system memory)	See note 1 on page 178.
910D	Configure processors	See note 1 on page 178.
910E	Configure and initialize I/O	See note 1 on page 178.
910F	Test and initialize main storage (system memory)	See note 1 on page 178.
9110	Free IPL LIDs	See note 1 on page 178.
9111	Load run-time LIDS	See note 1 on page 178.
9112	Load dump LIDs	See note 1 on page 178.
9113	Enable attention	See note 1 on page 178.
9114	Enable function 22	See note 1 on page 178.
9115	Load system IPL program	See note 1 on page 178.
9116	Load system data areas (NACA/PACA)	See note 1 on page 178.
9117	Start system IPL program	See note 1 on page 178.
9119	Waiting for VPD collection to complete	See note 1 on page 178.
9184	Firmware image being loaded into service processor's control storage during firmware update.	<ol style="list-style-type: none"> <li>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.</li> <li>2. Call service support.</li> </ol>
91C4	Flash update pending, either a firmware update or hypervisor dump.	<p><b>Note:</b> 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.</p> <p>See note 1 on page 178.</p>
91FF	Control being handed to system processor from service processor	See note 1 on page 178.
9200	Scan interface BATs	See note 1 on page 178.

Table 1. Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
9300	Logic BIST	See note 1 on page 178.
9301	Scanned ABIST	See note 1 on page 178.
9302	Dedicated ABIST	See note 1 on page 178.
9303	Dedicated ABIST array fuse repair calculation	See note 1 on page 178.
9380	Built-in-self-test (BIST)	See note 2 on page 178.
9400	Service processor is requesting system flush	See note 1 on page 178.
9410	Service processor is issuing request to start instruction execution	See note 1 on page 178.
9411	Service processor is issuing request to stop instruction execution	See note 1 on page 178.
9420	Service processor is issuing request to start system clocks	See note 1 on page 178.
9421	Service processor is issuing request to stop system clocks	See note 1 on page 178.
94B0	Wire test faulty driver status refcode	See note 2 on page 178.
94B1	Wire test shorted net status refcode	See note 2 on page 178.
94B2	Wire test elastic interface test	See note 2 on page 178.
94BB	Wire test starting	See note 2 on page 178.
9501	IPL diagnostic initialization	See note 2 on page 178.
9502	IPL diagnostic L3 cache march test	See note 2 on page 178.
9503	IPL diagnostic L3 connections test	See note 2 on page 178.
9504	IPL diagnostic L2 cache march test	See note 2 on page 178.
9505	IPL diagnostic RIO wrap test	See note 2 on page 178.
9506	IPL diagnostic cleanup	See note 2 on page 178.
9507	IPL diagnostic test	See note 2 on page 178.
9508	IPL diagnostic main storage march test	See note 2 on page 178.
9509	IPL diagnostic main storage connections test	See note 2 on page 178.
950A	IPL diagnostic elastic interface slack test	See note 2 on page 178.
950B	IPL diagnostic fast initialization to zeros	See note 2 on page 178.
96C2	IPL MOPs processor configuration	See note 2 on page 178.
96C3	IPL MOPs main storage size	See note 2 on page 178.
96C4	IPL MOPs main storage configuration	See note 2 on page 178.
96C6	IPL MOPs I/O configuration	See note 2 on page 178.
96C7	IPL MOPs: enable chip machine checks	See note 2 on page 178.
96E1	Initialize run-time PRD objects and memory	See note 2 on page 178.
96E2	Run-time initialization: enable attention handling	See note 2 on page 178.
99EE	Firmware update module corrupted	See note 3 on page 178.



Table 1. Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
99FD	Service processor receiving firmware update module	<p>See note 3 on page 178.</p> <p><b>Attention:</b> 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.</p> <p><b>Attention:</b> Do not remove power from the system, or reset the service processor, during a firmware update or hypervisor dump.</p>
99FF	Service processor writing firmware update module	<p>See note 3 on page 178.</p> <p><b>Attention:</b> 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.</p> <p><b>Attention:</b> Do not remove power from the system, or reset the service processor, during a firmware update or hypervisor dump.</p>
A800	Start service processor dump process	See note 1 on page 178.
A801	Start dump to NVRAM	See note 1 on page 178.
A802	Start dump to debug port	See note 1 on page 178.
A803	NVRAM not usable	See note 1 on page 178.
A804	NVRAM dump done	See note 1 on page 178.
A805	Start dump to flash	See note 1 on page 178.
A806	Flash dump area done	See note 1 on page 178.
A807	Flash area not usable	See note 1 on page 178.
A808	Flash error log to debug port	See note 1 on page 178.
A809	Flash erase start	See note 1 on page 178.
A80A	Flash erase end	See note 1 on page 178.
A80B	Reserved; not used	See note 1 on page 178.
A80C	Reserved; not used	See note 1 on page 178.
A80D	Reserved; not used	See note 1 on page 178.
A80E	Reserved; not used	See note 1 on page 178.
A80F	Service processor dump done	See note 1 on page 178.

Table 1. Service Processor Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
A810-A8FF	Scan log dump in progress	<p>Informational message. (See “Scan Log Dump Policy” on page 426.)</p> <p>The last two characters of the checkpoints will change as the scan log dump progresses. If the last two characters do not change after five minutes, the service processor is hung and must be reset. Follow the procedure outlined in Note 1 following this table.</p> <p>When the scan log dump is complete, depending on how the reboot policy is set, the system will either:</p> <ul style="list-style-type: none"> <li>Go to the standby state (and the service processor menus will be available), indicated by OK or STBY in the operator panel,</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Attempt to reboot.</li> </ul>
B0F5	Delayed power-off sequence has begun	See note 1.
B0FA	Delayed power-off acknowledged	See note 1.
B0FF	Power-off requested program executing	See note 1.

**Notes:**

- If the system fails to progress after this checkpoint is put in the display, do the following:
  - Activate the service processor pinhole reset switch on the system's operator panel.
  - If the hang repeats, check with service support to see if there is a firmware update that fixes the problem.
  - If not, or the update does not fix the problem, replace the service processor/PCI backplane, location: U0.1-P2.
  - If this procedure does not fix the problem, call service support.
- If the system fails to progress after this checkpoint is put in the operator display, do the following:
  - Activate the service processor pinhole reset switch on the system's operator panel.
  - 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.
  - If not, or the update does not fix the problem, call service support.
- Recovery mode flash update has failed. Do the following:
  - Activate the service processor pinhole reset switch on the system's operator panel and try the recovery mode flash update again.
  - 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.
  - If the same hang occurs with the new diskettes, replace the following FRUs one at a time in this order:
    - Diskette drive
    - Service processor/PCI backplane, location: U0.1-P2
  - If this procedure does not fix the problem, call service support.
- The service processor was unable to configure the modem(s) attached to the serial port(s) on the service processor/PCI 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.

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## 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 173.

If you have a checkpoint with no location code associated with it, see “Determining the Location Code” on page 219. If a checkpoint has a location code associated with a FRU replacement, see “AIX and Physical Location Code Reference Tables” on page 29 for physical location information.

If you replace FRUs and the problem is still not corrected, go to “MAP 1542: I/O Problem Isolation” on page 129 unless otherwise indicated in the tables.

**Note:** If you receive a four-digit code in the range of E1xx to EFFF that is not listed in the table above, go to “MAP 1542: I/O Problem Isolation” on page 129.

*Table 2. Firmware Checkpoints*

Checkpoint	Description	Action/ Possible Failing FRU
E101	Create RTAS node	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E102	Load/Init RTAS	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E105	Transfer control to operating system (normal boot).	See “Boot Problems” on page 214.
E10A	Load RTAS device tree	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E10B	Set RTAS device properties	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E111	GOOD CRC - jump to composite image	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E120	Initialize I/O and early memory block	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E121	Initialize service processor	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E122	RTAS sensor setup complete	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E130	Build device tree	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E131	Build device tree	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E132	Build device tree, just before setting up root node	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E133	Build device tree, just before setting up root note	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E134	Create memory node	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E135	Configuring memory notes	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E138	Create options node	Go to “MAP 1540: Problem Isolation Procedures” on page 127.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E139	Create node aliases and system aliases	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E13A	Create packages node	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E140	Operating system load	See “Boot Problems” on page 214.
E149	Create boot mgr node	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E14C	Create terminal-emulator node	Go to “MAP 1540: Problem Isolation Procedures” on page 127.
E14D	Loading boot image	See “Boot Problems” on page 214.
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 1542: I/O Problem Isolation” on page 129.
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 1542: I/O Problem Isolation” on page 129.
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 1542: I/O Problem Isolation” on page 129.
E158	System firmware waiting for virtual terminal to be opened on HMC for SMS menu to be displayed	Open a virtual terminal window on the HMC.
E15B	Transferring control to operating system (service mode boot)	See “Boot Problems” on page 214.
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.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E174	Establishing host connection	<p>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.</p> <p>Restart the system and get to the SMS utilities menu. In the multi-boot menu, verify:</p> <ul style="list-style-type: none"> <li>• Is the intended boot device correctly specified in the boot list?</li> <li>• Are the IP parameters correct?</li> <li>• Look at the server configuration for this client.</li> <li>• Attempt to ping the target server using the ping utility in SMS.</li> </ul>
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" on page 214.
E17B	Processor clock speed measurement	Call service support.
E183	Service processor POST	<ol style="list-style-type: none"> <li>1. Replace the service processor, location: U0.1-P2.</li> <li>2. Go to "MAP 1541: JTAG Problem Isolation" on page 128.</li> </ol>
E18D	A system reset request has been sent to the service processor	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
E191	Create ISA reserved node	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E19A	NVRAM auto-boot? variable not found - assume FALSE	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E19B	NVRAM menu? variable not found - assume FALSE	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E19D	Create NVRAM node	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E19E	Real-time clock (RTC) initialization	Refer to error code 28030xxx in "Firmware/POST Error Codes" on page 237.
E1A0	User requested boot to SMS menus via keyboard entry	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1A1	User requested boot to open firmware prompt via keyboard entry	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1A2	User requested boot using default service mode boot list via keyboard entry	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1A3	User requested boot using customized service mode boot list via keyboard entry	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1A4	User requested boot to SMS menus via HMC or CSP command	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1A5	User requested boot to open firmware prompt via HMC or CSP command	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1A6	User requested boot using default service mode boot list via HMC or CSP command	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1A7	User requested boot using customized service mode boot list via HMC or CSP command	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1A8	System booting to open firmware prompt	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1A9	System booting to SMS menus	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1AA	System NVRAM settings during boot	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1AB	System booting using default service mode boot list	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1AC	System booting using customized service mode boot list	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1AD	System booting to operating system	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1AE	System booted to multiboot menu via NVRAM settings	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1AF	System booted to utilities menu via NVRAM settings	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1B1	Create serial node	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1B6	Probe for (ISA) keyboard	Replace the service processor/PCI backplane, Location: U0.1-P2.
E1BD	Probe for (ISA) mouse	Replace the Service processor/PCI backplane, Location: U0.1-P2.
E1C4	Build ISA timer chip node	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1C5	Create ISA interrupt controller (pic) node	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1C6	Create DMA node	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1D0	Create PCI SCSI node	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1D3	Create SCSI block device node (SD)	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1D4	Create SCSI byte device node (ST)	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1DB	Create floppy controller (FDC) node	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1DC	Dynamic console selection.	<ol style="list-style-type: none"> <li>1. If a console is attached, but nothing is displayed on it, go to "All display problems" in the Entry MAP.</li> <li>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: <ol style="list-style-type: none"> <li>a. If selecting the console with a keyboard attached to the processor subsystem, replace the keyboard, then replace the service processor/PCI backplane Location: U0.1-P2.</li> <li>b. If selecting the console with an ASCII terminal, suspect the terminal. Use the problem determination procedures for the terminal.</li> </ol> </li> </ol> <p><b>Note:</b> Terminal setting should be:</p> <ul style="list-style-type: none"> <li>• 9600 baud</li> <li>• no parity</li> <li>• 8 data bits</li> <li>• 1 stop bit</li> </ul>
E1F0	Start O.B.E.	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
E1F1	Begin selftest sequence on boot devices.	Go to "MAP 1542: I/O Problem Isolation" on page 129.
E1F2	Power-on password prompt	<p>The prompt should be visible on the firmware console (usually a VTERM on the HMC).</p> <p>If a console is attached but nothing is displayed on it, go to the "Entry MAP" on page 73 with the symptom "All display problems."</p>
E1F3	Privileged-access password prompt	<p>The prompt should be visible on the firmware console (usually a VTERM on the HMC).</p> <p>If a console is attached but nothing is displayed on it, go to the "Entry MAP" on page 73 with the symptom "All display problems."</p>
E1F4	End self-test sequence on boot devices; begin SMS.	Go to "MAP 1542: I/O Problem Isolation" on page 129.
E1F5	Build boot device list	Go to "MAP 1542: I/O Problem Isolation" on page 129.



Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E1F6	Determine boot device sequence	Go to “MAP 1542: I/O Problem Isolation” on page 129.
E1F7	No boot image located	Go to “Boot Problems” on page 214.
E1F8	Partition (system firmware) is waiting for a virtual terminal to be opened on the HMC.	Open a virtual terminal for the partition on the HMC.  If the partition hangs at this checkpoint after a virtual terminal is opened on the HMC: 1. Replace the service processor/PCI backplane Location: U0.1-P2 2. Call service support.
E1F9	Building boot device list for fibre-channel adapters. (The location of the SAN adapter being scanned is also displayed.)	Go to “MAP 1542: I/O Problem Isolation” on page 129.
E1FA	Building boot device list for SCSI adapters. (The device ID and the device LUN being scanned code are also displayed.)	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 1542: I/O Problem Isolation” on page 129.
E1FB	Scan SCSI bus for attached devices	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 1542: I/O Problem Isolation” on page 129.
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 1542: I/O Problem Isolation” on page 129.
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 129.
E20F	System firmware has exited to open firmware prompt.	1. Replace the service processor/PCI backplane Location: U0.1-P2 2. Call service support.
E440	Validate NVRAM, initialize partitions as needed	1. Check for system firmware updates. 2. Replace the service processor/PCI backplane, Location: U0.1-P2. 3. Call service support.
E441	Generate /options node NVRAM configuration variable properties	1. Check for system firmware updates. 2. Replace the service processor/PCI backplane Location: U0.1-P2 3. Call service support.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E442	Validate NVRAM partitions	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the service processor/PCI backplane, Location: U0.1-P2.</li> <li>3. Call service support.</li> </ol>
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	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E501	Initialize I/O data structures	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E502	Set up I/O data structure pointers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E503	Initialize location code data structures	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E504	Initialize memory map data structures	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E505	Enable the time base for all RIO hubs	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E506	Reset time base of processors	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E507	I/O hub assignment	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E508	Begin initializing I/O hubs	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E509	Begin configuring EADS chips in I/O subsystems	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E50A	Check for missing I/O interface chips	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E50B	Save I/O hub information	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E50C	Copy all of the memory ranges	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E50D	Copy all of the I/O data	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E50E	Copy all of the I/O hub information	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E50F	Clean up the error registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E51F	End of I/O configuration	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E520	Set up the I/O architecture registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E521	Set up interrupts for the current I/O hub	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E522	Set up miscellaneous registers for the current I/O hub	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E523	Initialize data structures and enable all I/O hub ports	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E524	Determine I/O configuration of current I/O hub	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E525	Set up the ETE of the current I/O hub	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E526	Reassign the I/O subsystems to the nearest I/O hub	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO adapter that the failing I/O subsystem is attached to.</li> <li>3. Replace the I/O subsystem backplane that the RIO cable in step 1 is attached to.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E527	Enable the memory map and I/O map for the current I/O hub port	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E528	Begin search for the next available I/O drawer from a current RIO port	<ol style="list-style-type: none"> <li>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.</li> <li>2. Verify that the entire RIO loop associated with the location code is cabled correctly.</li> <li>3. 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.</li> <li>4. Replace the RIO connector card specified by the location code, or the RIO connector card to which the RIO cables in step 1 are attached.</li> <li>5. Replace the I/O subsystem backplane specified by the location code, or the I/O subsystem backplane to which the RIO cables in step 1 are attached.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E529	Enable the control port and driver of the current RIO hub	<ol style="list-style-type: none"> <li>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.</li> <li>2. Verify that the entire RIO loop associated with the location code is cabled correctly.</li> <li>3. 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.</li> <li>4. Replace the RIO connector card specified by the location code, or the RIO connector card to which the RIO cables in step 1 are attached.</li> <li>5. Replace the I/O subsystem backplane specified by the location code, or the I/O subsystem backplane to which the RIO cables in step 1 are attached.</li> </ol>
E52A	Search for the next available I/O drawer from a current RIO port	<ol style="list-style-type: none"> <li>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.</li> <li>2. Verify that the entire RIO loop associated with the location code is cabled correctly.</li> <li>3. 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.</li> <li>4. Replace the RIO connector card specified by the location code, or the RIO connector card to which the RIO cables in step 1 are attached.</li> <li>5. Replace the I/O subsystem backplane specified by the location code, or the I/O subsystem backplane to which the RIO cables in step 1 are attached.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E52B	The RIO cable connected to the RIO port has been detected	<ol style="list-style-type: none"> <li>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.</li> <li>2. Verify that the entire RIO loop associated with the location code is cabled correctly.</li> <li>3. 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.</li> <li>4. Replace the RIO connector card specified by the location code, or the RIO connector card to which the RIO cables in step 1 are attached.</li> <li>5. Replace the I/O subsystem backplane specified by the location code, or the I/O subsystem backplane to which the RIO cables in step 1 are attached.</li> </ol>
E52D	Disable the anynode mode	Replace the I/O subsystem backplane to which the RIO cable specified by the location code is attached.
E52F	End of configuration of the RIO hub	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E530	Checking I/O hub ports on current I/O hub	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E531	Get I/O hub node ID	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card in the processor subsystem to which the failing I/O subsystem is attached.</li> <li>3. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>5. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E532	RIO cable detected; enable the I/O hub port	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card in the processor subsystem to which the failing I/O subsystem is attached.</li> <li>3. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>5. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E533	Set up the I/O hub routing table	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card in the processor subsystem to which the failing I/O subsystem is attached.</li> <li>3. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>5. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E534	Get the node ID of the node on the other end of the RIO cable	<ol style="list-style-type: none"> <li>1. This error code may indicate that the RIO cables are not properly connected to the I/O subsystems. Check the RIO cabling; refer to “Subsystem Positioning and Cabling” on page 8.</li> <li>2. Replace the RIO cable specified by the location code.</li> <li>3. Replace the RIO connector card in the processor subsystem to which the failing I/O subsystem is attached.</li> <li>4. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 2 is attached.</li> <li>5. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 2 is attached.</li> <li>6. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E535	Valid node ID detected at other end of the RIO cable	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card in the processor subsystem to which the failing I/O subsystem is attached.</li> <li>3. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>5. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E536	I/O subsystem detected at other end of the RIO cable	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>



Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E537	Configuring the I/O subsystem	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card in the processor subsystem to which the failing I/O subsystem is attached.</li> <li>3. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>5. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E538	Detected the I/O hub at other end of the RIO cable	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E539	Enabling the I/O hub ports	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO adapter specified by the location code.</li> <li>3. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E53A	Set up the RIO port speed of the exit port of the I/O subsystem connected to the RIO hub port	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card in the processor subsystem to which the failing I/O subsystem is attached.</li> <li>3. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>5. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E53B	End of looking for next node port	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E53C	End of looking for next RIO hub port	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E53D	Disable the anynode mode	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E540	Begin initialization of I/O subsystem	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E541	Initialize the routing table	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card in the processor subsystem to which the failing I/O subsystem is attached.</li> <li>3. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>5. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E544	Enable the I/O ports	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E545	Set up the device routing address for this new node ID	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E546	Set up the I/O interface chip new node ID	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E547	Set up the I/O interface chip routing table	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 on page 194 is attached.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 on page 194 is attached.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E548	Disable any node mode	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E549	Disable the anynode mode	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 1 is attached.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E54A	Configure the I/O drawer	<ol style="list-style-type: none"> <li>1. Check the RIO cable specified by the location code. If the location code specifies an I/O subsystem or its RIO connector card, check the RIO cables going into and out of the I/O subsystem.</li> <li>2. Verify that the entire RIO loop associated with the location code is cabled correctly.</li> <li>3. Replace the RIO cables specified by the location code. If the location code specifies an I/O subsystem or its RIO connector card, replace the RIO cables going into and out of the I/O subsystem.</li> <li>4. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 3 is attached.</li> <li>5. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 3 is attached.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E54B	Update the I/O drawer routing table of RIO ports	<ol style="list-style-type: none"> <li>1. Check the RIO cable specified by the location code. If the location code specifies an I/O subsystem or its RIO connector card, check the RIO cables going into and out of the I/O subsystem.</li> <li>2. Verify that the entire RIO loop associated with the location code is cabled correctly.</li> <li>3. Replace the RIO cables specified by the location code. If the location code specifies an I/O subsystem or its RIO connector card, replace the RIO cables going into and out of the I/O subsystem.</li> <li>4. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 3 is attached.</li> <li>5. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 3 is attached.</li> </ol>
E550	Begin to initialize I/O interface chip	<p>If the location code associated with this checkpoint is either U0.1-P2 or U0.1-P1-H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E551	Set up the I/O speed	<p>If the location code associated with this checkpoint is either U0.1-P2 or U0.1-P1-H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E552	Set up I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1–P1–H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1–P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E553	Set up the I/O interface chip base address	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1–P1–H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1–P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E554	Set up more I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1–P1–H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1–P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E555	Set up the I/O interface chip I/O link	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1–P1–H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1–P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E556	Set up and initialize I/O interface chips under current I/O interface chip	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E55F	End of I/O drawer initialization	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E560	Begin initializing the I/O subsystem	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E561	Set up I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E562	Set up I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E563	Set up I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E564	Set up I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E565	Set up I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E566	Enable device arbitration on the I/O interface chip	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>



Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E567	Set up I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E568	Set up the external interrupt vector register	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E569	Set up I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E56A	Set up I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1-P1-H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1-P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E56B	Set up I/O interface chip registers	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1–P1–H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1–P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E56C	Set up I/O interface chip PCI bus	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1–P1–H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1–P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E56D	Identify devices on current bus	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1–P1–H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1–P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E56E	Begin initializing the service processor control chip	<p>If the location code associated with this checkpoint is either U0.1–P2 or U0.1–P1–H1, do the following:</p> <ol style="list-style-type: none"> <li>1. Replace the RIO adapter in the processor subsystem. Location: U0.1–P1–H1.</li> <li>2. Replace the service processor/PCI backplane. Location: U0.1–P2.</li> </ol> <p>Otherwise, replace the device specified by the location code.</p>
E56F	End initializing the service processor control chip	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E570	Initialize the PCI-ISA bridge chip	Replace the device specified by the location code.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
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 I/O interface chip initialization	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E580	Begin initializing the EADS module	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E581	Read the PCI bus configuration header	<ol style="list-style-type: none"> <li>1. This error code may indicate that the I/O (RIO) cables are not properly connected to the I/O subsystems. Check the RIO cabling; refer to "Subsystem Positioning and Cabling" on page 8.</li> <li>2. Replace the RIO cable specified by the location code.</li> <li>3. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 2 is attached.</li> <li>4. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem. This is the I/O subsystem to which the cable replaced in step 2 is attached.</li> </ol>
E582	EADS has been detected	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E583	Running BIST on the current EADS	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E584	Checking function of current EADS	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E585	Valid function of current EADS detected	Replace the I/O subsystem backplane specified by the location code.
E586	Set up EADS function	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E587	Set up EADS BIST	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E588	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E589	Set up EADS function	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E58A	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E58B	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E58C	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E58D	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E58E	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E58F	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E590	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E591	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E592	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E593	Set up EADS function registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E594	Begin probing slots	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E595	Detected valid adapter in slot	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E596	Read the EADS revision ID and class code	<ol style="list-style-type: none"> <li>1. Replace the RIO cable specified by the location code.</li> <li>2. Replace the I/O subsystem backplane to which the RIO cable in step 1 is attached.</li> </ol>
E59E	End of walking bus of current EADS	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>
E59F	End of EADS initialization	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to "MAP 1542: I/O Problem Isolation" on page 129.</li> </ol>



Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E5E0	Initialize system processor array	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Replace the RIO connector card (location: U0.dd-P1.1) in the failing I/O subsystem specified by the location code.</li> <li>3. Replace the I/O subsystem backplane (location: U0.dd-P1) in the failing I/O subsystem specified by the location code.</li> <li>4. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E5E1	Reserved	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E5E2	Initialization of the hypervisor, phase 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E5E3	Not in quick-restart: load and set up open firmware code in memory	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E5E4	Activate slave processors	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E5E5	Initialize the hypervisor, phase 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol>
E5E6	Set L2 and processor status	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1548: Memory and Processor Problem Isolation” on page 155.</li> </ol>
E5E7	Save I/O hub information for RTAS and open firmware	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1548: Memory and Processor Problem Isolation” on page 155.</li> </ol>
E5E8	Set up registers	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1548: Memory and Processor Problem Isolation” on page 155.</li> </ol>
E5E9	Reset the quick restart path	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1548: Memory and Processor Problem Isolation” on page 155.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E5EE	Hang state in main control code	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1548: Memory and Processor Problem Isolation” on page 155.</li> </ol>
E5EF	End of low-level firmware	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1548: Memory and Processor Problem Isolation” on page 155.</li> </ol>
E5FE	Get the system’s licensed memory quantity from the service processor	<ol style="list-style-type: none"> <li>1. Power down, then power up the system.</li> <li>2. Verify that the CUoD capacity card is installed and properly seated.</li> <li>3. Call service support</li> </ol>
E600	SSA PCI adapter open firmware has run successfully.	Replace the adapter.
E601	SSA PCI adapter BIST has started but failed to complete after 4 seconds.	Replace the adapter.
E602	SSA PCI open firmware has started.	Replace the adapter.
E603	SSA PCI adapter BIST has completed with an error.	Replace the adapter.
E604	SSA PCI adapter BIST and subsequent POSTs have completed successfully.	Replace the adapter.
E605	SSA PCI adapter BIST has completed successfully but subsequent POSTS have failed.	Replace the adapter.
E60E	SSA PCI open firmware about to exit (no stack corruption).	Replace the adapter.
E60F	SSA PCI open firmware has run unsuccessfully.	Replace the adapter.
E6FF	SSA PCI open firmware about to exit (with stack corruption).	Replace the adapter.
E700	Create system firmware VPD	System firmware may be corrupted. Reinstall system firmware.
E701	Create memory VPD.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call for support.</li> </ol>
E702	Create processor card VPD.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call for support.</li> </ol>
E703	Create operator panel VPD.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call for support.</li> </ol>
E704	Create processor subsystem VPD.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call for support.</li> </ol>
E705	Create clock card VPD.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call for support.</li> </ol>

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E706	Create RIO extender card 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 RIO to PCI adapter VPD.	Go to "MAP 1542: I/O Problem Isolation" on page 129.
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 1542: I/O Problem Isolation" on page 129.
E70D	Create capacitor bank VPD	1. Check for system firmware updates. 2. Call service support.
E70F	Create CEC VPD	1. Check for system firmware updates. 2. Call service support.
E7EE	Delaying while waiting for power subsystem VPD collection to be completed; informational only	1. Check for system firmware updates. 2. Call service support.
E7FF	Successful end of VPD creation	Informational message. If the system hangs here, go to "MAP 1541: JTAG Problem Isolation" on page 128.
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 service processor/PCI backplane Location: U0.1-P2. 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 service processor/PCI backplane Location: U0.1-P2. 3. Call service support.
E845	Initializing interface/sensor access	1. Check for system firmware updates. 2. Call service support.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E846	Initializing interface/sensors/LED-table 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 1542: I/O Problem Isolation" on page 129. 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 129. 4. Call service support.
E854	Start collecting cable IDs	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 129. 4. Call service support.
E855	Start setting RIO link speed	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 129. 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 1548: Memory and Processor Problem Isolation" on page 155. 3. Call service support.
E870	Initializing RTAS/logs interface	1. Check for system firmware updates. 2. Call service support.

Table 2. Firmware Checkpoints (continued)

Checkpoint	Description	Action/ Possible Failing FRU
E871	Initializing RTAS/EEH handling interface	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to “MAP 1548: Memory and Processor Problem Isolation” on page 155.</li> <li>3. Call service support.</li> </ol>
E872	Initializing RTAS/error inject interface	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
E873	Initializing RTAS/error handling interface	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
E880	Initializing RTAS/debug interface	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
E881	Initializing RTAS/utility interface	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
E882	Initializing RTAS/softpatch register interface	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
E890	Initializing RTAS/hot-plug interface	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
E8C1	Initializing interface/client memory access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
E8D1	Initializing interface/special memory access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
EAA1	Probe PCI-PCI bridge bus	Follow the repair actions for checkpoint E151.

## Boot Problems

**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 the CD-ROM 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). If the operating system is AIX 5.1 and a device is moved between two partitions, both partitions must be rebooted. If the operating system is AIX 5.2, the partitions do not require a reboot.

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 the checkpoint/code is displayed for an extended time, there may be a problem loading the boot image from the device. 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.

For network boot attempts, refer to checkpoint E174.

If the checkpoint is displayed for an extended time, there may be a problem with the integrity of the boot image.

This procedure assumes that a CD-ROM drive is connected to the system, or that the diagnostics can be run from a NIM server.

1. Look at the service action event-error log in the Service Focal Point on the HMC (see "Service Focal Point" on page 65 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 2.

2. Boot to the SMS main menu:
  - 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 Options**.

- 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 3 on page 215.
  - 3) If attempting to boot from a disk drive or CD-ROM, go to step 4 on page 215.

- 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. Record the list of bootable devices that displays when **List All Devices** is selected. If the intended boot device is in the list, go to step 4; if it is not, go to step 5 on page 216.
3. If attempting to boot from the network:
  - a. Verify that the IP parameters are correct.
  - b. 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.
  - c. Check with the network administrator to ensure that the network is up. Also ask the network administrator to verify the settings on the server from which you are trying to boot.
  - d. Check the network cabling to the adapter.
  - e. Restart the partition and retry the boot operation.
4. Try to boot and run standalone diagnostics against the devices in the partition, 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 "Loading the Standalone Diagnostics from CDROM" on page 412 or "Running Standalone Diagnostics from a Network Installation Management (NIM) Server with an HMC Attached to the System" on page 413.

**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 Diagnostic Operation with an HMC Attached to the System" on page 412.

If standalone diagnostics boot successfully:

- a. Go to the Task Selection menu, and select Display Configuration and Resource List. If the intended boot device is not listed, ask the customer or system administrator to verify that it is assigned to the correct partition. If it is, and does not appear in the NEW RESOURCE list, go to "MAP 0290: Missing Resource Problem Resolution" in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.
- b. Run diagnostics on the device you want to boot from. If an SRN, not an 8-digit error code, is reported, go to the *@server pSeries Diagnostic Information for Multiple Bus Systems* manual.
- c. If the diagnostics are successful, it may be necessary to perform an operating system-specific recovery process, or reinstall the operating system.

If diagnostics do not boot successfully from CD-ROM:

- a. Verify that the CD-ROM drive is assigned to the correct partition.
- b. Check the SCSI cabling to the CD-ROM drive. Check the power connector on the CD-ROM.
- c. Look at the list of devices made in substep 2b (of step 2 on page 214). If the CD-ROM is in the list, but the stand-alone diagnostic CD does not boot, replace the CD-ROM drive.
- d. If the CD-ROM is not in the list made in substep 2b (of step 2 on page 214), it is possible that another SCSI device on the same bus, or the SCSI controller, is causing the problem. Do the following:
  - 1) Disconnect the power and signal cables from all other SCSI devices that are attached to the same SCSI adapter to which the CD-ROM is attached.
  - 2) Boot to the SMS menus. Select **Select Install or Boot a Device** and then select **List all Devices**.

If the CD-ROM is present in the list of bootable devices, reconnect the SCSI devices one at a time and boot to the SMS menus to look at the list of bootable devices until the failing device is

isolated. When the failing device is isolated, replace it and then go to "MAP 410: Repair Checkout" in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.

If the CD-ROM is not present, turn off the power and disconnect the CD-ROM. Reconnect one of the SCSI devices on the same bus. Boot to the SMS menus and look at the list of bootable devices. If the device that was just reconnected is present, replace the CD-ROM drive. If it is not present, replace the service processor/PCI backplane, location U0.1-P2. Go to "MAP 410 Repair Checkout" in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.

If diagnostics do not boot successfully from a NIM server:

- a. Verify that the network adapter is assigned to the correct partition.
  - b. Check the network settings and flag settings, as detailed in "Running Standalone Diagnostics from a Network Installation Management (NIM) Server with an HMC Attached to the System" on page 413.
  - c. Follow the procedure outlined in step 3 on page 215.
5. Go to "MAP 1542: I/O Problem Isolation" on page 129.



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## Chapter 5. Error Code to FRU Index

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.

**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 129 unless you were already directed to any MAP 154x by the error code. Otherwise, call service 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 AIX error log, please be aware that an error may require an additional 15 minutes to be propagated to the AIX error log.

If you replace FRUs and the problem is corrected, go to “MAP 0410: Repair Checkout” in the *@server pSeries Diagnostic Information for Multiple Bus Systems*.

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### Performing Slow Boot

On this system, the error code displayed in the operator panel or in the service action event (SAE) log 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 operator panel.
2. Do a slow-mode boot into the SMS 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 or new errors in the service processor error log. If a new error code is reported, record it for use in subsequent steps. Slow mode boot is selected through the service processor menus. The procedure is different for systems without an HMC attached versus systems with an HMC attached.
  - Systems without an HMC attached:
    - a. Go to the system power control menu from the service processor main menu.
    - b. Select option 7, the boot mode menu.
    - c. On the boot mode menu, select option 1. This automatically enables **Boot to SMS menus**.
    - d. Enter 98 to go back to the system power control menu.
    - e. Look at the state of the fast boot enable, option 6. If it is enabled, select option 6 to change it to disabled (disabling fast system boot automatically enables slow mode boot).  
If it is already disabled, it may have been disabled by the service processor because the previous boot failed.  
In either case, boot the system by continuing to substep 2f.
    - f. Select option 4 to power on the system. Enter y when prompted. The system will power up and begin the boot process.
    - g. When the system stops at the SMS main menu, use the white power button on the operator panel to power down the system.

At this point, the service processor menus should be available to examine the service processor error logs.

- Systems with an HMC attached:
  - a. From the HMC, select **Partition Manager**.
  - b. Highlight the processor subsystem name.
  - c. Right-click the mouse and select **Open Terminal Window**.
  - d. From the Service Processor Menu on the VTERM select Option 2 **System Power Control Menu**.

- e. Select option 6. Verify that the state changes to currently disabled. Disabling fast system boot automatically enables slow boot.
  - f. Select Option 98 to exit the system power control menu.
  - g. Use the HMC to power up the system to the SMS menus in a full system partition.
3. When the system has stopped at the SMS menus, use the HMC to power off the system. At this point, the service processor menus should be available to examine the service processor error log.

---

## Confirming Initial Error Code

The service processor may have recorded one or more symptoms in its error log. If the system has attempted to boot since an error terminated normal operation, there may be specific fault information in the service processor error log. Examine this error log before proceeding (see "System Information Menu" on page 432).

In the service processor error log, the most recent error is at the top of the list and the oldest error is at the bottom. It is also important to look at the time stamp associated with each error. (The time stamps in the service processor error log reflect coordinated universal time (UTC), which is also referred to as Greenwich mean time.)

On this system, the error code displayed in the operator panel may not be indicative of the root cause of the problem. This is also true of the most recent error in the service processor error log.

Attempt to find the error code that originally sent you to the "Checkpoints and Error Codes Index" on page 221 table.

1. If you can not find the error code in the service processor error log, start with the error code at the bottom of the list. Proceed to 3 below.
2. If you can find the error code in the service processor error log, observe the time stamps and look for a group of failures that happened within minutes prior to this error code. In this group, start at the error code with the earliest time stamp. Proceed to 3.
3. Examine the list of error codes you obtained from 1 or 2 and look for any of the form 4xxB xxxx.  
Can you find any error codes of the form 4xxB xxxx?

**No** Proceed to step 6.

**Yes** Proceed to step 4.

4. Do any of the error codes of the form 4xxB xxxx have the same first two characters on the left as the first two characters on the left of the error code that sent you to the MAP?

**No** Proceed to step 6.

**Yes** Proceed to step 5.

5. Adjust the order of the list of error codes you obtained from steps 1 or 2 by placing the error codes of the form 4xxB xxxx with the same first two characters as the error code that sent you to this MAP on the bottom of the list. Start step 6 at the bottom of the adjusted list of error codes. Proceed to step 6.
6. To get a list of possible FRUs, select the detail screen for each error code. Record the listed location codes and their order.

**Note:** If the error code that results from this procedure is 406x 0EA0, 406x 0EA1, 406x 0EA2, or 406x 0EA4, do not go back to the "Checkpoints and Error Codes Index" on page 221 with this error code. Look for a hardware error in the service processor error log of the form 450x yyyy, 460x yyyy, or 4B2x yyyy that occurred just prior to the 406x 0EAy error. Use this hardware error code instead when returning to the "Checkpoints and Error Codes Index" on page 221.

Return to the step in the "Checkpoints and Error Codes Index" on page 221 table immediately after the step that sent you to this "Confirming Initial Error Code" procedure to perform the listed repair actions. If the repair actions for an error code are ineffective, continue to work upward through this group of

error codes (which is forward in time from the earliest time stamp to the latest) until either the problem is fixed, you reach the error code that was first reported, or you are at the top of the list.

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## Four-Character Checkpoints

Four-character checkpoints in the form 8xxx, 9xxx, Axxx, Bxxx, and Exxx are listed in “Firmware Checkpoints” on page 180. If you have a four-character code that begins with any character other than 8, 9, A, B, or E, refer to the *@server pSeries Diagnostic Information for Multiple Bus Systems*.

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## 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 pluggable VPD module must be swapped. If the old module is defective, or cannot be recovered, contact service support.

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## 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 server 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.

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## Determining the 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 running AIX, 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 470.
- 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 432, then select “Read Progress Indicator From Last System Boot”. Find the error code that directed you to this note in the list, and the location code should be a part of the entry in the log.

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## FRU Identify LEDs

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

- Rack identify beacon LED (optional rack status beacon)
- Processor subsystem drawer identify LED
- I/O subsystem identify LED
- RIO port identify LED
- FRU identify LED
- Power subsystem FRUs
- Processor 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 processor subsystem 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 under in the “System Information Menu” on page 432. See “System Information Menu” on page 432 for information on how to use the LED Control Menu.

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

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

1. If the system is configured as a full system partition, the system may be booted to the open firmware prompt and the command **FRU-LED-MENU** entered. A menu will appear that will allow you to turn on the desired FRU identify LED. See the “System Power Control Menu” on page 428 for instructions on setting the boot mode to enable the boot to the open firmware prompt.
2. If the system is logically partitioned, the HMC must be attached. There is a function at the HMC that allows any FRU identify LED to be flashed. See the “Hardware Service Functions” section of the “Service Focal Point” chapter of the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, for instructions on activating and deactivating a FRU identify LED.

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## Checkpoints and Error Codes Index

The table below 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.

Table 3. Checkpoints and Error Codes Index

8-Digit Error Code or 4-Digit Checkpoint	What You Should Do
0000 xxxx	<p>Operator Panel Error Codes</p> <p>Go to “Operator Panel Error Codes” on page 224 and follow the instructions in the operator panel error code table.</p>
1xxx xxxx	<p>System Power Control Network (SPCN) Error Codes</p> <ol style="list-style-type: none"><li>There may be additional error codes and information in the service processor error log. The system must be powered off to examine the contents of the service processor error log.<ol style="list-style-type: none"><li><b>Is the system still powered on?</b> <b>NO</b> Go to step 2 below. <b>YES</b> Ask the customer if the system can be powered off, then go to step 1b below.</li><li><b>Can the system be powered off?</b> <b>NO</b> Go to step 3 below. <b>YES</b> Power off the system, then go to step 2 below.</li></ol></li><li>Confirm this is the first error code that caused the failure as described in “Confirming Initial Error Code” on page 218.</li><li>Did you come to this step from step 2. <b>NO</b> Go to “SPCN Error Codes” on page 225 with the error codes you already have and follow the instructions in the SPCN error code table. <b>YES</b> Go to “SPCN Error Codes” on page 225 with the error code(s) from step 2 and follow the instructions in the SPCN error code table.</li></ol>
2xxx xxxx	<p>Firmware Error Codes</p> <p>Go to “Firmware/POST Error Codes” on page 237 and follow the instructions in the firmware error code table.</p>

Table 3. Checkpoints and Error Codes Index (continued)

8-Digit Error Code or 4-Digit Checkpoint	What You Should Do
4xxx xxxx	<p>Service Processor Error Codes</p> <ol style="list-style-type: none"> <li>Is the system powered up? <ul style="list-style-type: none"> <li><b>NO</b> Go to step 2 below.</li> <li><b>YES</b> Go to step 4 below.</li> </ul> </li> <li>Find the error code in the service processor error log and check the value of word 13. Go to 3 below.</li> <li>Is the value of word 13 C0xx xxxx? <ul style="list-style-type: none"> <li><b>NO</b> Go to step 7 below.</li> <li><b>YES</b> Go to "MAP 1541: JTAG Problem Isolation" on page 128.</li> </ul> </li> <li>Is the system running Linux? <ul style="list-style-type: none"> <li><b>NO</b> Go to step 6 below.</li> <li><b>YES</b> Go to step 5 below.</li> </ul> </li> <li>If the system is not functional, go to step 7 below. If the system is functional, do the following: Examine the Linux system log by logging in to the system as the root user and entering the following command: <code>cat /var/log/messages   grep RTAS   more</code> Record any RTAS messages found in the Linux system log entry. Ignore all other messages in the Linux system log. Find the value of word 13 in the Linux system log entry. For detailed instructions on finding word 13 in a Linux system log entry, refer to the actions under error code B1xx 4699 in this service guide. Is the value of word 13 C0xx xxxx? <ul style="list-style-type: none"> <li><b>NO</b> Go to step 7 below.</li> <li><b>YES</b> Go to "MAP 1541: JTAG Problem Isolation" on page 128.</li> </ul> </li> <li>If the system is not functional, go to step 7. If the system is functional, do the following: Examine the AIX error log entry. Find the value of word 13. For detailed instructions on finding word 13 in a AIX error log entry, refer to the actions under error code B1xx 4699 in this service guide. Is the value of word 13 C0xx xxxx? <ul style="list-style-type: none"> <li><b>NO</b> Go to step 7 below.</li> <li><b>YES</b> Go to "MAP 1541: JTAG Problem Isolation" on page 128.</li> </ul> </li> <li>There might be additional error codes and information in the service processor error log. The system must be powered off to examine the contents of the service processor error log. <ol style="list-style-type: none"> <li>Is the system still powered on? <ul style="list-style-type: none"> <li><b>NO</b> Go to step 8 below.</li> <li><b>YES</b> Ask the customer if the system can be powered off, then go to 7b.</li> </ul> </li> <li>Can the system be powered off? <ul style="list-style-type: none"> <li><b>NO</b> Go to step 10 below.</li> <li><b>YES</b> Power off the system, then go to step 8.</li> </ul> </li> </ol> </li> <li>Perform slow boot procedure as described in "Performing Slow Boot" on page 217.</li> <li>Confirm this is the first error code that caused the failure as described in "Confirming Initial Error Code" on page 218.</li> <li>Did you come to this step from step 9? <ul style="list-style-type: none"> <li><b>NO</b> Go to "Service Processor Error Codes" on page 261 with the error codes you already have and follow the instructions in the service processor error codes table.</li> <li><b>YES</b> Go to "Service Processor Error Codes" on page 261 with the error codes from 9 above and follow the instructions in the service processor error codes table.</li> </ul> </li> </ol>

Table 3. Checkpoints and Error Codes Index (continued)

8-Digit Error Code or 4-Digit Checkpoint	What You Should Do
8xxx 9xxx Axxx Bxxx	Service Processor Checkpoints  Go to “Service Processor Checkpoints” on page 173 for more information on these checkpoints.
A1FD 000x	The system has entered recovery mode. Go to “Recovery Mode” on page 456.
B006 xxxx B1xx xxxx	Common Firmware Error Codes  1. Confirm this is the first error code that caused the failure as described in “Confirming Initial Error Code” on page 218.  2. Go to “Common Firmware Error Codes” on page 392 and follow the instructions in the Common Firmware Error Codes table.
B3xx xxxx	HMC Surveillance Error Codes  Go to “HMC Surveillance Error Codes” on page 402 for more information on these error codes.
Exxx	Firmware Checkpoints  Go to “Firmware Checkpoints” on page 180 for more information on these checkpoints.
Mxxx xxxx	Problem Determination-Generated Error Codes  Go to “Problem Determination-Generated Error Codes” on page 403 and follow the instructions in the more general error code table.

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## Operator Panel Error Codes

**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 129 unless you were already directed to any MAP 154x 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, 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

Error Code	Description	Action/ Possible Failing FRU
0000 1111	At power on, failure of power-good signal from power supply.	1. Service processor/PCI backplane Location: U0.1-P2  2. Power supply Locations: U0.1-V1 U0.1-V2
0000 1112	At power off, failure of power-good signal from power supply.	1. Service processor/PCI backplane Location: U0.1-P2  2. Power supply Locations: U0.1-V1 U0.1-V2
0000 1113	While power on, failure of power-good signal from power supply.	1. Service processor/PCI backplane Location: U0.1-P2  2. 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. Service processor/PCI backplane Location: U0.1-P2
0000 3333	SPCN communications error	Service processor/PCI backplane Location: U0.1-P2
0000 3334	I2C repeater error	Service processor/PCI backplane Location: U0.1-P2
0000 BBBB	TOD battery malfunction	TOD battery Location: U0.1-P2-V3



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## SPCN Error Codes

**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 129 unless you were already directed to any MAP 154x 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, 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

Table 4. SPCN Error Codes for the processor subsystem (System Unit)

Error Code	Description	Action/ Possible Failing FRU
1011 00AC	AC loss or brownout detected	Informational message
1011 00EF	AC loss or brownout detected	Informational message
1011 1510	Power supply 1 power source failure	<ol style="list-style-type: none"><li>1. Check input power to the power supply. Location: U0.1-V1</li><li>2. Processor subsystem power supply 1, Location: U0.1-V1.</li><li>3. Service processor/PCI backplane Location: U0.1-P2</li></ol>
1011 1511	Power supply 1 fault	<ol style="list-style-type: none"><li>1. Ensure that the top cover is installed correctly, and that the top cover interlock switch is operating correctly.</li><li>2. Processor subsystem power supply 1 Location: U0.1-V1</li><li>3. Service Processor /PCI Backplane Location: U0.1-P2</li></ol>
1011 1512	Power supply 1 non-power fault	<ol style="list-style-type: none"><li>1. Processor subsystem power supply 1 Location: U0.1-V1</li><li>2. Service processor/PCI backplane Location: U0.1-P2</li></ol>
1011 1513	Power supply 1 domain fault	<ol style="list-style-type: none"><li>1. Processor subsystem power supply 1 Location: U0.1-V1</li><li>2. Service processor/PCI backplane Location: U0.1-P2</li></ol>
1011 1514	Power supply 1 fan fault	<ol style="list-style-type: none"><li>1. Processor subsystem power supply fan 1 Location: U0.1-F1</li><li>2. Service processor/PCI backplane Location: U0.1-P2</li></ol>
1011 1516	Power supply 1 fan missing	<ol style="list-style-type: none"><li>1. Processor subsystem power supply fan 1 Location: U0.1-F1</li><li>2. Service processor/PCI backplane Location: U0.1-P2</li></ol>

Table 4. SPCN Error Codes for the processor subsystem (System Unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 1520	Power supply 2 power source failure	<ol style="list-style-type: none"> <li>1. Check input power to the power supply. Location: U0.1-V2</li> <li>2. Processor subsystem power supply 2, Location: U0.1-V2.</li> <li>3. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 1521	Power supply 2 fault	<ol style="list-style-type: none"> <li>1. Processor subsystem power supply 2 Location: U0.1-V2</li> <li>2. Service Processor /PCI Backplane Location: U0.1-P2</li> </ol>
1011 1522	Power supply 2 non-power fault	<ol style="list-style-type: none"> <li>1. Processor subsystem power supply 2 Location: U0.1-V2</li> <li>2. Service Processor /PCI Backplane Location: U0.1-P2</li> </ol>
1011 1523	Power supply 2 domain fault	<ol style="list-style-type: none"> <li>1. Processor subsystem power supply 2 Location: U0.1-V2</li> <li>2. Service Processor /PCI Backplane Location: U0.1-P2</li> </ol>
1011 1524	Power supply 2 fan fault	<ol style="list-style-type: none"> <li>1. Processor subsystem power supply fan 2 Location: U0.1-F2</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 1526	Power supply 2 fan missing	<ol style="list-style-type: none"> <li>1. Processor subsystem power supply fan 2 Location: U0.1-F2</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 1B0A	+12V/-12V load fault	Go to "MAP 1520: Power" on page 105.
1011 1B0B	1.8V load fault	Go to "MAP 1520: Power" on page 105.
1011 1B0C	3.3V/1.5V load fault	Go to "MAP 1520: Power" on page 105.
1011 1B0D	2.5V load fault	Go to "MAP 1520: Power" on page 105.
1011 1B0E	+5V load fault	Go to "MAP 1520: Power" on page 105.
1011 1B0F	1.5V/1.3V load fault	Go to "MAP 1520: Power" on page 105.
1011 1F01	TMS limit reached - log only	Informational message
1011 2600	Pgood faults - P/S domain good	Service processor/PCI backplane Location: U0.1-P2
1011 2603	Pgood faults - P/S domain bad	Service processor/PCI backplane Location: U0.1-P2
1011 2612	Optical converter fault	Service processor/PCI backplane Location: U0.1-P2
1011 2613	100v fault	Service processor/PCI backplane Location: U0.1-P2
1011 3100	I2C controller fault	Service processor/PCI backplane Location: U0.1-P2

Table 4. SPCN Error Codes for the processor subsystem (System Unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 3104	3104 I2C bus 4 failure; used for SES VPD collection	<ol style="list-style-type: none"> <li>Media backplane, Location: U0.1-P4</li> <li>DASD backplane, Location: U0.1-P5</li> <li>Service processor, Location: U0.1-P2</li> <li>CEC backplane, Location: U0.1-P1</li> </ol>
1011 3105	I2C fault	Service processor/PCI backplane Location: U0.1-P2
1011 3114	I2C fault	Service processor/PCI backplane Location: U0.1-P2
1011 3116	I2C fault	Service processor/PCI backplane Location: U0.1-P2
1011 3118	SPCN VPD fault	Service processor/PCI backplane Location: U0.1-P2
1011 3119	Media backplane SES VPD collection failure	<ol style="list-style-type: none"> <li>Media backplane, Location: U0.1-P5</li> <li>Service processor/PCI backplane , Location: U0.1-P2</li> <li>System backplane, Location: U0.1-P1</li> </ol>
1011 311D	Disk drive backplane SES VPD collection failure	<ol style="list-style-type: none"> <li>Disk drive backplane, Location: U0.1-P4</li> <li>Service processor/PCI backplane, Location: U0.1-P2</li> <li>System backplane, Location: U0.1-P1</li> </ol>
1011 7610	Processor fan failure	<ol style="list-style-type: none"> <li>Processor Fan Location: U0.1-F3</li> <li>Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 7611	Processor fan missing	Processor Fan Location: U0.1-F3
1011 7620	Processor fan failure	<ol style="list-style-type: none"> <li>Processor Fan Location: U0.1-F4</li> <li>Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 7621	Processor fan missing	Processor Fan Location: U0.1-F4
1011 7630	Power supply V1 fan failure	<ol style="list-style-type: none"> <li>Fan Location: U0.1-F1</li> <li>Power supply V1 Location: U0.1-V1</li> </ol>
1011 7631	Power supply V1 fan missing	Fan Location: U0.1-F1

Table 4. SPCN Error Codes for the processor subsystem (System Unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 7640	Power supply V2 fan missing	<ol style="list-style-type: none"> <li>1. Fan Location: U0.1-F2</li> <li>2. Power supply V2 Location: U0.1-V2</li> </ol>
1011 7641	Power supply V2 fan missing	Fan Location: U0.1-F2
1011 8400	Configuration ID conflict	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
1011 8401	VPD access	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
1011 8402	VPD access - concentrator	<ol style="list-style-type: none"> <li>1. Verify that at least one processor card is properly installed and seated. At least one processor card must be installed for the system to boot.</li> <li>2. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
1011 8403	VPD level mismatch	<ol style="list-style-type: none"> <li>1. System VPD module Location: U0.1-L1-N1</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 8404	PU 2 mismatch	<ol style="list-style-type: none"> <li>1. Processor card 2 Location: U0.1-P1-C2</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 8405	PU 3 mismatch	<ol style="list-style-type: none"> <li>1. Processor card 3 Location: U0.1-P1-C3</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 8406	PU 4 mismatch	<ol style="list-style-type: none"> <li>1. Processor card 4 Location: U0.1-P1-C4</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 8409	No valid processor VPD found	<ol style="list-style-type: none"> <li>1. Verify that the processor cards are properly installed and seated. At least one processor card must be installed for the system to boot.</li> <li>2. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
1011 840A	VPD +5 stuck high	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
1011 840B	VPD access	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
1011 840C	Memory DIMM misplug	Verify that all of the memory DIMMs are properly installed and seated.

Table 4. SPCN Error Codes for the processor subsystem (System Unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 840D	SPCN configuration	<ol style="list-style-type: none"> <li>1. Check SPCN cabling.</li> <li>2. Set the I/O type. See Power Control Network Utilities Menu on page 436.</li> <li>3. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 840E	SPCN default config	<ol style="list-style-type: none"> <li>1. Check SPCN cabling.</li> <li>2. Set the I/O type. See Power Control Network Utilities Menu on page 436.</li> <li>3. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 840F	Config ID not recognized	<ol style="list-style-type: none"> <li>1. Check SPCN cabling.</li> <li>2. Set the I/O type. See Power Control Network Utilities Menu on page 436.</li> <li>3. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
1011 8413	Invalid processor VPD	Processor card 1 Location: U0.1-P1-C1
1011 8414	Invalid processor VPD	Processor card 2 Location: U0.1-P1-C2
1011 8415	Invalid processor VPD	Processor card 3 Location: U0.1-P1-C3
1011 8416	Invalid processor VPD	Processor card 4 Location: U0.1-P1-C4
1011 8423	No processor VPD	Processor card 1 Location: U0.1-P1-C1
1011 8424	No processor VPD	Processor card 2 Location: U0.1-P1-C2
1011 8425	No processor VPD	Processor card 3 Location: U0.1-P1-C3
1011 8426	No processor VPD	Processor card 4 Location: U0.1-P1-C4
1011 9280	SPCN interface failure	<ol style="list-style-type: none"> <li>1. Check the SPCN cables connected to the processor subsystem drawer.</li> <li>2. Check for system firmware updates. Apply any available updates.</li> <li>3. Replace the SPCN cables going to the processor subsystem drawer, locations: U0.1-P2/Q3#, U0.1-P2/Q4#</li> <li>4. Replace the service processor/PCI backplane, location: U0.1-P2.</li> <li>5. Replace the I/O drawer backplane, location: U0.dd-P1.</li> </ol>

Table 4. SPCN Error Codes for the processor subsystem (System Unit) (continued)

Error Code	Description	Action/ Possible Failing FRU
1011 9281	SPCN interface failure	<ol style="list-style-type: none"> <li>1. Check the SPCN cables connected to the processor subsystem drawer.</li> <li>2. Check for system firmware updates. Apply any available updates.</li> <li>3. Replace the SPCN cables going to the processor subsystem drawer, locations: U0.1-P2/Q3#, U0.1-P2/Q4#</li> <li>4. Replace the service processor/PCI backplane, location: U0.1-P2.</li> <li>5. Replace the I/O drawer backplane, location: U0.dd-P1.</li> </ol>
1011 9282	SPCN interface failure	<ol style="list-style-type: none"> <li>1. Check the SPCN cables connected to the processor subsystem drawer.</li> <li>2. Check for system firmware updates. Apply any available updates.</li> <li>3. Replace the SPCN cables going to the processor subsystem drawer, locations: U0.1-P2/Q3#, U0.1-P2/Q4#</li> <li>4. Replace the service processor/PCI backplane, location: U0.1-P2.</li> <li>5. Replace the I/O drawer backplane, location: U0.dd-P1.</li> </ol>

**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 129 unless you were already directed to any MAP 154x 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, 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

The *nn* in “1*nn*1 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 12F1 1510 will have location codes U0.47-V1 and U0.47-P1 listed.

Unless otherwise noted, the error codes in the following table are common to both the 7311 Model D10 I/O Subsystem and the 7311 Model D20 I/O Subsystem.

Table 5. SPCN Error Codes for I/O Subsystems

Error Code	Description	Action/ Possible Failing FRU
1nn1 00AC	AC loss or brownout detected	Informational message
1nn1 1510	Power supply 1 power source failure	<ol style="list-style-type: none"> <li>1. Check input power to the power supply.</li> <li>2. I/O subsystem power supply 1 Location: U0.dd-V1</li> <li>3. I/O subsystem backplane, Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1511	Power supply 1 fault	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 1 Location: U0.dd-V1</li> <li>2. I/O subsystem backplane Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1512	Power supply 1 non-power fault	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 1 Location: U0.dd-V1</li> <li>2. I/O subsystem backplane Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1513	Power supply 1 domain fault	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 1 Location: U0.dd-V1</li> <li>2. I/O subsystem backplane Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1514	Power supply 1 fan fault (7311 Model D10 I/O Subsystem only)	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 1 Location: U0.dd-V1</li> <li>2. I/O subsystem backplane Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>

Table 5. SPCN Error Codes for I/O Subsystems (continued)

Error Code	Description	Action/ Possible Failing FRU
1nn1 1516	Power supply 1 fan missing (7311 Model D10 I/O Subsystem only)	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 1 Location: U0.dd-V1</li> <li>2. I/O subsystem backplane Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1517	Power supply 1 thermal fault	<ol style="list-style-type: none"> <li>1. Check for obstructions to the air flow around the I/O subsystem.</li> <li>2. I/O subsystem power supply 1, Location: U0.dd-V1</li> <li>3. I/O subsystem backplane, Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1520	Power supply 2 power source failure	<ol style="list-style-type: none"> <li>1. Check input power to power supply 2.</li> <li>2. I/O subsystem power supply 2, Location: U0.dd-V2</li> <li>3. I/O subsystem backplane, Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1521	Power supply 2 fault	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 2, Location: U0.dd-V2</li> <li>2. I/O subsystem backplane, Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1522	Power supply 2 non-power fault	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 1 Location: U0.dd-V2</li> <li>2. I/O subsystem backplane, Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1523	Power supply 2 domain fault	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 2 Location: U0.dd-V2</li> <li>2. I/O subsystem backplane, Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1524	Power supply 2 fan fault (7311 Model D10 I/O Subsystem only)	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 2 Location: U0.dd-V2</li> <li>2. I/O subsystem backplane, Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1526	Power supply 2 fan missing (7311 Model D10 I/O Subsystem only)	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 2 Location: U0.dd-V2</li> <li>2. I/O subsystem backplane, Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>



Table 5. SPCN Error Codes for I/O Subsystems (continued)

Error Code	Description	Action/ Possible Failing FRU
1nn1 1527	Power supply 2 thermal fault	<ol style="list-style-type: none"> <li>1. Check for obstructions to the air flow around the I/O subsystem.</li> <li>2. I/O subsystem power supply 2, Location: U0.dd-V2</li> <li>3. I/O subsystem backplane, Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1B01	+12V load fault	<ol style="list-style-type: none"> <li>1. I/O subsystem power supply 1 Location: U0.dd-V1</li> <li>2. If power supply 2 is present, use removed power supply 1 to replace power supply 2.</li> <li>3. I/O subsystem backplane Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1B02	+5V load fault	<ol style="list-style-type: none"> <li>1. Replace power supply 1, Location: U0.dd-V1</li> <li>2. If power supply 2 is present, use removed power supply 1 to replace power supply 2.</li> <li>3. I/O subsystem backplane Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1B03	+3.3V load fault	<ol style="list-style-type: none"> <li>1. Replace power supply 1, Location: U0.dd-V1</li> <li>2. If power supply 2 is present, use removed power supply 1 to replace power supply 2.</li> <li>3. I/O subsystem backplane Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 1B04	-12 load fault	<ol style="list-style-type: none"> <li>1. Replace power supply 1, Location: U0.dd-V1</li> <li>2. If power supply 2 is present, use removed power supply 1 to replace power supply 2.</li> <li>3. I/O subsystem backplane Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 2600	Power good fault	<p>I/O subsystem backplane, Location: U0.dd-P1</p> <p>See the notices on page 231 for “dd” values.</p>
1nn1 2603	Power domain fault	<p>I/O subsystem backplane, Location: U0.dd-P1</p> <p>See the notices on page 231 for “dd” values.</p>
1nn1 2605	Power good 1.8 V fault	<p>I/O subsystem backplane, Location: U0.dd-P1</p> <p>See the notices on page 231 for “dd” values.</p>

Table 5. SPCN Error Codes for I/O Subsystems (continued)

Error Code	Description	Action/ Possible Failing FRU
1nn1 2606	Power good 2.5 V fault	I/O subsystem backplane, Location: U0.dd-P1 See the notices on page 231 for “dd” values.
1nn1 3100	I2C controller fault	I/O subsystem backplane, Location: U0.dd-P1 See the notices on page 231 for “dd” values.
1nn1 3101	I2C bus fault	I/O subsystem backplane, Location: U0.dd-P1 See the notices on page 231 for “dd” values.
1nn1 3102	I2C interface fault	I/O subsystem backplane, Location: U0.dd-P1 See the notices on page 231 for “dd” values.
1nn1 3103	I2C interface fault	I/O subsystem backplane, Location: U0.dd-P1 See the notices on page 231 for “dd” values.
1nn1 3104	I2C interface fault	I/O subsystem backplane, Location: U0.dd-P1 See the notices on page 231 for “dd” values.
1nn1 3110	SES module fault on SCSI backplane 1 (7311 Model D20 I/O Subsystem only)	SCSI backplane, location: U0.dd-P3
1nn1 3110	SES module fault on SCSI backplane 2 (7311 Model D20 I/O Subsystem only)	SCSI backplane, location: U0.dd-P4
1nn1 3113	PCI bridge chip fault	I/O subsystem backplane, Location: U0.dd-P1 See the notices on page 231 for “dd” values.
1nn1 3114	I2C fault	I/O subsystem backplane, Location: U0.dd-P1 See the notices on page 231 for “dd” values.
1nn1 3115	(Model D10 systems, Power supply temperature sensor fault)	<ol style="list-style-type: none"> <li>1. Replace power supply 1, Location: U0.dd-V1</li> <li>2. If power supply 2 is present, use removed power supply 1 to replace power supply 2.</li> <li>3. I/O subsystem backplane Location: U0.dd-P1</li> </ol> See the notices on page 231 for “dd” values.
	(Model D20 systems, operator panel fault)	Replace the I/O subsystem backplane, U0.dd-P1. See the notices on page 231 for “dd” values.
1nn1 3118	SPCN VPD fault	I/O subsystem backplane, Location: U0.dd-P1 See the notices on page 231 for “dd” values.
1nn1 311F	RIO configuration problem (7311 Model D10 I/O Subsystem only)	<ol style="list-style-type: none"> <li>1. RIO connector extension card, Location: U0.dd-P1.1</li> <li>2. I/O subsystem backplane, Location: U0.dd-P1</li> </ol> See the notices on page 231 for “dd” values.

Table 5. SPCN Error Codes for I/O Subsystems (continued)

Error Code	Description	Action/ Possible Failing FRU
1nn1 7610	Blower 1 fault (7311 Model D20 I/O Subsystem only)	Blower 1, Location: U0.dd-F1 See the notices on page 231 for “dd” values.
1nn1 7611	Blower 1 missing (7311 Model D20 I/O Subsystem only)	Blower 1, Location: U0.dd-F1 See the notices on page 231 for “dd” values.
1nn1 7620	Blower 2 fault (7311 Model D20 I/O Subsystem only)	Blower 2, Location: U0.dd-F2 See the notices on page 231 for “dd” values.
1nn1 7621	Blower 2 missing (7311 Model D20 I/O Subsystem only)	Blower 2, Location: U0.dd-F2 See the notices on page 231 for “dd” values.
1nn1 7630	Blower 3 fault (7311 Model D20 I/O Subsystem only)	Blower 3, Location: U0.dd-F3 See the notices on page 231 for “dd” values.
1nn1 7631	Blower 3 missing (7311 Model D20 I/O Subsystem only)	Blower 3, Location: U0.dd-F3 See the notices on page 231 for “dd” values.
1nn1 7640	Blower 4 fault (7311 Model D20 I/O Subsystem only)	Blower 4, Location: U0.dd-F4 See the notices on page 231 for “dd” values.
1nn1 7641	Blower 4 missing (7311 Model D20 I/O Subsystem only)	Blower 4, Location: U0.dd-F4 See the notices on page 231 for “dd” values.
1nn1 7650	Fan fault (7311 Model D10 I/O Subsystem only)	1. I/O subsystem backplane Location: U0.dd-P1 2. Fan Location: U0.dd-F5 See the notices on page 231 for “dd” values.
1nn1 7651	Fan missing (7311 Model D10 I/O Subsystem only)	1. I/O subsystem backplane Location: U0.dd-P1 2. Fan Location: U0.dd-F5 See the notices on page 231 for “dd” values.
1nn1 8400	Configuration ID conflict	1. Check cabling 2. Set the I/O type. See Power Control Network Utilities Menu on page 436. 3. I/O subsystem backplane Location: U0.dd-P1 See the notices on page 231 for “dd” values.
1nn1 840D	I/O type mismatch	1. Check cabling 2. Set the I/O type. See Power Control Network Utilities Menu on page 436. 3. I/O subsystem backplane Location: U0.dd-P1 See the notices on page 231 for “dd” values.

Table 5. SPCN Error Codes for I/O Subsystems (continued)

Error Code	Description	Action/ Possible Failing FRU
1nn1 840E	I/O type mismatch	<ol style="list-style-type: none"> <li>1. Check cabling</li> <li>2. Set the I/O type. See Power Control Network Utilities Menu on page 436.</li> <li>3. I/O subsystem backplane Location: U0.dd-P1</li> </ol> <p>See the notices on page 231 for “dd” values.</p>
1nn1 8A00	The power controlling the processor subsystem changed	Informational message
1nn1 C62E	Polling error	<p>I/O subsystem backplane, Location: U0.dd-P1</p> <p>See the notices on page 231 for “dd” values.</p>

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## Firmware/POST Error Codes

**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 129 unless you were already directed to any MAP 154x 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

Error Code	Description	Action/ Possible Failing FRU
2022 0000	The I/O bus is running slowly	1. Check cabling and correct any problems. 2. Call second level of support
20A8 0000	Insufficient information to boot.	Verify the IP address in the SMS menu.
20A8 0001	Client IP address is already in use by other network device	Verify the IP address in the SMS menu.
20A8 0002	Cannot get gateway IP address	Refer to Table 2 on page 180 using code <b>E174</b> .
20A8 0003	Cannot get server hardware address	Refer to Table 2 on page 180 using code <b>E174</b> .
20A8 0004	BootP failed	Refer to Table 2 on page 180 using code <b>E175</b> .
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 (informational message)	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: <ol style="list-style-type: none"><li>1. Boot the system and match the I/O subsystem location codes reported by the operating system to the subsystems attached to the processor subsystem. Check the SPCN and RIO cabling to the I/O subsystems. If a cabling problem is found, correct it.</li><li>2. If no cabling problem is found, call your next level of support.</li></ol>
20D0 000F	Selftest failed on device, no error and/or location code information available	Refer to “Determining the Location Code” on page 219 to see if a location code is available for the device the error was reported against. <ol style="list-style-type: none"><li>1. Replace device indicated by the location code (if available).</li><li>2. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li></ol>

Error Code	Description	Action/ Possible Failing FRU
20D0 0010	Self test failed on device, can't locate package	Contact your next level of support for assistance.
20D0 0011	Firmware RTAS attempt to allocate memory failed.	Contact your next level of support for assistance.
20D0 0800	Firmware update failure: partition does not have service authority	Using the HMC, grant service authority to that partition. Reboot the partition. Retry the flash update.
20D0 0801	System firmware update failure: more than one partition running	Shutdown all other partitions, then retry the firmware update.
20D0 0997	Operating system terminated with error string	Call service support.  A hypervisor dump may be available; see "Hypervisor Dump Retrieval Procedure" on page 404.
20D0 0998	Operating system terminated with error string	Call service support.  A hypervisor dump may be available; see "Hypervisor Dump Retrieval Procedure" on page 404.
20D0 0999	Operating system terminated with error string	Call service support.  A hypervisor dump may be available; see "Hypervisor Dump Retrieval Procedure" on page 404.
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.

Error Code	Description	Action/ Possible Failing FRU
20D0 0A07	Error initializing interface/operating system access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A08	Error initializing interface/client_interface access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A09	Error initializing interface/NUMA access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A0A	Error initializing interface/interrupt access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A0B	Error initializing interface/OFDT access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A0C	Error initializing interface/sensor access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A0D	Error initializing interface/sensors/led_table access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A0E	Error initializing interface/timebase access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A0F	Error initializing interface/time-of-day access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A10	Error initializing interface/cache access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A11	Error initializing interface/power access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
20D0 0A12	Error initializing interface/hot-plug access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A13	Error initializing interface/log access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A14	Error initializing interface/EEH access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A15	Error initializing interface/error injection access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A16	Error initializing interface/handling access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A17	Error initializing interface/utility access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 0A18	Error initializing register softpatch access	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D0 9001	Subsystem information not found in VPD	<ol style="list-style-type: none"> <li>1. If the location code starts with U0.1, the problem is in the system VPD module on the operator panel. Replace the operator panel; do not swap the old VPD module onto the new operator panel. Call service support for instructions on programming the VPD information into the new VPD module.</li> <li>2. If the location code indicates an I/O subsystem, call service support.</li> </ol>
20D0 9002	Subsystem machine type and model information not found in VPD	<ol style="list-style-type: none"> <li>1. If the location code starts with U0.1, the problem is in the system VPD module on the operator panel. Replace the operator panel; do not swap the old VPD module onto the new operator panel. Call service support for instructions on programming the VPD information into the new VPD module.</li> <li>2. If the location code indicates an I/O subsystem, call service support.</li> </ol>



Error Code	Description	Action/ Possible Failing FRU
20D0 9003	Subsystem serial number information not found in VPD	<ol style="list-style-type: none"> <li>1. If the location code starts with U0.1, the problem is in the system VPD module on the operator panel. Replace the operator panel; do not swap the old VPD module onto the new operator panel. Call service support for instructions on programming the VPD information into the new VPD module.</li> <li>2. If the location code indicates an I/O subsystem, call service support.</li> </ol>
20D0 9004	Subsystem machine type and model field is empty in VPD	<ol style="list-style-type: none"> <li>1. If the location code starts with U0.1, the problem is in the system VPD module on the operator panel. Replace the operator panel; do not swap the old VPD module onto the new operator panel. Call service support for instructions on programming the VPD information into the new VPD module.</li> <li>2. If the location code indicates an I/O subsystem, call service support.</li> </ol>
20D0 9005	Subsystem serial number field is empty in VPD	<ol style="list-style-type: none"> <li>1. If the location code starts with U0.1, the problem is in the system VPD module on the operator panel. Replace the operator panel; do not swap the old VPD module onto the new operator panel. Call service support for instructions on programming the VPD information into the new VPD module.</li> <li>2. If the location code indicates an I/O subsystem, call service support.</li> </ol>
20D0 9006	Duplicate subsystem serial number found in VPD	<ol style="list-style-type: none"> <li>1. If the location code starts with U0.1, the problem is in the system VPD module on the operator panel. Replace the operator panel; do not swap the old VPD module onto the new operator panel. Call service support for instructions on programming the VPD information into the new VPD module.</li> <li>2. If the location code indicates an I/O subsystem, call service support.</li> </ol>
20D0 9007	Invalid subsystem machine type and model information in VPD	<ol style="list-style-type: none"> <li>1. If the location code starts with U0.1, the problem is in the system VPD module on the operator panel. Replace the operator panel; do not swap the old VPD module onto the new operator panel. Call service support for instructions on programming the VPD information into the new VPD module.</li> <li>2. If the location code indicates an I/O subsystem, call service support.</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
20D0 9008	Invalid subsystem serial number found in VPD	<ol style="list-style-type: none"> <li>1. If the location code starts with U0.1, the problem is in the system VPD module on the operator panel. Replace the operator panel; do not swap the old VPD module onto the new operator panel. Call service support for instructions on programming the VPD information into the new VPD module.</li> <li>2. If the location code indicates an I/O subsystem, call service support.</li> </ol>
20D1 0001	Failed to send state-change message to service processor	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 0002	Failed to disable heartbeat alarm	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 0003	Failed to send boot status in LPAR partition	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 0004	Failed to locate service processor device tree node	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 0005	Failed to reboot system in LPAR mode	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 0006	Failed to reboot a partition in LPAR mode	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 0007	Failed to set PCI read/write permissions array	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 0008	Failed to set PCI read/write permissions array for slot	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
20D1 0009	Missing or invalid subsystem serial number	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. If a location code is shown with this error code, replace the part at that location.</li> <li>3. Contact your next level of support for assistance.</li> </ol> <p><b>Note:</b> The location code identifies the failing subsystem.</p>
20D1 000A	Failed to send boot failed message to service processor	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 000B	Failed to reset PCI read/write permissions array	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 000C	Failed to send LMB-TABLE-INFO mailbox repair	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 000D	Hypervisor function to get time-of-day failed	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 000E	Function to get time-of-day failed	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 000F	Hypervisor call to reset PHB or to check for drawer existence failed	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply update if available.</li> <li>2. Contact your next level of support for assistance.</li> </ol>
20D1 0010	Hypervisor call to reset PHB or to check for drawer existence failed	<ol style="list-style-type: none"> <li>1. Check for microcode updates for the fiber channel adapter. Apply any available updates.</li> <li>2. Check for system firmware updates. Apply any available updates.</li> <li>3. Contact your next level of support for assistance.</li> </ol>
20D1 0011	PHB recovery was not successful. Open firmware received a failure in phb-recovery-buffer.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply any available updates.</li> <li>2. Contact your next level of support for assistance.</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
20D1 0012	<b>Attention:</b> One of the I/O subsystems has been disconnected from the processor subsystem.	<p>This indicates that an I/O subsystem that was previously in the configuration was not found during the current boot.</p> <p>If an I/O subsystem has been removed, this code is an informational message.</p> <p>If this message occurs during a system boot and the system's drawer configuration has not changed, do the following:</p> <ol style="list-style-type: none"> <li>1. If not already booted, boot the system. Match the I/O subsystem location codes that are reported by the operating system with the attached I/O subsystems. Check the SPCN and RIO cabling to the I/O subsystems. Correct any cabling problems that are found.</li> <li>2. Check for system firmware updates. Apply any available updates.</li> <li>3. Contact your next level of support for assistance.</li> </ol>
20E0 0001	Privileged-access password entry error.	The password has been entered incorrectly. Retry the privileged-access password.
20E0 0004	Battery drained or needs replacement	<ol style="list-style-type: none"> <li>1. Replace the battery, Location: U0.1-P2-V3</li> <li>2. If problem persists, replace the service processor/PCI backplane, Location: U0.1-P2</li> </ol>
20E0 0009	Invalid password entered - system locked	<p>The password has been entered incorrectly 3 times.</p> <p>Turn off, then turn on the system unit, then enter the password correctly.</p>
20EE 0003	IP parameter requires 3 dots "."	<p>Enter valid IP parameter.</p> <p>Example: 000.000.000.000</p>
20EE 0004	Invalid IP parameter	<p>Enter valid IP parameter.</p> <p>Example: 000.000.000.000</p>
20EE 0005	Invalid IP parameter (>255)	<p>Enter valid IP parameter.</p> <p>Example: 255.192.002.000</p>
20EE 0007	Keyboard not found	<ol style="list-style-type: none"> <li>1. Plug in the keyboard.</li> <li>2. Replace the keyboard.</li> <li>3. If the keyboard is plugged into the processor subsystem, replace the service processor/PCI backplane.</li> <li>4. If the keyboard is plugged into a USB card, replace the USB card.</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
20EE 0008	No configurable adapters 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 device or adapter. (See notes on 217.) 2. Replace the I/O drawer backplane in the drawer that contains the adapter.
20EE 0009	Unable to communicate with the service processor/PCI backplane	Replace the service processor/PCI backplane, Location: U0.1-P2
20EE 000A	The image size on the boot or installation device exceeds the system firmware memory limitations	1. Check for system firmware updates. Apply if available. 2. Call service support.
20EE 000B	The system was not able to find an operating system on the devices in the boot list.	Go to "Boot Problems" on page 214.
20EE 000C	Pointer to the operating system found in non-volatile storage.	<p>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:</p> <ul style="list-style-type: none"> <li>• Either your operating system doesn't support storing the values</li> <li>or</li> <li>• An event occurred that caused the system to lose non-volatile storage information (drainage or replacement of the battery).</li> </ul> <p>If you are running AIX, this information can be reconstructed by running the bootlist command and specifying the device that the operating system is installed on. Please refer to your AIX documentation for the syntax and usage of the bootlist command. In order to boot the operating system so that the above-mentioned values can be reconstructed, power the system down and power it back up 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, modify the boot sequence (also known as the boot list) to include devices that are known to contain a copy of the operating system. This can be accomplished by using the SMS menus. 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 service processor/PCI backplane, Location: U0.1-P2</p>

Error Code	Description	Action/ Possible Failing FRU
20EE 000E	Unable to execute the lpar-mgr open firmware method	<ol style="list-style-type: none"> <li>1. Verify that the system is in LPAR mode, and reboot the system.</li> <li>2. Reflash the system with the latest level of system firmware.</li> <li>3. Call service support.</li> </ol>
20EE 000F	Unable to find the lpar-mgr package node	<ol style="list-style-type: none"> <li>1. Verify that the system is in LPAR mode, and reboot the system.</li> <li>2. Reflash the system with the latest level of system firmware.</li> <li>3. Call service support.</li> </ol>
20EE 0010	Unable to execute the root vpd method	<ol style="list-style-type: none"> <li>1. Verify that the system is in LPAR mode, and reboot the system.</li> <li>2. Reflash the system with the latest level of system firmware.</li> <li>3. Call service support.</li> </ol>
20EE 0011	Unable to execute the root-lpar-vpd vpd method	<ol style="list-style-type: none"> <li>1. Verify that the system is in LPAR mode, and reboot the system.</li> <li>2. Reflash the system with the latest level of system firmware.</li> <li>3. Call service support.</li> </ol>
20EE 0012	Unable to execute the mem-dimm-vpd method	<ol style="list-style-type: none"> <li>1. Verify that the system is in LPAR mode, and reboot the system.</li> <li>2. Reflash the system with the latest level of system firmware.</li> <li>3. Call service support.</li> </ol>
20EE 0013	Unable to allocate memory for root-lpar-vpd vpd	<ol style="list-style-type: none"> <li>1. Verify that the system is in LPAR mode, and reboot the system.</li> <li>2. Reflash the system with the latest level of system firmware.</li> <li>3. Call service support.</li> </ol>
20EE 0014	Unable to allocate memory for root-lpar-vpd location codes	<ol style="list-style-type: none"> <li>1. Verify that the system is in LPAR mode, and reboot the system.</li> <li>2. Reflash the system with the latest level of system firmware.</li> <li>3. Call service support.</li> </ol>
20EE 0100	Fcode resident on an I/O adapter is not supported on this system	<p>Informational message. The adapter's Fcode driver is not supported on this system. IBM may produce a compatible driver in the future, but does not guarantee one. Additional information may be available from service support.</p> <p>This error code only affects boot-time operation, not the adapter's functionality under the operating system.</p>
20FB 0010	Failed to find keyword offset of SPCN configuration table in NVRAM.	Call service support.
20FB 0020	Invalid SPCN configuration table flag before SPCN table update.	Call service support.

Error Code	Description	Action/ Possible Failing FRU
20FC 0020	Failed to retrieve power, package, and/or cooling VPD through the SPCN for the corresponding subsystem.	<ol style="list-style-type: none"> <li>1. Check RIO cable connection.</li> <li>2. Check for system firmware updates.</li> <li>3. Replace corresponding I/O backplane (location code indicates which subsystem).</li> <li>4. Replace the service processor/PCI backplane, Location: U0.1-P2.</li> </ol>
20FC 0021	Failed to retrieve power, package, and/or cooling VPD through SPCN for the subsystem.  Service processor mailbox failed to get power, packaging, and cooling device VPD.	<ol style="list-style-type: none"> <li>1. Check RIO cable connection.</li> <li>2. Check for system firmware updates.</li> <li>3. Replace corresponding I/O backplane (location code indicates which subsystem).</li> <li>4. Replace the service processor/PCI backplane Location: U0.1-P2.</li> </ol>
20FC 0030	Corrupted power, packaging, and/or cooling device VPD format in SPCN configuration table	<ol style="list-style-type: none"> <li>1. Check the RIO cabling.</li> <li>2. Replace corresponding I/O backplane (location code indicates which subsystem).</li> </ol>
20FF 0001	Problem with VPD	<ol style="list-style-type: none"> <li>1. Replace the part indicated by the location code.</li> <li>2. If no location code is specified, call service support.</li> </ol>
2100 0xxx	SCSI controller fault	<p>Before replacing any system components, refer to the notes in error code 21A0 0001.</p> <ol style="list-style-type: none"> <li>1. Replace the SCSI device.</li> </ol>
21A0 0001	SCSI DASD: test unit ready failed; hardware error	<p>Before replacing any system components:</p> <ol style="list-style-type: none"> <li>1. Insure that the controller and each device on the SCSI bus is assigned a unique SCSI ID.</li> <li>2. Insure that the SCSI bus is properly terminated.</li> <li>3. Insure that the SCSI signal and power cables are securely connected and not damaged.</li> </ol> <p>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.</p> <ol style="list-style-type: none"> <li>1. Replace the SCSI device.</li> <li>2. Replace the SCSI cable.</li> <li>3. Replace the SCSI controller.</li> </ol>
21A0 0002	SCSI DASD: test unit ready failed; sense data available	<p>Before replacing any system components, refer to the Action under error code 21A0 0001.</p> <ol style="list-style-type: none"> <li>1. Replace the media (if a removable media device).</li> <li>2. Replace the SCSI device.</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
21A0 0003	SCSI DASD: send diagnostic failed; sense data available	Before replacing any system components, refer to the Action under error code 21A0 0001.  Replace the SCSI device.
21A0 0004	SCSI DASD: send diagnostic failed - devofl command	Before replacing any system components, refer to the Action under 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 Action under 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 Action under error code 21A0 0001.  1. Replace the media (if a removable media device). 2. Replace the SCSI device.
21E0 0003	SCSI tape: send diagnostic failed; sense data available	Before replacing any system components, refer to the Action under error code 21A0 0001.  Replace the SCSI device.
21E0 0004	SCSI tape: send diagnostic failed - devdfl command	Before replacing any system components, refer to the Action under error code 21A0 0001.  Replace the SCSI device.
21ED 0001	SCSI changer: test unit ready failed; hardware error	Before replacing any system components, refer to the Action under 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 Action under error code 21A0 0001.  1. Replace the SCSI device. 2. Replace the media.
21ED 0003	SCSI changer: send diagnostic failed; sense data available	Before replacing any system components, refer to the Action under error code 21A0 0001.  Replace the SCSI device.



Error Code	Description	Action/ Possible Failing FRU
21ED 0004	SCSI changer: send diagnostic failed - devofl command	Before replacing any system components, refer to the Action under error code 21A0 0001.  Replace the SCSI device.
21EE 0001	Undetermined SCSI device: test unit ready failed; hardware error	Before replacing any system components, refer to the Action under 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: test unit ready failed; sense data available	Before replacing any system components, refer to the Action under error code 21A0 0001. 1. Replace the SCSI device. 2. Replace the media.
21EE 0003	Undetermined SCSI device: send diagnostic failed; sense data available	Before replacing any system components, refer to the Action under error code 21A0 0001.  Replace the SCSI device.
21EE 0004	Undetermined SCSI device: send diagnostic failed - devofl command	Before replacing any system components, refer to the Action under 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 Action under 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 Action under error code 21A0 0001. 1. Replace the SCSI device. 2. Replace the media.
21F0 0003	SCSI CD-ROM: send diagnostic failed; sense data available	Before replacing any system components, refer to the Action under error code 21A0 0001.  Replace the SCSI device.
21F0 0004	SCSI CD-ROM: send diagnostic failed - devofl command	Before replacing any system components, refer to the Action under error code 21A0 0001.  Replace the SCSI device.

Error Code	Description	Action/ Possible Failing FRU
21F2 0001	SCSI read/write optical device: test unit ready failed; hardware error	Before replacing any system components, refer to the Action under 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 device: test unit ready failed; sense data available	Before replacing any system components, refer to the Action under error code 21A0 0001. 1. Replace the SCSI device. 2. Replace the media.
21F2 0003	SCSI read/write optical drive: send diagnostic failed; sense data available	Before replacing any system components, refer to the Action under error code 21A0 0001.  Replace the SCSI drive.
21F2 0004	SCSI read/write optical drive: send diagnostic failed - devofl command	Before replacing any system components, refer to the Action under error code 21A0 0001.  Replace the SCSI drive.
2200 0001	PCI Ethernet BNC/RJ-45 or PCI Ethernet AUI/RJ-45 adapter: Internal wrap test failure	Replace the adapter. See note "Determining the Location Code" on page 219 for location code information related to this error.
2200 1001	10/100 Mbps Ethernet PCI adapter: Internal wrap test failure	Replace the adapter. See "Determining the Location Code" on page 219 for location code information related to this error.
2200 1002	10/100 Mbps Ethernet PCI adapter failure	Replace the adapter. See "Determining the Location Code" on page 219 for location code information related to this error.
2201 0001	PCI Auto LANstreamer Token Ring Adapter: adapter failed to complete hardware initialization.	Replace the adapter. See "Determining the Location Code" on page 219 for location code information related to this error.
2201 1001	PCI token ring adapter: adapter failed to complete hardware initialization.	Replace the adapter. See "Determining the Location Code" on page 219 for location code information related to this error.
25A0 0001	L2 cache controller failure	Replace the processor card specified by the location code.
25A1 0001	L2 cache SRAM failure	Replace the processor card specified by the location code.

Error Code	Description	Action/ Possible Failing FRU
25A8 0xxx	NVRAM problems	<p>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 25A8 0000 error, these errors are warnings that the NVRAM data content had to be reestablished and do not require any FRU replacement unless the error is persistent. When one of these errors occurs, any system customization (eg. boot device list) information has been lost, the system may need to be re-configured.</p> <p>If the error is persistent, replace the service processor/PCI backplane, Location: U0.1-P2</p>
25A8 0000	Initialization failed, device test failed	Refer to Action under error code 25A8 0xxx
25A8 0100	NVRAM data validation check failed.	<p>Turn off, turn on system unit and retry the operation before replacing any system component.</p> <p>Refer to Action under error code 25A8 0xxx</p>
25A8 0201	Unable to expand target partition - saving configuration variable.	Refer to Action under error code 25A8 0xxx
25A8 0202	Unable to expand target partition - writing error log entry.	Refer to Action under error code 25A8 0xxx
25A8 0203	Unable to expand target partition - writing VPD data.	Refer to Action under error code 25A8 0xxx
25A8 0210	Setenv/\$Setenv parameter error - name contains a null character.	Refer to Action under error code 25A8 0xxx
25A8 0211	Setenv/\$Setenv parameter error - value contains a null character.	Refer to Action under error code 25A8 0xxx

Error Code	Description	Action/ Possible Failing FRU
25A8 0998	NVRAMRC script evaluation error - command line execution error	<p>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 <b>SMS</b> 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.</p> <ol style="list-style-type: none"> <li>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. <ol style="list-style-type: none"> <li>Select the SCSI ID utility from the <b>SMS</b> menu(s). <ol style="list-style-type: none"> <li>Verify the list of SCSI controllers/adapters. If the list is not correct, suspect a problem with the adapter(s) installed but not listed.</li> <li>Select the option to Save the configuration information.</li> <li>Restart the system.</li> </ol> </li> <li>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.</li> </ol> </li> <li>Contact your support representative for further assistance.</li> </ol>
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. If this error persists, call service support.
25A8 0A00	Unable to retrieve NVRAM LPAR table information	Refer to the actions 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 390) 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 389 for information on how to interpret PD bits.

25B0 0001	Memory DIMM failure	Replace the DIMM specified by the location code.
25B0 0004	DIMM is not supported	Replace the unsupported DIMMs specified by the location code.
25Cy y001	DIMM is not supported	Replace unsupported memory DIMM(s) specified by the location code.

Error Code	Description	Action/ Possible Failing FRU
25Cy y002	DIMM failure	Replace the DIMM(s) specified by the location code.
2601 0000	Boot failed because the RIO cables, or the power subsystem cables, are not routed correctly to the I/O subsystems	<ol style="list-style-type: none"> <li>1. Check both ends of the RIO cable specified in the location code that appears with this error code.</li> <li>2. Determine which I/O subsystem is at the end of the RIO cable specified by the location code shown with this error code. Check both ends power supplies in that I/O subsystem.</li> </ol> <p>For information about I/O cabling and connector locations, see "Subsystem Positioning and Cabling" on page 8.</p>
2601 0001	Boot failed because the I/O subsystem has not been programmed correctly.	<p>For information about I/O book cabling and connector locations, see "Subsystem Positioning and Cabling" on page 8.</p> <ol style="list-style-type: none"> <li>1. Ensure that power cables are correctly connected to the I/O drawers.</li> <li>2. Firmware, including power code, may have to be flashed on the I/O subsystem. <b>Note:</b> The location code identifies the I/O subsystem that has the problem</li> <li>3. Contact the next level of support.</li> </ol>
2601 0002	RIO cable error	<ol style="list-style-type: none"> <li>1. Check both ends of the RIO cable specified in the location code that appears with this error code.</li> <li>2. Determine which I/O subsystem is at the end of the RIO cable specified by the location code shown with this error code. Check the power cables going to both power supplies in that I/O subsystem.</li> </ol> <p>For information about I/O cabling and connector locations, see "Subsystem Positioning and Cabling" on page 8.</p>
2602 0001	Invalid PCI adapter vendor ID	<ol style="list-style-type: none"> <li>1. Move adapter to another slot (behind a different PCI bus).</li> <li>2. Check for available firmware updates for adapter. Apply update if available.</li> <li>3. Run AIX diagnostics on adapter. Replace if indicated.</li> <li>4. Replace adapter.</li> <li>5. Check for system firmware updates. Apply if update available.</li> <li>6. Replace service processor/PCI backplane (See notes on Chapter 5, "Error Code to FRU Index", on page 217.)</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
2602 0002	Invalid PCI adapter device ID	<ol style="list-style-type: none"> <li>1. Move adapter to another slot (behind a different PCI bus).</li> <li>2. Check for available firmware updates for adapter. Apply update if available.</li> <li>3. Run AIX diagnostics on adapter. Replace if indicated.</li> <li>4. Replace adapter.</li> <li>5. Check for system firmware updates. Apply if update available.</li> <li>6. Replace service processor/PCI backplane. (See notes on Chapter 5, "Error Code to FRU Index", on page 217.)</li> </ol>
2602 0007	PCI device I/O or memory space request could not be satisfied	<p>If the location code identifies a slot:</p> <ol style="list-style-type: none"> <li>1. Reseat the adapter and reboot the system.</li> <li>2. Replace the adapter.</li> <li>3. Check for available firmware updates. Apply update if available.</li> <li>4. Replace the I/O backplane in which the adapter is installed.</li> </ol> <p>If the location code identifies an I/O backplane:</p> <ol style="list-style-type: none"> <li>1. Check for available firmware updates. Apply update if available.</li> <li>2. Replace the I/O backplane.</li> </ol>
2602 0008	PCI device Fcode evaluation error	<ol style="list-style-type: none"> <li>1. If the location code identifies a slot: <ol style="list-style-type: none"> <li>a. Check for adapter firmware updates. Apply if available.</li> <li>b. Replace the adapter.</li> <li>c. Check for system firmware updates. Apply if available.</li> </ol> </li> <li>2. If the location code identifies an I/O backplane: <ol style="list-style-type: none"> <li>a. Check for system firmware updates. Apply if available.</li> <li>b. Replace the I/O backplane.</li> </ol> </li> <li>3. Call service support.</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
2602 0010	<p><b>Description:</b> PCI probe error, bridge in freeze state</p> <p><b>Action:</b> If the location code identifies a slot or PCI adapter, do the following:</p> <ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply if available.</li> <li>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.</li> <li>3. <b>Is the system running AIX, and is the failing adapter hot-pluggable?</b> <p><b>YES</b> Go to 4.</p> <p><b>NO</b> The system will have to be powered down to continue, go to “2602 0010 (continued)” on page 256.</p> </li> <li>4. Use the hot plug service aid to reseat the card specified by the location code. See “Removing and Replacing a Hot-Pluggable PCI Adapter” on page 498. If reseating the adapter fixes the problem, go to MAP 410: “Repair Checkout” in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> manual. If the problem is not resolved, continue.</li> </ol> <p><b>Attention:</b> 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.</p> <ol style="list-style-type: none"> <li>5. <b>Is there an empty slot available into which the adapter could be plugged?</b> <p><b>YES</b> Use the hot plug task to move the adapter to another slot (behind a different PCI bridge). The “I/O Subsystem PHB and PCI Slot Locations” on page 7 identifies the PCI bridges and the associated slots. See “Removing a Hot-Pluggable PCI Adapter” on page 500 when removing the adapter, and “Installing a Hot-Pluggable PCI Adapter” on page 502 when installing the adapter in the new slot.</p> <p>If the adapter is successfully reconfigured in the new slot (behind a different PCI bridge), the slot in which the adapter was originally plugged is bad. Replace the service processor/PCI backplane, location: U0.1-P2, or the I/O backplane, location: U0.dd-P1 that contains the slot in which the adapter was originally installed.</p> <p>If the adapter does not reconfigure successfully in the new slot, replace the adapter.</p> <p><b>NO</b> Replace the adapter. If the problem is not resolved, replace the service processor/PCI backplane or the I/O backplane in which the card was installed, location: U0.1-P2 or U0.dd-P1.</p> </li> <li>6. Go to “MAP 1542: I/O Problem Isolation” on page 129.</li> </ol> <p>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 129.</p>	

Error Code	Description	Action/ Possible Failing FRU
2602 0010 (continued)	<p>1. Power down the system. See “Non-Hot-Pluggable PCI Adapter Removal and Replacement” on page 497 for instructions on reseating the card. If reseating the adapter fixes the problem, go to “MAP 0410: Repair Checkout” in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> manual.</p> <p><b>Attention:</b> 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.</p> <p>2. <b>Is there an empty slot available into which the adapter could be plugged?</b></p> <p><b>YES</b> Move the adapter to another slot (behind a different PCI bridge). The “I/O Subsystem PHB and PCI Slot Locations” on page 7 identifies the PCI bridges and the associated slots. See “Removing a Hot-Pluggable PCI Adapter” on page 500 when removing the adapter, and “Installing a Hot-Pluggable PCI Adapter” on page 502 when installing the adapter in the new slot.</p> <p>If the adapter is successfully reconfigured in the new slot (behind a different PCI bridge), the slot in which the adapter was originally plugged is bad. Replace the service processor/PCI backplane, location: U0.1-P2, or the I/O backplane, location: U0.dd-P1 that contains the slot in which the adapter was originally installed.</p> <p>If the adapter does not reconfigure successfully in the new slot, replace the adapter.</p> <p><b>NO</b> Replace the adapter. If the problem is not resolved, replace the service processor/PCI backplane, location: U0.1-P2, or the I/O backplane, location: U0.dd-P1 that contains the slot in which the adapter was originally installed.</p> <p>3. Go to “MAP 1542: I/O Problem Isolation” on page 129.</p> <p>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 129.</p>	
2602 0011	PCI probe error, bridge is not usable	<p>If the location code identifies a service processor/PCI backplane:</p> <ol style="list-style-type: none"> <li>1. Check for available firmware updates for adapter. Apply update if available.</li> <li>2. Replace the service processor/PCI backplane (See notes on Chapter 5, “Error Code to FRU Index”, on page 217.)</li> </ol> <p>If no location code is specified, go to “MAP 1542: I/O Problem Isolation” on page 129.</p>
2602 0012	PCI device run-time error, bridge in freeze state	<p>If the location code identifies a slot:</p> <ol style="list-style-type: none"> <li>1. Check for available firmware updates for adapter. Apply update if available.</li> <li>2. Replace adapter.</li> <li>3. Check for system firmware updates. Apply if update available.</li> </ol>
2680 0Axy	MX-PCI Bridge BIST Failure	<p>The problem is associated with bridge “y” in I/O subsystem “x”. Replace the I/O board associated with x</p> <p>x = I/O subsystem</p> <p>1=0 2=1 3=2 4=3 5=4 6=5</p> <p>See “Determining the Location Code” on page 219 or location code information related to this error.</p>



Error Code	Description	Action/ Possible Failing FRU
2680 0Cxx	Machine Check occurred	<ol style="list-style-type: none"> <li>1. Replace the part identified by the location code associated with this error code.</li> <li>2. If the location code associated with this error code identifies an adapter, and replacing the adapter does not correct the problem, replace the service processor/PCI subsystem backplane.</li> </ol> <p>Location: U0.1-P2</p>
2680 0Dxx	Machine check occurred; unable to isolate to a single device	Go to "MAP 1542: I/O Problem Isolation" on page 129.
27A0 0001	Error obtaining external RIO cable IDs	<ol style="list-style-type: none"> <li>1. Check the SPCN and RIO cabling going to the I/O subsystem specified by the location code.</li> <li>2. Check for system firmware updates. Apply any available updates.</li> <li>3. Replace the I/O subsystem backplane specified by the location code.</li> </ol>
2803 0001	Real-time clock not updating - RTC initialization required	<p>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 RTC 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.</p> <p>To set/restore the time and date, use the operating system facility.</p> <p>If the error is persistent, replace the service processor/PCI backplane, Location: U0.1-P2</p>
2803 0002	Bad time/date values	<ol style="list-style-type: none"> <li>1. Set time and date.</li> <li>2. Refer to Action under error code 2803 0001.</li> </ol>
2803 0003	RTC not updating - not correctable	Replace the service processor/PCI backplane, Location: U0.1-P2
2803 0004	RTC operating mode parameters (eg. data mode) changed	<ol style="list-style-type: none"> <li>1. Set time and date.</li> <li>2. Refer to Action under error code 2803 0001.</li> </ol>
2803 0005	RTC battery error	<p>Replace the service processor/PCI backplane. Location: U0.1-P2</p> <p><b>Note:</b> Passwords, time, and date need to be reset.</p>
2803 0010	The real-time-clock cannot be protected in the LPAR environment.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply any available updates.</li> <li>2. Contact your next level of support.</li> </ol>
2803 F003	Real-time-clock battery error	<p>Replace the service processor/PCI backplane, location: U0.1-P2.</p> <p><b>Note:</b> Passwords, time, and date need to be reset.</p>
2900 0002	ISA keyboard/mouse controller failed self-test	Replace the service processor/PCI backplane, location: U0.1-P2.

Error Code	Description	Action/ Possible Failing FRU
29A0 0003	ISA keyboard not present/detected	<ol style="list-style-type: none"> <li>1. Replace the keyboard</li> <li>2. Replace the service processor/PCI backplane, location: U0.1-P2.</li> </ol> <p><b>Note:</b> Passwords, time, and date need to be reset.</p>
29A0 0004	ISA keyboard stuck key detected	<ol style="list-style-type: none"> <li>1. Replace the keyboard.</li> <li>2. Replace the service processor/PCI backplane, location: U0.1-P2.</li> </ol>
29B0 0004	ISA mouse not present/detected	<ol style="list-style-type: none"> <li>1. Replace the mouse.</li> <li>2. Replace the service processor/PCI backplane, location: U0.1-P2.</li> </ol> <p><b>Note:</b> Passwords, time, and date need to be reset.</p>
2B20 0011	Processor is manually disabled.	Use the service processor menus to re-enable the processor and reboot the system.
2B20 0012	This is an informational code that is generated when the AIX command <b>cpu_deallocate</b> is used to take a processor off-line.	<p>There is no action required.</p> <p>To bring the processor back on-line (back into the system's or partition's configuration), reboot the operating system.</p>
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 system unit 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 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.

Error Code	Description	Action/ Possible Failing FRU
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	An exception error has been reported on a global processor	<p>The type of interrupt that caused the exception is specified by the x as follows:</p> <ul style="list-style-type: none"> <li><b>0:</b> Unknown interrupt</li> <li><b>1:</b> System reset interrupt (SRI)</li> <li><b>2:</b> Machine check interrupt (MCI)</li> <li><b>3:</b> Data storage interrupt (DSI)</li> <li><b>4:</b> Instruction storage interrupt (ISI)</li> <li><b>5:</b> External interrupt (EXI)</li> <li><b>6:</b> Alignment interrupt (ALI)</li> <li><b>7:</b> Program interrupt (SRI)</li> <li><b>8:</b> Floating unavailable interrupt (FUI)</li> </ul> <ul style="list-style-type: none"> <li>1. Check for system firmware updates. Apply if available.</li> <li>2. Call service support.</li> </ul>
2BA0 0000	Service processor/PCI backplane POST failure	Replace the service processor/PCI backplane, Location: U0.1-P2
2BA0 0012	Service processor/PCI backplane reports self test failure	Replace the service processor/PCI backplane, Location: U0.1-P2
2BA0 0013	Service processor/PCI backplane reports bad NVRAM CRC	Refer to the actions for 25A8 0xxx.
2BA0 0017	Service processor/PCI backplane reports bad or low battery.	Refer to the actions for 25A8 0xxx.
2BA0 0041	Service processor/PCI backplane VPD is corrupted.	Replace the service processor/PCI backplane, Location: U0.1-P2
2BA0 0071	VPD data is corrupted for processor 0	Replace the processor card Location: U0.1-C1
2BA0 0072	VPD data is corrupted for processor	Replace the processor card Location: U0.1-C2
2BA0 0073	VPD data is corrupted for processor	Replace the processor card Location: U0.1-C3
2BA0 0074	VPD data is corrupted for processor	Replace the processor card Location: U0.1-C4
2BA0 0080	Service processor hardware reset request failure	<ul style="list-style-type: none"> <li>1. Check for system firmware updates, apply if applicable.</li> <li>2. Call service support.</li> </ul>

Error Code	Description	Action/ Possible Failing FRU
2Cmm mhhh	A processor's timebase enable signal is stuck enabled	<ol style="list-style-type: none"> <li>1. Replace the service processor/PCI backplane, location: U0.1-P2.</li> <li>2. hhh indicates the failing processor. Replace the processor card that contains the failing processor according to the following table: <ul style="list-style-type: none"> <li>• hhh = 0 - 7: U0.1-C1</li> <li>• hhh = 8-15: U0.1-C2</li> <li>• hhh = 16-23: U0.1-C3</li> <li>• hhh = 24-31: U0.1-C4</li> </ul> </li> </ol>
2Dmm mhhh	A processor's timebase enable signal is stuck disabled	<ol style="list-style-type: none"> <li>1. Replace the service processor/PCI backplane, location: U0.1-P2.</li> <li>2. hhh indicates the failing processor. Replace the processor card that contains the failing processor according to the following table: <ul style="list-style-type: none"> <li>• hhh = 0 - 7: U0.1-C1</li> <li>• hhh = 8-15: U0.1-C2</li> <li>• hhh = 16-23: U0.1-C3</li> <li>• hhh = 24-31: U0.1-C4</li> </ul> </li> </ol>

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## Service Processor Error Codes

**Attention:** Follow the procedure defined in “Checkpoints and Error Codes Index” on page 221. 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 129 unless you were already directed to any MAP 154x 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, 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 *@server pSeries Diagnostic Information for Multiple Bus Systems*.

Table 6. Service Processor Error Codes.

Error Code	Description	Action/ Possible Failing FRU
4064 0002	System backplane fault	1. Ensure processor cards are seated and cables are connected securely. 2. System backplane Location: U0.1-P1
4064 0003	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C1
4064 0004	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C2
4064 0005	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C3
4064 0006	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C4
4064 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
4064 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
4064 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
4064 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
4064 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
4064 000E	Processor capacity card	Processor capacity card Location: U0.1-L1

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4064 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
4064 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
4064 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
4064 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
4064 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
4064 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
4064 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
4064 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5
4064 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
4064 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
4064 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
4064 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
4064 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
4064 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
4064 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
4064 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5
4064 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
4064 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
4064 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
4064 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
4064 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
4064 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
4064 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4064 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
4064 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
4064 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
4064 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
4064 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
4064 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
4064 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
4064 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2
4064 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
4064 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
4064 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
4064 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
4064 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
4064 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
4064 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane 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 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C3
4064 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C4

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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 127.
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
4064 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4064 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4064 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
4064 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4
4064 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
4064 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
4064 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4064 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4064 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4064 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4064 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4064 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
4064 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
4064 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
4064 0B10	Reserved	Call service support.
4064 0B11	Reserved	Call service support.
4064 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4064 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4064 0B20	Reserved	Call service support.
4064 0B21	Reserved	Call service support.
4064 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4064 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4064 0B30	Reserved	Call service support.
4064 0B31	Reserved	Call service support.
4064 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4064 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4064 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>
4064 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
4064 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4064 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4064 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4064 0C10	Processor configuration error: VPD mismatch for processor card 1 (Service processor firmware problem)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4064 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2 (Service processor firmware problem)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4064 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3 (Service processor firmware problem)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4064 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4 (Service processor firmware problem)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4064 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
4064 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
4064 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
4064 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4064 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
4064 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4064 0EA4	Service processor code problem	Contact next level of support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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 1540: Problem Isolation Procedures" on page 127.
4064 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4064 0EBF	Memory error	1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217. 2. Examine the service processor error log. a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code. b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.
4064 0EE1	Service processor firmware: invalid MRU to FRU mapping	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 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 0002	System backplane fault	1. Ensure processor cards are seated and cables are connected securely. 2. System backplane Location: U0.1-P1
4065 0003	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C1
4065 0004	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C2
4065 0005	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C3
4065 0006	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C4
4065 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
4065 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
4065 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
4065 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
4065 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
4065 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
4065 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
4065 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
4065 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4065 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
4065 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
4065 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
4065 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
4065 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5
4065 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
4065 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
4065 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
4065 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
4065 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
4065 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
4065 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
4065 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5
4065 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
4065 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
4065 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
4065 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
4065 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
4065 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
4065 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
4065 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
4065 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
4065 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4065 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
4065 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
4065 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
4065 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
4065 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2
4065 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
4065 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
4065 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
4065 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
4065 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
4065 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
4065 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane 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 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C3
4065 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C4
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 127.
4065 00D1	Informational message	Informational message
4065 0100	Memory extender 0 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
4065 0101	Memory extender 2 on processor card 1	Processor card, Location: U0.1-P1-C1
4065 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4065 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4065 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
4065 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4
4065 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
4065 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
4065 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4065 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4065 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4065 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4065 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
4065 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4065 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
4065 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
4065 0B10	Reserved	Call service support.
4065 0B11	Reserved	Call service support.
4065 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4065 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4065 0B20	Reserved	Call service support.
4065 0B21	Reserved	Call service support.
4065 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4065 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4065 0B30	Reserved	Call service support.
4065 0B31	Reserved	Call service support.
4065 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4065 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4065 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>
4065 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
4065 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4065 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4065 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4065 0C10	Processor configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4065 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4065 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4065 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4065 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
4065 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
4065 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
4065 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4065 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
4065 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4065 0EA4	Service processor code problem	Contact next level of support.
4065 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4065 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4065 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4065 0EBF	Memory error	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>2. Examine the service processor error log. <ol style="list-style-type: none"> <li>a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code.</li> <li>b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.</li> </ol> </li> </ol>
4065 0EE1	Service processor firmware: invalid MRU to FRU mapping	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4065 0EE2	Service processor firmware fault	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4065 0EE5	Firmware error, no callout available	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4066 0002	System backplane fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. System backplane Location: U0.1-P1</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 0003	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C1
4066 0004	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C2
4066 0005	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C3
4066 0006	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C4
4066 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
4066 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
4066 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
4066 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
4066 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
4066 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
4066 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
4066 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
4066 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
4066 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
4066 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
4066 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
4066 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
4066 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
4066 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
4066 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
4066 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
4066 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
4066 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
4066 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
4066 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5
4066 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
4066 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
4066 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
4066 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
4066 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
4066 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
4066 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
4066 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
4066 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
4066 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
4066 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
4066 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
4066 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
4066 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
4066 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
4066 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
4066 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
4066 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
4066 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
4066 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
4066 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane 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 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C3
4066 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C4
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 127.
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 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4066 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4066 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
4066 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
4066 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
4066 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4066 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4066 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4066 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4066 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
4066 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
4066 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
4066 0B10	Reserved	Call service support.
4066 0B11	Reserved	Call service support.
4066 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4066 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4066 0B20	Reserved	Call service support.
4066 0B21	Reserved	Call service support.
4066 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4066 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4066 0B30	Reserved	Call service support.
4066 0B31	Reserved	Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4066 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4066 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>
4066 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
4066 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4066 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4066 0C10	Processor configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4066 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4066 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4066 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4066 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
4066 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
4066 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
4066 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4066 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
4066 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4066 0EA4	Service processor code problem	Contact next level of support.
4066 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4066 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4066 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4066 0EBF	Memory error	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>2. Examine the service processor error log. <ol style="list-style-type: none"> <li>a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code.</li> <li>b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.</li> </ol> </li> </ol>
4066 0EE1	Service processor firmware: invalid MRU to FRU mapping	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4066 0EE2	Service processor firmware fault	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4066 0EE5	Firmware error, no callout available	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4067 0002	System backplane fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. System backplane Location: U0.1-P1</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4067 0003	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C1
4067 0004	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C2
4067 0005	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C3
4067 0006	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C4
4067 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
4067 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
4067 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
4067 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
4067 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
4067 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
4067 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
4067 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
4067 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
4067 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
4067 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
4067 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
4067 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
4067 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4067 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
4067 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
4067 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
4067 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
4067 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
4067 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
4067 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
4067 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5
4067 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
4067 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
4067 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
4067 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
4067 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
4067 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
4067 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
4067 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
4067 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
4067 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
4067 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
4067 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
4067 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
4067 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
4067 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4067 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
4067 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
4067 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
4067 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
4067 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
4067 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
4067 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane 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
4067 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
4067 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C3
4067 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C4
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 127.
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 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4067 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4067 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
4067 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4067 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
4067 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
4067 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4067 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4067 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4067 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4067 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
4067 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
4067 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4067 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
4067 0B10	Reserved	Call service support.
4067 0B11	Reserved	Call service support.
4067 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4067 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4067 0B20	Reserved	Call service support.
4067 0B21	Reserved	Call service support.
4067 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4067 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4067 0B30	Reserved	Call service support.
4067 0B31	Reserved	Call service support.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4067 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4067 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4067 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>
4067 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
4067 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4067 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4067 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4067 0C10	Processor configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4067 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4067 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4067 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4067 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
4067 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
4067 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
4067 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4067 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
4067 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4067 0EA4	Service processor code problem	Contact next level of support.
4067 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4067 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4067 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4067 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

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 127.
4067 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
40670EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4067 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4067 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4067 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4067 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4067 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4067 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4067 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
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 0002	System backplane fault	1. Ensure processor cards are seated and cables are connected securely. 2. System backplane Location: U0.1-P1
4068 0003	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C1
4068 0004	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C2
4068 0005	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C3

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4068 0006	Scan interface basic assurance tests detected processor fault	1. Ensure processor cards are seated and cables are connected securely. 2. Processor card Location: U0.1-P1-C4
4068 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
4068 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
4068 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
4068 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
4068 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
4068 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
4068 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
4068 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
4068 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
4068 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
4068 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
4068 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
4068 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
4068 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5
4068 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
4068 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
4068 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
4068 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
4068 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
4068 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4068 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
4068 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5
4068 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
4068 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
4068 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
4068 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
4068 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
4068 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
4068 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
4068 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
4068 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
4068 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
4068 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
4068 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
4068 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
4068 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
4068 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2
4068 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
4068 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
4068 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
4068 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
4068 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4068 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
4068 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane 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 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C3
4068 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C4
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 127.
4068 00D1	Informational message	Informational message
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 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4068 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4068 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
4068 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4
4068 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
4068 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
4068 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array guard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4068 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4068 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
4068 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
4068 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
4068 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
4068 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
4068 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
4068 0B10	Reserved	Call service support.
4068 0B11	Reserved	Call service support.



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4068 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4068 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4068 0B20	Reserved	Call service support.
4068 0B21	Reserved	Call service support.
4068 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4068 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4068 0B30	Reserved	Call service support.
4068 0B31	Reserved	Call service support.
4068 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4068 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4068 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>
4068 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
4068 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4068 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4068 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4068 0C10	Processor configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4068 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4068 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4068 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4068 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
4068 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
4068 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
4068 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4068 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
4068 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4068 0EA4	Service processor code problem	Contact next level of support.
4068 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4068 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4068 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4068 0EBF	Memory error	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>2. Examine the service processor error log. <ol style="list-style-type: none"> <li>a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code.</li> <li>b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.</li> </ol> </li> </ol>
4068 0EE1	Service processor firmware: invalid MRU to FRU mapping	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4068 0EE2	Service processor firmware fault	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4068 0EE5	Firmware error, no callout available	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4069 0002	System backplane fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. System backplane Location: U0.1-P1</li> </ol>
4069 0003	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C1</li> </ol>
4069 0004	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C2</li> </ol>
4069 0005	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C3</li> </ol>
4069 0006	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C4</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
4069 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
4069 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
4069 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
4069 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
4069 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
4069 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
4069 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
4069 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
4069 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
4069 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
4069 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
4069 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
4069 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5
4069 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
4069 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
4069 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
4069 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
4069 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
4069 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
4069 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
4069 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
4069 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
4069 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
4069 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
4069 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
4069 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
4069 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
4069 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
4069 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
4069 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
4069 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
4069 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
4069 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
4069 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
4069 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2
4069 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
4069 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
4069 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
4069 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
4069 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
4069 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
4069 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C3
4069 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C4
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 127.
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 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
4069 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
4069 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
4069 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4
4069 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
4069 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
4069 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array card to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
4069 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array card to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
4069 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
4069 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
4069 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
4069 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
4069 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
4069 0B10	Reserved	Call service support.
4069 0B11	Reserved	Call service support.
4069 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4069 0B20	Reserved	Call service support.
4069 0B21	Reserved	Call service support.
4069 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4069 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4069 0B30	Reserved	Call service support.
4069 0B31	Reserved	Call service support.
4069 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4069 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4069 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
4069 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
4069 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
4069 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
4069 0C10	Processor card 1 configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4069 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4069 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4069 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
4069 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
4069 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
4069 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4069 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
4069 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4069 0EA4	Service processor code problem	Contact next level of support.
4069 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4069 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4069 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
4069 0EBF	Memory error	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>2. Examine the service processor error log. <ol style="list-style-type: none"> <li>a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code.</li> <li>b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.</li> </ol> </li> </ol>
4069 0EE1	Service processor firmware: invalid MRU to FRU mapping	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4069 0EE2	Service processor firmware fault	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4069 0EE5	Firmware error, no callout available	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406A 0002	System backplane fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. System backplane Location: U0.1-P1</li> </ol>
406A 0003	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C1</li> </ol>
406A 0004	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C2</li> </ol>
406A 0005	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C3</li> </ol>
406A 0006	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C4</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
406A 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
406A 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
406A 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
406A 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
406A 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
406A 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
406A 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
406A 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
406A 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
406A 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
406A 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
406A 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
406A 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5
406A 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
406A 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
406A 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
406A 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
406A 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
406A 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
406A 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
406A 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
406A 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
406A 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
406A 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
406A 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
406A 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
406A 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
406A 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
406A 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
406A 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
406A 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
406A 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
406A 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
406A 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
406A 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2
406A 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
406A 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
406A 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
406A 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
406A 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
406A 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
406A 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
406A 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
406A 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C3
406A 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C4
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 127.
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 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406A 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406A 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
406A 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4
406A 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
406A 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
406A 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
406A 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406A 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406A 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406A 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406A 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406A 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406A 0B10	Reserved	Call service support.
406A 0B11	Reserved	Call service support.
406A 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406A 0B20	Reserved	Call service support.
406A 0B21	Reserved	Call service support.
406A 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406A 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406A 0B30	Reserved	Call service support.
406A 0B31	Reserved	Call service support.
406A 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406A 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406A 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
406A 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406A 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406A 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406A 0C10	Processor card 1 configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406A 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406A 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406A 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
406A 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
406A 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
406A 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406A 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
406A 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406A 0EA4	Service processor code problem	Contact next level of support.
406A 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406A 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406A 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406A 0EBF	Memory error	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>2. Examine the service processor error log. <ol style="list-style-type: none"> <li>a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code.</li> <li>b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.</li> </ol> </li> </ol>
406A 0EE1	Service processor firmware: invalid MRU to FRU mapping	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406A 0EE2	Service processor firmware fault	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406A 0EE5	Firmware error, no callout available	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406B 0002	System backplane fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. System backplane Location: U0.1-P1</li> </ol>
406B 0003	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C1</li> </ol>
406B 0004	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C2</li> </ol>
406B 0005	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C3</li> </ol>
406B 0006	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C4</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
406B 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
406B 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
406B 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
406B 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
406B 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
406B 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
406B 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
406B 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
406B 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
406B 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
406B 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
406B 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
406B 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5
406B 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
406B 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
406B 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
406B 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
406B 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
406B 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
406B 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
406B 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
406B 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
406B 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
406B 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
406B 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
406B 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
406B 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
406B 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
406B 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
406B 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
406B 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
406B 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
406B 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
406B 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
406B 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2
406B 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
406B 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
406B 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
406B 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
406B 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
406B 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
406B 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
406B 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
406B 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C3
406B 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C4
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 127.
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 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406B 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406B 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
406B 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4
406B 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
406B 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
406B 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array card to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
406B 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array card to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406B 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406B 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406B 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406B 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406B 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406B 0B10	Reserved	Call service support.
406B 0B11	Reserved	Call service support.
406B 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406B 0B20	Reserved	Call service support.
406B 0B21	Reserved	Call service support.
406B 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406B 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406B 0B30	Reserved	Call service support.
406B 0B31	Reserved	Call service support.
406B 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406B 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406B 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
406B 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406B 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406B 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406B 0C10	Processor card 1 configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406B 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406B 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406B 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
406B 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
406B 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
406B 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406B 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
406B 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406B 0EA4	Service processor code problem	Contact next level of support.
406B 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406B 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406B 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406B 0EBF	Memory error	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>2. Examine the service processor error log. <ol style="list-style-type: none"> <li>a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code.</li> <li>b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.</li> </ol> </li> </ol>
406B 0EE1	Service processor firmware: invalid MRU to FRU mapping	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406B 0EE2	Service processor firmware fault	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406B 0EE5	Firmware error, no callout available	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406C 0002	System backplane fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. System backplane Location: U0.1-P1</li> </ol>
406C 0003	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C1</li> </ol>
406C 0004	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C2</li> </ol>
406C 0005	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C3</li> </ol>
406C 0006	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C4</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406C 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
406C 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
406C 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
406C 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
406C 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
406C 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
406C 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
406C 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
406C 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
406C 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
406C 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
406C 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
406C 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
406C 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5
406C 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
406C 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
406C 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
406C 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
406C 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
406C 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
406C 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
406C 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406C 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
406C 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
406C 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
406C 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
406C 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
406C 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
406C 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
406C 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
406C 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
406C 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
406C 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
406C 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
406C 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
406C 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
406C 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2
406C 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
406C 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
406C 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
406C 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
406C 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
406C 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
406C 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C3
406C 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C4
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 127.
406C 00D1	Informational message	Informational message
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 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406C 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406C 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
406C 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4
406C 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
406C 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
406C 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array card to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
406C 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array card to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406C 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406C 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406C 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406C 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406C 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406C 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406C 0B10	Reserved	Call service support.
406C 0B11	Reserved	Call service support.
406C 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406C 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406C 0B20	Reserved	Call service support.
406C 0B21	Reserved	Call service support.
406C 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406C 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406C 0B30	Reserved	Call service support.
406C 0B31	Reserved	Call service support.
406C 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406C 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406C 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406C 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
406C 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406C 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406C 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406C 0C10	Processor configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406C 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406C 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406C 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406C 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
406C 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
406C 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
406C 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406C 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
406C 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406C 0EA4	Service processor code problem	Contact next level of support.
406C 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406C 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406C 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406C 0EBF	Memory error	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>2. Examine the service processor error log. <ol style="list-style-type: none"> <li>a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code.</li> <li>b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.</li> </ol> </li> </ol>
406C 0EE1	Service processor firmware: invalid MRU to FRU mapping	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406C 0EE2	Service processor firmware fault	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406C 0EE5	Firmware error, no callout available	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406D 0002	System backplane fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. System backplane Location: U0.1-P1</li> </ol>
406D 0003	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C1</li> </ol>
406D 0004	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C2</li> </ol>
406D 0005	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C3</li> </ol>
406D 0006	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C4</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
406D 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
406D 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
406D 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
406D 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
406D 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
406D 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
406D 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
406D 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
406D 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
406D 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
406D 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
406D 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
406D 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5
406D 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
406D 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
406D 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
406D 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
406D 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
406D 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
406D 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
406D 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
406D 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
406D 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
406D 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
406D 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
406D 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
406D 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
406D 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
406D 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
406D 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
406D 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
406D 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
406D 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
406D 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
406D 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2
406D 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
406D 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
406D 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
406D 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
406D 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
406D 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
406D 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C3
406D 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C4
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 127.
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 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406D 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406D 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
406D 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4
406D 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
406D 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
406D 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array card to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
406D 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array card to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406D 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406D 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406D 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406D 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406D 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406D 0B10	Reserved	Call service support.
406D 0B11	Reserved	Call service support.
406D 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406D 0B20	Reserved	Call service support.
406D 0B21	Reserved	Call service support.
406D 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406D 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406D 0B30	Reserved	Call service support.
406D 0B31	Reserved	Call service support.
406D 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406D 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406D 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
406D 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406D 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406D 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406D 0C10	Processor card 1 configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406D 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406D 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406D 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
406D 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
406D 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
406D 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406D 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
406D 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406D 0EA4	Service processor code problem	Contact next level of support.
406D 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406D 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406D 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406D 0EBF	Memory error	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>2. Examine the service processor error log. <ol style="list-style-type: none"> <li>a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code.</li> <li>b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.</li> </ol> </li> </ol>
406D 0EE1	Service processor firmware: invalid MRU to FRU mapping	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406D 0EE2	Service processor firmware fault	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406D 0EE5	Firmware error, no callout available	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406E 0002	System backplane fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. System backplane Location: U0.1-P1</li> </ol>
406E 0003	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C1</li> </ol>
406E 0004	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C2</li> </ol>
406E 0005	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C3</li> </ol>
406E 0006	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C4</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406E 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
406E 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
406E 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
406E 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
406E 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
406E 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
406E 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
406E 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
406E 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
406E 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
406E 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
406E 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
406E 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
406E 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5
406E 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
406E 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
406E 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
406E 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
406E 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
406E 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
406E 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
406E 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406E 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
406E 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
406E 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
406E 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
406E 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
406E 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
406E 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
406E 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
406E 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
406E 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
406E 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
406E 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
406E 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
406E 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
406E 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2
406E 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
406E 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
406E 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
406E 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
406E 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
406E 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
406E 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
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 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C3
406E 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C4
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 127.
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 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406E 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406E 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
406E 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4
406E 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
406E 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
406E 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array card to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
406E 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array card to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406E 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406E 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406E 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406E 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406E 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406E 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406E 0B10	Reserved	Call service support.
406E 0B11	Reserved	Call service support.
406E 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406E 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406E 0B20	Reserved	Call service support.
406E 0B21	Reserved	Call service support.
406E 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406E 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406E 0B30	Reserved	Call service support.
406E 0B31	Reserved	Call service support.
406E 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406E 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406E 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406E 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
406E 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406E 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406E 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406E 0C10	Processor card 1 configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406E 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406E 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406E 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406E 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
406E 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
406E 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
406E 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406E 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
406E 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406E 0EA4	Service processor code problem	Contact next level of support.
406E 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406E 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406E 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406E 0EBF	Memory error	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>2. Examine the service processor error log. <ol style="list-style-type: none"> <li>a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code.</li> <li>b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.</li> </ol> </li> </ol>
406E 0EE1	Service processor firmware: invalid MRU to FRU mapping	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406E 0EE2	Service processor firmware fault	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406E 0EE5	Firmware error, no callout available	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406F 0002	System backplane fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. System backplane Location: U0.1-P1</li> </ol>
406F 0003	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C1</li> </ol>
406F 0004	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C2</li> </ol>
406F 0005	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C3</li> </ol>
406F 0006	Scan interface basic assurance tests detected processor fault	<ol style="list-style-type: none"> <li>1. Ensure processor cards are seated and cables are connected securely.</li> <li>2. Processor card Location: U0.1-P1-C4</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 0009	Fabric card	1. Ensure processor cards are seated and cables are connected securely. 2. Fabric card Location: U0.1-P3
406F 000A	RIO connector card 1	RIO connector card 1 Location: U0.1-P1-H1
406F 000B	RIO connector extender card 1	RIO connector extender card 1 Location: U0.1-P1-H1.1
406F 000C	RIO connector card 2	RIO connector card 2 Location: U0.1-P1-H2
406F 000D	RIO connector extender card 2	RIO connector extender card 2 Location: U0.1-P1-H2.1
406F 000E	Processor capacity card	Processor capacity card Location: U0.1-L1
406F 0010	Memory DIMM J0A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M3
406F 0011	Memory DIMM J1A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M8
406F 0012	Memory DIMM J2A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M1
406F 0013	Memory DIMM J3A, processor card 1	Memory DIMM Location: U0.1-P1-C1.M6
406F 0014	Memory DIMM J0C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M4
406F 0015	Memory DIMM J1C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M7
406F 0016	Memory DIMM J2C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M2
406F 0017	Memory DIMM J3C, processor card 1	Memory DIMM Location: U0.1-P1-C1.M5
406F 0018	Memory DIMM J0A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M3
406F 0019	Memory DIMM J1A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M8
406F 001A	Memory DIMM J2A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M1
406F 001B	Memory DIMM J3A, processor card 2	Memory DIMM Location: U0.1-P1-C2.M6
406F 001C	Memory DIMM J0C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M4
406F 001D	Memory DIMM J1C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M7
406F 001E	Memory DIMM J2C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M2
406F 001F	Memory DIMM J3C, processor card 2	Memory DIMM Location: U0.1-P1-C2.M5

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 0020	Memory DIMM J0A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M3
406F 0021	Memory DIMM J1A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M8
406F 0022	Memory DIMM J2A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M1
406F 0023	Memory DIMM J3A, processor card 3	Memory DIMM Location: U0.1-P1-C3.M6
406F 0024	Memory DIMM J0C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M4
406F 0025	Memory DIMM J1C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M7
406F 0026	Memory DIMM JCB, processor card 3	Memory DIMM Location: U0.1-P1-C3.M2
406F 0027	Memory DIMM J3C, processor card 3	Memory DIMM Location: U0.1-P1-C3.M5
406F 0028	Memory DIMM J0A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M3
406F 0029	Memory DIMM J1A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M8
406F 002A	Memory DIMM J2A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M1
406F 002B	Memory DIMM J3A, processor card 4	Memory DIMM Location: U0.1-P1-C4.M6
406F 002C	Memory DIMM J0C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M4
406F 002D	Memory DIMM J1C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M7
406F 002E	Memory DIMM J2C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M2
406F 002F	Memory DIMM J3C, processor card 4	Memory DIMM Location: U0.1-P1-C4.M5
406F 0030	NUMA directory DIMM card 0	Memory DIMM Location: U0.1-P1-C1.M9
406F 0038	NUMA directory DIMM card 1	Memory DIMM Location: U0.1-P1-C2.M9
406F 0040	NUMA directory DIMM card 3	Memory DIMM Location: U0.1-P1-C3.M9
406F 0048	NUMA directory DIMM card 2	Memory DIMM Location: U0.1-P1-C4.M9
406F 00B0	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2
406F 00B1	Bus controller failure	1. Check for system firmware updates 2. Service processor/PCI backplane Location: U0.1-P2

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 00B3	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 1 Location: U0.1-P1-C1
406F 00B4	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 2 Location: U0.1-P1-C2
406F 00B5	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 3 Location: U0.1-P1-C3
406F 00B6	Processor/VPD problem detected	1. Check for system firmware updates 2. Processor card 4 Location: U0.1-P1-C4
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 127.
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 0110	Memory extender 0 on processor card 2	Processor card, Location: U0.1-P1-C2
406F 0111	Memory extender 2 on processor card 2	Processor card, Location: U0.1-P1-C2
406F 0120	Memory extender 0 on processor card 4	Processor card, Location: U0.1-P1-C4
406F 0121	Memory extender 2 on processor card 4	Processor card, Location: U0.1-P1-C4
406F 0130	Memory extender 0 on processor card 3	Processor card, Location: U0.1-P1-C3
406F 0131	Memory extender 2 on processor card 3	Processor card, Location: U0.1-P1-C3
406F 0A03	Reboot message on processor card 1. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .
406F 0A04	Reboot message on processor card 2. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i> .

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 0A05	Reboot message on processor card 4. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406F 0A06	Reboot message on processor card 3. Reboot is necessary for run-time array gard to take affect.	Reboot the system in slow mode. Run diagnostics, then go to "MAP 0235: System Array Self-Repair Problem Resolution" in the <i>@server pSeries Diagnostic Information for Multiple Bus Systems</i>
406F 0B00	Problem with internal RIO interface (I/O slot 0, I/O port 0)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406F 0B01	Problem with internal RIO interface (I/O slot 0, I/O port 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. RIO riser card, Location: U0.1-P1-H1</li> <li>3. Service processor/PCI backplane, Location:U0.1-P2</li> <li>4. System board, Location: U0.1-P1</li> </ol>
406F 0B02	Problem with RIO interface (I/O slot 0, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406F 0B03	Problem with RIO interface (I/O slot 0, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Call service support.</li> </ol>
406F 0B10	Reserved	Call service support.
406F 0B11	Reserved	Call service support.
406F 0B12	Problem with RIO interface (I/O slot 1, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 0B13	Problem with RIO interface (I/O slot 1, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406F 0B20	Reserved	Call service support.
406F 0B21	Reserved	Call service support.
406F 0B22	Problem with RIO interface (I/O slot 2, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406F 0B23	Problem with RIO interface (I/O slot 2, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406F 0B30	Reserved	Call service support.
406F 0B31	Reserved	Call service support.
406F 0B32	Problem with RIO interface (I/O slot 3, I/O port 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406F 0B33	Problem with RIO interface (I/O slot 3, I/O port 3)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406F 0B40	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane, Location: U0.1-P2</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 0BF0	Problem with controller chip on service processor/PCI backplane	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1 and the I/O subsystems.</li> <li>3. RIO riser card, Location: U0.1-P1-H1</li> <li>4. Service processor/PCI backplane, Location: U0.1-P2</li> <li>5. System backplane, Location: U0.1-P1</li> <li>6. Call service support.</li> </ol>
406F 0BF1	Problem with RIO interface (I/O slot 1, I/O hub 1)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H1.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H1.1</li> <li>4. Call service support.</li> </ol>
406F 0BF2	Problem with RIO interface (I/O slot 2, I/O hub 2)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2</li> <li>4. Call service support.</li> </ol>
406F 0BF3	I/O hub 3, I/O port x (problem outside the system unit)	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Check the cabling between the RIO interface card at U0.1-P1-H2.1 and the I/O subsystems.</li> <li>3. RIO connector extension card, Location: U0.1-P1-H2.1</li> <li>4. Call service support.</li> </ol>
406F 0C10	Processor card 1 configuration error: VPD mismatch for processor card 1	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406F 0C11	Processor card 2 configuration error: VPD mismatch for processor card 2	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406F 0C12	Processor card 3 configuration error: VPD mismatch for processor card 3	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406F 0C13	Processor card 4 configuration error: VPD mismatch for processor card 4	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 0CA5	Invalid system configuration	<ol style="list-style-type: none"> <li>1. Check that the processor cards and memory DIMMs are properly installed and configured.</li> <li>2. If there are any FRUs listed in the service processor error log entry, replace them one at a time.</li> <li>3. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
406F 0CA6	No usable memory left in the system. The system must be rebooted.	Reboot in slow mode to isolate the failure.
406F 0CA9	Processor memory configuration error	Check plugging and configuration of DIMMs. Reboot in slow mode.
406F 0EA0	MOPS service processor code error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406F 0EA1	Operating system code on main processor	<ol style="list-style-type: none"> <li>1. Check for operating system code updates.</li> <li>2. Call service support.</li> </ol>
406F 0EA2	PRD code on service processor error.	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406F 0EA4	Service processor code problem	Contact next level of support.
406F 0EAF	Service processor code and system type are unknown	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406F 0EB0	JTAG problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EB1	Attention line 0 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EB2	Attention line 1 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EB3	Attention line 2 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EB4	Attention line 3 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F0EB5	Attention line 4 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EB6	Attention line 5 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EB7	Attention line 6 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EB8	Attention line 7 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EB9	Attention line 8 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EBA	Attention line 9 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EBB	Attention line 10 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
406F 0EBC	Attention line 11 stuck fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
406F 0EBF	Memory error	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>2. Examine the service processor error log. <ol style="list-style-type: none"> <li>a. If a CEC subsystem error (a 4xxx yyyy error) occurred during the slow boot that calls out the memory, processors, L3 cache modules or the primary I/O book, replace the part indicated by the location code.</li> <li>b. If a CEC subsystem error (a 4xxx yyyy error) did not occur during the slow boot, look for a 4xxx yyyy error immediately preceding the 406x 0EBF error. Replace the part indicated by the location code associated with that error.</li> </ol> </li> </ol>
406F 0EE1	Service processor firmware: invalid MRU to FRU mapping	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406F 0EE2	Service processor firmware fault	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
406F 0EE5	Firmware error, no callout available	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
4503 25DB	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Go to the processor configuration/deconfiguration menu, which is 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 2.</li> <li>2. Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 25DC	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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.</p> <p>If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved.</p> <p>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 2.</p> <ol style="list-style-type: none"> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>
4503 25DF	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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.</p> <p>If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved.</p> <p>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 2.</p> <ol style="list-style-type: none"> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 25EC	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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.</p> <p>If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved.</p> <p>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 2.</p> <ol style="list-style-type: none"> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>
4503 25EF	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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.</p> <p>If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved.</p> <p>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 2.</p> <ol style="list-style-type: none"> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 25F4	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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.</p> <p>If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved.</p> <p>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 2.</p> <ol style="list-style-type: none"> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>
4503 301A	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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. Shut down the system using the white power button and look again at the status of the DIMMs.</p> <p>If all of the DIMMs are still configured in the memory configuration/deconfiguration menu, the problem has been resolved.</p> <p>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.</p> <ol style="list-style-type: none"> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 301B	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>
4503 301C	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 301D	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>
4503 301E	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 302E	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>
4503 302F	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 303B	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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. Shut down the system using the white power button and look again at the status of the DIMMs.</p> <p>If all of the DIMMs are still configured in the memory configuration/deconfiguration menu, the problem has been resolved.</p> <p>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.</p> <ol style="list-style-type: none"> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>
4503 303C	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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. Shut down the system using the white power button and look again at the status of the DIMMs.</p> <p>If all of the DIMMs are still configured in the memory configuration/deconfiguration menu, the problem has been resolved.</p> <p>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.</p> <ol style="list-style-type: none"> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 303D	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>
4503 309A	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 309B	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>
4503 309C	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 309D	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>
4503 309E	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is 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. Shut down the system using the white power button and look again at the status of the DIMMs.  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.</li> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4503 309F	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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. Shut down the system using the white power button and look again at the status of the DIMMs.</p> <p>If all of the DIMMs are still configured in the memory configuration/deconfiguration menu, the problem has been resolved.</p> <p>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.</p> <ol style="list-style-type: none"> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>
4503 30AA	This error code indicates that the memory repeat guard function has deconfigured a quad of memory.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the memory configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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. Shut down the system using the white power button and look again at the status of the DIMMs.</p> <p>If all of the DIMMs are still configured in the memory configuration/deconfiguration menu, the problem has been resolved.</p> <p>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.</p> <ol style="list-style-type: none"> <li>Replace the quad of memory containing the DIMM specified by the location code. The entire quad of memory must be replaced.</li> </ol>
4504 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4504 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4504 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4505 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4505 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4506 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4506 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4507 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4507 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4508 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4508 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4509 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4509 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450A 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450A 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450B 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450B 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450C 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450C 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450D 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450D 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450E 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450E 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
450F 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 301A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 301B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 301C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 301D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 301E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 302E	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 302F	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 303B	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 303C	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 303D	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 309A	128 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 309B	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 309C	256 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 309D	512 MB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 309E	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 309F	1 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
450F 30AA	2 GB DIMM fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4604 2783	RIO adapter card	Replace the part specified by the location code.
4604 2784	RIO adapter card	Replace the part specified by the location code.
4604 278C	RIO adapter card	Replace the part specified by the location code.
4604 278D	RIO adapter card	Replace the part specified by the location code.
4604 2848	Service processor/PCI backplane	Replace the part specified by the location code.
4605 2783	RIO adapter card	Replace the part specified by the location code.
4605 2784	RIO adapter card	Replace the part specified by the location code.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4605 278C	RIO adapter card	Replace the part specified by the location code.
4605 278D	RIO adapter card	Replace the part specified by the location code.
4605 2848	Service processor/PCI backplane	Replace the part specified by the location code.
4606 2783	RIO adapter card	Replace the part specified by the location code.
4606 2784	RIO adapter card	Replace the part specified by the location code.
4606 278C	RIO adapter card	Replace the part specified by the location code.
4606 278D	RIO adapter card	Replace the part specified by the location code.
4606 2848	Service processor/PCI backplane	Replace the part specified by the location code.
4607 2783	RIO adapter card	Replace the part specified by the location code.
4607 2784	RIO adapter card	Replace the part specified by the location code.
4607 278C	RIO adapter card	Replace the part specified by the location code.
4607 278D	RIO adapter card	Replace the part specified by the location code.
4607 2848	Service processor/PCI backplane	Replace the part specified by the location code.
4608 2783	RIO adapter card	Replace the part specified by the location code.
4608 2784	RIO adapter card	Replace the part specified by the location code.
4608 278C	RIO adapter card	Replace the part specified by the location code.
4608 278D	RIO adapter card	Replace the part specified by the location code.
4608 2848	Service processor/PCI backplane	Replace the part specified by the location code.
4609 2783	RIO adapter card	Replace the part specified by the location code.
4609 2784	RIO adapter card	Replace the part specified by the location code.
4609 278C	RIO adapter card	Replace the part specified by the location code.
4609 278D	RIO adapter card	Replace the part specified by the location code.
4609 2848	Service processor/PCI backplane	Replace the part specified by the location code.
460A 2783	RIO adapter card	Replace the part specified by the location code.
460A 2784	RIO adapter card	Replace the part specified by the location code.
460A 278C	RIO adapter card	Replace the part specified by the location code.
460A 278D	RIO adapter card	Replace the part specified by the location code.
460A 2848	Service processor/PCI backplane	Replace the part specified by the location code.
460B 2783	RIO adapter card	Replace the part specified by the location code.
460B 2784	RIO adapter card	Replace the part specified by the location code.
460B 278C	RIO adapter card	Replace the part specified by the location code.
460B 278D	RIO adapter card	Replace the part specified by the location code.
460B 2848	Service processor/PCI backplane	Replace the part specified by the location code.
460C 2783	RIO adapter card	Replace the part specified by the location code.
460C 2784	RIO adapter card	Replace the part specified by the location code.
460C 278C	RIO adapter card	Replace the part specified by the location code.
460C 278D	RIO adapter card	Replace the part specified by the location code.
460C 2848	Service processor/PCI backplane	Replace the part specified by the location code.
460D 2783	RIO adapter card	Replace the part specified by the location code.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
460D 2784	RIO adapter card	Replace the part specified by the location code.
460D 278C	RIO adapter card	Replace the part specified by the location code.
460D 278D	RIO adapter card	Replace the part specified by the location code.
460D 2848	Service processor/PCI backplane	Replace the part specified by the location code.
460E 2783	RIO adapter card	Replace the part specified by the location code.
460E 2784	RIO adapter card	Replace the part specified by the location code.
460E 278C	RIO adapter card	Replace the part specified by the location code.
460E 278D	RIO adapter card	Replace the part specified by the location code.
460E 2848	Service processor/PCI backplane	Replace the part specified by the location code.
460F 2783	RIO adapter card	Replace the part specified by the location code.
460F 2784	RIO adapter card	Replace the part specified by the location code.
460F 278C	RIO adapter card	Replace the part specified by the location code.
460F 278D	RIO adapter card	Replace the part specified by the location code.
460F 2848	Service processor/PCI backplane	Replace the part specified by the location code.
4B23 25DB	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is 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 2.</li> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B23 25DC	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is 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 2.</li> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>
4B23 25DF	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is 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 2.</li> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B23 25EC	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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.</p> <p>If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved.</p> <p>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 2.</p> <ol style="list-style-type: none"> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>
4B23 25EF	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is under the system information menu in the service processor menus.</li> </ol> <p>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.</p> <p>If all of the processors are still configured in the processor configuration/deconfiguration menu, the problem has been resolved.</p> <p>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 2.</p> <ol style="list-style-type: none"> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B23 25F4	This error code indicates that the processor repeat guard function has deconfigured a processor.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>Go to the processor configuration/deconfiguration menu, which is 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 2.</li> <li>Replace the processor card (on which the deconfigured processor resides) specified by the location code.</li> </ol>
4B24 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B24 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B24 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B24 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B24 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B24 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B24 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B24 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B24 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B24 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B25 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B25 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B25 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.



Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B25 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B25 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B25 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B25 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B25 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B25 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B25 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B26 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B26 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B26 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B26 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B26 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B26 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B26 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B26 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B26 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B26 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B27 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B27 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B27 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B27 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B27 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B27 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B27 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B27 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B27 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B28 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B28 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B28 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B28 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B28 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B28 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B28 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B28 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B28 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B28 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B29 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B29 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B29 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B29 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B29 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B29 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B29 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B29 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B29 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B29 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B2A 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2A 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2A 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2A 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2A 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2A 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2A 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2A 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2A 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2A 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2B 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2B 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2B 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2B 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2B 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2B 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2B 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2B 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2B 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2B 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2C 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2C 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2C 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B2C 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2C 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2C 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2C 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2C 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2C 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2C 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2D 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2D 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2D 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2D 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2D 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2D 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2D 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2D 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2D 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2D 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2E 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2E 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2E 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2E 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2E 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2E 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

Table 6. Service Processor Error Codes. (continued)

Error Code	Description	Action/ Possible Failing FRU
4B2E 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2E 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2E 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2E 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2F 25DB	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2F 25DC	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2F 25DF	2-way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2F 25EC	1-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2F 25EF	0-2 way processor card fault (CuOD)	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2F 25F4	2 way processor card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2F 281E	System backplane fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2F 289C	4-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2F 289D	6-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.
4B2F 289E	8-way fabric card fault	Go to "MAP 1548: Memory and Processor Problem Isolation" on page 155.

## Memory DIMM Present Detect Bits (PD-Bits)

The following table expands on the Memory Error Notes found on page 252, 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.

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.

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## 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. Choose **View Error Log** from the SMS main menu.
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 217 and perform the listed action.

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## System Firmware Update Messages

Error Code	Description	Action/ Possible Failing FRU
A1FD 0000	Firmware update recovery mode entered	Informational 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
A1FD 000n	Service processor flash recovery	Insert Diskette #n

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## Scan Dump Messages

*Table 7. Scan Dump Messages*

Error Code	Description	Action/ Possible Failing FRU
A100 3000	Successful completion of scan dump	Informational message; may or may not be seen during a scan log dump.
A1FF 3000	Scan dump has been disabled	Informational message; may or may not be seen during a scan log dump.

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## Common Firmware Error Codes

**Attention:** Follow the procedure defined in “Checkpoints and Error Codes Index” on page 221. 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 129 unless you were already directed to any MAP 154x 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 *@serverpSeries Diagnostic Information for Multiple Bus Systems*.

Error Code	Description	Action/ Possible Failing FRU
B006 1403	Missing service processor resource	1. Check for system firmware updates. 2. Service processor/PCI backplane Location: U0.1-P2
B006 1404	Service processor firmware fault	1. Check for system firmware updates. 2. Service processor/PCI backplane Location: U0.1-P2
B006 1405	Service processor firmware fault	1. Check for system firmware updates. 2. Service processor/PCI backplane Location: U0.1-P2
B006 1406	Service processor program error	1. Check for system firmware updates. 2. Check for operating system updates 3. Service processor/PCI backplane Location: U0.1-P2
B006 1407	Service processor resource allocation problem	1. Check for system firmware updates. 2. Check for operating system updates 3. Service processor/PCI backplane Location: U0.1-P2
B006 1408	Service processor program error	1. Check for system firmware updates. 2. Check for operating system updates 3. Service processor/PCI backplane Location: U0.1-P2
B006 1409	Service processor program error	1. Check for system firmware updates. 2. Service processor/PCI backplane Location: U0.1-P2
B10F 1000	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1002	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1005	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1007	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1008	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B10F 100E	Service processor boot flash corrupted	Service processor/PCI backplane Location: U0.1-P2



Error Code	Description	Action/ Possible Failing FRU
B10F 100F	Service processor base flash corrupted	Service processor/PCI backplane Location: U0.1-P2
B10F 1300	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1370	Service processor flash update failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1380	Service processor program failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1381	Service processor flash error	Service processor/PCI backplane Location: U0.1-P2
B10F 1384	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1387	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1400	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1401	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1670	Service processor flash update failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1672	Service processor firmware update invalid	Call second level of support
B10F 1675	Service processor memory failure	Service processor/PCI backplane Location: U0.1-P2
B10F 1681	Service processor firmware update invalid	Call second level of support
B10F 1682	Service processor firmware update invalid	Call second level of support
B10F 1683	Service processor firmware update invalid	Call second level of support
B1xx 0013	An attempt was made to flash (update) the firmware from AIX using the wrong image for this system. No flashing took place; the firmware level was not changed.	Retry the firmware update from AIX using the correct flash image.
B1xx 4600	Service processor failure	1. Check for system firmware updates. 2. Service processor/PCI backplane Location: U0.1-P2
B1xx 4601	System processor failure	Reboot the system in slow mode to isolate the failure.

Error Code	Description	Action/ Possible Failing FRU
B1xx 4602	RIO failure	<ol style="list-style-type: none"> <li>Was this error code logged just after the system crashed?  <b>NO</b>      Go to step 3.  <b>YES</b>      Go to step 2.</li> <li>Examine the service processor error log. Look for a 4xxx yyyy error that calls out FRU(s) in the CEC whose timestamp just precedes the B1xx 4602 error.  If a 4xxx yyyy error occurred, replace the FRU indicated by the location code. If there is no 4xxx yyyy error whose timestamp just precedes the B1xx 4602 error, continue to step 3.</li> <li> <ol style="list-style-type: none"> <li>Reboot the system in slow mode to the SMS menus. See "Performing Slow Boot" on page 217.</li> <li>Examine the service processor error logs. Look for a 4xxx yyyy error that occurred during the slow boot that calls out FRU(s) in the processor subsystem.</li> <li>If a 4xxx yyyy error occurred during the slow boot, replace the FRU(s) indicated by the location code(s).</li> <li>If a 4xxx yyyy error did not occur during the slow boot, replace the service processor/PCI backplane, Location: U0.1-P2.</li> </ol> </li> </ol>

Error Code	Description	Action/ Possible Failing FRU
B1xx 4603	Service processor firmware corrupted	<ol style="list-style-type: none"> <li>1. Reflash system firmware.</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
B1xx 4606	Firmware failure	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Operator panel Location: U0.1-L1</li> </ol>
B1xx 4608	Service processor early termination	<ol style="list-style-type: none"> <li>1. Reset the system by removing, then reapplying power to the system unit.</li> <li>2. Reflash system firmware.</li> <li>3. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
B1xx 460A	Time-of-day clock has been reset	<ol style="list-style-type: none"> <li>1. Set time-of-day clock</li> <li>2. Replace the service processor/PCI backplane Location: U0.1-P2</li> </ol>
B1xx 460B	NVRAM/Time-of-day battery	Replace battery Location: U0.1-P2-V3
B1xx 4611	Service processor failure	<ol style="list-style-type: none"> <li>1. Reboot the system in slow mode to isolate the problem in the system unit.</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
B1xx 4612	Service processor firmware failure	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
B1xx 4613	Service processor failure	Service processor/PCI backplane Location: U0.1-P2
B1xx 4614	Service processor failure related to system unit	Reboot the system in slow mode to isolate the problem in the system unit.
B1xx 4620	Modem configuration failure	<ol style="list-style-type: none"> <li>1. Check modem configuration files.</li> <li>2. Check for system firmware updates.</li> <li>3. Modem and modem cable.</li> <li>4. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
B1xx 4621	Modem disconnection failure	<ol style="list-style-type: none"> <li>1. Check modem configuration files.</li> <li>2. Check for system firmware updates.</li> <li>3. Modem and modem cable.</li> <li>4. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
B1xx 4622	Service processor failure	<ol style="list-style-type: none"> <li>1. Operator panel Location: U0.1-L1</li> <li>2. Check for system firmware updates.</li> <li>3. Service processor/PCI backplane Location: U0.1-P2</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
B1xx 4633	<p>This error code may be informational, or it may indicate a failure in the SPCN firmware update. Before changing any parts, examine word 13 in the service processor error log entry, or bytes 68 and 69 in the AIX error log entry. For detailed instructions on finding word 13 in the service processor error log entry, or bytes 68 and 69 in the AIX error log entry, refer to error code B1xx 4699 on page 400 in this service guide.</p> <p>All of the following values of word 13 (or bytes 68 and 69) indicate a failure of an SPCN firmware update:</p> <ul style="list-style-type: none"> <li>A701</li> <li>A702</li> <li>A703</li> <li>A704</li> <li>A705</li> <li>A706</li> <li>A707</li> </ul> <p>For these values of word 13, do the following:</p> <ol style="list-style-type: none"> <li>1. Power down the system.</li> <li>2. Collect the service processor error log data for the B1xx 4633 error. From the main service processor menu, enter 3 to access the System Information menu. Select option 3, <b>Service Processor Error Logs</b>.</li> <li>3. Collect the SPCN trace data. From the main service processor menu, enter 3 to access the System Information menu. Select option 9, the <b>Power Control Network Utilities Menu</b>. Then select option 4, <b>Collect and Display the SPCN Trace Data</b>.</li> <li>4. Power on the system.</li> <li>5. Wait 10 minutes after the system has reached the AIX prompt. Look at the AIX error log for new B1xx 4633 errors with the word 13 values (in bytes 68 and 69 in the error log entry). If there are no B1xx 4633 errors with matching timestamps, the SPCN download was successful.</li> </ol> <p>If the download failed again (there is another B1xx 4633 error in the AIX error log with the correct timestamp), do the following:</p> <ol style="list-style-type: none"> <li>a. Power down the system.</li> <li>b. Collect the service processor error log data for the B1xx 4633 error (see item 2 above).</li> <li>c. Collect the SPCN trace data (see 3 above).</li> <li>d. Contact service support.</li> </ol> <p>For all other values of word 13, or bytes 68 and 69, do the following:</p> <ol style="list-style-type: none"> <li>1. Check for system firmware updates. Apply if available.</li> <li>2. Call service support.</li> </ol>	
B1xx 4634	SPCN loop fault	<ol style="list-style-type: none"> <li>1. Check SPCN cabling.</li> <li>2. Go to "MAP 1540: Problem Isolation Procedures" on page 127.</li> </ol>
B1xx 4635	AC input was removed, then restored.	Informational message. Look at the service processor error log for additional error codes relating to loss of ac power to the system.
B1xx 4636	System is running on battery back-up power	Informational message.
B1xx 4643	I2C card/flex cable detection error	Go to "MAP 1540: Problem Isolation Procedures" on page 127
B1xx 4644	Processor VPD System Fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127
B1xx 4645	I2C (non-processor) VPD system fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.

Error Code	Description	Action/ Possible Failing FRU
B1xx 4646	General VPD System Fault	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
B1xx 4647	Write TM field in System VPD	The machine type and model fields must be rewritten. Call service support.
B1xx 4648	System unit backplane VPD or power source problem	Go to "MAP 1540: Problem Isolation Procedures" on page 127.
B1xx 4650	System processor failure (all processors reset).	Reboot the system in slow mode to isolate the problem.
B1xx 4651	CPU GARD VPD on processor	U0.1.P1-C1
B1xx 4652	CPU GARD VPD on processor	U0.1.P1-C2
B1xx 4653	CPU GARD VPD on processor	U0.1.P1-C3
B1xx 4654	CPU GARD VPD on processor	U0.1.P1-C4
B1xx 4660	Memory subsystem failure	Reboot the system in slow mode to isolate the failure, then check the service processor error log for failing FRUs associated with this error code. Go to "MAP 1540: Problem Isolation Procedures" on page 127.
B1xx 4661	Memory DIMM VPD failure	Reboot the system in slow mode to isolate the failure, then check the service processor error log for failing FRUs associated with this error code. Go to "MAP 1540: Problem Isolation Procedures" on page 127.
B1xx 4662	Memory DIMM VPD failure	Reboot the system in slow mode to isolate the failure, then check the service processor error log for failing FRUs associated with this error code. Go to "MAP 1540: Problem Isolation Procedures" on page 127.
B1xx 4670	Critical temperature in system unit drawer	<ol style="list-style-type: none"> <li>1. Check ambient temperature.</li> <li>2. Check air supply to fans.</li> <li>3. Check fans for proper installation and operation.</li> <li>4. Check for unsupported cards (which may be too hot)</li> <li>5. Operator panel Location: U0.1-L1</li> <li>6. Service procesor/PCI backplane, Location: U0.1-P2</li> </ol>
B1xx 4671	Critical temperature in system unit drawer	<ol style="list-style-type: none"> <li>1. Check ambient temperature.</li> <li>2. Check air supply to fans.</li> <li>3. Check fans for proper installation and operation.</li> <li>4. Check for unsupported cards (which may be too hot)</li> <li>5. Operator panel Location: U0.1-L1</li> <li>6. Service procesor/PCI backplane, Location: U0.1-P2</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
B1xx 4672	Critical temperature in I/O subsystem	<ol style="list-style-type: none"> <li>1. Check ambient temperature.</li> <li>2. Check air supply to fans.</li> <li>3. Check fans for proper installation and operation.</li> <li>4. Check for unsupported cards (which may be too hot)</li> <li>5. I/O subsystem planar, Location: U0.dd-P1</li> </ol>
B1xx 4681	JTAG scan system (cabling)	Call service support.
B1xx 4682	Problem with VPD on operator panel	<ol style="list-style-type: none"> <li>1. Replace the operator panel, U0.1-L1. Do not swap the old VPD module onto the new op panel. Call service support for instructions on programming the new VPD module.</li> <li>2. Call service support.</li> </ol>
B1xx 4683	CUoD capacity card	Replace the CUoD capacity card, U0.1-L1-H1.
B1xx 4690	<p><b>Description:</b> Operating system surveillance interval exceeded (AIX to service processor interface failure)</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>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, there should be another error which 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 this Chapter 5, "Error Code to FRU Index", on page 217, and perform the indicated actions.</li> <li>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: <ol style="list-style-type: none"> <li>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.</li> <li>b. In the detail data, find the string "B1xx4690" (If present, it will be at byte 60 of the detail data.)</li> <li>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.</li> </ol> </li> <li>3. Call service support.</li> </ol>	

Error Code	Description	Action/ Possible Failing FRU
B1xx 4691	<p><b>Description:</b> System firmware surveillance interval exceeded (system firmware to service processor interface failure)</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Go to the service processor main menu and select <b>System Information Menu</b>, then select <b>Read Progress Indicators From Last System Boot</b>. Begin your repair action with the error code or checkpoint immediately preceeding B1xx 4691. <ol style="list-style-type: none"> <li>a. If the checkpoint is an E5xx checkpoint, find the checkpoint in "Firmware Checkpoints" on page 180, and follow the actions in the action column.</li> <li>b. For all other checkpoints, if a location code displays with the error code or checkpoint, replace the part at that location.</li> </ol> </li> <li>3. If the problem is not solved, call the second level of support.</li> </ol>	
B1xx 4692	Operator panel task interface failure	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support</li> </ol>
B1xx 4693	Service processor firmware failure	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support</li> </ol>
B1xx 4694	System processor firmware failure	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
B1xx 4695	System power control network (SPCN) to service processor interface failure	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
B1xx 4696	System firmware interface failure	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>
B1xx 4698	Service processor firmware problem	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Call service support.</li> </ol>

Error Code	Description	Action/ Possible Failing FRU
B1xx 4699	<p>Service processor firmware:</p> <p>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.</p> <p>If the managed server is down, go the service processor error log and find the error log entry containing B1xx 4699. Examine the first two bytes of word 13 of the detailed entry information.</p> <p>If the managed server is running AIX, examine 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.) Then go forward 8 bytes after the "B1" to byte 68 and look at bytes 68 and 69.</p> <p>If the system is running Linux, examine the Linux system log. The line(s) in the extended data that begin with &lt;4&gt;RTAS: Log Debug: 04" contain the error code in the next 8 hex characters. (This error code is also known as word 11).</p> <p>Each 4 bytes after the error code in the Linux extended data is another word. The 4 bytes after the error code are word 12 and the next four bytes are word 13. An example of the Linux extended data, and finding words 11, 12, and 13, is shown in MAP 1321, step 1321-28, and step 1321-29, in this service guide.</p> <p>Perform the following actions based on the values of bytes 68 and 69 listed below from the AIX error log entry, or the first two bytes of word 13 from the Linux system log, or on the first two bytes of word 13 from the service processor error log entry:</p> <p><b>2306:</b> 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.</p> <p>Actions:</p> <ol style="list-style-type: none"> <li>1. If a processor card is not plugged into slot one (U0.1-P1-C1), plug a processor card into the slot.</li> <li>2. If a processor card is plugged in slot one (U0.1-P1-C1), reseal the card in its connector. If resealing the processor card does not fix the problem, replace it.</li> </ol> <p><b>9906:</b> Software problem during firmware update from operating system.</p> <p>Actions:</p> <ol style="list-style-type: none"> <li>1. Check for a system firmware update that is later than the one that just caused this error. Apply if available.</li> <li>2. Call service support.</li> </ol> <p><b>A205:</b> Machine type and model fields are not valid in the VPD module. Obtain a new 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.</p> <p><b>A20B:</b> Error requesting trace buffer for service processor.</p> <p><b>Actions:</b></p> <ol style="list-style-type: none"> <li>1. Reset the service processor, if possible.</li> <li>2. Check for system firmware updates. Apply the updates if they are available.</li> </ol> <p><b>A218:</b> Unknown return code detected.</p> <p><b>Actions:</b></p> <p>Check for system firmware updates. Apply the updates if they are available.</p> <p><b>A21A:</b> Error allocating an internal service processor.</p> <p><b>Actions:</b></p> <ol style="list-style-type: none"> <li>1. Reset the service processor, if possible.</li> <li>2. Check for system firmware updates. Apply the updates if they are available.</li> </ol>	



Error Code	Description	Action/ Possible Failing FRU
B1xx 4699 (Continued)	<p><b>A800:</b> This indicates an HMC/service processor initialization failure.  <b>Actions:</b>  1. Check for system firmware updates.  2. Replace the service processor/PCI backplane, location: U0.1-P2.</p> <p><b>A801:</b> This indicates an HMC wrap failure.  <b>Actions:</b>  1. Replace the service processor/PCI backplane, location: U0.1-P2.</p> <p><b>A806:</b> This indicates a loss of the surveillance heartbeat between the HMC and the service processor.  <b>Actions:</b>  1. Make sure that the HMC is booted and operational.  2. Check the serial cables that go from the HMC to the service processor/PCI backplane, location: U0.1-P2.</p> <p>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.</p> <p>If the problem persists:  1. Check the serial cables that go from the HMC to the service processor/PCI backplane, location: U0.1-P2.  2. Run diagnostics on the serial port on the HMC.  3. Run diagnostics on the serial ports on the service processor in the managed server.</p> <p>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:</p> <p><b>A009:</b> The system received a power-off request at runtime from the HMC, or the white button on the operator panel was used to power down the system at runtime.</p> <p><b>A719:</b> Primary power failed; the system switched to battery backup power.</p> <p>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.</p>	
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. Service processor/PCI backplane Location: U0.1-P2
B1xx 469C	Firmware to I/O interface	1. Check for system firmware updates. 2. Service processor/PCI backplane Location: U0.1-P2
B1xx 469D	Service processor firmware	1. Check for system firmware updates. 2. Service processor/PCI backplane Location: U0.1-P2
B1xx 469E	Service processor firmware failure	1. Check for system firmware updates. 2. Reboot the system in slow mode to isolate a problem in the system unit. 3. Service processor/PCI backplane Location: U0.1-P2

Error Code	Description	Action/ Possible Failing FRU
B1xx 469F	Service processor failure	<ol style="list-style-type: none"> <li>1. Check for system firmware updates.</li> <li>2. Reboot the system in slow mode to isolate a problem in the system unit.</li> <li>3. Service processor/PCI backplane Location: U0.1-P2</li> </ol>
B1xx 8FF0	Informational message	No action required.
B1FD 0013	A firmware update has failed because the update image is invalid. The update was aborted before any changes were made to the currently-installed firmware	Reset the service processor by activating the pinhole reset switch on the operator panel. Flash a valid firmware update image for the system type and model.
B1FD 0015	Too many firmware update diskettes were inserted (or the update image was faulty, or not the right image for the system)	<ol style="list-style-type: none"> <li>1. Assure the the firmware update image is correct for the system type and model.</li> <li>2. Replace the update diskettes with a new set of firmware update diskettes.</li> </ol>
B1FD 0016	Firmware update diskette read error	<ol style="list-style-type: none"> <li>1. The firmware diskette may be faulty. Try another diskette.</li> <li>2. Diskette drive Location: U0.1-D1.</li> <li>3. Service processor/PCI backplane Location: U0.1-P2.</li> </ol>
B1FD 001A	Service processor recovery mode update fault	Reset the service processor by activating the pinhole reset switch on the operator panel. Attempt to flash a valid firmware update image for the system type and model again.
B1FD 001E	Service processor recovery mode update fault	Wrong firmware update diskette. Insert the correct update diskette.
B1FD 001F	Firmware update diskette bad	Replace the update diskette.

## HMC Surveillance Error Codes

The HMC surveillance error codes generated only by the HMC are listed in the following table.

Error Code	Description	Action/ Possible Failing FRU
B301 0001	HMC/partition surveillance fault	Contact service support.
B301 0002	HMC/partition surveillance fault	Verify the network between the HMC and the partition by pinging in both directions. If problems are found, correct them. Reboot the HMC.
B301 0012	HMC/partition surveillance fault	Contact service support.
B301 0013	HMC/partition surveillance fault	Contact service support.
B301 0019	HMC/partition surveillance fault	Contact service support.
B301 0020	HMC/partition surveillance fault	Contact service support.
B301 0023	HMC/partition surveillance fault	Contact service support.
B301 0025	HMC/partition surveillance fault	Contact service support.
B301 0026	HMC/partition surveillance fault	Contact service support.

Error Code	Description	Action/ Possible Failing FRU
B301 0027	HMC/partition surveillance fault	<ol style="list-style-type: none"> <li>1. If short hostnames are being used for the HMC and the partitions, ensure that the short hostnames are set up correctly according to the instructions in "Using Network Adapters to Communicate with Partitions" in the <i>IBM Hardware Management Console for pSeries Installation and Operations Guide</i>. Correct any problems that are found, then verify that you can ping in both directions between the HMC and partitions.</li> <li>2. If short hostnames are not being used, or the previous step does not correct the problem, contact service support.</li> </ol>
B301 0029	HMC/partition surveillance fault	Contact service support.
B301 002B	HMC/partition surveillance fault	Contact service support.
B301 002C	HMC/partition surveillance fault	Contact service support.
B301 002D	HMC/partition surveillance fault	Contact service support.
B302 0001	HMC/partition surveillance fault	<ol style="list-style-type: none"> <li>1. If short hostnames are being used for the HMC and the partitions, ensure that the short hostnames are set up correctly according to the instructions in "Using Network Adapters to Communicate with Partitions" in the <i>IBM Hardware Management Console for pSeries Installation and Operations Guide</i>. Correct any problems that are found, then verify that you can ping in both directions between the HMC and partitions.</li> <li>2. If short hostnames are not being used, or the previous step does not correct the problem, contact service support.</li> </ol>

## Problem Determination-Generated Error Codes

Table 8. 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 <i>@server pSeries 650 User's Guide</i> .	Go to "MAP 1542: I/O Problem Isolation" on page 129.
M0BT 0001	The system hung during "Starting Software...". This error code is generated by the customer performing "Problem Determination" in the <i>@server pSeries 650 User's Guide</i> .	Go to "MAP 1542: I/O Problem Isolation" on page 129.
M0KB D000	The system hung during keyboard POST. This error code is generated by the customer performing "Problem Determination" in the <i>@server pSeries 650 User's Guide</i> .	<ol style="list-style-type: none"> <li>1. Service processor/PCI backplane Location: U0.1-P2</li> <li>2. Keyboard</li> </ol>

Table 8. Problem Determination-Generated Error Codes (continued)

Error Code	Description	Action/ Possible Failing FRU
M0KB D001	The system did not respond to a keyboard entry. This error code is generated by the customer performing "Problem Determination" in the <i>@server pSeries 650 User's Guide</i> .	Type 101 keyboard.
M0KB D002	The system did not respond to a keyboard entry. This error code is generated by the customer performing "Problem Determination" in the <i>@server pSeries 650 User's Guide</i> .	Type 102 keyboard.
M0KB D003	The system did not respond to a keyboard entry. This error code is generated by the customer performing "Problem Determination" in the <i>@server pSeries 650 User's Guide</i> .	Kanji-type keyboard.
M0ME M002	The system hung during memory POST. This error code is generated by the customer performing "Problem Determination" in the <i>@server pSeries 650 User's Guide</i> .	Go to "MAP 1542: I/O Problem Isolation" on page 129.
M0NE T000	The system hung during network POST. This error code is generated by the customer performing "Problem Determination" in the <i>@server pSeries 650 User's Guide</i> .	Go to "MAP 1542: I/O Problem Isolation" on page 129.
M0PS 0000	Power failure. This error code is generated by the customer performing "Problem Determination" in the <i>@server pSeries 650 User's Guide</i> .	Go to "MAP 1520: Power" on page 105.
M0SC SI00	Unable to load diagnostics. This error code is generated by the customer performing "Problem Determination" in the <i>@server pSeries 650 User's Guide</i> .	Go to "MAP 1542: I/O Problem Isolation" on page 129.
M0SC SI01	Unable to load diagnostics. This error code is generated by the customer performing "Problem Determination" in the <i>@server pSeries 650 User's Guide</i> .	Go to "MAP 1542: I/O Problem Isolation" on page 129.

## Hypervisor Dump Retrieval Procedure

This procedure defines the requirements and methods for retrieving a hypervisor (LPAR) dump file following a system crash. This procedure is only applicable if the managed system had been running as a partitioned system before it crashed.

This procedure requires the managed system to be rebooted as a partitioned system. Retrieval must then take place from an AIX partition.

## Hypervisor Dump Indications

If the system op-panel is displaying error code 20D00997, 20D00998, or 20D00999, this is an indication that a system crash within the runtime firmware has occurred.

If error code 20D00997, 20D00998, or 20D00999 is in the service processor error log, this is also an indication that a system crash within the runtime firmware has occurred. The following is an example of a detailed service processor error log entry with error code 20D00999:

05/29/2001 21:06:12      Operating System Terminated with Error String  
Error code: 20D00999  
Detail:      A2C1

SRC

```
-----  
word11: B1194690      word12: 04A0005D      word13: A2C1C0FA  
word14: 00000000      word15: 00007701      word16: 00000008  
word17: 00000000      word18: 00000000      word19: 00000000
```

20D00999

After a system crash has occurred, a check should be made to see if a hypervisor dump has been collected. This is described in the following steps.

### Retrieving the Hypervisor Dump file

Once it has been determined that the managed system has crashed and a hypervisor dump exists, or the user wishes the test for an existing dump file, the managed system must be rebooted as a partitioned system. A partition or partitions running AIX must then be activated. Once rebooted, any partition running AIX may be used to retrieve the dump file.

1. Install the devices.chrp\_lpar.base.ras Fileset.

In order to perform the following task, the devices.chrp\_lpar.base.ras AIX fileset must be installed and committed. To determine if the package has been previously installed, enter the following command on the AIX command line:

```
lslpp -l | grep devices.chrp_lpar.base.ras
```

If the output on the AIX console is something similar to:

```
devices.chrp_lpar.base.ras    5.X.X.X    COMMITTED    CHRP LPAR RAS Support
```

the devices.chrp\_lpar.base.ras fileset is already installed and no further action for step 1 is necessary. If no output is returned, the devices.chrp\_lpar.base LPP will have to be installed from the AIX installation media. This must be done by the customer or system administrator.

Once the fileset is installed, the dump file is ready to be retrieved.

2. Enter `fetchdbg -k` at the command prompt.

This should produce the following output:

```
Retrieving Dump File .....Dump read successful
```

This will result in a file being written into the /tmp directory named dumpMMDDYY where MM is the current month, DD is the current day, and YY is the current year. The file /tmp/dumpMMDDYY should be forwarded to service support.

If the following text appears on the AIX console:

```
Retrieving Dump File  
Error performing dump read
```

the error should be noted and reported to service support.



---

## Chapter 6. Using the Online and Standalone Diagnostics

Running AIX diagnostics verifies system hardware operation. The AIX diagnostics consist of online diagnostics and standalone diagnostics.

**Attention:** The AIX operating system must be installed in a partition in order to run online diagnostics 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 415.

**NO** If there is an HMC attached to the system, go to “Standalone Diagnostic Operation with an HMC Attached to the System” on page 412.

If an HMC is not attached to the system, go to “Running the Standalone Diagnostics with No HMC Attached” on page 415.

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 413. If an HMC is not attached to the system, follow the directions for a full system partition.

---

## Operating Considerations for Online and Standalone Diagnostics

**Attention:** Online diagnostics can only be run in a partition with AIX installed.

**Note:** When possible, run online diagnostics in service mode. Online diagnostics perform additional functions compared to standalone diagnostics. Running online diagnostics in service mode ensures that the error state of the system that has been captured in NVRAM is available for your use in analyzing the problem. The AIX error log and certain SMIT functions are only available when diagnostics are run from the disk drive.

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 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. For partitions running AIX levels lower than 5.2, if you move devices, reboot both source and destination partitions. For more information, see “Standalone Diagnostic Operation with an HMC Attached to the System” on page 412.
- 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 function 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. Choose the "lft" selection when running diagnostics from a IBM Hardware Management Console for pSeries (HMC).

## Undefined Terminal Types

If you specify an undefined terminal type from the DEFINE TERMINAL option menu, the menu prompts the user to enter a valid terminal type. The menu redisplay 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 HMC virtual terminal window being used, you may be unable to read the screen, use the function keys, or use the Enter key. Bypass these difficulties by pressing Ctrl-C to reset the terminal. The screen display that results from this reset depends on the mode in which the system is being run:

- Online Normal or Maintenance Mode - The command prompt displays.
- Standalone Mode or Online Service Mode - The terminal type is reset to dumb, the Diagnostic Operating Instruction panel displays, and you are required to go through the DEFINE TERMINAL process again.

---

## Online Diagnostics Modes of Operation

**Attention:** Online diagnostics can only be run in a partition with AIX installed.

When running online diagnostics on a partition in a partitioned system, diagnostics can be run only on resources that are allocated to that partition.

The online diagnostics can be run in the following modes:

- Service Mode (see "Service Mode")
- Concurrent Mode (see "Concurrent Mode" on page 410)
- Maintenance Mode (see "Maintenance Mode" on page 410)

## 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 system on a full system partition. All partition or system 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 the **Problem Determination** option on the DIAGNOSTIC MODE SELECTION menu.

## Using the HMC to Load the Diagnostics in Service Mode

To run the online diagnostics in service mode from the boot hard disk, do the following:

1. From the HMC select the **Partition Manager**.
2. Right click on the mouse and select **Open Terminal Window**



3. From the Service Processor Menu on the VTERM select Option 2 **System Power Control**.
4. Select option 6. Verify that the state changes to currently disabled. Disabling fast system boot automatically enables slow boot.
5. Select Option 98 to exit the system power control menu.
6. Use the HMC to power on the managed system in a full system partition by selecting the managed system in the Contents area.
7. Right click or select the desired system in the Contents area. Next, on the menu, choose **Selected**.
8. Select **Power On**.
9. Select the **Power on Diagnostic Stored Boot list** option (refer to “Full System Management Tasks” in the Hardware Management Console , order number SA38-0590, for more information on full system partitions).
10. Make sure that there is no media in the devices in the media drive.
11. Enter any passwords, if requested.

**Note:** If you are unable to load the diagnostics to the point when the DIAGNOSTIC OPERATING INSTRUCTIONS display, go to Chapter 3, "Maintenance Analysis Procedures (MAPs)", on page 73.

## 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 the Problem Determination option on the DIAGNOSTIC MODE SELECTION menu.

To run the online diagnostics in concurrent mode, you must be logged in to the AIX operating system and have proper authority to issue the commands (if help is needed, see the system operator).

The **diag** command loads the diagnostic controller and displays the online diagnostic menus.

## Running the Online Diagnostics in Concurrent Mode

To run online diagnostics in concurrent mode, use the following steps:

1. Log in to the AIX operating system as root user or use CE Login.
2. Enter the **diag** command.
3. When the DIAGNOSTIC OPERATING INSTRUCTIONS display, follow the instructions to check out the desired resources.
4. When testing is complete, use the F3 key to return to the DIAGNOSTIC OPERATING INSTRUCTIONS. Press the F3 key again to return to the AIX operating system prompt. Be sure to vary on any resource that you had varied to off.
5. Press the Ctrl-D key sequence to log off from root user or CE Login.

## Maintenance Mode

Maintenance mode runs the online diagnostics using the customer's version of the AIX operating system. This mode requires that all activity on the partition running the AIX operating system be stopped so that the online diagnostics have most of the resources available to check. All of the system resources except the SCSI adapters, memory, processor, and the disk drive used for paging can be checked.

Error log analysis is done in maintenance mode when you select the **Problem Determination** option on the DIAGNOSTIC MODE SELECTION menu.

Use the **shutdown -m** command to stop all activity on the AIX operating system and put the AIX operating system into maintenance mode. The **diag** command is then used to invoke the diagnostic controller so you can run the diagnostics. After the diagnostic controller is loaded, follow the normal diagnostic instructions.

Documentation for the AIX operating system is available from the IBM @server pSeries Information Center at [http://publib16.boulder.ibm.com/pseries/en\\_US/infocenter/base](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.

AIX documentation is also contained on the AIX Documentation CD. This documentation is made accessible by loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.

## Running the Online Diagnostics in Maintenance Mode

To run the online diagnostics in maintenance mode, do the following:

1. Stop all programs running on the partition except the AIX operating system (if help is needed, see the system operator).
2. Log in to the AIX operating system as root user or use CE Login.
3. Type the shutdown -m command.
4. When a message indicates the system is in maintenance mode, enter the **diag** command.

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

5. When DIAGNOSTIC OPERATING INSTRUCTIONS screen displays, follow the displayed instructions to check out the desired resources.
6. When testing is complete, use the F3 key to return to DIAGNOSTIC OPERATING INSTRUCTIONS. Press the F3 key again to return to the AIX operating system prompt.
7. Press Ctrl-D to log off from root user or CE Login.

---

## Standalone Diagnostic Operation with an HMC Attached to the System

Use standalone diagnostics to test the system when the online diagnostics are not installed and as a method of testing the disk drives that cannot be tested by the online diagnostics.

**Note:** No error log analysis is done by the standalone diagnostics. The CD-ROM drive and the SCSI controller that controls it cannot be tested by the standalone diagnostics. Standalone diagnostics:

- Are resident on CD-ROM or a Network Installation Management (NIM) server
- Provide a method to test the system when the online diagnostics are not installed or cannot be loaded from the disk drive
- Allow testing of the disk drives and other resources that cannot be tested by the online diagnostics
- Do not have access to the system configuration data
- Do not have access to the system error log
- Do not allow for running of error log analysis

## Partitioned System Considerations for Standalone Diagnostics

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). For a partitioned system, before running standalone diagnostics on a given partition, the user must move the device from the existing location where standalone diagnostics is booted (the CD-ROM drive or the network adapter connected to the NIM server in the case of NIM boot of standalone diagnostics) to the partition that will run standalone diagnostics. Devices on a partitioned system are moved on an I/O slot basis.

If the CD-ROM drive is moved from one partition to another, all SCSI devices on the same SCSI adapter card to which the CD-ROM drive is attached must be moved to the same partition. It is recommended that you attach few SCSI devices to the same SCSI controller card to prevent moving them, along with the CD-ROM drive, between partitions. For partitions running a version of AIX that is lower than 5.2, a reboot is required on the partition containing this device and on the moved device, but the system itself is *not* powered off in order to boot standalone diagnostics in a logical system 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 SCSI adapter (or circuitry) controlling the CD-ROM drive from which diagnostics were loaded cannot be tested.

## Loading the Standalone Diagnostics from CDROM

To run standalone diagnostics in service mode from CD-ROM, use the following steps:

1. Stop all programs including the operating system (get help if needed).
2. Remove all tapes, diskettes, and CD-ROMs.
3. Power off the @server pSeries 650 (refer to Full System Management Tasks in the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, for more information on full system partitions).
4. Right click on the mouse and select **Open Terminal Window**.
5. From the service processor menu on the VTERM, select option 2, **System Power Control Menu**.

6. Select option 6. Verify that the state changes to currently disabled. Disabling fast system boot automatically enables slow boot.
7. Select option 98 to exit the system power control menu.
8. Use the HMC to power on the managed server in a full system partition. Select the **Power on Diagnostic Default Boot List** (refer to Full System Management Tasks in the Hardware Management Console , order number SA38-0590, for more information on full system partitions).
9. Insert the CD-ROM into the CD-ROM in the media subsystem in the @server pSeries 650 (**NOT** into the HMC's CD-ROM drive).

## 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 is capable of booting 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 hardfile. This allows the system to boot in standalone diagnostics from the NIM server if there is a problem booting from the hard file. Refer to the **Multiboot** section under "SMS" in the client system's service guide for information on setting the bootlist.

## NIM Server Configuration

Refer to the "Advanced NIM Configuration Tasks" chapter of the *Network Installation Management Guide and Reference*, order number SC23-4385, for information on doing the following:

- Registering a client on the NIM server
- Enabling a client to run diagnostics from the NIM server

To verify that the client system is registered on the NIM server and the diagnostic boot is enabled, run the command **lsnim -a Cstate -Z ClientName** from the command line on the NIM server. Refer to the following table for system responses.

**Note:** The *ClientName* is the name of the system on which you want to run standalone diagnostics.

System Response	Client Status
#name:Cstate: ClientName:diagnostic boot has been enabled:	The client system is registered on the NIM server and enabled to run diagnostics from the NIM server.
#name:Cstate: ClientName:ready for a NIM operation:  or #name:Cstate: ClientName:BOS installation has been enabled:	The client is registered on the NIM server but not enabled to run diagnostics from the NIM server. <b>Note:</b> 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 be 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 Installation and Operations Guide*, order number SA38-0590 for more information). Verify with the system administrator and system users using a 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.

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** on an HMC virtual terminal window or the word **keyboard** on a graphical display), press the number 1 key on the keyboard to display the SMS menu.
6. Enter any requested passwords.
7. Select **Set up Remote IPL (Initial Program Load)**.
8. Select a network adapter, then enter the client address, server address, gateway address (if applicable), and subnet mask. Click Save if you are using a graphical interface. Exit to the SMS Utilities 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” on page 214, 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 the refer to “Boot Problems” on page 214 and follow the steps for network boot problems.

After running diagnostics, reboot the system and use SMS to change the bootlist sequence back to the original settings.

---

## Running the Online Diagnostics with No HMC Attached

**Attention:** Online diagnostics can only be run in a partition with AIX installed.

**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, enter the **shutdown** command.

3. Wait until the Power LED is blinking slowly, then press the power button to turn the system on.
4. When or after 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.

---

## 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, enter the **shutdown** command. If Linux is running, enter the **shutdown now -h** command

3. Wait until the Power LED is blinking slowly, 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.





---

## Chapter 7. Running Online Diagnostics

**Attention:** Online diagnostics can only be run in a partition with AIX installed.

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 full system partitions, if the diagnostics are loaded from disk or a server, you must shut down the 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 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.



---

## Chapter 8. Using the Service Processor

### Notes:

1. 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 service processor/PCI backplane (location U0.1-P2). None of this information is applicable to the serial ports, or modems attached to those serial ports, on the IBM Hardware Management Console for pSeries (HMC).
2. On some of the system management services (or service processor) screens, you will see the term *LPAR*. LPAR is equivalent to the term *partitioned system*.

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 HMC virtual terminal window when OK is displayed on the operator panel or when the service processor has detected a server 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 server is powered off, the service processor menus can be accessed locally or remotely on the following:

- Serial port 1 (S1)
- Serial port 2 (S2)
- The 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 locks out 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 indicates 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 442), 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 server. Refer to “Save or Restore Hardware Management Policies,” in the “Introduction to Tasks and Service Aids” section of the *@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 zero.

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 462.

- **Read Service Processor Error Logs**

Displays the service processor error logs. For an example, refer to “Service Processor Error Logs” on page 461.

- **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 server 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 server 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 server. 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 423 for more information.
- **System Power Control Menu**  
See "System Power Control Menu" on page 428 for more information.
- **System Information Menu**  
See "System Information Menu" on page 432 for more information.
- **Language Selection Menu**  
See "Language Selection Menu" on page 440 for more information.
- **Call-In/Call-Out Setup Menu**  
See "Call-In/Call-Out Setup Menu" on page 441 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 Policy:
   Currently Never
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 9, “Using System Management Services”, on page 467). 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 server) or remotely (through a modem). The error threshold is three attempts.

If the error threshold is reached by someone entering passwords at the server, the service processor commands the server to resume the initial program load (IPL). This action is taken based on the assumption that the server 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 server to power off to prevent potential security attacks on the server 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 server, 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 460.

- **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.

For more information about surveillance, refer to “Service Processor System Monitoring - Surveillance” on page 457.

- **Reset Service Processor**

If this option is selected, entering Y causes the service processor to reboot.

- **Reprogram Flash EPROM Menu**

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 several 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>1
```

The scan log dump policy can be set to the following:

#### **2=As Needed**

The processor run-time diagnostics record the dump data base 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>0
```

The scan log dump content can be set to the following:

#### **1 = As needed**

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 value.

#### **2 = Optimum**

The dump will include the smallest amount of information possible (a minimum number of hardware scan log rings).

#### **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 contents 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 Enabled

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 server 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 servers that require automatic power-on after a power failure. For more information, see “System Power-On Methods” on page 449.

- **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 441 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 server 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.

On a partitioned system, this setting is ignored.

- **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.

If set to Yes in a partitioned system, the service processor restarts the system when the system loses control and it is detected by service processor surveillance.

- **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 Prompt**

This option should only be used by service personnel to obtain additional debug information. When this selection is enabled, the system boots to the open firmware prompt.

## System Information Menu

This menu provides access to system configuration information, error logs, system resources, and processor configuration.

### SYSTEM INFORMATION MENU

1. Read VPD Image from Last System Boot
  2. Read Progress Indicators from Last System Boot
  3. Read Service Processor Error Logs
  4. Read System POST Errors
  5. Read NVRAM
  6. Read Service Processor Configuration
  7. Processor Configuration/Deconfiguration Menu
  8. Memory Configuration/Deconfiguration Menu
  9. Power Control Network Utilities Menu
  10. LED Control Menu
  11. MCM/L3 Interposer Plug Count Menu  
Not Applicable
  12. Performance Mode Setup Menu
  13. L3 Mode Menu
  14. Remote I/O (RIO) Link Speed Set Up Menu
  98. Return to Previous Menu
  99. Exit from Menus
- 0>

- **Read VPD Image from Last System Boot**

Displays manufacturer's vital product data (VPD), such as serial numbers, part numbers, and so on, that was stored from the system boot prior to the one in progress now. VPD from all devices in the system is displayed.

- **Read Progress Indicators from Last System Boot**

Displays a number of the boot progress indicators, which may include service processor checkpoints, IPL checkpoints, or AIX configuration codes, from the previous system boot. This information can be useful in diagnosing system faults.

**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 462.

- **Read Service Processor Error Logs**

Displays error conditions detected by the service processor. For an example of this error log, refer to "Service Processor Error Logs" on page 461.

- **Read System POST Errors**



This option should only be used by service personnel to obtain additional debug information.

- **Read NVRAM**

Displays Nonvolatile 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 automatically deconfigures a CPU during a system boot if a processor fails BIST (built-in self-test), caused a machine check or check stop, or has reached a threshold of recoverable errors. The processor will remain deconfigured until repeat gard is disabled or the processor is replaced.

The default is enabled.

For more information, see “Configuring and Deconfiguring Processors or Memory” on page 456.

**Enable/Disable Dynamic Processor Sparing:** This option is part of the Capacity Upgrade on Demand function. Dynamic processor sparing is the capability of the system to deconfigure a failing (or potentially failing) processor and then configure a replacement processor from the unlicensed CUoD processor pool.

If the system is running logical partitions, the dynamic processor sparing operation takes place with the system running. If the system is booted in a full system partition, the system must be rebooted for the processor sparing operation to take place.

**Note:** The memory affinity of the failing processor is not taken into account when the replacement processor is assigned; the replacement processor is the next one that is available.

This menu allows the user to change the system processor configuration. If it is necessary to take one of the processors offline, use this menu to deconfigure a processor, and then reconfigure the processor at a later time. An example of this menu follows:

```
PROCESSOR CONFIGURATION/DECONFIGURATION MENU

77. Enable/Disable CPU Repeat Gard: Currently Enabled

78. Enable/Disable Dynamic Processor Sparing (if available): Currently enabled

    1.  0  3.0  (00)  Configured by system    2.  1  3.1  (00)  Deconfigured by system
    3.  2  3.2  (00)  Configured by system    4.  3  3.3  (00)  Configured by system
    5.  4  3.4  (00)  Configured by system    6.  5  3.5  (00)  Deconfigured by system
    7.  6  3.6  (00)  Configured by system    8.  7  3.7  (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 AIX.

The fields of the previous table represent the following:

**Column 1**

(1.) Menu selection index.

**Column 2**

(0) Logical processor device number assigned by AIX. You can display these logical device numbers by issuing the following command on the AIX command line:

```
lsdev -C | grep proc
```

**Column 3**

(3.0) Processor address list used by the service processor.

**Column 4**

(00) Error status of the processors.

The error status of each processor is indicated by AB, where B indicates the number of errors and A indicates the type of error according to the following 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.

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 CPU repeat gard is enabled, the processor is taken offline again because of its history of failures.

**Notes:**

1. The processor numbering scheme used by the service processor is different from the numbering scheme used by AIX. Consult the AIX documentation before configuring or deconfiguring a processor to ensure that the correct processor is selected.
2. The number of processors available to AIX can be determined by issuing the following command on the AIX command line: `bindprocessor -q`.

• **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 fails BIST (built-in self-test), caused a machine check or checkstop, or has reached a threshold of recoverable errors. The quad will remain deconfigured until repeat gard is disabled or the failing memory is replaced.

The default is enabled.

For more information, see “Configuring and Deconfiguring Processors or Memory” on page 456.

**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 the 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 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 similar to the following displays.

```

MEMORY CONFIGURATION/DECONFIGURATION MENU

77. Enable/Disable Memory Repeat Gard: Currently Enabled
78. Runtime Recoverable Error Repeat Gard: Currently Enabled

1. Memory card
98. Return to Previous Menu

```

After you select the memory card option by entering 1, a menu similar to the following displays, allowing the selection of a memory DIMM. The following is an example of this menu.

```

MEMORY CONFIGURATION/DECONFIGURATION MENU

1: 16.16(00) Configured by system  2: 17.17(00) Configured by system
3: 18.18(00) Configured by system  4: 19.19(00) Configured by system

98. Return to Previous Menu

```

**Note:** This table is built from vital product data collected during the last boot sequence. The first time the system is powered on, or after the system's nonvolatile RAM (NVRAM) has been erased, this table may be empty. The table is rebuilt during the next boot into AIX.

The fields in the previous table represent the following:

**Column 1**

1. Menu selection index/DIMM number

**Column 2**

xx.xx : DIMM address used by service processor

**Column 3**

(00) Error status

The error status of the each memory DIMM is indicated by AB, where B indicates the number of errors and A indicates the type of error according to the following table:

1. Bring-up failure
2. Run-time non-recoverable failure
3. Run-time recoverable failure
4. Group integrity failure
5. Non-repeat-gardable error. The resource may be reconfigured on the next boot.

An error status of 00 (for example, 11.16(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
   Not Supported
3. Change I/O type

4. Collect & display SPCN trace data

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.

- **Change I/O Type**

If a service action or a configuration change in the processor subsystem causes the I/O type to be set incorrectly, you will receive an error code indicating that you need to change the I/O Type. To change the I/O type, use this option on the Power Control Network Utilities menu. When this option is chosen, you are asked to make the following entries:

1. For the I/O drawer address, type 1.
2. For the I/O type, type A0.

Always use the values listed above when servicing a @server pSeries 650. If either value is not valid, a failure message displays on the console. Press Enter to return to the Power Control Network Utilities Menu.

- **Collect & display SPCN trace data**

This option is used by service personnel to dump the SPCN trace data from the system unit or an I/O subsystem to gather additional debug information.

To dump the SPCN trace data for the processor subsystem (CEC drawer), enter 0 when prompted for the SPCN drawer number and enter d0 when prompted for the unit address.

To dump the SPCN trace data for an I/O subsystem, the drawer number must be determined. This can be done by either of the following methods:

- If the system is booted into AIX, use the "Identify and System Attention Indicators" task to correlate a drawer and its physical location code (for example, U0.2). Due to the drawer-addressing scheme that is used by the SPCN firmware, the drawer numbers may not match the cabling in a particular RIO loop. For example, do not assume that the first drawer in the loop will be drawer number 2 (which corresponds to a physical location code of U0.2).
- If the system can be booted to the open firmware prompt, enter FRU-LER-MENU at the prompt. Use the menu to flash the identify indicator on a drawer.

To dump the data for an I/O drawer, enter the drawer number when prompted, then enter 10 for the unit address, as shown in the following example:

Enter the SPCN drawer number: 3

Enter the Unit Address: 10

**Note:** It can take up to 5 minutes for the trace data to be dumped to the screen.  
The SPCN trace data will be displayed on the screen. An example of this output follows.

Please wait....

```
***** Power Trace Data Start ***** 00000000ffffffffffff0006158800a00
0061574a000000060200353700060210031300060242000000060241040b0006110a004
00006110902000006110208040000000000061102080b0006041000000006d0e385000
006110300000006110902000006040200000006040200010006041000010006d0e3850
1000604100002000000000006d0e385020006041000030006d0e385030006158010000
006154003180006101116000006101116010006158010010007158156a000071100001
000000000000910120000000910120001
***** Power Trace data End *****
```

(Press Return to Continue)

- **LED Control Menu**

This menu displays the state of the processor subsystem disturbance/system attention LED and the fault/identify LEDs on the I/O subsystem(s). Use this menu to toggle the attention/fault LEDs between identify (blinking or solidly on) and off.

Option 1 is available only when the system is in the error state (the processor subsystem 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 Control Menu

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, similar to the following:

```
1. U0.1-P1
2. U0.2-P1
3. U0.3-P1
4. U0.4-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 can 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 applicable to this system.

- **Performance Mode Setup Menu**

If certain types of processor cards are installed in the system, this menu remains not applicable.

**Note:** The first time the system is booted after NVRAM is cleared, Not Applicable displays under Performance Mode Setup Menu on the screen. This may also happen if the service processor is replaced, or the processor cards are upgraded.

If option 12 is selected when Not Applicable is on the screen, the system responds with Not Applicable and redisplay the system information menu. The setup menu can be displayed after the performance mode is set, which happens the first time the system is rebooted.

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 system-wide; it cannot be set on a per-partition basis.

You can override the default setting by using the Default Performance Mode menu, 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>
```

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.
- 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.

#### • L3 Mode Menu

If certain types of processor cards are installed in the system, this menu remains not applicable. For other types of processor cards this menu becomes active after the first boot.

**Note:** The first time the system is booted after NVRAM is cleared, *Not Applicable* displays under L3 Mode Menu on the screen. This might also happen if the service processor is replaced, or if the processor cards are upgraded.

If option 1 is selected when *Not Applicable* is displayed on the screen, the system responds with *Not Applicable* and redisplay the system information menu. The setup menu can be displayed after the L3 mode is set, which happens the first time the system is rebooted.

The default L3 mode is set by firmware during IPL. The default mode, *private* or *shared*, provides the optimum performance for hardware configuration of the system. The L3 mode is system-wide; it cannot be set on a per-partition basis.

You can override the default setting by using the L3 Mode menu. The L3 Mode menu is similar to the following:

```
L3 Mode Menu
Default L3 Mode: Currently Shared

1. Private/Shared L3 Mode:
Currently Shared

98. Return to the Previous Menu

0>
```

Selecting option 1 allows you to toggle between private mode and shared mode.

- **Remote I/O (RIO) Link Speed Set Up Menu**

This option is used to change the speed of the RIO interface to external drawers. On this system, setting this speed will have no effect on the system.

The hardware capability is detected and set by the system firmware during the boot process. If the hardware capability is uninitialized (after NVRAM is cleared), it will be set during the first boot and remain set during subsequent boots.

The maximum RIO speed setting will remain uninitialized until set by the user.

The user can set the speed lower than or equal to the hardware capability, but not higher. If the hardware capability is 1000 Mbps, the user can set the link speed to 500 Mbps, and the RIO link will run at 500 Mbps. However, if the hardware capability is 500 Mbps and the user selects 1000 Mbps, the user's selection will be ignored by the system.

If this option is chosen, the menu similar to the following is displayed:

```
Remote I/O (RIO) Link Speed Set Up Menu

Hardware Capability (internal and external): 1000 Mbps

1. Maximum RIO speed setting (internal and external):
   Currently Uninitialized

98. Return to previous menu.

0>1
```

If option 1 is selected, the RIO interface speed can be set as follows:

```
Enter new value for this option: (1 = 1000 MBPS, 2 = 500 Mbps)

0>
```

This setting remains in effect until it is changed or NVRAM is cleared.

## 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 service processor/PCI backplane (location U0.1-P2). 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 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 442.
- **Serial Port Selection Menu**, see “Serial Port Selection Menu” on page 443.
- **Serial Port Speed Setup Menu**, see “Serial Port Speed Setup Menu” on page 444.
- **Telephone Number Setup Menu**, see “Telephone Number Setup Menu” on page 445.
- **Call-Out Policy Setup Menu**, see “Call-Out Policy Setup Menu” on page 447.
- **Customer Account Setup Menu**, see “Customer Account Setup Menu” on page 448.
- **Call-Out Test** tests the configuration after the modem is installed and configured correctly.

**Note:** If the system is running in partition mode, this option is not supported.

## Modem Configuration Menu

**Note:** This option applies only to a modem attached to serial port 1 (S1) or serial port 2 (S2) on the service processor/PCI 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 613 and “Transfer of a Modem Session” on page 619.

## 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:** If the system is running in partition mode, call-out is disabled.

```
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 server. 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 459).

**Note:** If the system is running in partition 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 server or answered by someone responsible for the server. 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 server's modem is connected. The service or administrative center representatives need this number to make direct contact with your server for problem investigation. This is also referred to as the *call-in* phone number.

## Call-Out Policy Setup Menu

**Note:** Call-out is disabled in logically 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 server 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. Leave these fields unassigned if your service provider does not use RETAIN.

## Call-out Test

**Note:** Call-out test is disabled in partitioned systems.

Tests the configuration after the modem is installed and configured. In order for the test to execute successfully, at least one of the following numbers must be assigned:

- Service center telephone number
- Customer administration center telephone number
- Digital pager telephone number

---

## Service Processor Parameters in Service Mode (Full System Partition)

When the system is in service mode, the following service processor functions 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 Button on the operator panel
- 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 server 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 server 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 428.

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 server can operate a timer, much like the wake-up timer on your clock radio. You can set the timer so that your server powers on at a certain time after shutting down. The timer is battery-operated, so power interruptions that occur while the server is off do not affect its accuracy. For details on setting the timer, refer to the AIX **shutdown -t** command.

**Note:** If an ac power loss is in progress when the timed power-on attempt occurs, the server 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 server 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-induced 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** (True/False). 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, 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 in 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 450.

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 <sup>1</sup>	No	
None	No <sup>1</sup>	Yes <sup>1</sup>	Restarts
None	Yes	No	
None	Yes	Yes <sup>1</sup>	Restarts
False <sup>2</sup>	No <sup>1</sup>	No	
False <sup>2</sup>	No <sup>1</sup>	Yes <sup>1</sup>	Restarts
False <sup>2</sup>	Yes	No	
False <sup>2</sup>	Yes	Yes <sup>1</sup>	
True	No <sup>1</sup>	No	
True	No <sup>1</sup>	Yes <sup>1</sup>	Restarts
True	Yes	No	Restarts
True	Yes	Yes <sup>1</sup>	Restarts
<sup>1</sup> Service processor default <sup>2</sup> AIX default			

In a partitioned system, the service processor's supplemental restart policy is the only setting that is used. If the service processor supplemental restart policy is enabled, the system restarts. The enable state (Yes) is the default setting for the supplemental restart policy.

If the service processor supplemental restart policy is not enabled, there is no system response.

---

## 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 requested that you update your firmware.

Downloading the firmware update image and update instructions from the Web is preferred.

Always check the pSeries and RS/6000 Support Web site for the latest firmware images and update instructions. The Web address is: <http://techsupport.services.ibm.com/server/mdownload2>

If you cannot download from the Web, do the following:

- If the system is running, but access to the Web is not available, see “System Firmware Update in AIX Using a Locally Available Image” on page 454.
- 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 455.
- 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 456.

To check the level of firmware that is currently on the system, see “Determining the Level of Firmware on the System” on page 453.

## 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://techsupport.services.ibm.com/server/mdownload2>.

There are two forms in which the firmware level may be denoted:

- *RKyyymmdd*, where RK = the pSeries @server pSeries 650's firmware designation, yy = year, mm = month, and dd = day of the release.
- *vKyyymmdd*, where v = version number, K = the pSeries @server pSeries 650's firmware 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 any one of the following methods:

- If the system was installed prior to May of 2003, and has not had a firmware update in the May 2003 time frame or later, type the following on the Linux command line:  

```
/usr/sbin/ibmras/nvram --print-vpd | grep RK
```
- If the system was installed in May of 2003 or later, or the system has firmware on it that was released in the May 2003 time frame or later, type the following on the Linux command line:

```
/usr/sbin/ibmras/nvram --print-vpd | grep 3K
```

A line similar to Alterable ROM Level RK021114 or Alterable ROM Level 3K030509 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 either of the following command, depending on the name of the update image:

```
ls /tmp/fwupdate/RK*.img
```

or

```
ls /tmp/fwupdate/3K*.img
```

The update file will have either the **RKyymmdd.img** format or the **3Kyymmdd.img** format. In both cases, the **K** in the second position 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`

then either of these commands, depending on the name of the update file:

```
./update_flash -f /tmp/fwupdate/RKyymmdd.img
```

or

```
./update_flash -f /tmp/fwupdate/3Kyymmdd.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 a NIM Server

Refer to “Running Standalone Diagnostics from a Network Installation Management (NIM) Server with an HMC Attached to the System” on page 413.

## 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.

## 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.

---

## 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.

A processor or memory DIMM is marked "bad" under the following circumstances:

- A processor or memory DIMM fails built-in self-test (BIST) or power-on self-test (POST) testing during boot (as determined by the service processor).
- A processor or memory DIMM causes a machine check or check stop during runtime, and the failure can be isolated specifically to that processor or memory DIMM (as determined by the processor runtime diagnostics in the service processor).
- A processor or memory DIMM reaches a threshold of recovered failures that results in a predictive callout (as determined by the processor run-time diagnostics in the service processor).

During boot time, the service processor does not configure processors or memory DIMMs that are marked "bad."

If a processor or memory DIMM is deconfigured, the processor or memory DIMM remains offline for subsequent reboots until it is replaced or repeat guard is disabled. The repeat guard 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 on configuring or deconfiguring a processor, see the Processor Configuration/Deconfiguration Menu on page 433. For information on configuring or deconfiguring a memory DIMM, see the Memory Configuration/Deconfiguration Menu on page 434. 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, which is a submenu under the System Information Menu.

## Run-Time CPU Deconfiguration (CPU Gard)

L1 instruction cache recoverable errors, L1 data cache correctable errors, and L2 cache correctable errors are monitored by the processor 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 two 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 in partitioned systems.

Operating system surveillance enables the service processor to detect hang conditions, as well as hardware or software failures, while the operating system is running. It also provides the operating system with a means to detect a service processor failure caused by the lack of a return heartbeat.

Operating system surveillance is not enabled by default, allowing you to run operating systems that do not support this service processor option.

You can also use service processor menus and AIX service aids to enable or disable operating system surveillance.

For operating system surveillance to work correctly, you must set these parameters:

- Surveillance enable/disable
- Surveillance interval

The maximum time the service processor should wait for a heartbeat from the operating system before timeout.

- Surveillance delay

The length of time to wait from the time the operating system is started to when the first heartbeat is expected.

Surveillance does not take effect until the next time the operating system is started after the parameters have been set.

If desired, you can initiate surveillance mode immediately from service aids. In addition to the three options above, a fourth option allows you to select immediate surveillance, and rebooting of the system is not necessarily required.

If operating system surveillance is enabled (and system firmware has passed control to the operating system), and the service processor does not detect any heartbeats from the operating system, the service processor assumes the system is hung and takes action according to the reboot/restart policy settings. See “Service Processor Reboot/Restart Recovery” on page 450.

If surveillance is selected from the service processor menus which are only available at bootup, then 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 in logically 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 a 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 server 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 is shown below, 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 screen 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 the log can contain, and is for example purposes only.

The progress indicator codes are listed from top (latest) to bottom (oldest).

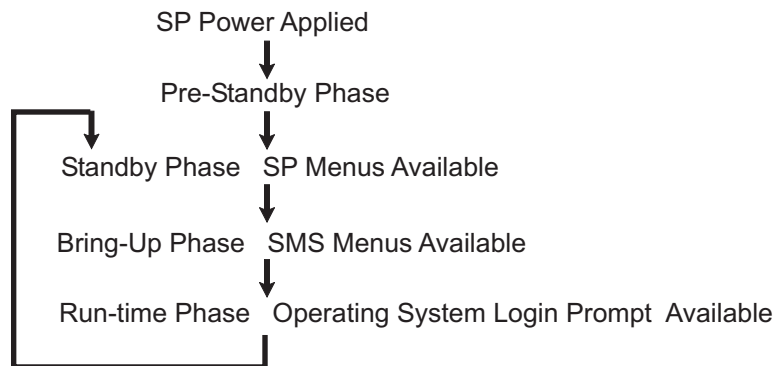
```

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..U1.5-P1-I14/E1
0539..
0742..U1.5-P1-I12/E1
0539..
0776..U1.5-P1-I10/T1
E139
E1FB
E139
E183
Press Return to continue, or 'x' to return to menu. >
EAA1..U1.9-P1-I14
E172..U1.9-P1
E172..U1.9-P1-I14
E172..U1.9-P1
94BB
9109
9380
9108
9107
9106
9105
9118
9104
9103
9102
90FD
```

---

## Service Processor Operational Phases

This section provides a high-level flow of the phases of the service processor.



### Pre-Standby Phase

This phase is entered when the server is connected to a power source. The server may or may not be fully powered on. This phase is exited when the power-on self-tests (POSTs) and configurations 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 server. 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:

- With the server off and power connected (the normal path), recognized by 0K in the LCD display.  
OR
- With the server 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 server 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, and on terminal emulators. On HMC-managed systems, service processor menus are also available on the HMC graphical user 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 is capable of starting multiple logical partitions which would be activated through HMC graphical user 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.

---

## Restoring Service Processor Settings

To set the date and time using the service processor menu, do the following:

1. At the service processor main menu, enter **11235**
2. At the screen that says IBM AUTHORIZED PERSONNEL ONLY, press Enter to continue.
3. Select option 2, set time-of-day. Enter the date and time using the formats shown on the screen. The time must be Greenwich Mean Time (GMT) and must be in the 24-hour format (1:00:00 PM is 13:00:00, for example).
4. When requested, enter the day of the week using the format shown (1=Sunday, 2=Monday, 3=Tuesday,...., 7=Saturday).
5. Verify that the settings are correct when displayed, then press enter to exit this menu and continue.
6. At the service processor main menu, select option 1, **Service Processor Setup Menu**.
7. At the service processor main menu, select option 1, **Service Processor Setup Menu**.
8. Manually input the settings recorded earlier, or the settings provided by the customer, to restore the service processor settings.
9. Ask the customer to use the restore function on the HMC to rewrite the partition information in the service processor's NVRAM.
10. If an HMC is attached and the system is partitioned, please perform the following for each partition.
  - a. Power up the system to the SMS Menu.
  - b. Reenter the boot list using the SMS menus.
  - c. Run concurrent diagnostics.

## Chapter 9. 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 just *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 IBM Hardware Management Console for pSeries (HMC) to restart the partition.  
For a full system partition, restart the system.
2. For a partitioned system, watch the virtual terminal window on the HMC.  
For a full system partition, watch the firmware console which could be a serially attached TTY terminal, a display attached to the system, or a virtual terminal window on the HMC.
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 23.

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 431.

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" takes you back 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. Français
3. Deutsch
4. Italiano
5. Español

-----  
Navigation keys:

M = return to main menu

ESC key = return to previous screen

X = eXit System Management Services

-----  
Type the number of the menu item and press Enter or Select a Navigation key: \_

---

## Change Password Options

The Change Password Options menu enables you to select from password utilities.

**Note:** This option is not available when the system is booted in LPAR mode.

Password Utilities

- 1 Set Privileged-Access Password
- 2 Remove Privileged-Access Password

-----  
Navigation keys:

M = return to main menu

ESC key = return to previous screen

X = eXit System Management Services

-----  
Type the number of the menu item and press Enter or Select a Navigation key: \_

## Set Privileged-Access Password

The privileged-access password protects against the unauthorized starting of the system programs.

**Note:** If the privileged-access password has been enabled, you are asked for the privileged-access password at startup every time you boot your system.

If you previously had set a privileged-access password and want to remove it, select **Remove Privileged-Access Password**.

---

## View Error Log

Use this option to view or clear your system's error log. A menu similar to the following displays when you select this option.

Error Log

	Date	Time	Error Code	Location
Entry 1.	01/04/96	12:13:22	25A80011	00-00
Entry 2.	no error logged			

1. Clear error log

-----

Navigation keys:  
M = return to main menu  
ESC key = return to previous screen  
X = eXit System Management Services

-----

Type the number of the menu item and press Enter or Select a Navigation key: \_

**Note:** The time stamp in his error log is coordinated universal time (UTC), which is also referred to as Greenwich mean time (GMT). Operating system error logs have more information available and can time stamp with your local time.

---

## Setup Remote IPL (Initial Program Load)

This option allows you to enable and set up the remote startup capability of your system or partition. A list of NIC (network interface card) adapters in the system displays first. An example of this screen is shown below:

**Attention:** In a partitioned system, only those network adapters that have been assigned to the partition being booted display in the IP Parameters menu. In a full system partition, all network adapters in the system are listed in the adapter parameters menu.

```
NIC Adapters
  Device                      Slot      Hardware Address
1.  10/100 Mbps Ethernet PCI Adapt  Integ:  U0.1-P2/E1    00096baeac10
2.  IBM 10/100/1000 Base-TX PCI     Integ:  U0.1-P2-I3/E1    0009cbce0fde

-----
Navigation keys:
M = return to main menu
ESC key = return to previous screen
X = eXit System Management Services
-----
Type the number of the menu item and press Enter or Select a Navigation key: _
```

When an adapter is selected, the network parameters menu displays:

```
Network Parameters
10/100 Mbps Ethernet PCI Adapter II:  U0.1-P2/E1
1.  IP Parameters
2.  Adapter Parameters
3.  Ping Test

-----
Navigation keys:
M = return to main menu
ESC key = return to previous screen
X = eXit System Management Services
-----
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Selecting the IP (Internet Protocol) Parameters option displays the following menu.

```
IP Parameters
10/100 Mbps Ethernet PCI Adapter II:  U0.1-P2/E1
1.  Client IP Address  [000.000.000.000]
2.  Server IP Address  [000.000.000.000]
3.  Gateway IP Address [000.000.000.000]
4.  Subnet Mask        [255.255.255.000]

-----
Navigation keys:
M = return to main menu
ESC key = return to previous screen
X = eXit System Management Services
-----
Type the number of the menu item and press Enter or Select a Navigation key: _
```

To change IP parameters, type the number of the parameters for which you want to change the value. Entering IP parameters on this screen will automatically update the parameters on the ping test screen.

**Attention:** If the client system and the server are on the same subnet, set the gateway IP address to [0.0.0.0].



Selecting **Adapter Configuration** allows the setting of the network speed, enabling or disabling spanning tree, and setting the protocol as shown in the example menu below:

**Attention:** In a partitioned system, only those network adapters that have been assigned to the partition being booted display in the IP Parameters menu. In a full system partition, all network adapters in the system are listed in the adapter parameters menu.

```
Adapter Configuration
10/100 Mbps Ethernet PCI Adapter II: U0.1-P2/E1
1. Speed, Duplex
2. Spanning Tree Enabled
3. Protocol

-----
Navigation keys:
M = return to main menu
ESC key = return to previous screen
X = eXit System Management Services
-----
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Selecting the **Speed, Duplex** option allows you to set the interface speed at which the card will run and half versus full duplex. The current setting is indicated by "<===".

```
Adapter Configuration
10/100 Mbps Ethernet PCI Adapter II: U0.1-P2/E1

1. auto, auto
2. 10,half
3. 10,full
4. 100,half
5. 100,full

-----
Navigation keys:
M = return to main menu
ESC key = return to previous screen
X = eXit System Management Services
-----
Type the number of the menu item and press Enter or Select a Navigation key: _
```

Selecting the **Spanning Tree Enabled** menu allows you to enable or disable the spanning tree flag. If this flag is enabled (because the network the system is being attached to supports spanning trees), the firmware will impose a waiting period of 60 seconds before the adapter is allowed to communicate with the network. If this flag is disabled, the network adapter will be able to access the network immediately after the system is connected.

Spanning Tree Enabled  
10/100 Mbps Ethernet PCI Adapter II: U0.1-P2/E1

1. Yes <===
2. No

-----  
Navigation keys:  
M = return to main menu  
ESC key = return to previous screen  
X = eXit System Management Services

-----  
Type the number of the menu item and press Enter or Select a Navigation key: \_

The **Protocol** option allows you to set the appropriate protocol for your network as shown below.

Protocol  
10/100 Mbps Ethernet PCI Adapter II: U0.1-P2/E1

1. Standard <===
2. IEEE802.3

-----  
Navigation keys:  
M = return to main menu  
ESC key = return to previous screen  
X = eXit System Management Services

-----  
Type the number of the menu item and press Enter or Select a Navigation key: \_

Select the **ping test** option from the network parameters menu to test an adapter's network connection to a remote system. After the ping test option is selected, the same series of screens will take you through setting up the IP parameters and the adapter configuration before attempting the ping test.

#### Notes:

1. Once the ping test is initiated, it may take 60 seconds or longer to return a result.
2. If the ping test passes or fails, the firmware will stop and wait for a key to be pressed before continuing.

---

## Change SCSI Settings

This option allows you to view and change the addresses of the SCSI controllers attached to your system.

SCSI Utilities

1. Hardware Spin Up Delay
2. Change SCSI Id

-----  
Navigation keys:  
M = return to main menu  
ESC key = return to previous screen  
X = eXit System Management Services

-----  
Type the number of the menu item and press Enter or Select a Navigation key: \_

---

## Select Console

**Note:** This option is not available when the system is booted in LPAR mode.

The Select Console Utility allows the user to select which console the user would like to use to display the SMS menus. This selection is only for the SMS menus and does not affect the display used by the operating system.

Follow the instructions that display on the screen. The firmware automatically returns to the SMS main menu.

**Note:** This option is not available in a partitioned system. A virtual terminal window on the HMC is the default firmware console for a partitioned system.

---

## Select Boot Options

Use this menu to view and set various options regarding the installation devices and boot devices.

1. Select Install or Boot a Device
2. Select Boot Devices
3. Multiboot Startup

-----  
Navigation keys:

M = return to main menu

ESC key = return to previous screen

X = eXit System Management Services

-----  
Type the number of the menu item and press Enter or Select a Navigation key: \_

### Option 1

**Select Install or Boot a Device** which allows you to select a device to boot from or install the operating system from. This selection is for the current boot only.

### Option 2

**Select Boot Devices** which allows you to set the boot list.

### Option 3

**Multiboot Startup** toggles the multiboot startup flag, which controls whether the multiboot menu is invoked automatically on startup.

If option 1 is selected, the following menu is displayed:

```
Select Device Type
1. Diskette
2. Tape
3. CD/DVD
4. IDE
5. Hard Drive
6. Network
7. None
8. List All Devices

-----
Navigation keys:
M = return to main menu
ESC key = return to previous screen
X = eXit System Management Services
-----
Type the number of the menu item and press Enter or Select a Navigation key: _
```

If a device is selected that does not reside in the system, a menu with the following message displays:

```
THE SELECTED DEVICES WERE NOT DETECTED IN THE SYSTEM !
Press any key to continue.
```

If hard drive is selected, the following menu displays:

```
Select Hard Drive Type
1. SCSI
2. SSA
3. SAN
4. None
5. List All Devices

-----
Navigation keys:
M = return to main menu
ESC key = return to previous screen
X = eXit System Management Services
-----
Type the number of the menu item and press Enter or Select a Navigation key: _
```

If List All Devices is selected, a menu similar to the following displays, depending on the devices that are installed in the system:

```
Select Device
Device Current Device
Number Position Name
1.      1      SCSI 18200 MB Harddisk (loc=U0.1-P2/Z1-A8,0)
2.      -      SCSI 18200 MB Harddisk (loc=U0.1-P2/Z1-A9,0)
3.      -      SCSI 18200 MB Harddisk (loc=U0.1-P2/Z1-Aa,0)
4.      None
5. List all devices

-----
Navigation keys:
M = return to main menu
ESC key = return to previous screen
X = eXit System Management Services
-----
Type the number of the menu item and press Enter or Select a Navigation key: _
```

The appropriate device can then be selected for this boot or installation.

When a device is selected for installing the operating system, or to boot from, the Select Task menu allows you to get more information about the device, or to boot from that device in normal mode or service mode. The following is an example of this menu.

```
Select Task

SCSI 18200 MB Harddisk (loc=U0.1-P2/Z1-A8,0)

1. Information
2. Normal Mode Boot
3. Service Mode Boot

-----
Navigation keys:
M = return to main menu
ESC key = return to previous screen
X = eXit System Management Services
-----
Type the number of the menu item and press Enter or Select a Navigation key: _
```

If either Normal Mode Boot or Service Mode Boot is selected, the next screen will ask, "Are you sure?". If you answer yes, the device will be booted in the appropriate mode. If you answer no, the firmware will return to the Select Task menu.

---

## Select Boot Devices

**Attention:** In a partitioned system, only those devices from which an operating system can be booted that are assigned to the partition 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 Device Type screen will be displayed, which will be similar to the following.

```
Select Device Type
1. Diskette
2. Tape
3. CD/DVD
4. IDE
5. Hard Drive
6. Network
7. None
8. List All Devices
```

-----

Navigation keys:

M = return to main menu

ESC key = return to previous screen

X = eXit System Management Services

-----

Type the number of the menu item and press Enter or Select a Navigation key: \_

When a device type is selected, such as item 1, a Select Task menu will be 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** will display a menu similar to the following for a hard disk.

```
Device Information
/pci@3fffd0a000/pci@2,4/scsi@1/sd@8,0
: (Integrated) (Bootable)
DEVICE : SCSI 18200 MB Harddisk ( loc=U0.1-P2/Z1-A8,0)
NAME : sd
DEVICE-TYPE : block

-----
Navigation keys:
M = return to main menu
ESC key = return to previous screen
X = eXit System Management Services
-----
Type the number of the menu item and press Enter or Select a Navigation key: _
```

The Set Boot Sequence option allows you to set the location of the device in the boot list.

---

## Display Current Settings

This option displays the current setting of the customized boot list. An example of this menu, with one device in the boot list, follows.

Current Boot Sequence

1. SCSI 18200 MB Harddisk (loc=U0.1-P1/Z1-A8,0)
2. None
3. None
4. None
5. None

-----  
Navigation keys:

M = return to main menu

ESC key = return to previous screen

X = eXit System Management Services  
-----

Type the number of the menu item and press Enter or Select a Navigation key: \_

---

## Restore Default Settings

This option restores the boot list to the default boot list. The default boot list will vary depending on the devices that are installed in the system.

The default boot list is:

1. Primary diskette drive (if installed)
2. CD-ROM drive (if installed)
3. Tape drive (if installed)
4. Hard disk drive (if installed)
5. Network adapter

-----  
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: \_



---

## 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 10. Removal and Replacement Procedures

This chapter provides removal and replacement instructions for FRUs that are associated with the 7038 Model 6M2 processor subsystem. For removal and replacement of FRUs associated with the an I/O subsystem, see the *pSeries 7311 Model D10 and Model D20 Service Guide*, order number, SA38-0627.

Before performing any of the removal or replacement procedures in this chapter, read the following notices.

### **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.**

**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.**

**D06**

### **CAUTION:**

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

**C01**

### **CAUTION:**

**This unit has more than one power supply cord. To reduce the risk of electrical shock, disconnect two power supply cords before servicing.**

**C21**

---

## Handling Static-Sensitive Devices

**Attention:** Disk drives, tape drives, and CD-ROM drives are sensitive to static electricity discharge. These devices are shipped in antistatic containers to prevent damage caused by electrostatic discharge.

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 container until you are ready to install the device in the system unit.
- With the device still in its antistatic container, 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 container, lay it on the antistatic container. Before picking it up again, touch the antistatic container and the metal frame of the system unit at the same time.
- Handle the devices carefully in order to prevent permanent damage.

---

## Powering Off and Powering On the System

This section provides procedures for powering off and powering on the system.

### 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 shutdown a partition that controls an adapter or device that supports hot-swap. Individual power components and fans may be serviced with power on for power systems equipped with redundant power and cooling. Check removal and installation procedures before servicing the system.

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 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 before hand.

### 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 shutdown 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. Check removal and installation procedures before servicing this system.

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 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 before hand.

## 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, perform the following steps in sequence.

1. Open any system or rack doors necessary to allow the operator panel to be observed.
2. Connect the power source to the system unit.

Before you press the power button on your operator panel, observe the following:

- The power LED is slowly blinking.
- An OK prompt is visible in the operator panel display.

3. Press the power-on button on the operator panel.

After pressing the power button located on the operator panel, observe the following:

- a. The power LED begins to blink visibly faster.
- b. The system cooling fans are activated and begin to accelerate up 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.

## 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 button on the operator panel can be pushed to initialize the system but the preferred method is to use the HMC if 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. This 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 via the HMC. The state of all logical partitions that have been booted will be running.

---

## Hot-Pluggable FRUs

**Attention:** The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

**Note:** You do not have to power off the system to remove a hot-pluggable FRU from the processor subsystem or from I/O subsystems.

The following FRUs are hot-pluggable:

- Hot-pluggable PCI adapters (AIX operating system only)
- Disk drives (AIX operating system only)
- Media drives (AIX operating system only)
- Power supplies in the processor subsystem or the I/O subsystem. (The processor subsystem must have two power supplies installed, remove only one power supply at a time. If a power supply is indicating a failure, be sure to remove the failing power supply.)
- Front and rear fans on the processor subsystem and the front fan on the I/O subsystem.

The hot-pluggable FRUs in the 7038 Model 6M2 processor subsystem and the 7311 Model D10 I/O Subsystem can be removed and replaced when the drawers are in their normal operating positions (AIX operating system only).

---

## Processor Subsystem Access

The processor subsystem is normally installed in the operating position in a standard rack. Access to the rear of the drawer is through the back door of the rack. To access components inside the drawer, it must be placed in the service position and the two top covers removed.

**Note:** If you need to gain access to the inside the processor subsystem, the top cover screws can be loosened from the rear of the rack before putting the drawer into the service position, refer to “Processor Subsystem Top Covers” on page 488.

## Service Position

To gain access to the processor subsystem drawer from the top or the sides, use the following procedure to slide the drawer out toward the front of the rack.

1. Turn off the power to the processor subsystem drawer as described in “Powering Off and Powering On the System” on page 484.
2. Open the front and rear rack doors and remove the screws that hold the processor subsystem drawer to the front of the rack.
3. From the rear of the rack, check to ensure that any cables attached to the processor subsystem drawer are long enough to allow the drawer to be pulled toward the front of the rack. Note the location of all cables so that you can reinstall them in the correct position, then disconnect the cables.
4. If the hold-down brackets are used to hold the rear of the processor subsystem, remove the thumbscrews to release the rear of the drawer.
5. Carefully pull the processor subsystem drawer straight out the front of the rack until it stops against the rail stops. When moving the drawer, do so slowly and ensure that the cables are not being pulled.

## Operating Position

Before returning use of the system to the customer, return the processor subsystem drawer to the operating position, use the following procedure.

1. From the rear of the rack, check to ensure that any cables attached to the processor subsystem drawer are not in a position to be caught, pinched, or pulled when the drawer is pushed into the rack. Correct the cabling if required.
2. Push the processor subsystem drawer straight into the front of the rack until it stops against the rail flanges on the front. Ensure that the latches are latched. If required, install the screws to hold the drawer in the operating position.
3. Reconnect any cables that were removed earlier.
4. Turn on the power as described in “Powering Off and Powering On the System” on page 484.
5. Close the front and rear rack doors.

---

## Processor Subsystem Top Covers

If you plan to remove the covers from the top of the processor subsystem for a service procedure, you can loosen the covers when the processor subsystem is in the operating position, and then remove the covers when the processor subsystem is in the service position. If you need to remove the top covers to access areas of the subsystem other than the top of the PCI adapter area, remove both the PCI adapter cover and the processor access cover.

### PCI Adapter Cover

The battery can be accessed when the PCI adapter cover is removed. Use the following procedures to remove and replace the PCI adapter cover.

**Note:** Because the system uses the PCI adapter cassette for hot-plugging procedures, removing the PCI adapter cover from the processor subsystem is not required to perform removal and replacement of a PCI adapter.

#### Removal

1. Loosen the captive thumbscrews that attach the PCI adapter cover to the rear of the processor subsystem drawer.

**Note:** If you need to remove both of the top covers, also loosen the captive thumbscrews that attach the processor access cover.

2. Pull the processor subsystem drawer into the service position; see “Service Position” on page 487.
3. Pull the PCI adapter cover to the rear until it stops and then lift it straight up and off the processor subsystem.

#### Replacement

Reverse the steps performed for the removal procedure.

### Processor Access Cover

Use the following procedures to remove and replace the processor access cover.

**Note:** When the processor access cover is installed, it engages the top cover interlock switch . When replacing the processor access cover, ensure that the cover is securely fastened by the thumbscrews in the rear of the processor subsystem chassis. If the interlock switch is not engaged, the system generates an error code of 1011 1511.

#### Removal

1. Loosen the captive thumbscrews at the rear of the processor subsystem drawer.
2. Pull the processor subsystem drawer into the service position; see “Service Position” on page 487.
3. Slide the cover to the rear until it stops and then lift it straight up and off the processor subsystem.

#### Replacement

Reverse the removal procedure.

### Internal Processor EMC Cover

Use the following procedures to remove and replace the EMC cover that is over the processor section of the processor subsystem drawer.

#### Removal

1. Perform the top cover removal procedure; see “PCI Adapter Cover”.
2. Pull up on all the push-button snaps to release the processor card EMC cover.



3. Lift the front of the EMC cover straight up. When the rear of the cover is clear of the rear bulkhead, lift the cover out of the processor subsystem.

## **Replacement**

1. Pull up on all the push-button snaps to ensure that they are all in the open position.
2. Place the EMC cover over the processor card section of the processor subsystem. The tabs on the rear end of the cover should be under the tabs on the rear bulkhead. When the rear end of the cover is in the correct position, push down on the cover and then the push-button latches to hold the cover in place.
3. Install the top covers; see “PCI Adapter Cover” on page 488.

---

## PCI Adapters

**Attention:** The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. System with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

Most PCI adapters can be removed and replaced, or installed in a system without turning off the power to the entire system. These adapters are referred to as *hot-pluggable PCI adapters*. Some adapters are not hot-pluggable and power must be removed from the system for adapter removal, replacement, or installation.

**Note:** An adapter or an adapter blank filler must be installed into the PCI adapter cassette assembly before it is reinstalled in a processor subsystem or an I/O subsystem.

Before you remove or replace an adapter, determine if the PCI adapter you are installing or replacing is hot-pluggable. See the *PCI Adapter Placement Reference*, order number SA38-0538.

If you are removing a PCI adapter that is:

- Not hot-pluggable, go to “Non-Hot-Pluggable PCI Adapter Removal and Replacement” on page 497.
- Hot-pluggable, go to “Hot-Pluggable PCI Adapter Removal and Replacement” on page 498.

---

## Removing and Replacing a PCI Adapter Cassette

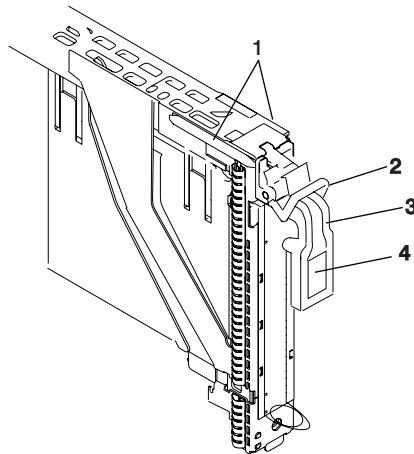
**Attention:** Only perform these procedures with the power turned on if you are directed to by the “Hot-Pluggable PCI Adapter Removal and Replacement” on page 498.

### Removing a PCI Adapter Cassette

**Attention:** Perform this procedure only when you are instructed to by the removal and replacement procedures for a “Non-Hot-Pluggable PCI Adapter Removal and Replacement” on page 497 or “Hot-Pluggable PCI Adapter Removal and Replacement” on page 498.

**Note:** An adapter or a blank filler must be installed into the PCI adapter cassette assembly before it is reinstalled in a processor subsystem or an I/O subsystem.

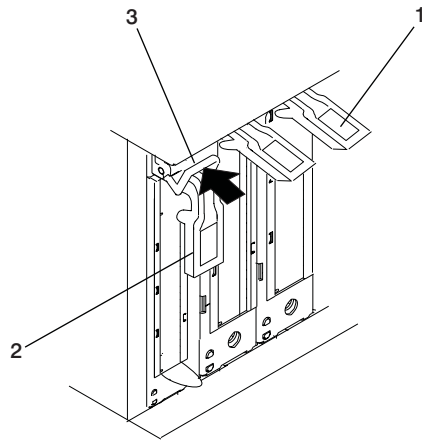
PCI adapter cassettes and the PCI slots in which they are installed have features that are difficult to see. Use of a flashlight is recommended when performing these procedures. The following illustration shows the PCI adapter cassette with the handle lowered.



- |                         |                                  |
|-------------------------|----------------------------------|
| 1 Dove-tail             | 3 Handle in the lowered position |
| 2 Gray locking crossbar | 4 Center of handle               |

1. Determine the slot from which you are removing the PCI adapter cassette.
2. Disconnect any cables that are connected to the adapter cassette being removed.

3. Press the center of the handle of the PCI card cassette to release the latch, then lower the handle completely.



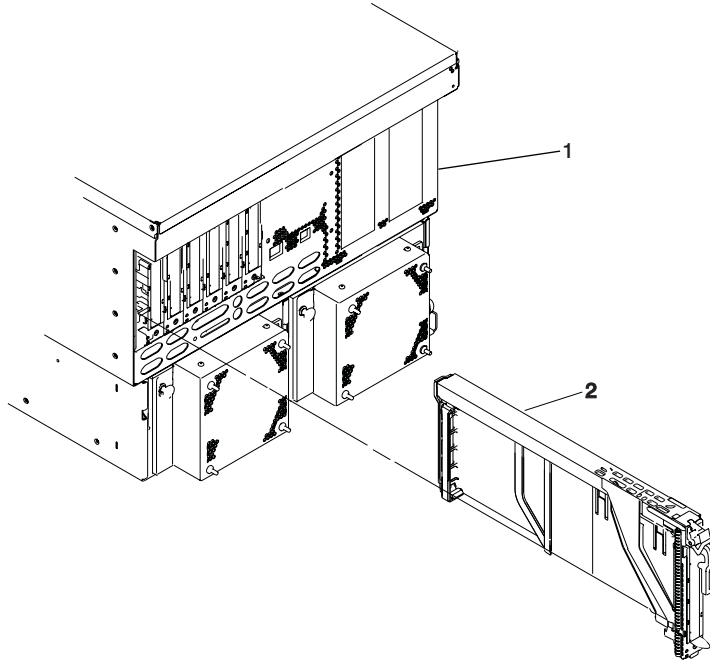
1 Center of handle

2 Handle in the lowered position

3 Gray locking crossbar

4. When the handle is completely lowered, push the gray locking cross bar. This action prevents the handle from pulling up while the adapter is being removed from the unit.
5. Carefully pull the PCI card cassette straight out from the subsystem as shown in the following illustration. Take care not to pull EMC gaskets from neighboring cassettes.

**Attention:** Do not remove more than one adapter cassette at a time.



1 Processor subsystem

2 PCI adapter cassette

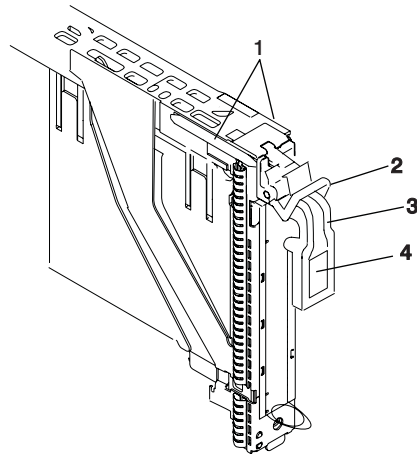
## Replacing a PCI Adapter Cassette

**Attention:** Perform this procedure only when instructed to by “Non-Hot-Pluggable PCI Adapter Removal and Replacement” on page 497 or “Hot-Pluggable PCI Adapter Removal and Replacement” on page 498. Check the following:

- An adapter or blank filler must be installed in each PCI adapter cassette and the top cover for the unit must be installed before installing PCI adapter cassette in the system.
- Check the adapter in the cassette that you are about to install and make sure that the adapter is held firmly by the retaining arms and ratchet clips on all four corners.
- Review the procedures beginning with “PCI Adapter or Blank Filler Removal from a Cassette Assembly” on page 506 to make sure that the adapter is correctly installed in the cassette.

Replace the PCI adapter cassette in the unit using the following procedure:

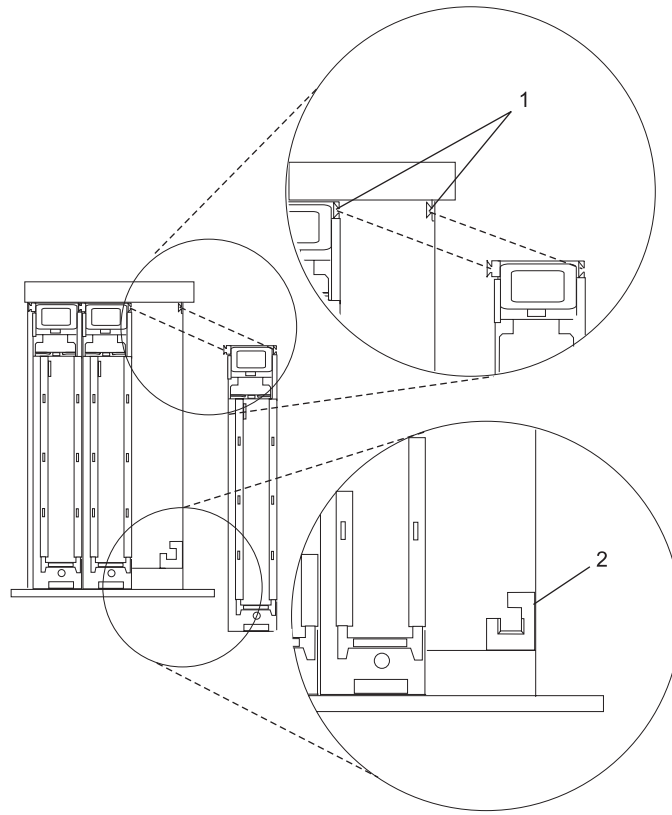
1. Press the center of the handle of the PCI card cassette to release the latch, then lower the handle completely.



1 Dove-tail  
2 Gray locking  
crossbar

3 Handle in the lowered position  
4 Center of handle

2. Study the PCI adapter slot opening carefully and note the location the dove-tail channels and the cassette guide slot. Use a flashlight to better see the dove-tail channels and the cassette guide slot.

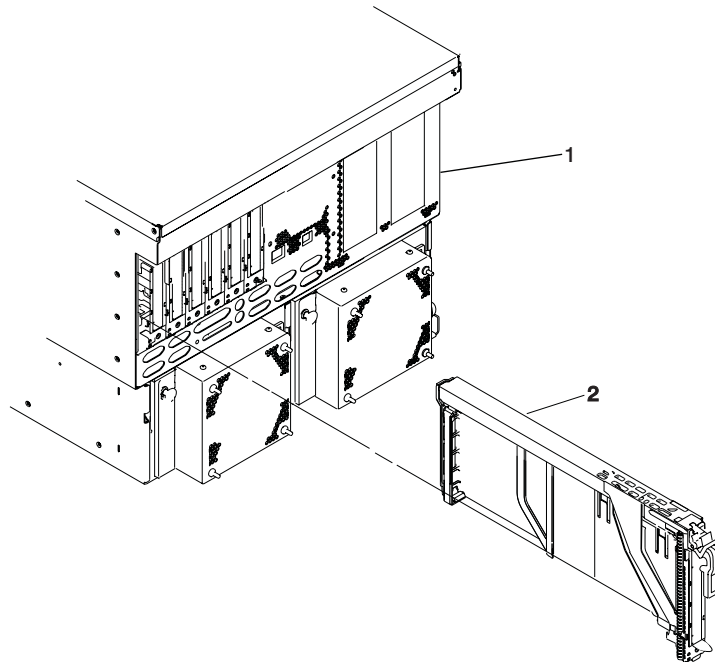


**1** Dove-tail  
channels

**2** PCI cassette guide slot

3. Holding the assembly straight on and level with the slot. Align the bottom edge of the black PCI cassette cover with the PCI cassette guide slot in the system or I/O unit.
4. Slide the cassette partially into the guide.

**Attention:** If the cassette does not slide in smoothly, the cover might not have engaged PCI cassette guide rail. Carefully pull the adapter back out and start again. Also, the cassette might bind if it hits the top cover as it is inserted.



1 Processor subsystem

2 PCI adapter cassette

5. As you slide the cassette into the slot, ensure the dove-tails on the top of the cassette align with the mating components on both the left and right sides.
6. Push the cassette in until its bezel is even with the next cassettes (to the left or right).

**Note:** Viewed from the rear, the left and right dove tail channels must be properly engaged. Check the following on the cassette after it is completely inserted into the unit.

- There should be no freedom of movement of the cassette when pressure is applied to the handle in a back and fourth motion.
- The PCI cassette bezel should be even with the other cassettes that are already installed.
- Visually check to ensure that the cassette is parallel with the cassettes to the left or right. If the cassette is not parallel with the neighboring cassettes, the cassette dove-tail channels might not have engaged, pull the cassette out a few inches, reinsert it, and check the alignment again. You might need to apply light pressure to the left or right neighboring cassettes against the new cassette in order to engage both of the dove-tails correctly.

7. When the cassette is fully inserted, ensure that the gray locking bar is in the unlocked position (pulled out).

**Attention:** Do not force the handle into the raised position. To enable proper insertion of the adapter, press down on the adapter tailstock (metal tab just below the handle hinge) at the rear of the adapter cassette when lifting the handle. Some minor forward or backward movement of the PCI adapter cassette might be necessary.

8. Carefully lift the handle all the way up until you hear and feel a click. The PCI adapter is pushed into the PCI adapter slot when the handle is raised.



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## Non-Hot-Pluggable PCI Adapter Removal and Replacement

### Removing a Non-Hot-Pluggable PCI Adapter

To remove a non-hot-pluggable adapter, do the following:

1. Turn off power and remove the power from the system as described in “Stopping the System without an HMC Attached” on page 484.
2. Determine the slot from which you are removing the adapter.
3. Disconnect any cables that are connected to the adapter being removed.
4. Go to “Removing a PCI Adapter Cassette” on page 491 to remove the appropriate cassette, then return here.
5. If you are installing another adapter in this slot, follow the instructions given in “Replacing a Non-Hot-Pluggable PCI Adapter”. If you are not installing another adapter in this slot, install a blank PCI adapter cassette into the slot.
6. Connect the power to the system.
7. Go to “MAP 0410: Repair Checkout” in the *@server pSeries Diagnostic Information for Multiple Bus Systems* Refer to “Starting the System Without an HMC Attached” on page 485 if necessary.

### Replacing a Non-Hot-Pluggable PCI Adapter

Replace the adapter using the following procedure:

**Note:** Because the adapter you are installing is not hot-pluggable, shut down the system and remove power before performing this procedure.

1. If you have just removed an adapter and you are replacing it in the system, use the procedures in “PCI Adapter or Blank Filler Removal from a Cassette Assembly” on page 506 to install the replacement adapter in the PCI adapter cassette.
2. Go to “Replacing a PCI Adapter Cassette” on page 494 to replace the appropriate cassette in the PCI slot, then return here.
3. Connect power to the system
4. Go to “MAP 0410: Repair Checkout” in the *@server pSeries Diagnostic Information for Multiple Bus Systems* Refer to “Starting the System Without an HMC Attached” on page 485 if necessary.

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## Hot-Pluggable PCI Adapter Removal and Replacement

**Attention:** The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

This following section provide instructions to remove and replace PCI adapters using a PCI adapter cassette. If you are permanently removing an adapter from the system go to “Removing a Hot-Pluggable PCI Adapter” on page 500. If you are installing a new adapter, got to “Installing a Hot-Pluggable PCI Adapter” on page 502.

### Removing and Replacing a Hot-Pluggable PCI Adapter

**Note:** Use this procedure only when you are replacing an adapter with an identical adapter. If you are replacing an adapter with an adapter that is not identical to the adapter removed, go to “Removing a Hot-Pluggable PCI Adapter” on page 500, and then to “Installing a Hot-Pluggable PCI Adapter” on page 502.

To replace an adapter, perform the following steps:

1. Determine the slot from which you are removing the adapter.
2. Ensure that any processes or applications that might use the adapter are stopped.

**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 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](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. Log in as root user, if the system is a partitioned system, log in as root user on the partition that has the adapter assigned to it.
4. At the command line, type **smitty**.
5. Select **Devices**.
6. Select **PCI Hot-Plug Manager**.

**Note:** For information about the Hot-Plug Manager, refer to “PCI Hot-Plug Manager Access” on page 503.

7. Select **Unconfigure a Device** and press Enter.
8. Press F4 to display the Device Names menu.
9. From the menu, select the adapter you are removing.
10. Answer YES to **Keep Definition**. Press Enter.
11. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfigure is indicated by the OK message displayed next to the **Command** field at the top of the screen.
12. Press F3 to return to the PCI Hot-Plug Manager menu.

13. Select **Replace/Remove a PCI Hot-Plug Adapter** and press Enter. The Replace/Remove a PCI Hot-Plug Adapter menu displays.
14. Move the cursor to select the adapter that you are removing and press Enter.
15. 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.
16. When you are instructed to remove the adapter from the adapter slot, disconnect any cables that are connected to the adapter being removed.
17. Go to “Removing a PCI Adapter Cassette” on page 491 to remove the appropriate cassette, then return here.
18. Install the replacement adapter in the PCI adapter cassette, see “PCI Adapter or Blank Filler Removal from a Cassette Assembly” on page 506, then return here.
19. Go to “Replacing a PCI Adapter Cassette” on page 494 to install the cassette in the system. Then return here.
20. Connect the appropriate cables and devices to the adapter.
21. 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.
22. Press the F3 key to return to the PCI Hot-Plug Manager menu.
23. Select **Install/Configure Devices Added After IPL** and press Enter. Then 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.
24. 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 13.
25. 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.
26. Install the covers that you removed earlier and return the drawer to the operating position.

## Removing a Hot-Pluggable PCI Adapter

**Attention:** The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

If you are permanently removing an adapter from a system, this procedure should be used.

**Note:** If you are removing an adapter and replacing it with an adapter that is identical to the adapter that was removed, use the “Removing and Replacing a Hot-Pluggable PCI Adapter” on page 498 procedure.

To remove an adapter, perform the following steps:

1. Open the door of the rack.
2. Determine the slot from which you are removing the adapter.
3. Ensure that any processes or applications that might use the adapter are stopped.

**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 as well. This action prevents a service representative or user from causing an unexpected outage for system users.

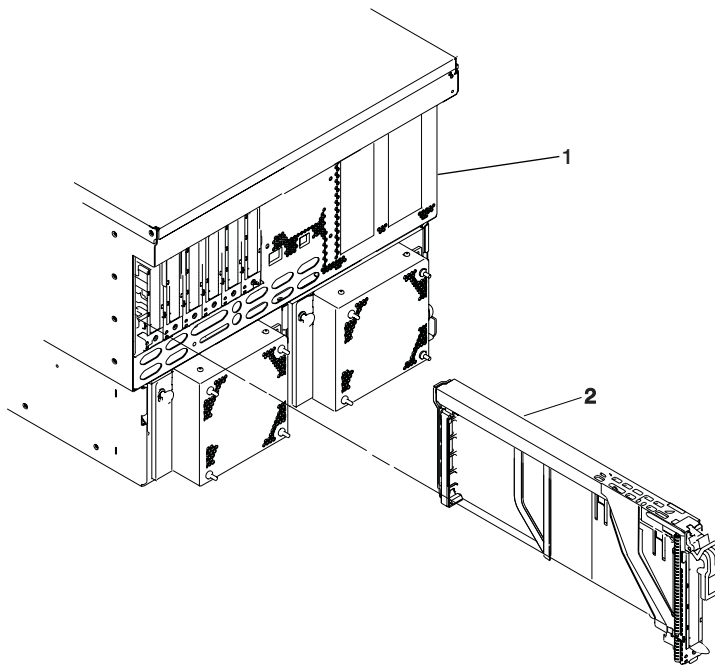
For more information on taking the PCI adapter online, see the AIX operating system documentation. Documentation for the AIX operating system is available from the IBM @server pSeries Information Center at [http://publib16.boulder.ibm.com/pseries/en\\_US/infocenter/base](http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base). Select **AIX documentation**. The *AIX Documentation* CD contains the base set of publications for the operating system, including system-management and end-user documentation.

4. Log in as root user, if the system is a partitioned system, log in as root user on the partition that has the adapter assigned to it.
5. At the command line, type **smitty**.
6. Select **Devices**.
7. Select **PCI Hot-Plug Manager**.

**Note:** For information about the Hot-Plug Manager, refer to “PCI Hot-Plug Manager Access” on page 503.

8. Select **Unconfigure a Device** and press Enter.
9. Press F4 to display the Device Names menu.
10. Select the adapter you are removing from the menu.
11. Use the Tab key to answer NO to **Keep Definition**. Press Enter.
12. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfigure 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 **Replace/Remove a PCI Hot-Plug Adapter** and press Enter. The Replace/Remove a PCI Hot-Plug Adapter menu displays.
15. Move the cursor to select the adapter that you are removing and press Enter. (The description entry displays as unknown).
16. 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.

17. When you are instructed to remove the adapter from the adapter slot, disconnect any cables that are connected to the adapter being removed.
18. Go to “Removing a PCI Adapter Cassette” on page 491 to remove the appropriate cassette, then return here.
19. Install the replacement adapter in the PCI adapter cassette, see “PCI Adapter or Blank Filler Removal from a Cassette Assembly” on page 506, then return here.
20. Go to “Replacing a PCI Adapter Cassette” on page 494 to install the cassette in the system. Then return here.
21. Press the center of the handle of the PCI card cassette to release the latch, then lower the handle completely.
22. When the handle is completely lowered, push the gray locking cross bar.
23. Carefully pull the PCI adapter cassette straight out from the I/O subsystem, as shown in the following illustration. RtmDiTake care not to pull EMC gaskets from neighboring cassettes.



1 Processor Subsystem

2 PCI adapter Cassette

24. If you are not installing another adapter in this slot, install a blank PCI adapter cassette into the slot.
25. 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.
26. 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 500.
27. Press F10 to exit the Hot-Plug Manager.
28. Install any covers that you removed earlier, and return the drawer to the normal operations.

## Installing a Hot-Pluggable PCI Adapter

**Attention:** The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

**Note:** Before installing a new adapter, ensure the device driver for the adapter is installed. Check with the system administrator if the device driver is not already installed.

To install an adapter, perform the following steps:

1. Go to “Removing a PCI Adapter Cassette” on page 491 to remove the appropriate cassette, then return here.
2. Install the new adapter into a PCI adapter cassette, see “PCI Adapter or Blank Filler Removal from a Cassette Assembly” on page 506.
3. Log in as root user, if the system is a partitioned system, log in as root user on the partition that has the adapter assigned to it.
4. At the command line, type **smitty**.
5. Select **Devices**.
6. Select **PCI Hot-Plug Manager**.

**Note:** For information about the Hot-Plug Manager, refer to “PCI Hot-Plug Manager Access” on page 503.

7. 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.
8. See the *PCI Adapter Placement Reference*, order number SA38-0538, for adapter placement information. Then select an empty PCI slot for the adapter.
9. Select the appropriate empty PCI slot from the ones listed on the screen, and press Enter.
10. Follow the instructions on the screen to install the adapter until the visual indicator (LED) for the specified PCI slot is set to the Action state. See Chapter 12, “Fault and Attention LEDs”, on page 601.
11. Install the replacement adapter in the PCI adapter cassette, see “PCI Adapter or Blank Filler Removal from a Cassette Assembly” on page 506, then return here.
12. Go to “Replacing a PCI Adapter Cassette” on page 494 to install the cassette in the system. Then return here.
13. Connect appropriate cables and devices to the adapter.
14. Continue to follow the screen instructions until you receive a message that the installation is successful. Successful installation is indicated by the OK message displayed next to the **Command** field at the top of the screen.
15. Press the F3 key to return to the PCI Hot-Plug Manager menu.
16. Select **Install/Configure Devices Added After IPL** and press Enter. Then follow the instructions on the screen. Successful installation is indicated by the OK message displayed next to the **Command** field at the top of the screen.
17. If you do not have other adapters to install, continue with the next step.  
OR  
If you have other adapters to install, press the F3 key to return to the PCI Hot-Plug Manager menu and then return to step 7.
18. 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.
19. Install any covers that you removed earlier and return the drawer to the normal operating position.

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## PCI Hot-Plug Manager Access

**Attention:** The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

The installation instructions for hot-pluggable PCI adapters refer you to these procedures when it is appropriate to perform them.

**Note:** A PCI adapter is only hot-pluggable if the PCI adapter supports hot-plug applications. See the *PCI Adapter Placement Reference*, order number SA38-0538.

## 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*.

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To access the hot-plug menus, do the following:

1. Log in as root user, if the system is a partitioned system, log in as root user on the partition that has the adapter assigned to it.
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. For a description of the menu options, see below.

## 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 Chapter 12, "Fault and Attention LEDs", on page 601.



## 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 “Unconfigure a Device” option below).

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 Chapter 12, “Fault and Attention LEDs”, on page 601.

## 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, see the following:

- If the adapter is listed as Unknown, select 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.

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## PCI Adapter or Blank Filler Removal from a Cassette Assembly

Use this procedure when you are preparing to install or replace an adapter or an adapter blank filler in the system unit or an I/O drawer.

**Note:** An adapter or an adapter blank filler must be installed into the PCI adapter cassette assembly before it is reinstalled in a system unit or an I/O drawer.

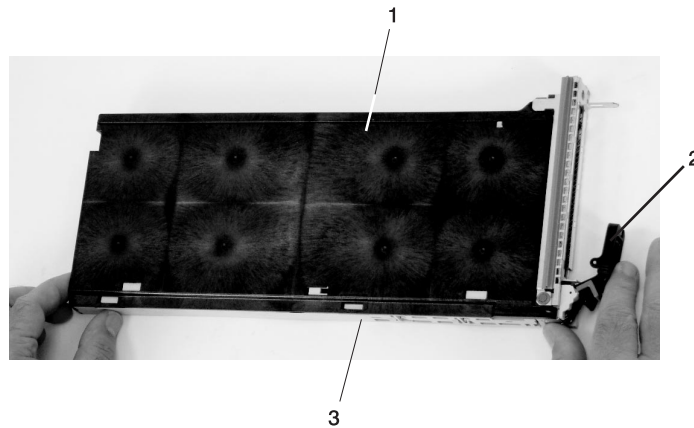
Determine the slot of the system or I/O drawer in which you plan to install or remove an adapter, and refer to the procedures for removing an adapter from the system. Remove the PCI adapter cassette assembly from the system unit or I/O drawer before beginning this procedure.

**Note:** It may take approximately 30 to 40 minutes to perform this procedure the first time. This time includes using the instructions in this guide and performing the steps. Thereafter, performing this procedure usually takes approximately 10 minutes.

Before performing the following steps, familiarize yourself with the entire procedure.

To remove a PCI adapter or blank filler from a cassette assembly, do the following:

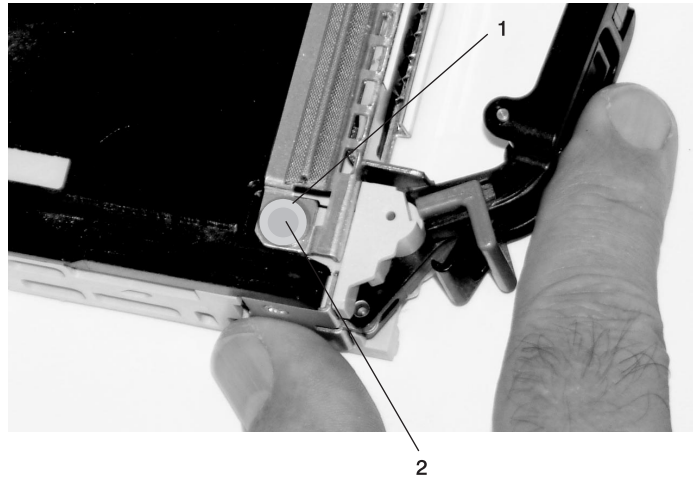
1. Place the PCI adapter cassette assembly on a flat work surface with the cover facing up, and the top of the adapter facing you. See the following illustration.



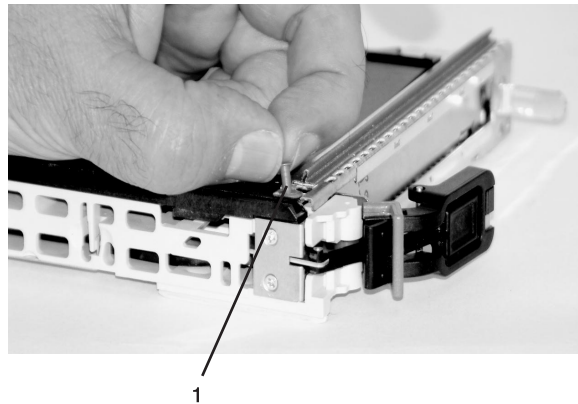
1 Cover  
2 Handle

3 Top of Cover

2. Using two fingers, remove the bushing-lock pin from the bushing. The pin can be removed by pulling it out of the bushing with your fingernails.

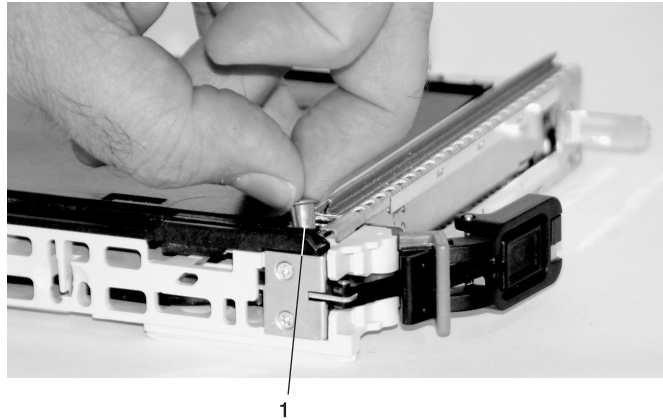


- 1 Bushing
- 2 Bushing-Lock Pin



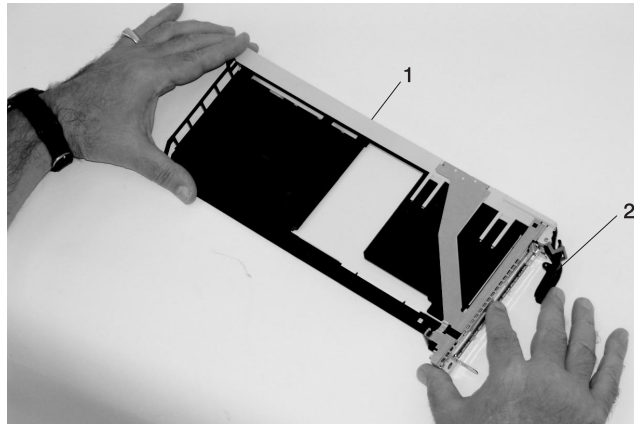
- 1 Bushing-Lock Pin

3. Remove the bushing. The bushing can be removed by pulling it out of the PCI adapter cassette assembly with your fingernails.



1 Bushing

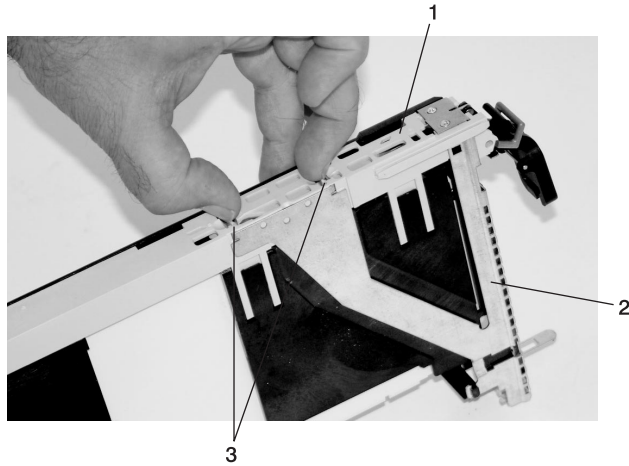
4. Turn over the PCI adapter cassette assembly so that the top is facing away from you.



1 Top of Adapter  
2 Handle

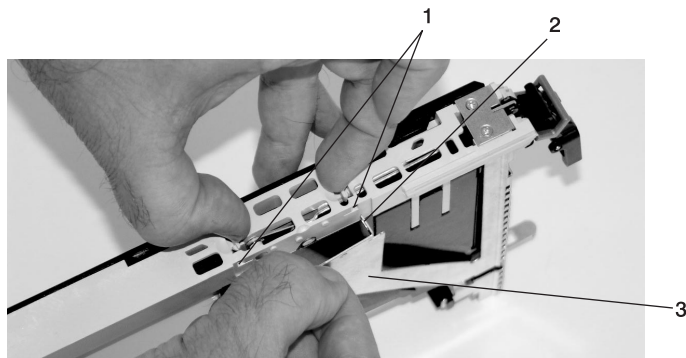
5. Remove the bezel, as follows:

- a. Locate the plastic latch fingers in the top part of the cassette.



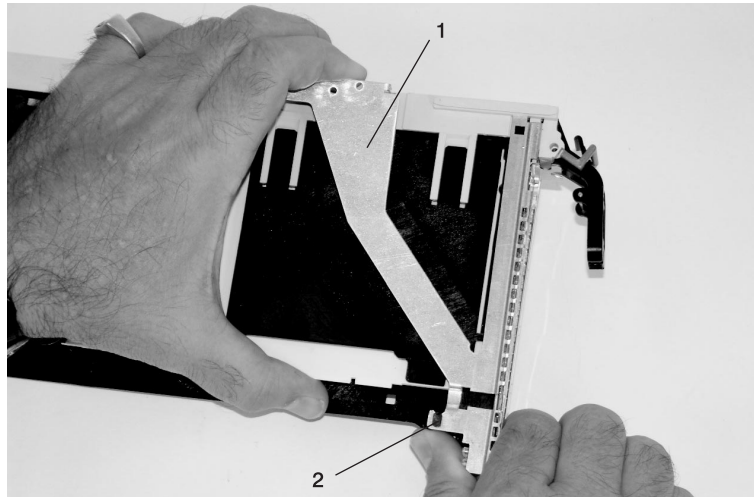
- 1 Top of Cassette
- 2 Bezel
- 3 Plastic Latch Fingers

- b. Using one hand, pinch the plastic latch fingers, and with your other hand, carefully lift the top part of the bezel extension out until the tabs clear the slots in the PCI adapter cassette assembly.



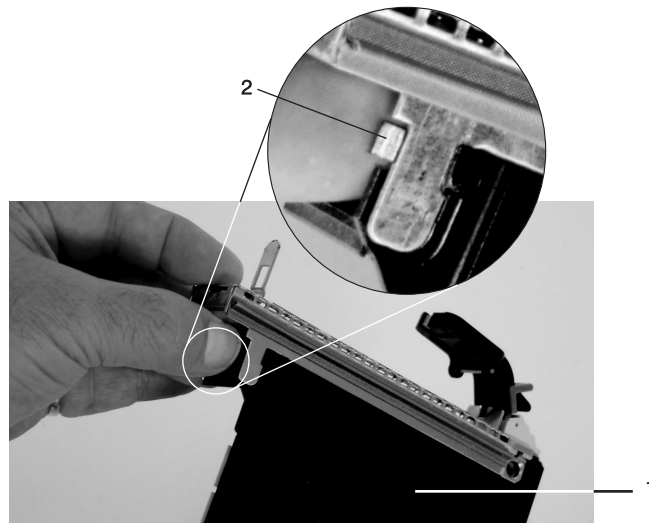
- 1 Slots
- 2 Tab
- 3 Bezel Extension

- c. While holding the bezel extension out, push the plastic cover latch out of the bezel hook, as shown in the following illustration. This action allows the bezel to be removed.



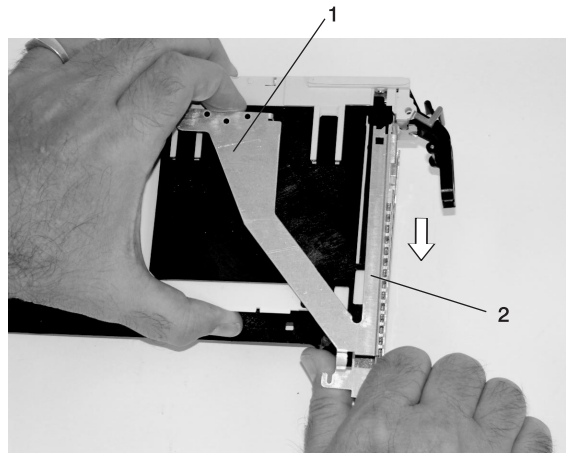
- 1 Bezel Extension
- 2 Plastic Cover Latch in Bezel Hook

- d. On the opposite side of the cassette (cover side), push the cover latch to release the bezel.

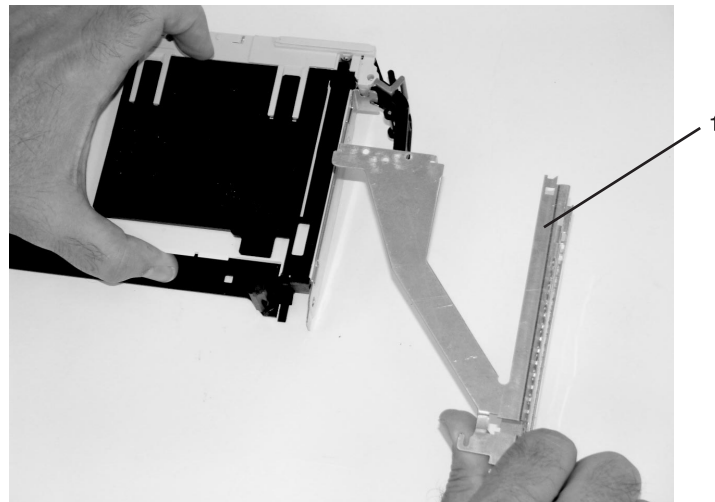


- 1 Cover Side
- 2 Cover Latch

- e. While holding the bezel extension out, carefully slide the bezel off. You might have to work from both sides to loosen the bezel assembly from the cassette assembly. When the bezel is free, slide it completely off the cassette assembly, and set it aside.



- 1 Bezel Extension  
2 Bezel

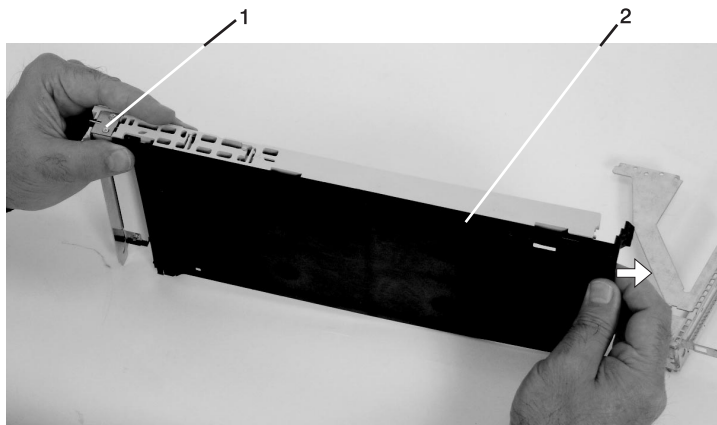


- 1 Bezel

6. Turn over the cassette so that the cover is facing up, as shown in the following illustration. Remove the cover from the cassette as follows:

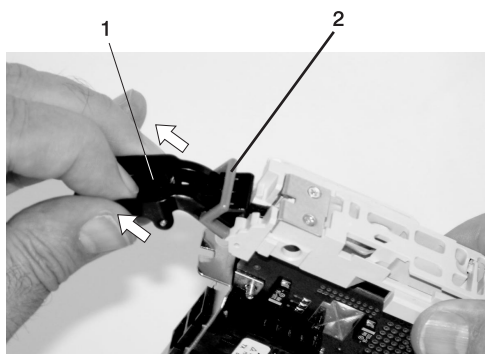
- a. Slide the cover until it releases from the cassette assembly.

**Attention:** The cover might be tight and difficult to slide. If you grasp the left end (handle end) of the cassette and the right end of the cover, you can use enough force to pull the cover off the PCI adapter cassette assembly.



- 1 Left End of the Cassette  
2 Cassette Cover

- b. Lift the cover off the assembly, and set it aside.
- c. By pulling on both sides of the gray plastic locking bar, which is located on the handle, ensure that the handle is pulled into the unlocked position. Raise the handle on the cassette linkage assembly until it locks into the up position (the blank filler or adapter moves downward).



- 1 Handle  
2 Gray Plastic Locking Bar



7. Remove the metal EMC shield from the top of the tailstock.



1 Metal EMC Shield

8. Remove the blank filler or adapter that is installed in the cassette linkage assembly.

**Note:** If there is a blank filler in the cassette linkage assembly, as shipped from the manufacturer, there are two adapter arms. One adapter arm is used with short adapters (short adapter arm) and the other adapter arm is used with long adapters (long adapter arm).

If you are removing a short adapter or blank filler, see “Short Adapter or Blank Filler Removal” on page 514.

If you are removing a long adapter, see “Long Adapter Removal” on page 516.

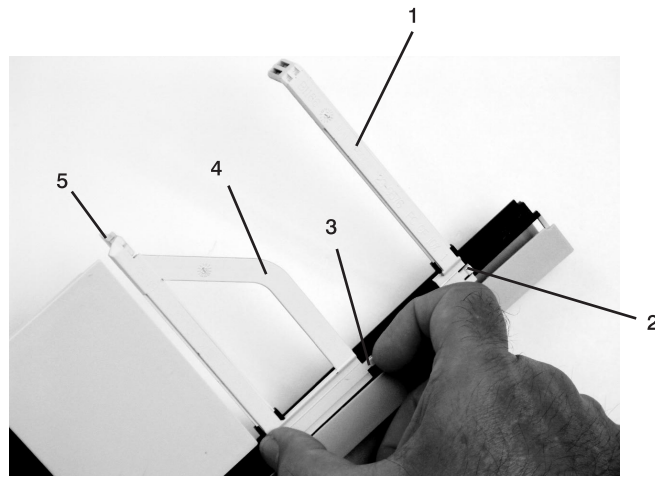
## Short Adapter or Blank Filler Removal

To remove a short adapter or blank filler, do the following:

1. Slide the long and short adapter arms away from the adapter or blank filler by doing the following:
  - a. Each adapter arm has a release tab that allows the arm to be moved away from the adapter or blank filler in the cassette assembly. Use your fingernail to lift the tab, to allow each arm to be moved away from the adapter or blank filler. Lift the release tab on the short adapter arm, and push on the slotted tab to release the end of the blank filler.

**Note:** If you plan to install a short adapter, leave the long adapter arm on the cassette linkage assembly. If you plan to install a long adapter, remove both the long and short adapter arms from the cassette linkage assembly in the next step.

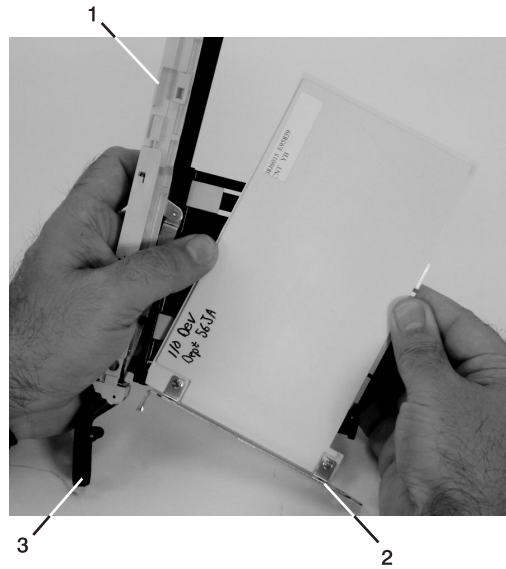
- b. Slide the long and short adapter arms away from the blank filler or adapter.



1 Long Adapter Arm  
2 Release Tab  
3 Release Tab

4 Short Adapter Arm  
5 Slotted Tab

2. Remove the adapter or blank filler from the cassette linkage assembly by rotating the bottom of the tailstock out, as shown in the following illustration. Store the adapter or blank filler in a safe place.



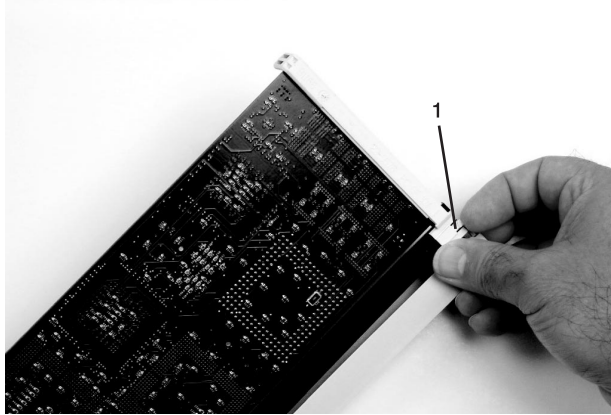
- |   |                              |   |        |
|---|------------------------------|---|--------|
| 1 | Cassette Linkage<br>Assembly | 3 | Handle |
| 2 | Bottom of Tailstock          |   |        |

3. The removal procedure for the PCI adapter cassette assembly is complete. To install a new adapter or blank filler in the cassette, go to "Installing a Hot-Pluggable PCI Adapter" on page 502.

## Long Adapter Removal

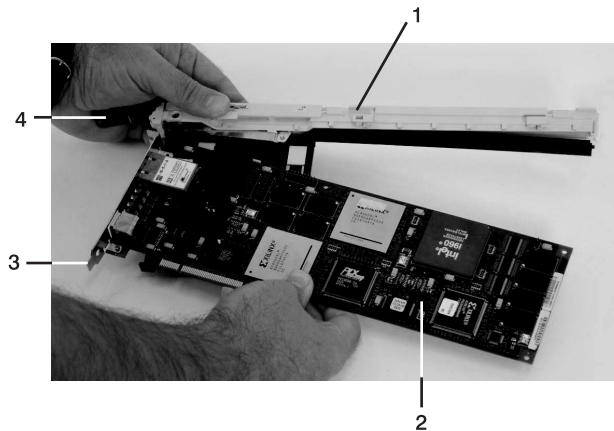
To remove a long adapter, do the following:

1. Each adapter arm has a release tab that allows the arm to be moved away from the adapter in the cassette assembly. Use your fingernail to lift the tab, to allow the arm to be moved away from the adapter. Lift the release tab on the long adapter arm, and slide it off the cassette linkage assembly.



1 Release Tab

2. Remove the adapter from the cassette linkage assembly by rotating the bottom of the tailstock out, as shown in the following illustration. Store the adapter in a safe place.



1 Cassette Linkage  
Assembly  
2 Adapter

3 Bottom of Tailstock  
4 Handle

3. The removal procedure for the PCI adapter cassette assembly is complete. To install a new adapter or blank filler in the cassette, go to "Installing a Hot-Pluggable PCI Adapter" on page 502.

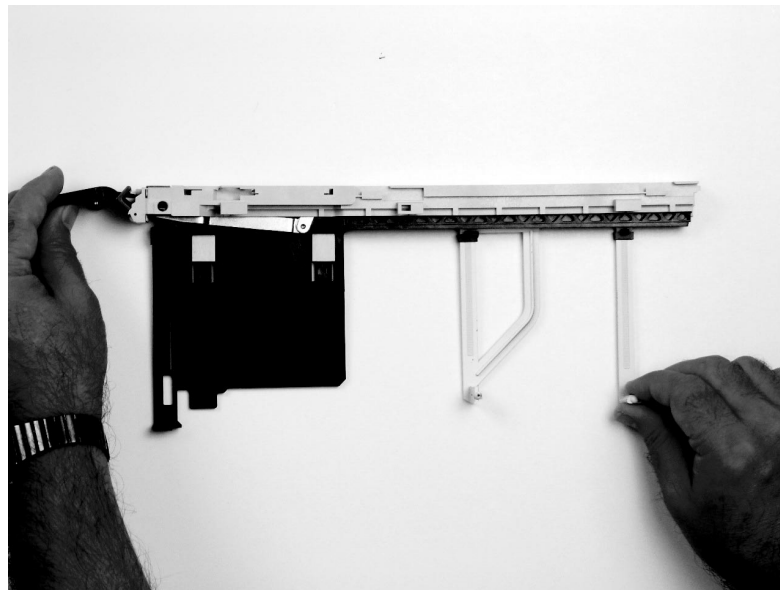
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## Replacing an Adapter in a PCI Adapter Cassette

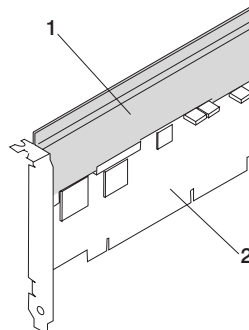
This procedure is performed when preparing to install a new adapter or a blank filler in the processor subsystem or an I/O drawer. Familiarize yourself with the entire procedure before performing the following steps.

1. Place the empty PCI adapter cassette linkage on a flat work surface in front of you. Position the cassette so that the handle is in the raised (up position), and on the left, with the top of the linkage facing away from you.

**Note:** Your PCI adapter cassette linkage might not have the short or long adapter retaining arms installed if you removed them during the remove procedure. In the following figure, both arms are shown.

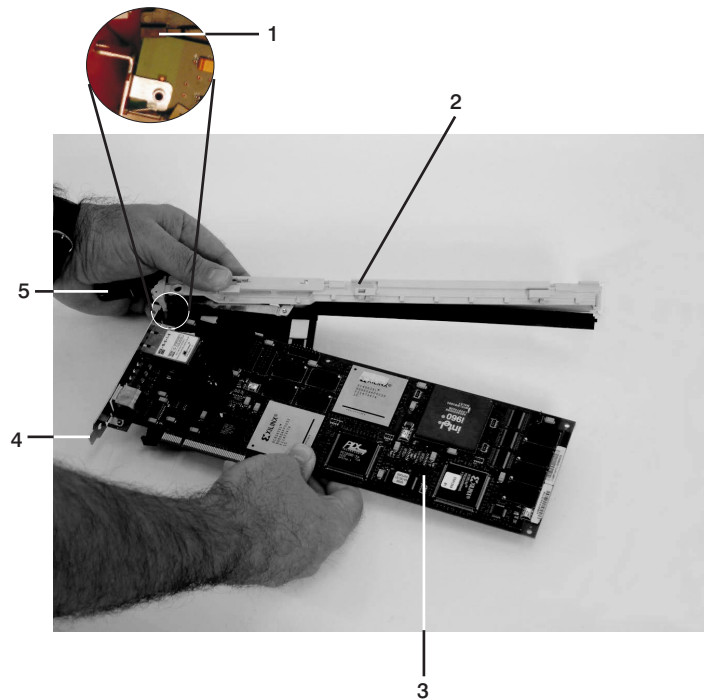


**Note:** If you are installing an adapter that is in the following list, use the additional brackets listed to help when you seat the adapter during installation. There are unique brackets **(1)** for each adapter type **(2)**:



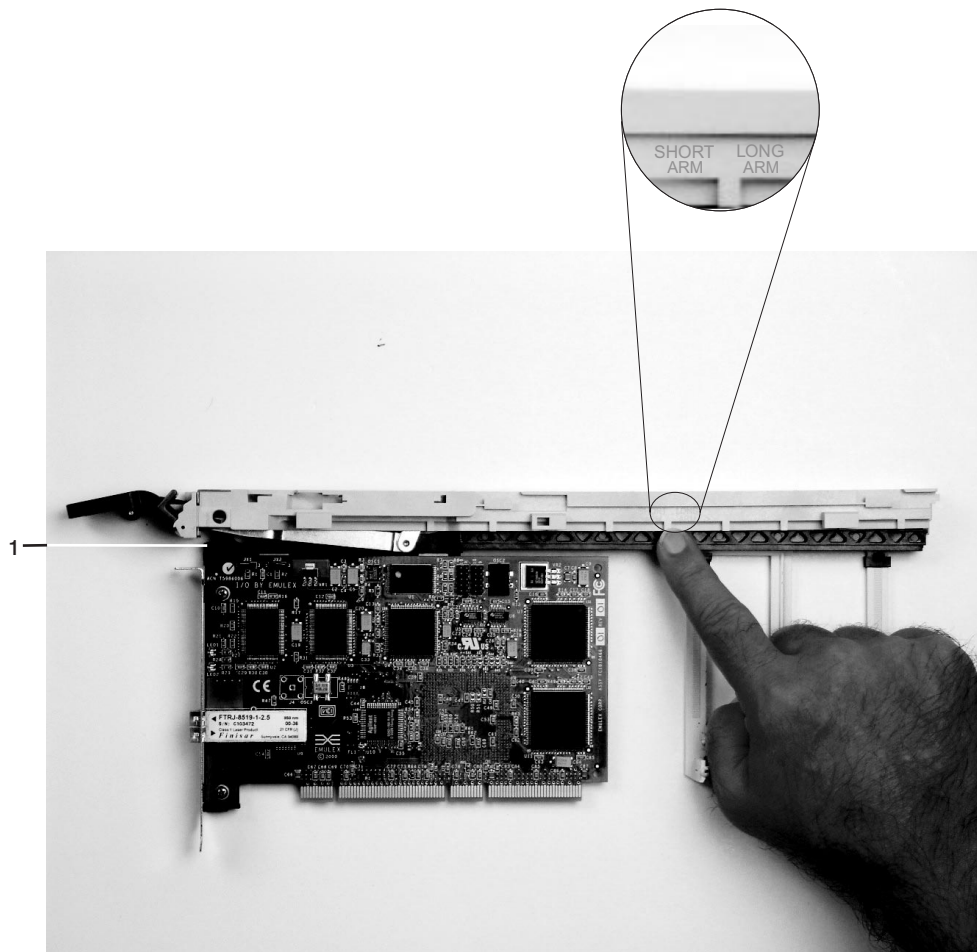
<b>53P5450</b>	Bracket for Gigabit Ethernet PCI-X Adapter, FC 5700 or 10/100/1000 Base-TX Ethernet PCI-X Adapter, FC 5701
<b>44P2661</b>	Bracket for Dual Channel Ultra3 SCSI PCI Adapter, FC 6203 Type 4Y
<b>44P0321</b>	Bracket for 10/100 BaseT Ethernet PCI Adapter, FC 4962 Type AF
<b>44P2675</b>	Bracket for 2 Gigabit Fibre Channel Adapter, FC 6228 Type 4W
<b>44P2676</b>	Bracket for Gigabit Ethernet - SX PCI Adapter, FC 2969 Type 9U, or 10/100/1000 Base-T Ethernet PCI Adapter, FC 2975 Type A-A

2. Use the following procedure to determine if you are installing a long adapter or a short adapter. If you know the length of your adapter, skip the following steps and proceed to step 3 on page 520.
  - a. Remove the adapter from its protective packaging and, if present, remove the plastic extension handle from the end of the adapter.
  - b. Place the adapter or a blank filler over the cassette with the upper left corner aligned into the top adapter-retaining clip.



- |                              |                       |
|------------------------------|-----------------------|
| 1 Top Adapter-Retaining Clip | 3 Adapter             |
| 2 Cassette Linkage Assembly  | 4 Bottom of Tailstock |
|                              | 5 Handle              |

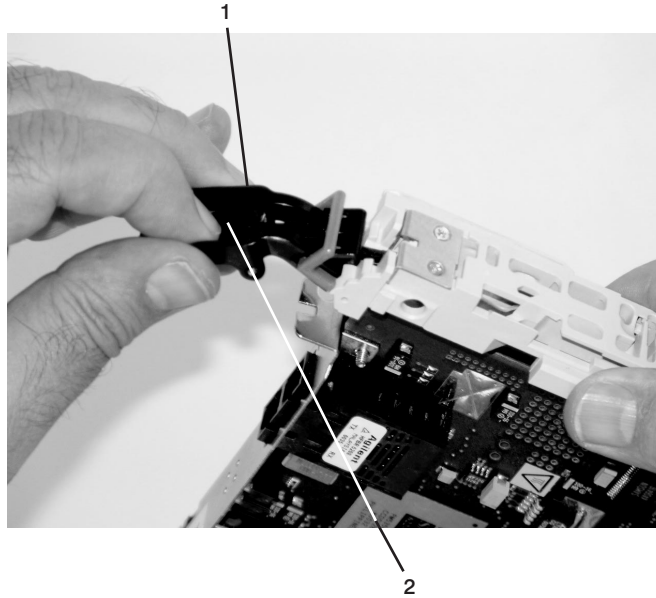
- c. The cassette linkage is marked to show long or short adapters similar to the adapter shown in the following figure. Check the right end of the adapter to determine if it is long enough to fall into the long area of the cassette linkage. Ensure that the corner on the left end of the adapter is still aligned into the top adapter-retaining clip and determine the length of the adapter.



1 Top Adapter-Retaining Clip

3. Remove the adapter or blank filler and ensure that the handle is in the up position. If you need to move the handle, ensure that the gray locking bar is pulled into the unlocked position, and then rotate the adapter handle until the handle is in the up position (the cassette linkage will extend down beyond the cassette top).

If you are installing a short adapter or blank filler, proceed to “Short Adapter or Blank Filler Installation” on page 521. If you are installing a long adapter, proceed to “Long Adapter Installation” on page 536.



- 1 Handle
- 2 Lock

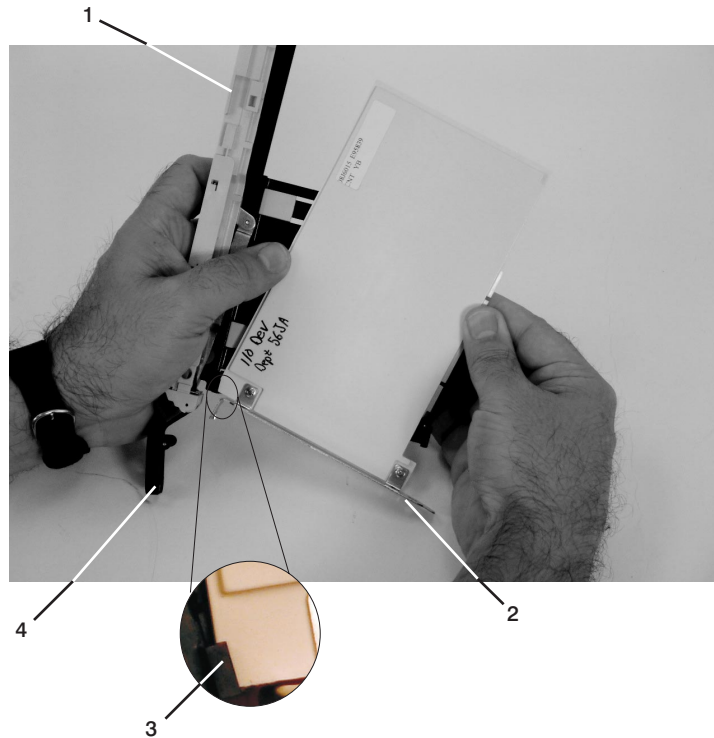


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## Short Adapter or Blank Filler Installation

Use the following procedure to install a short adapter or blank filler.

1. Install the adapter or blank filler by doing the following:
  - a. Place the adapter or blank filler into the cassette so that the upper-left corner of the adapter engages the adjustable top adapter-retaining clip as shown in the following figure.

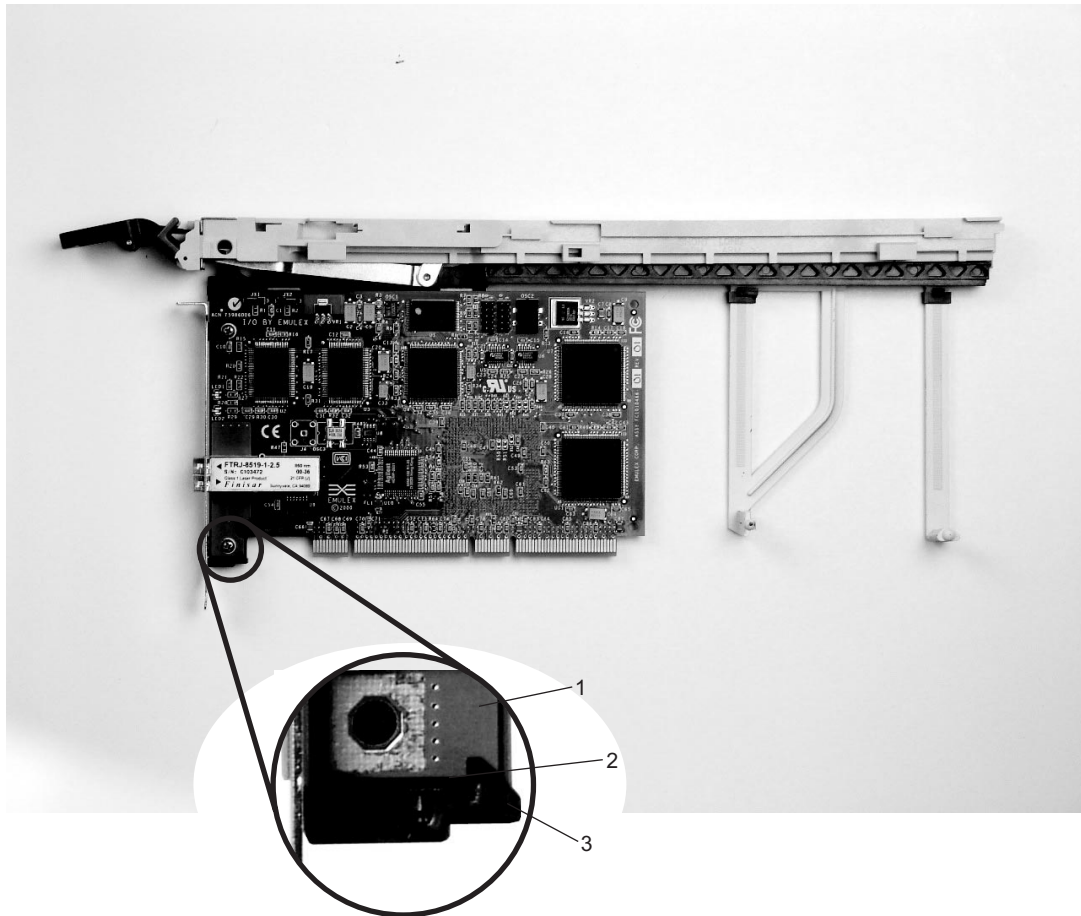


1 Cassette Linkage  
Assembly  
2 Bottom of Tailstock

3 Retaining Clip  
4 Handle

- b. Rotate the adapter so that the adapter engages the slot in the bottom adapter-retaining clip and the top corner of the adapter is seated into the adjustable top adapter-retaining clip.

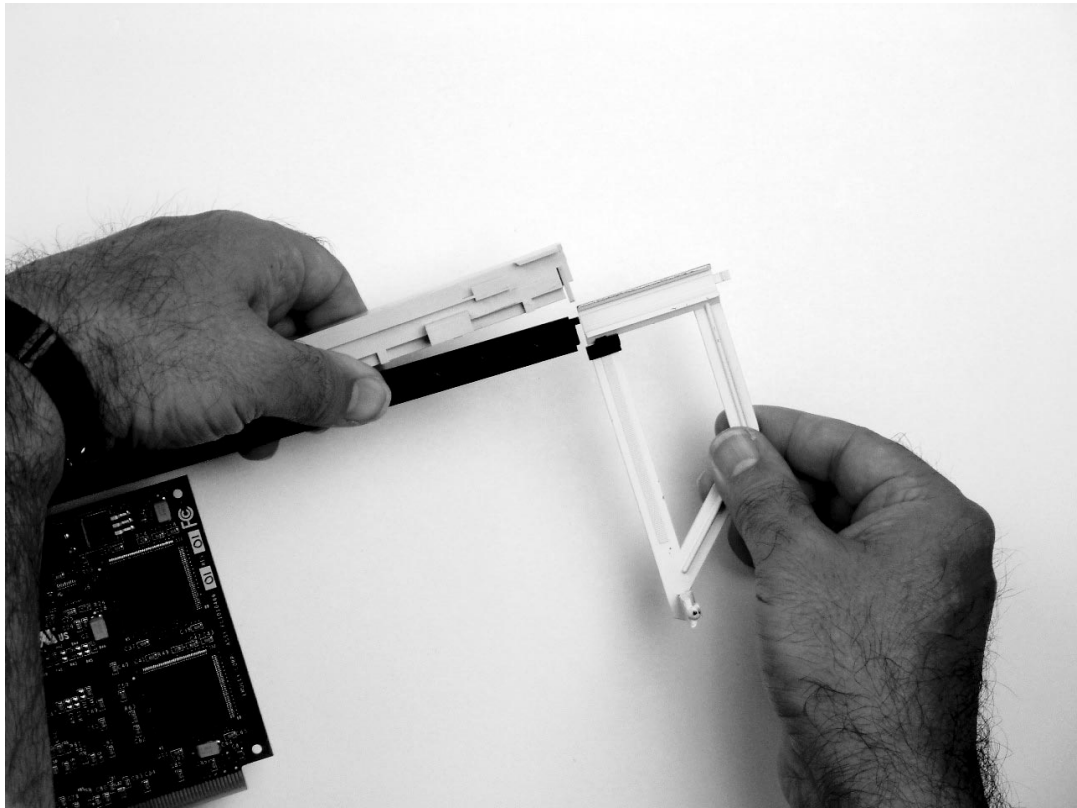
**Note:** If the adapter is not a full-height adapter, you must slide the adjustable top adapter-retaining clip downward until the lower edge of the adapter is seated into the slot on the bottom adapter-retaining clip.



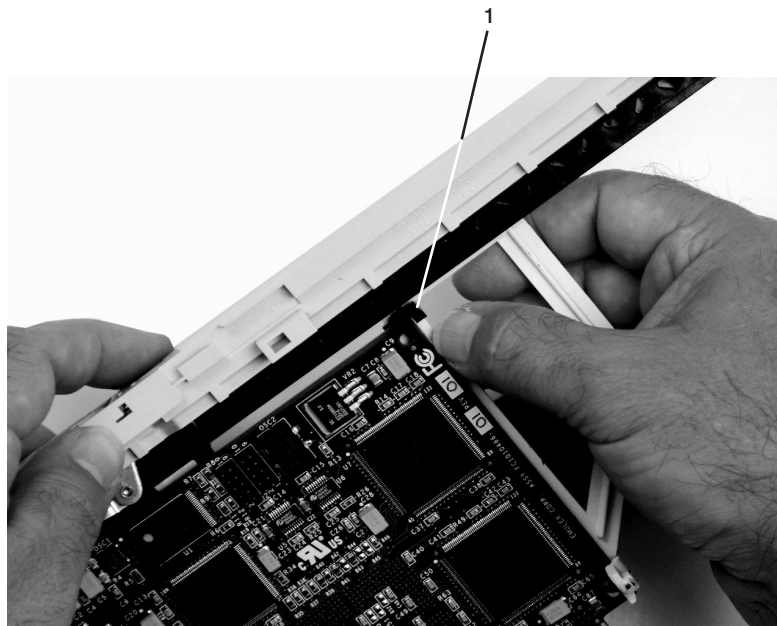
1 Adapter  
2 Slot

3 Bottom Retaining Clip

- c. Slide the short-adapter retaining arm toward the adapter or blank filler on the cassette linkage rail.
  - 1) If the short-adapter retaining arm has been removed from the cassette linkage rail, install the short-adapter retaining arm and then slide the arm until it contacts the adapter or blank filler as shown in the following figure.



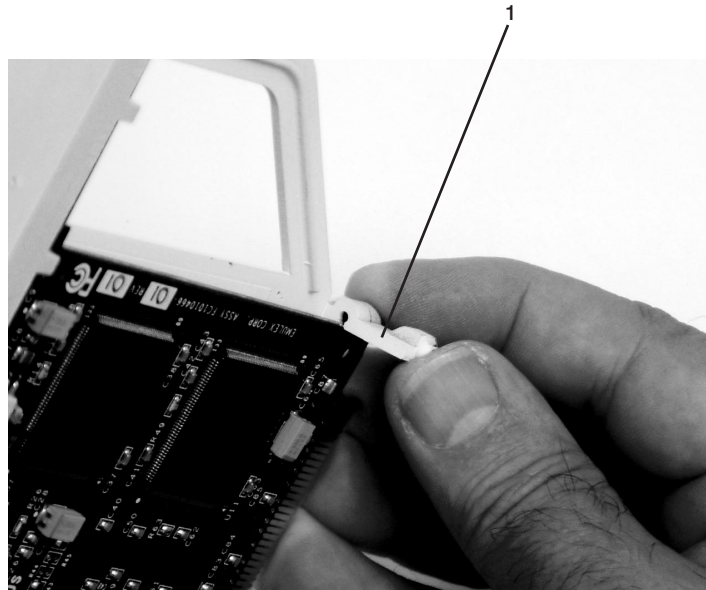
- d. Ensure that the adjustable top retainer clip catches the corner of the adapter as shown in the following figure:



1 Short Adapter Top Retaining Clip

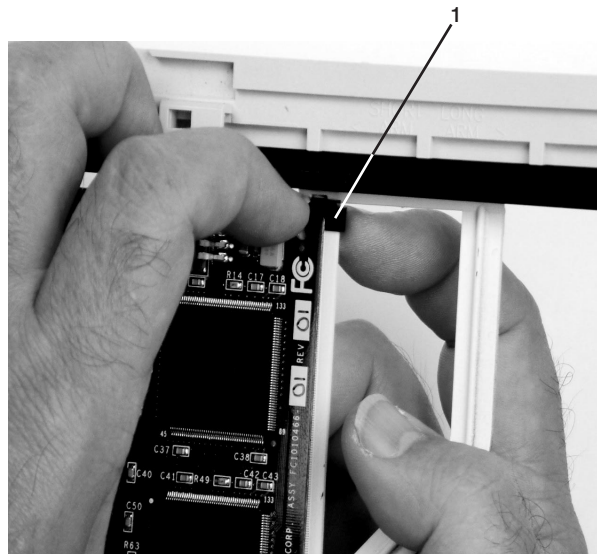
- e. Use the lower short adapter-retaining clip to engage and hold the bottom of the adapter.

**Note:** It might be necessary to apply pressure to engage and hold the bottom of the adapter.



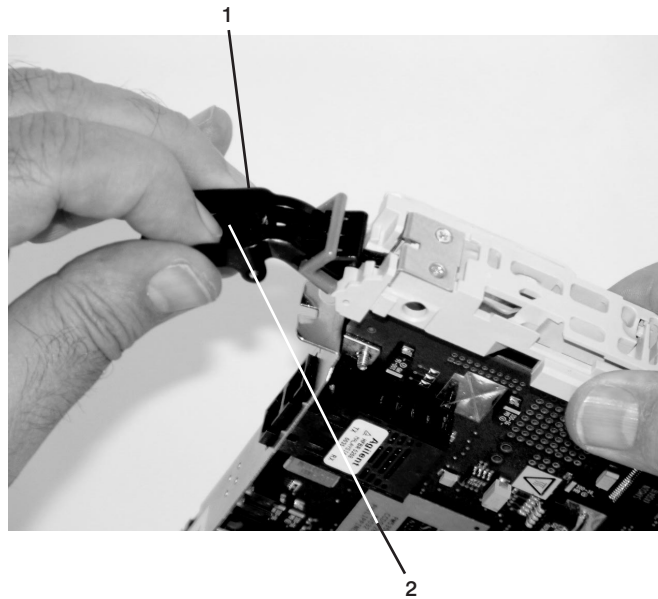
1 Lower Short Adapter Arm Clip

- f. To hold the top of the adapter, slide down the adjustable top adapter-retaining clip on the retaining arm. Ensure that the bottom edge of the adapter is held by the lower part of the adapter retaining arm.



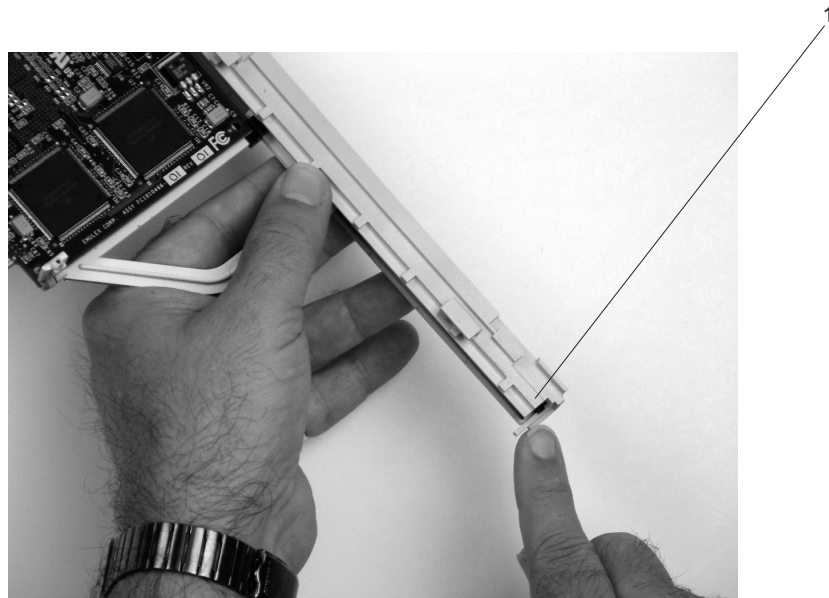
1 Short Adapter Adjustable Retaining Clip

- g. Press the lock on the handle, and rotate the adapter handle until it is in the down position (adapter or blank filler moves up into the cassette assembly).



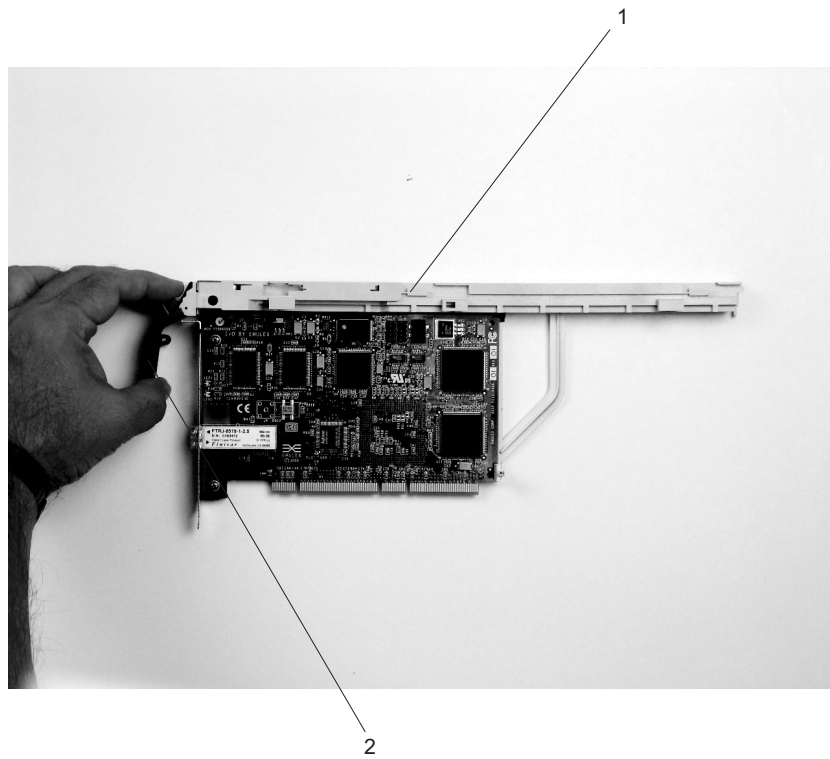
- 1 Handle
- 2 Lock

Ensure the right end of the cassette linkage rail moves up into the cassette linkage assembly as shown in the following figure:



- 1 Right End of Cassette Linkage

- h. Position the adapter and cassette assembly with the handle on the left (in the down position) and the top facing away from you.

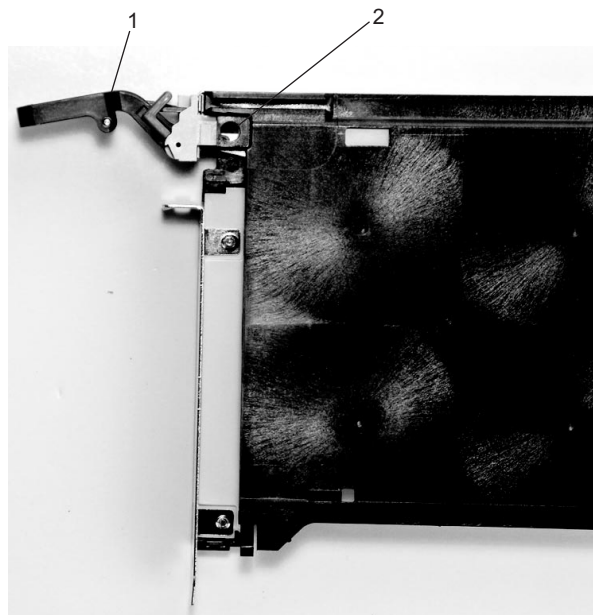
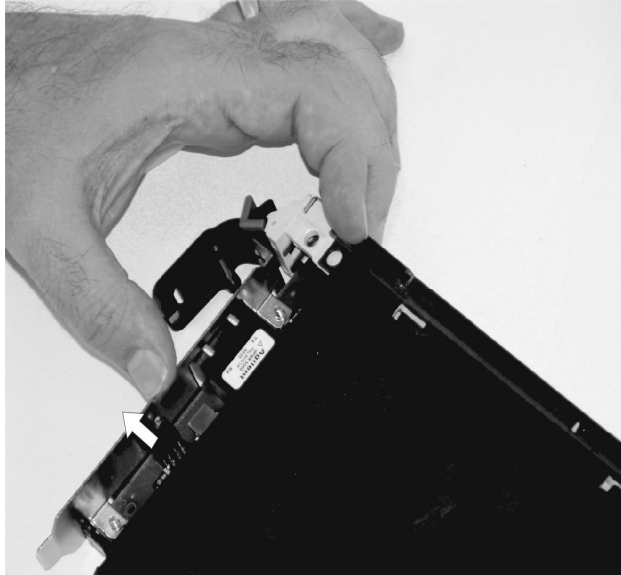


- 1 Top of Cassette  
2 Handle



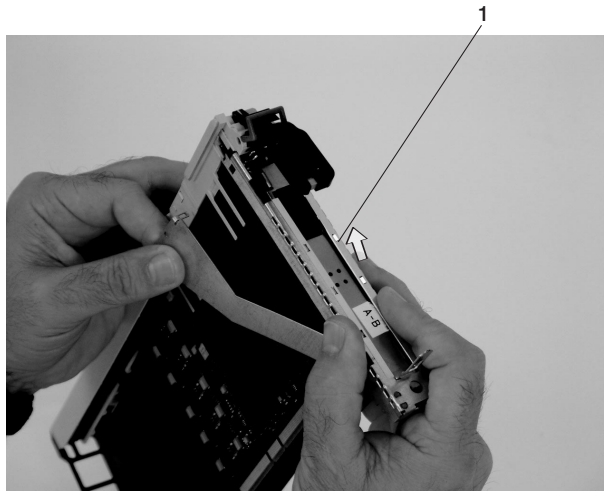
i. Install the cover on the cassette assembly:

- 1) Place the cassette cover on the cassette assembly as shown below. Slide the cover toward the handle until the hole in the cover aligns with the hole in the cassette assembly.



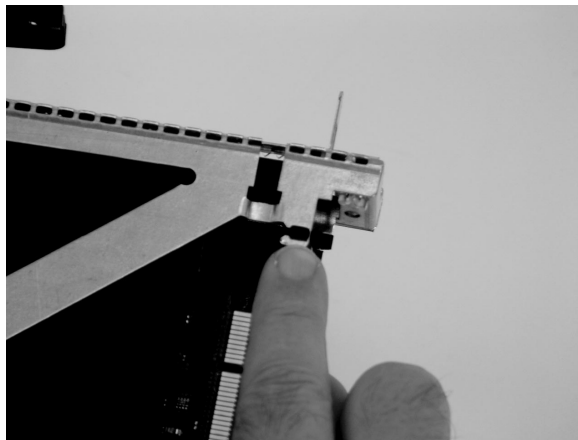
- 1 Handle
- 2 Holes Aligned

- j. Install the bezel assembly using the following procedure.
- 1) Carefully slide the bezel onto the cassette assembly.



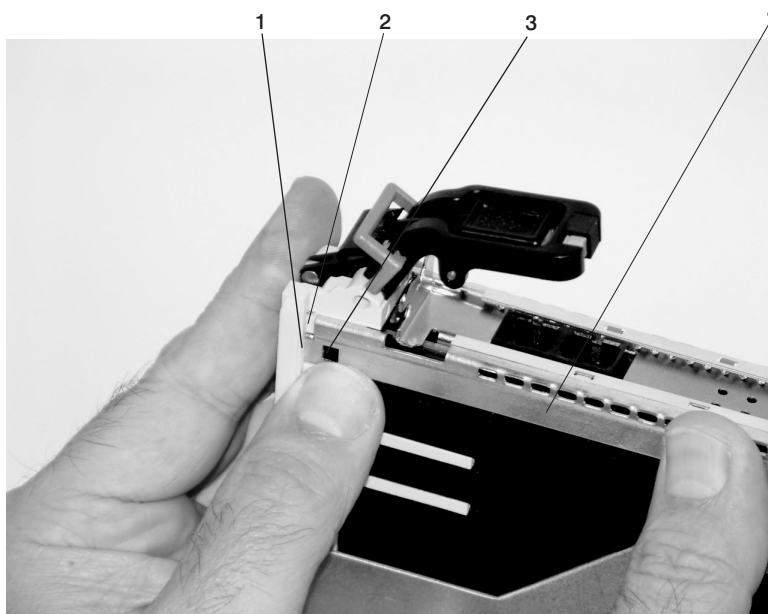
1 Bezel

- 2) Align and insert the cover arm latch in the hooked notch in the bezel.



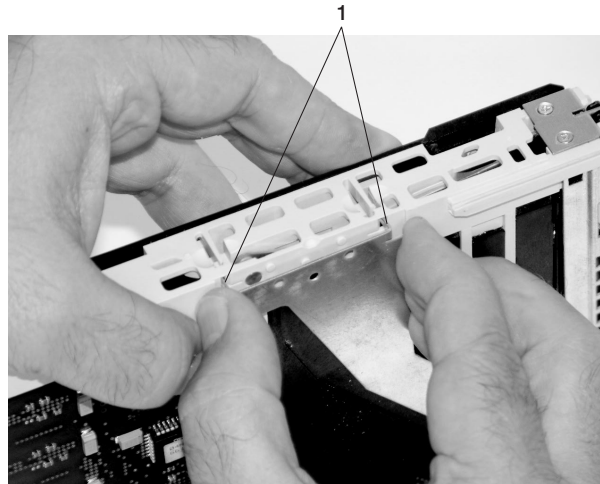


- 3) Align the top of the bezel assembly into the grooves on the top of the cassette assembly. Push the bezel onto the cassette linkage until the tab on the top of the bezel is seated in the recess of the cassette assembly.



- |          |                  |
|----------|------------------|
| 1 Recess | 3 Tab            |
| 2 Groove | 4 Bezel Assembly |

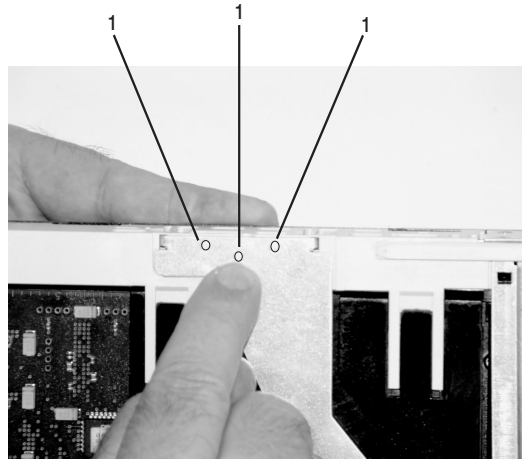
- 4) Insert the two tabs on the bezel extension into the two slots on the cassette assembly.



- 1 Tabs

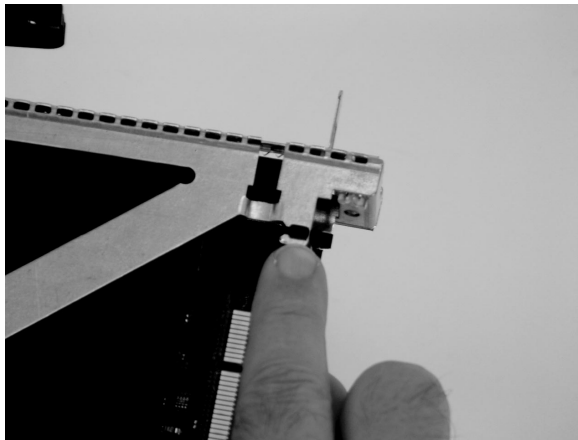
k. Check for the following:

- 1) Ensure that the extension arm engages the pins on the cassette. You should be able to see the three pins in the holes in the arm. The bezel tab should be seated as shown in the following figure.

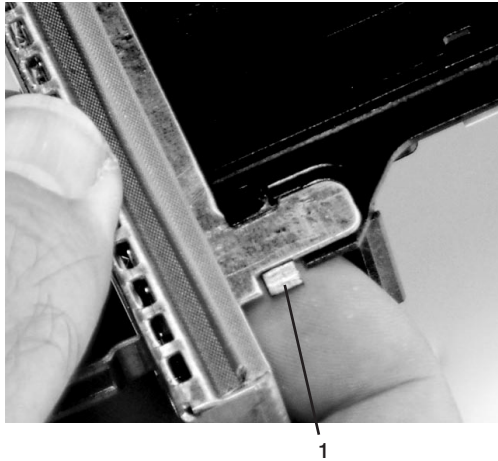


1 Pin

- 2) Ensure the cover arm latch is completely pressed into the hooked slot on the bezel as shown.

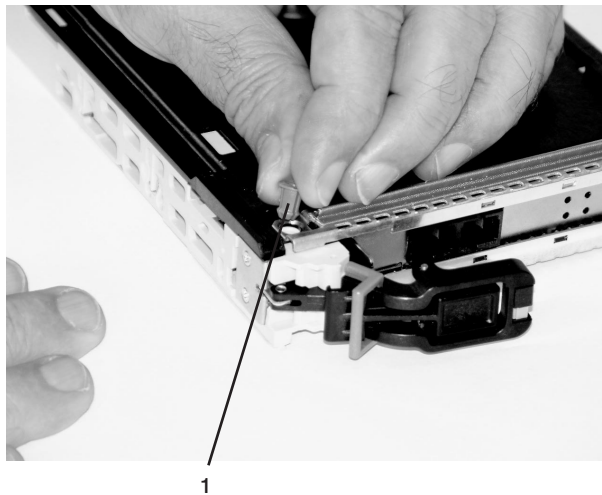


- 3) Turn the cassette assembly over so the cover is up. Check the cover latch to ensure it is holding the bezel to the cover as shown.

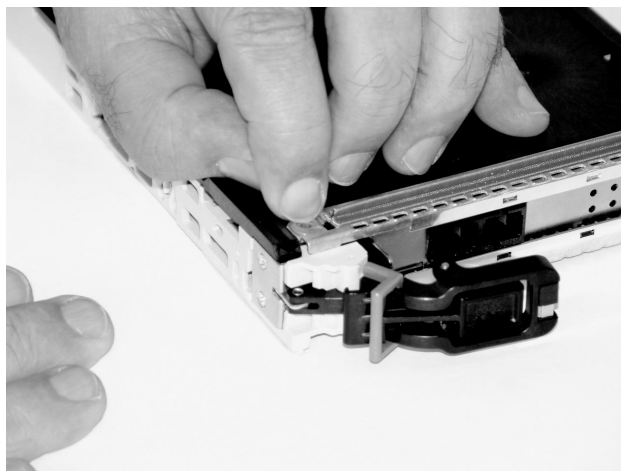


1 Cover Latch

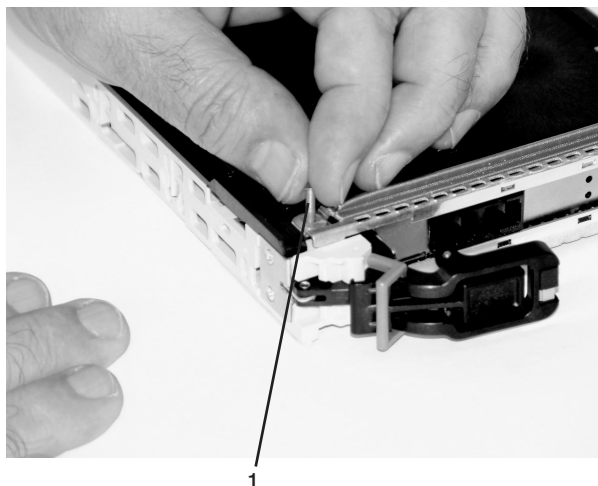
- I. Ensure the holes are aligned, and insert the bushing as shown.



1 Bushing

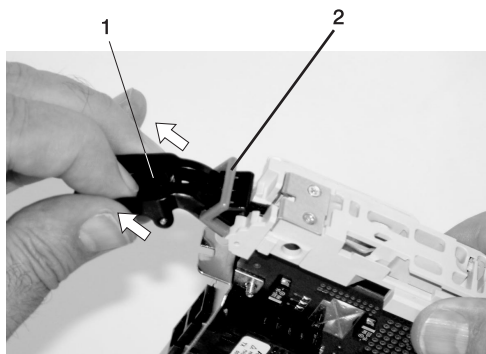


- m. Insert the bushing lock pin into the hole in the bushing and push it in until it seats.



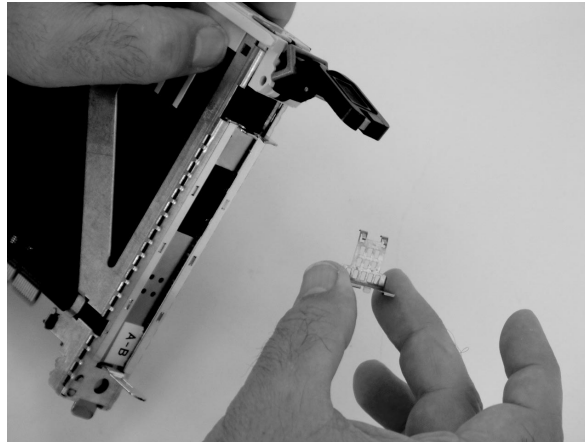
1 Bushing Lock Pin

- n. By pulling on both sides, ensure the gray plastic locking bar on the handle is pulled into the unlocked position. Raise the handle on the cassette linkage until it locks into the up position (the blank filler or adapter moves downward).



1 Handle  
2 Gray Plastic Locking Bar

- o. To install the metal EMC shield on the adapter bracket, do the following:



- 1) Ensure that the shield slides up inside the top of the cassette.



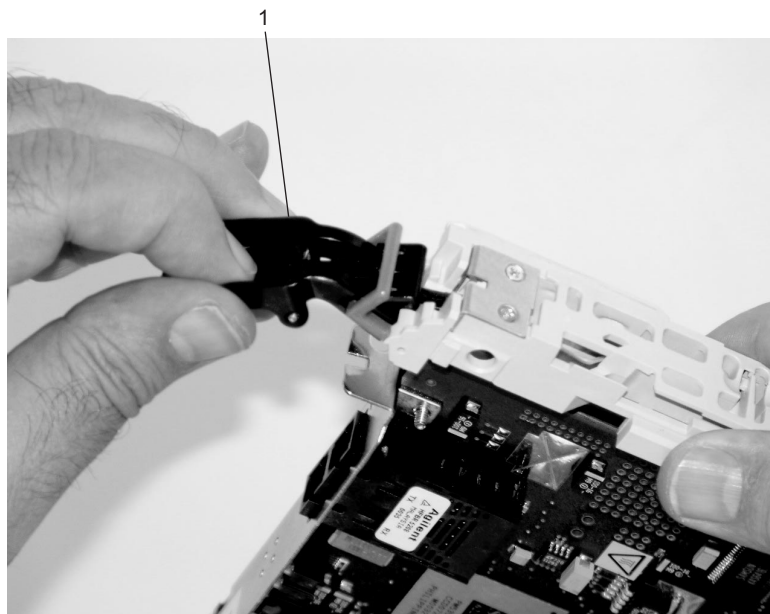
1 Metal EMC Shield

- 2) The metal shield has clips that slide over the top of the tailstock. Ensure that these clips are holding the EMC shield to the tailstock.



1 Top of Tailstock

- p. Press the lock on the handle and rotate the adapter handle until the handle is in the down position (adapter or blank filler moves up into the cassette assembly).

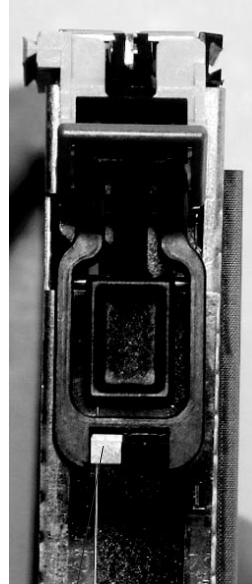


1 Handle

- q. Using the system documentation, determine if the adapter you are installing is hot-swappable. If the adapter is hot-swappable, move the slider on the color indicator to allow the orange to be visible. If the adapter is not hot-swappable, the blue color is visible.



1 Orange for Hot-Swappable



2 Blue for Not Hot-Swappable

- r. The adapter is ready to be installed into a system or an I/O drawer.

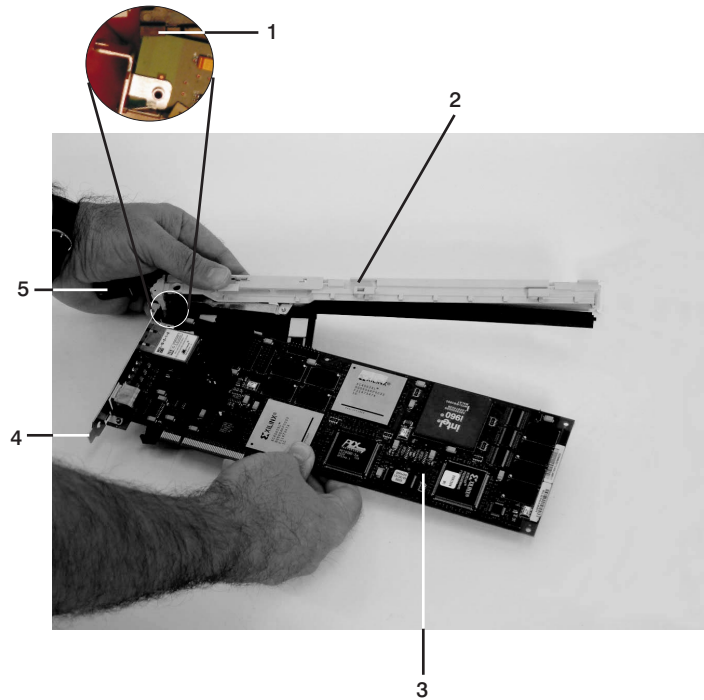
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## Long Adapter Installation

Use the following procedure to install a long adapter.

**Note:** Ensure that both the retaining arms for the long and short adapters are removed from the cassette linkage. Before continuing, see step 1a on page 514 to remove the arms.

1. Install the long adapter by doing the following:
  - a. Place the adapter into the cassette so that the upper left corner of the adapter engages the top adjustable adapter-retaining clip as shown in the following figure:

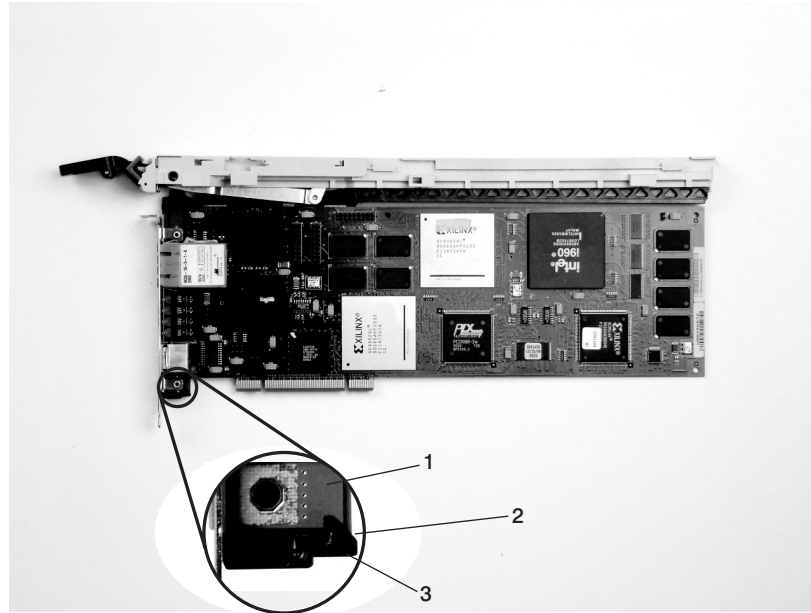


- |                              |                       |
|------------------------------|-----------------------|
| 1 Top Adapter-Retaining Clip | 3 Adapter             |
| 2 Cassette Linkage Assembly  | 4 Bottom of Tailstock |
|                              | 5 Handle              |



- b. Rotate the adapter so that the adapter engages the slot in the bottom retaining clip and the top corner of the adapter is seated into the top adjustable adapter-retaining clip.

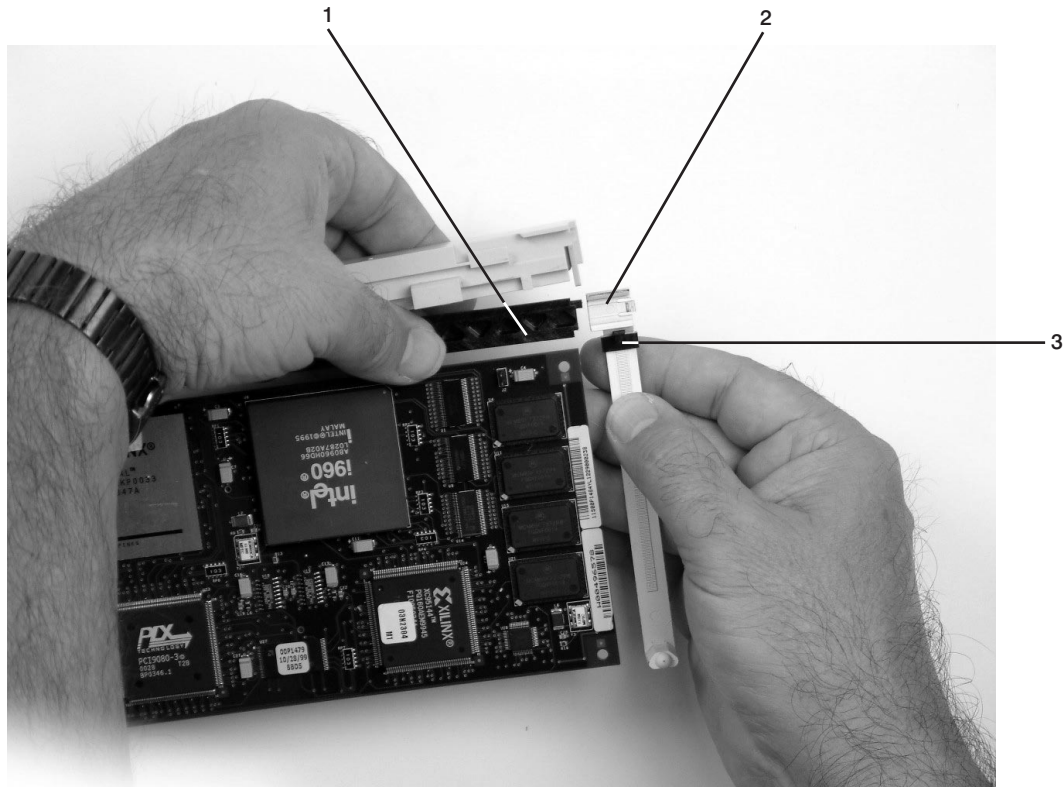
**Note:** If the adapter is not a full-height adapter, slide the top adjustable adapter-retaining clip downward until the lower edge of the adapter is seated into the slot on the bottom retaining clip.



1 Adapter  
2 Slot

3 Bottom Retaining Clip

- c. Install the long adapter-retaining arm onto the cassette linkage rail, as shown in the following figure, and slide the arm toward the adapter.

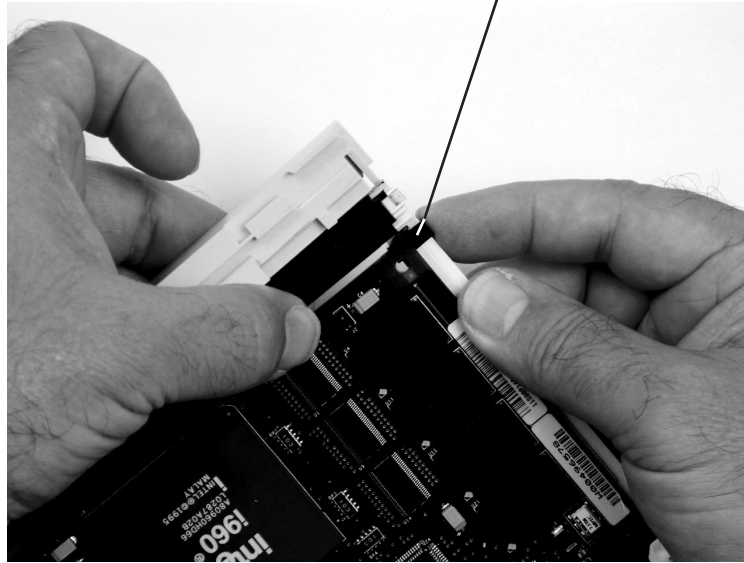


1 Cassette Linkage Assembly  
2 Adapter Retaining Arm

3 Top Adapter Retaining Clip

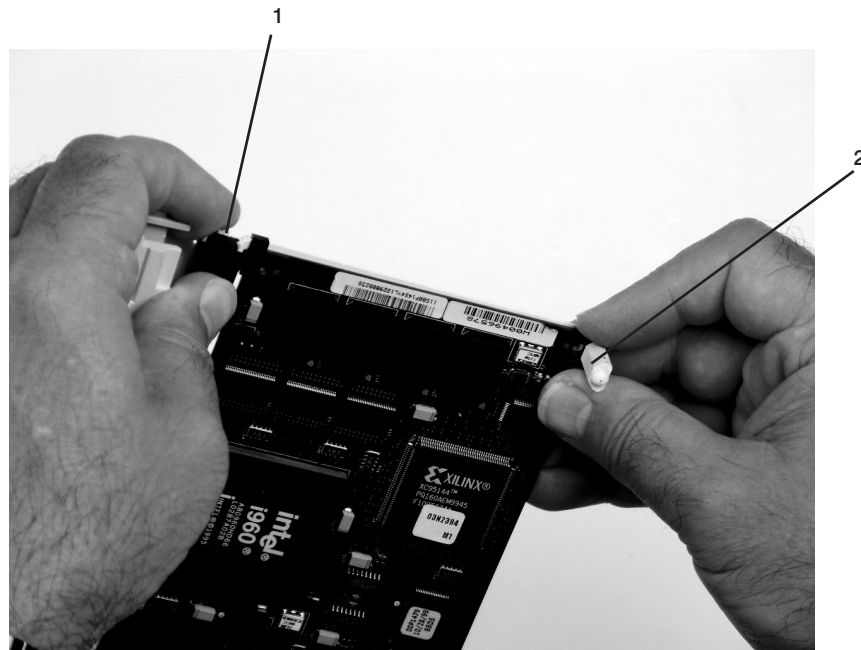
- d. Ensure that the top adjustable adapter-retaining clip catches the corner of the adapter as shown in the following figures.

Long Arm Adjustable Retaining Clip



1 Long Arm Adjustable Retaining Clip

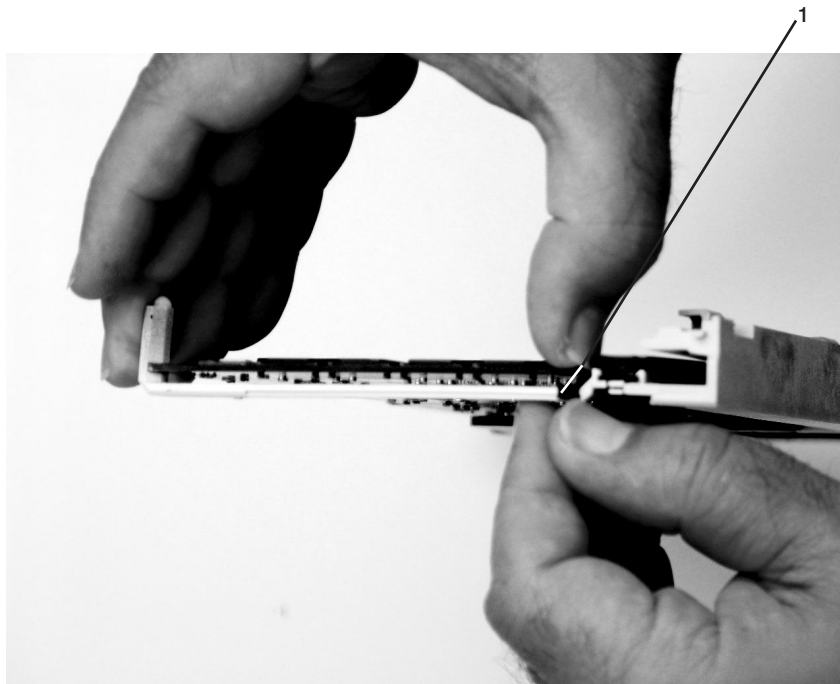
- e. Ensure that the bottom edge of the adapter is held by the groove in the lower part of the adapter-retaining arm.



1 Long Adapter Arm  
Adjustable Retaining Clip

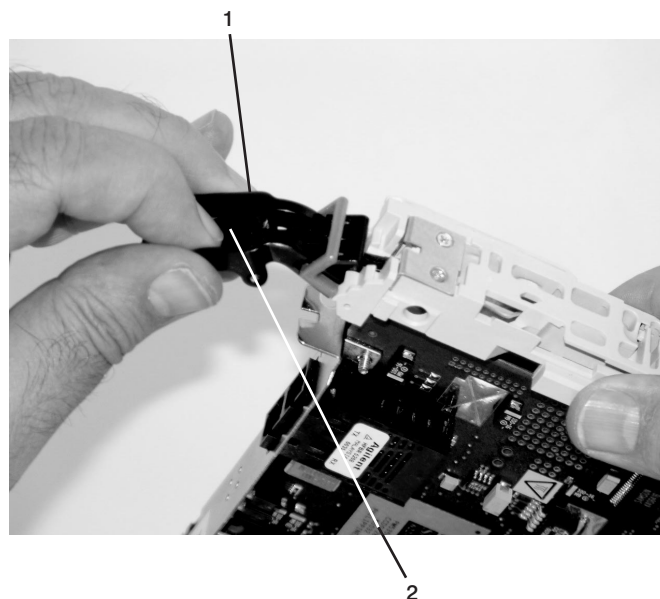
2 Long Adapter Retaining Arm Slot

- f. To hold the top of the adapter, slide down the top adjustable adapter-retaining clip on the retaining arm.



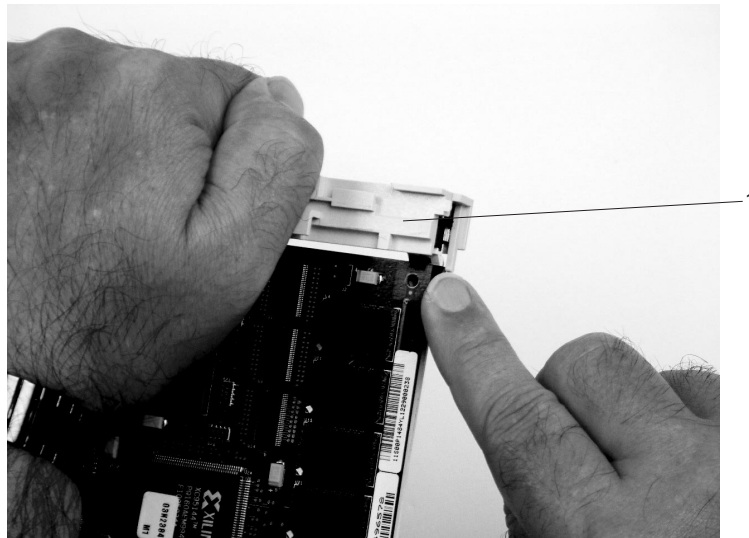
1 Long Adapter Retaining Arm

- g. Press the lock on the handle and rotate the adapter handle until it is in the down position (adapter or blank filler moves up into the cassette assembly).



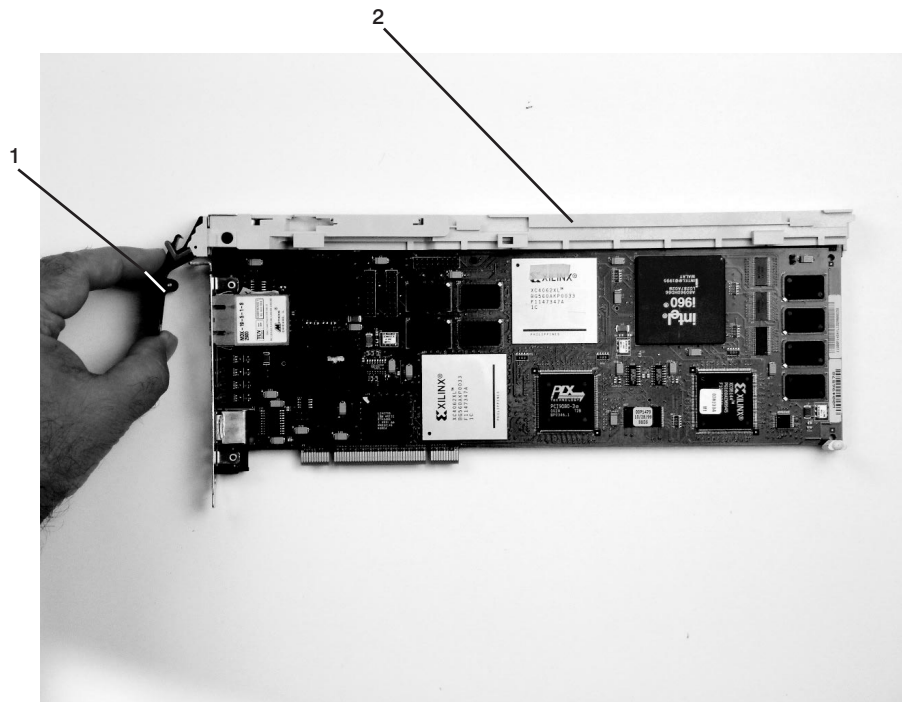
1 Handle  
2 Lock

Ensure the right end of the cassette linkage rail moves up into the cassette linkage assembly as shown below:



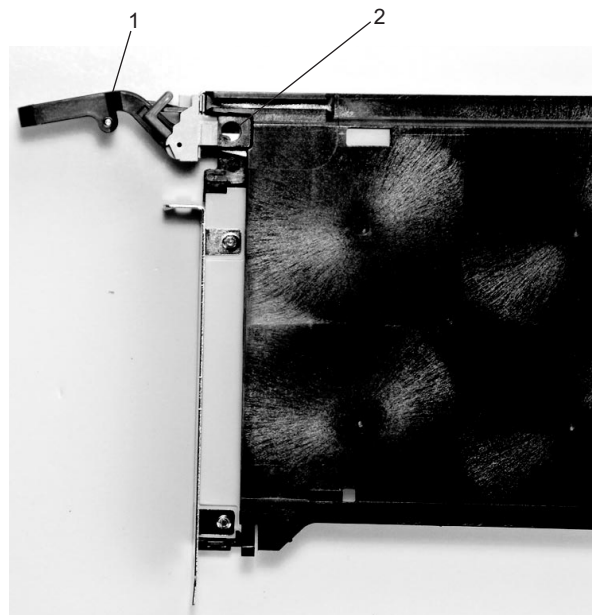
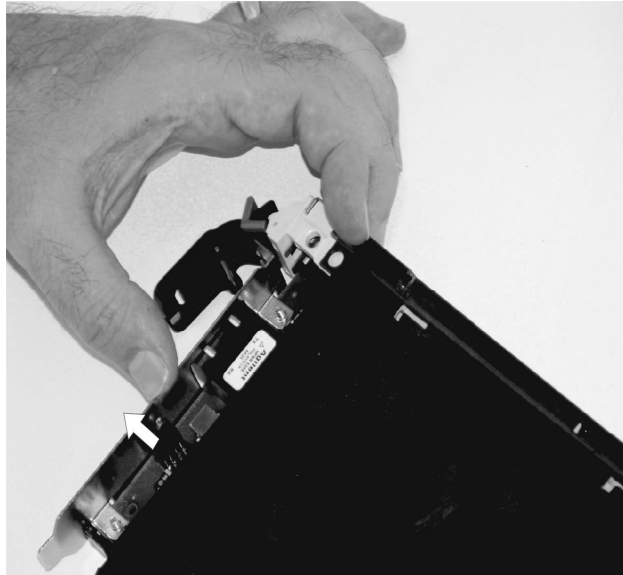
1 Right End of Cassette Linkage

- h. Position the adapter and cassette assembly with the handle on the left (in the down position) and the top facing away from you.



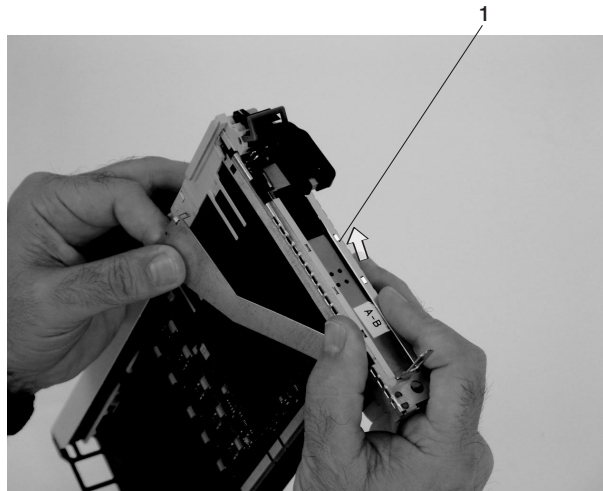
1 Handle  
2 Top of Cassette

- i. Install the cover on the cassette assembly by placing the cassette cover on the cassette assembly as shown below. Slide the cover toward the handle until the hole in the cover aligns with the hole in the cassette assembly.



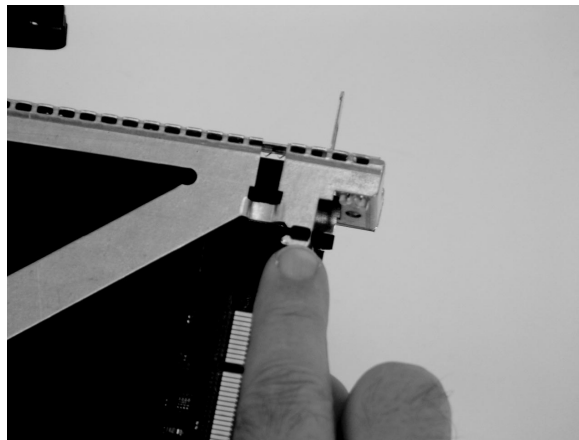
- 1 Top of Cassette
- 2 Handle

- j. Install the bezel assembly using the following procedure:
- 1) Carefully slide the bezel onto the cassette assembly.



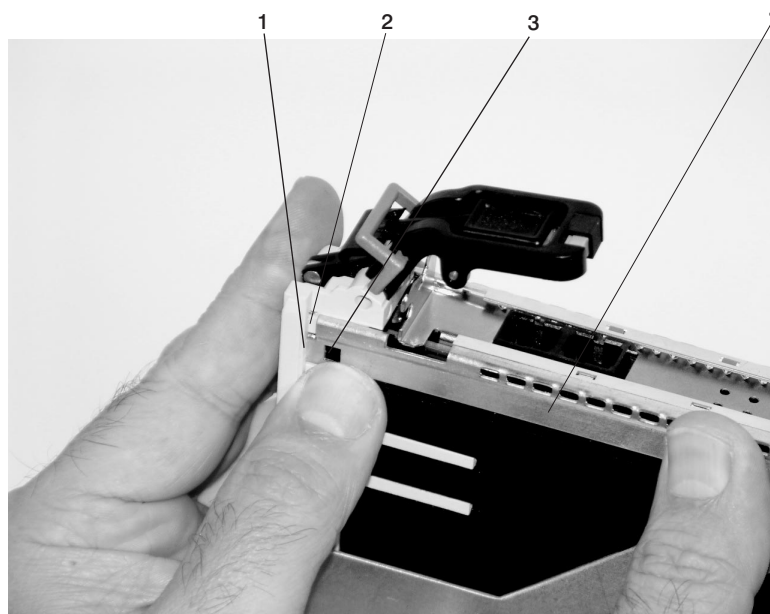
1 Bezel

- 2) Align and insert the cover arm latch in the hooked notch in the bezel.





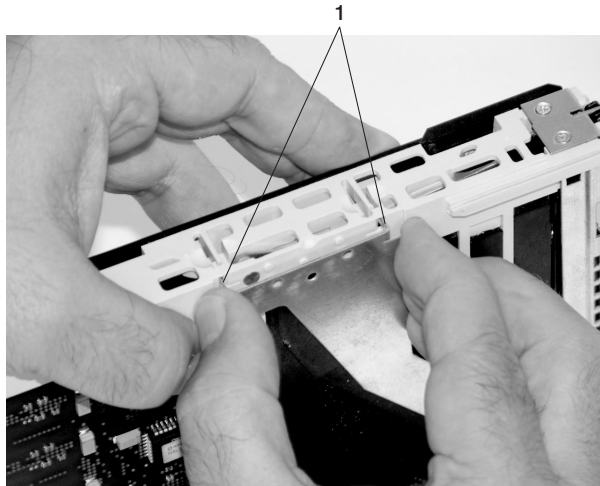
- 3) Align the top of the bezel assembly into the grooves on the top of the cassette assembly and then push the bezel onto the cassette linkage until the tab on the top of the bezel is seated in the recess of the cassette assembly.



1 Recess  
2 Groove

3 Tab  
4 Bezel

- 4) Insert the two tabs on the bezel extension into the two slots on the cassette assembly.

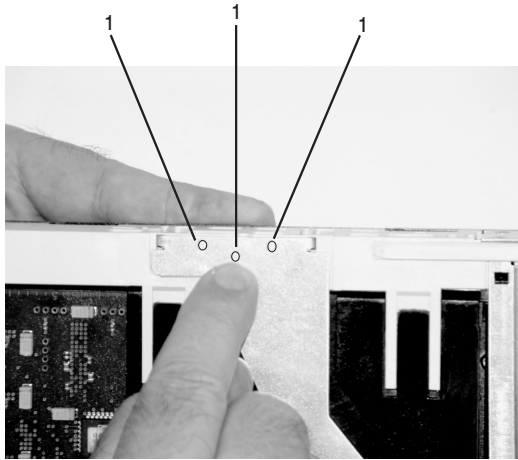


1 Tabs



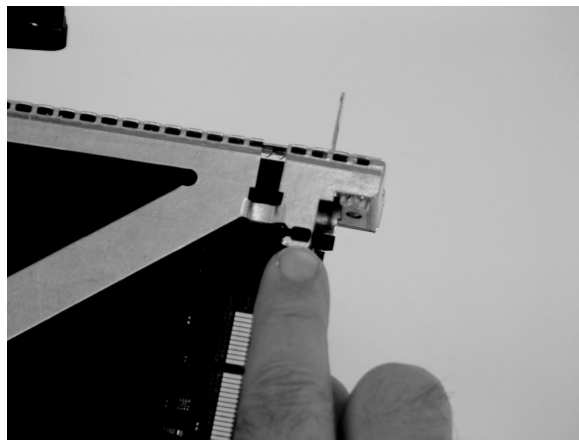
k. Check for the following:

- 1) Ensure that the extension arm engages the three pins on the cassette. You should be able to see the pins in the holes in the arm. The bezel tab should be seated as shown in the following figure.

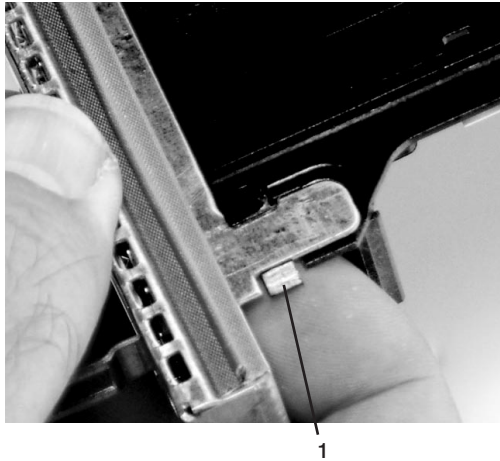


1 Pins

- 2) Ensure the cover arm latch is completely pressed into the hooked slot on the bezel as shown.

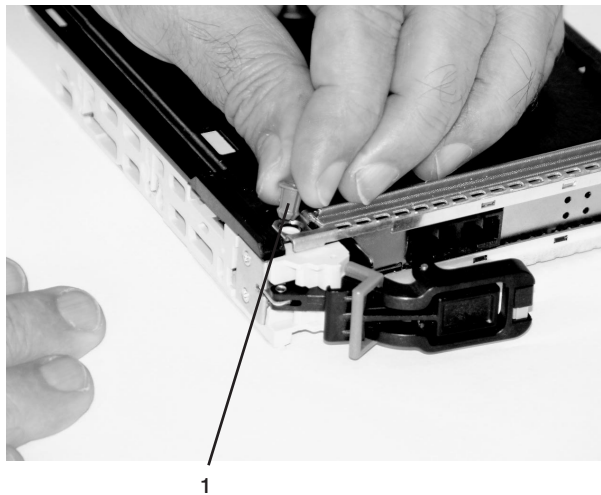


- 3) Turn the cassette assembly over so the cover is up and check the cover latch to ensure it is holding the bezel to the cover as shown.

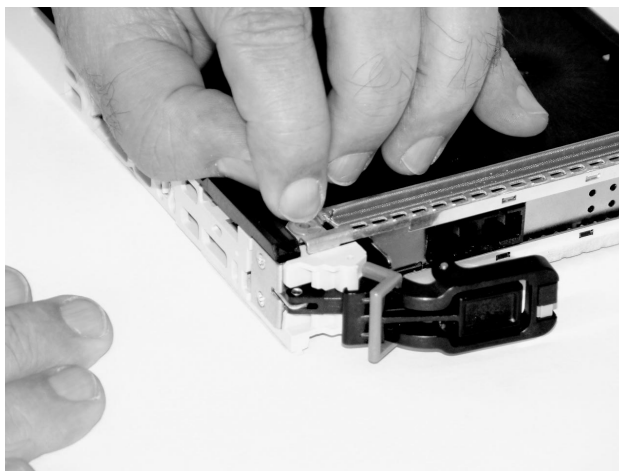


1 Cover Latch

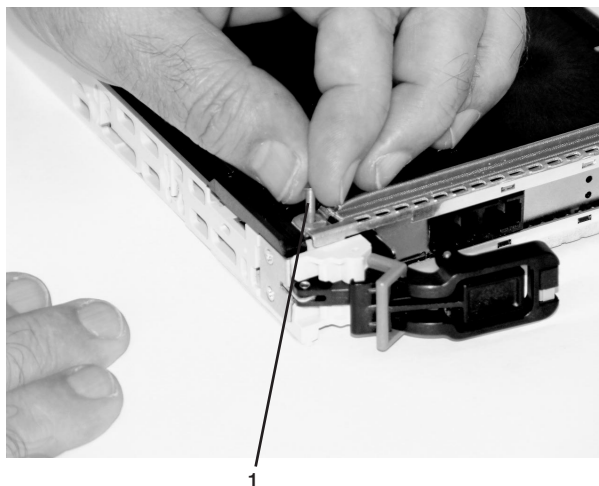
- I. Position the adapter with the cover side up. Ensure the holes are aligned and insert the bushing as shown.



1 Bushing

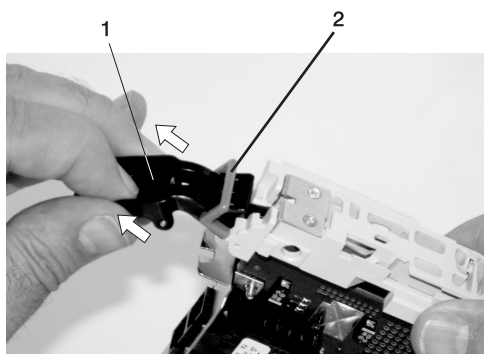


- m. Insert the bushing lock pin into the hole in the bushing. Push on the pin until it seats.



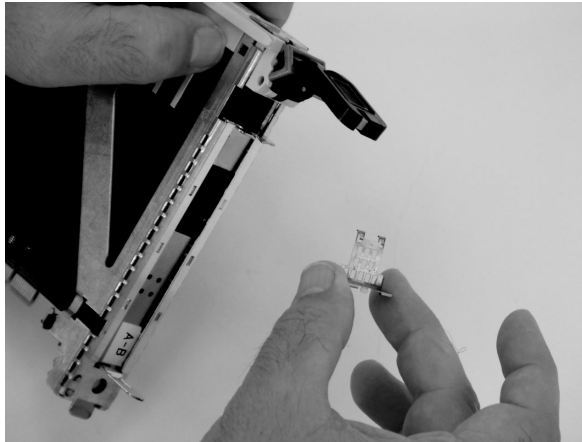
1 Bushing Lock Pin

- n. By pulling on both sides, ensure the gray plastic locking bar on the handle is pulled into the unlocked position. Raise the handle on the cassette linkage until it locks into the up position (the blank filler or adapter moves downward).

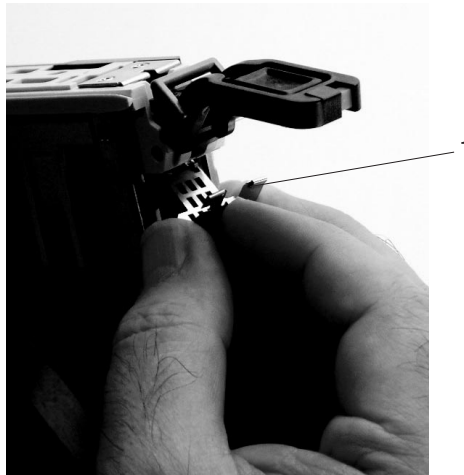


1 Handle  
2 Gray Plastic Locking Bar

- o. To install the metal EMC shield on the adapter bracket, do the following:



- 1) Ensure that the shield slides up inside the top of the cassette.



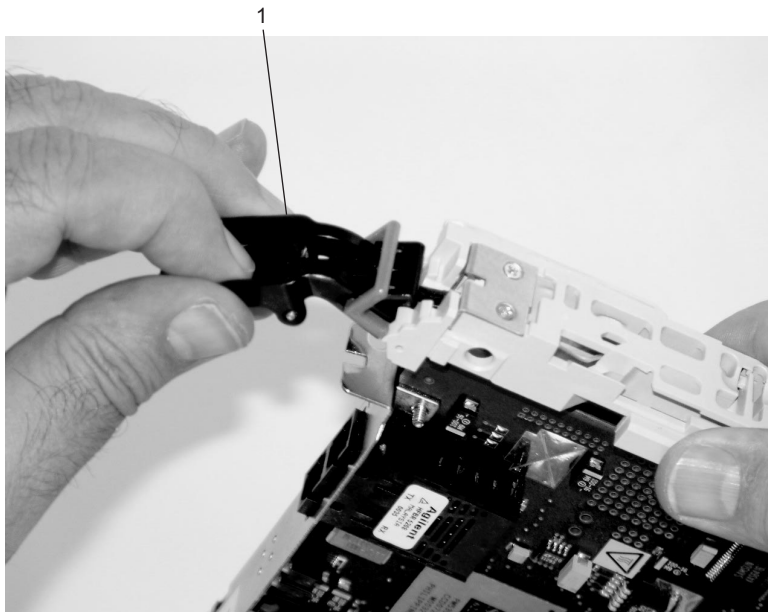
1 Metal EMC Shield

- 2) The metal shield has clips that slide over the top of the tailstock. Ensure that these clips are holding the EMC shield to the tailstock.



1 Top of Tailstock

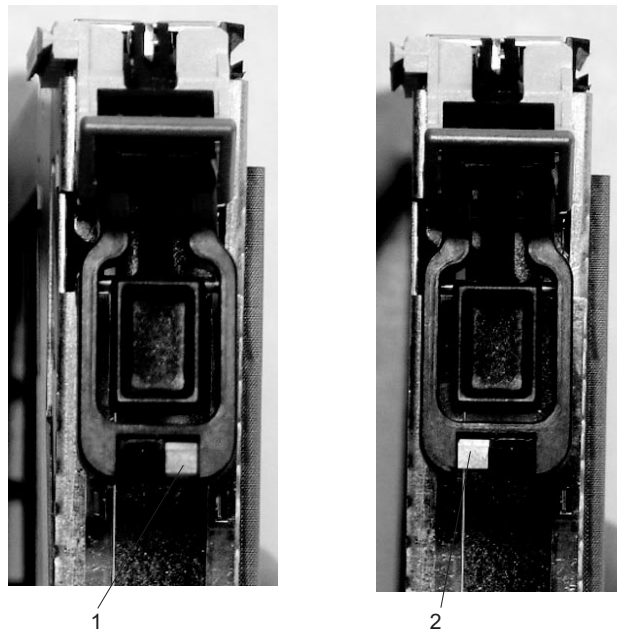
- p. Press the lock on the handle and rotate the adapter handle until the handle is in the down position (adapter or blank filler moves up into the cassette assembly).



1 Handle

- q. Using your system documentation, determine if the adapter you are installing is hot-swappable. If the adapter is hot-swappable, move the slider on the color indicator to allow the orange to be

visible. If the adapter is not hot-swappable, the blue color is visible.



- 1 Orange for Hot-Swappable
- 2 Blue for Not Hot-Swappable

- r. The adapter is ready to be installed into a system or an I/O drawer. Refer to your system documentation for more information.

---

## Processor Subsystem Procedures

The removal and replacement procedures for the processor subsystem follow. Handle all processor subsystem FRUs with extreme care.

### Processor Card

Before replacing a processor card, check with your support center to ensure you have been directed to replace the processor card for an error code in Chapter 5, "Error Code to FRU Index", on page 217.

**Attention:** All components must be replaced in the location from which they were removed.

### Removal

1. Turn off the power as described in "Powering Off and Powering On the System" on page 484.
2. Place the processor subsystem into the service position, see "Service Position" on page 487
3. Perform the top cover removal procedure, see "PCI Adapter Cover" on page 488.
4. Perform the EMC cover removal procedure, see "Internal Processor EMC Cover" on page 488.
5. Note the location of the processor card that is being removed.
6. With both hands, unlatch the latches and use the latches as a cam to unseat the processor board. Lift the processor board straight up and out of the drawer

### Replacement or New Installation

**Note:** This procedure is to be performed only by trained service personnel.

1. Turn off the power as described in "Powering Off and Powering On the System" on page 484.
2. Place the processor subsystem into the service position, see "Service Position" on page 487
3. Perform the top cover removal procedure, see "PCI Adapter Cover" on page 488.
4. Perform the EMC cover removal procedure, see "Internal Processor EMC Cover" on page 488.
5. Note the location of the processor card that is to be installed.
6. Remove the processor blank filler if one is installed in the next unoccupied processor card position.
7. Unlatch the latches on the processor card and carefully slide the card into the processor subsystem until it contacts the connectors.  
**Attention:** Do not drop or force the processor card against the connectors.
8. Push downward on the processor card. At the same time, rotate both latches toward the center until the latches are completely latched.
9. Perform the EMC cover replacement procedure, see "Internal Processor EMC Cover" on page 488.
10. Perform the top cover replacement procedure, see "PCI Adapter Cover" on page 488.
11. Place the processor subsystem into the operating position, see "Operating Position" on page 487.
12. Turn on the power as described in "Powering Off and Powering On the System" on page 484.

## Memory DIMMs

### Removal

1. Turn off power as described in “Powering Off and Powering On the System” on page 484.
2. Determine on which processor card the memory is installed.
3. Perform the removal procedure under “Processor Card” on page 551.
4. Place the processor card on a flat work surface with the components facing up.
5. Locate the memory DIMM to be replaced.
6. Unlatch the memory arms and pull the DIMM straight out of the processor board.

### Replacement

Reverse the removal procedure to install memory modules.

## RIO Connector Card

### Removal

**Note:** The blank filler for the RIO connector card is removed in the same way that the RIO connector card is removed.

1. Turn off the power as described in “Powering Off and Powering On the System” on page 484.
2. Perform the access cover removal procedure, see “PCI Adapter Cover” on page 488.
3. Perform the EMC cover removal procedure, see “Internal Processor EMC Cover” on page 488.
4. Note the location of the RIO connector card that you are removing.
5. Note the locations of the attached RIO cables and disconnect them from the RIO connector card that is being removed.
6. With both hands, unlatch the latches and use the latches as a cam to unseat the RIO connector card from the system backplane. Lift the RIO connector card straight up and out.

### Replacement

To replace the RIO connector card, reverse the removal procedure .



## Service Processor/PCI Backplane

This procedure is for removing, and replacing the service processor/PCI backplane.

### Before You Begin

Read the following notes before you begin any removal or replacement actions.

#### Notes:

1. If you are replacing a service processor/PCI backplane, check the system firmware level prior to replacing this part. For information on checking and updating firmware levels, see “Determining the Level of Firmware on the System” on page 453. If the new part is at an older firmware level than the system firmware level, update the system to the latest firmware code level after you replace the service processor/PCI backplane.
2. If you are replacing a service processor/PCI backplane, the service processor settings will need to be reloaded. Locate the backup copy of the service processor settings. If the service processor settings were backed up, the backup copy would be stored to a file on a disk drive in the system.  
If a backup copy is not available, use the “Save or Restore Hardware Management Policies” in the “Introduction to Tasks and Service Aids” section of the *@server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, to back-up the service processor settings saved in NVRAM. Then continue with 6 below to save the boot list for the system or each partition in the system.
3. If you cannot find or create a backup copy of the service processor settings as described in the previous note, the service processor settings must be saved manually so that they can be restored manually after the service processor/PCI backplane is replaced. If you need to save the settings manually, follow the procedure under “Save the Service Processor Settings Manually with an HMC Attached”.

**Save the Service Processor Settings Manually with an HMC Attached:** If an HMC is attached, to save the customer's service processor/PCI backplane settings, do the following:

1. Ask the customer to back up the partition information on the HMC.
2. Turn off power as described in “Powering Off and Powering On the System” on page 484.
3. At the Service Processor Main Menu, select option 3, **System Information Menu**.
4. At the System Information Menu, select option 6, **Read Service Processor Configuration**. This dumps all of the service processor settings to the screen.
5. Manually record the settings.

**Note:** If the customer is running multiple partitions, (steps 6 through 10) of this procedure must be repeated for each partition.

6. To record the bootlist for the customer's partitions, boot to the SMS Main Menu.
7. Select option 7, **Select Boot Options**.
8. On the Boot Mode Menu, select option 2, **Select Boot Devices**.
9. On the Configure Boot Device Order menu, selection option 6, **Display Current Setting**.
10. Record the boot list and continue with “Removal” on page 554.

**Save the Service Processor Settings Manually without an HMC Attached:** If an HMC is not attached, to save the customer's service processor/PCI backplane settings, do the following:

1. Turn off power as described in “Powering Off and Powering On the System” on page 484.
2. At the Service Processor Main Menu, select option 3, **System Information Menu**.
3. At the System Information Menu, select option 6, **Read Service Processor Configuration**. This dumps all of the service processor settings to the screen.
4. Manually record the settings.

**Note:** If the service processor menus are not available, the customer will have to provide the service processor settings after the Service Processor/PCI Backplane is replaced.

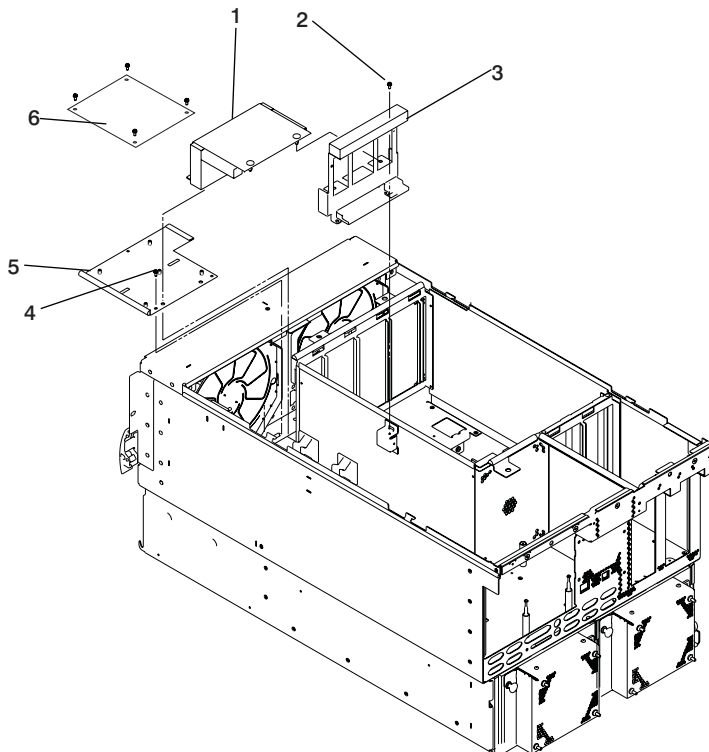
5. Boot to the SMS Main Menu.
6. Select option 7, **Select Boot Options**.
7. On the Boot Mode Menu, select option 2, **Select Boot Devices**.
8. On the **Configure Boot Device Order** menu, selection option 6, **Display Current Setting**.
9. Record the boot list and continue with "Removal".

## Removal

1. Turn off power as described in "Powering Off and Powering On the System" on page 484.
2. Record the cable connector locations of all external cables attached to the rear of the processor subsystem.
3. Disconnect all of the cables from the rear of the processor subsystem.
4. Remove all of the PCI adapters from the processor subsystem; see "Non-Hot-Pluggable PCI Adapter Removal and Replacement" on page 497.
5. Remove all of the processor cards from the processor subsystem; see "Processor Card" on page 551.

**Note:** Because you must access the inside of the processor subsystem in this step, be sure to follow the procedures in "Processor Card" on page 551. When you are done, the processor system should be in the service position.

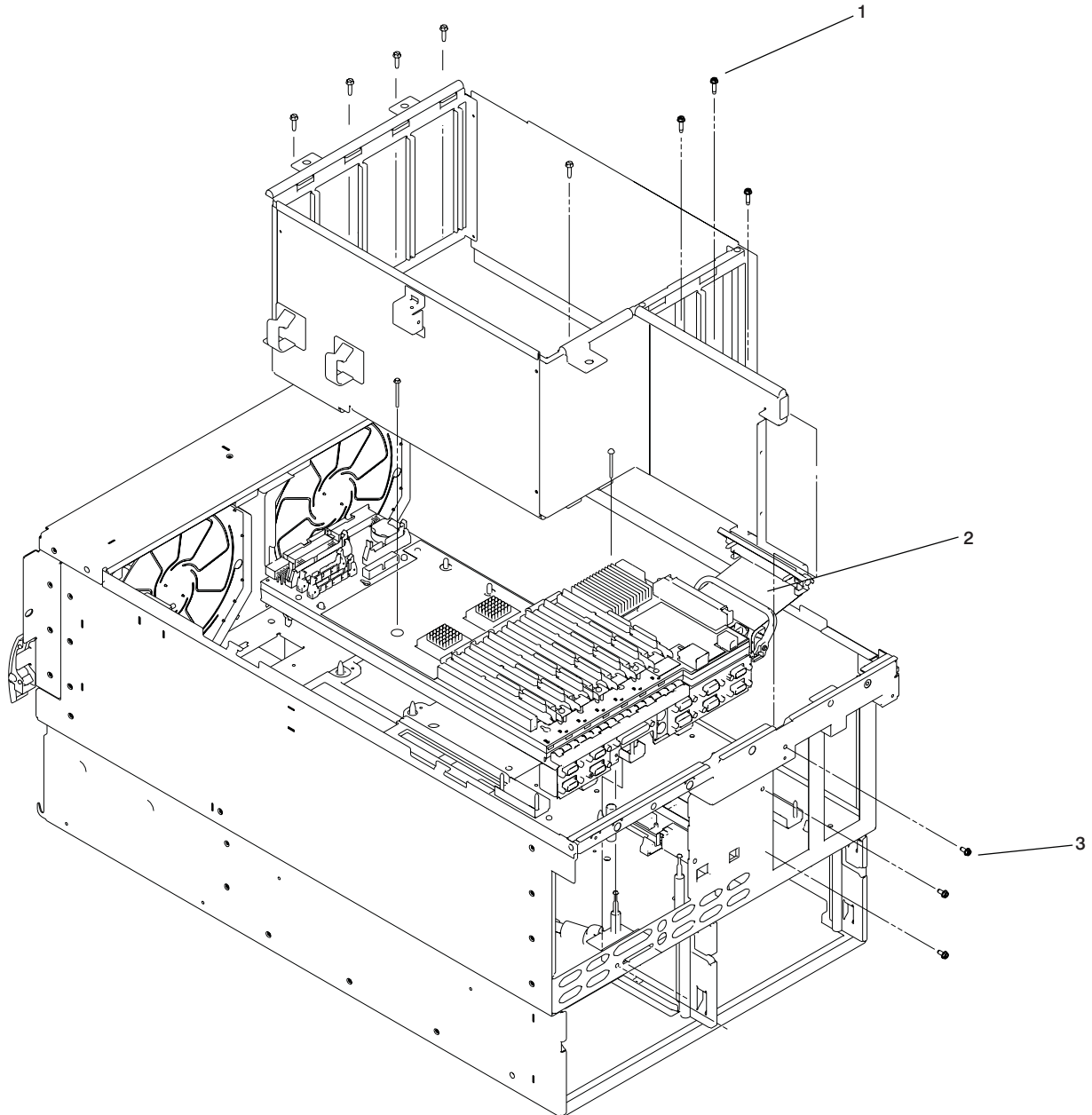
6. Remove all of the RIO connector cards from the processor subsystem; see "RIO Connector Card" on page 552.
7. To more easily access the service processor/PCI backplane and cabling, perform the removal procedures in "Disk Drive 4-Pack and Split (2+2) 4-Pack Cage" on page 565 to allow the disk drive 4-pack cage to be moved forward.
8. Remove the PCI adapter cassette bracket from over the service processor/PCI backplane. Save the screws and the bracket.



- 1 Air cover
- 2 Screw
- 3 PCI adapter cassette bracket

- 4 Screw
- 5 Front cover plate
- 6 SCSI Repeater Card

9. Record the connector locations of all internal cables attached to the service processor/PCI backplane for easier replacement. Disconnect all of the cables from the service processor/PCI backplane (the flex cable is removed later in this procedure).
10. Remove the processor card cage from the processor subsystem.



**Attention:** In the next step the flex cable is disconnected. The flex cable connectors and latch are fragile. Do not use the latch handle to pull or push the connector. Use extreme care when using the latch handle to disconnect or reconnect either connector of the flex cable.

11. Remove the flex cable connector that is connected to the left side of the service processor/PCI backplane.

12. Slide the backplane toward the front of the processor subsystem until you can see that the top of the mounting posts are clear of the elongated hole. Lift the backplane straight up and off the mounting posts.

## Replacement

To replace a service processor/PCI backplane, do the following:

1. Inspect the new service processor/PCI backplane for damage.
2. Taking care not to hit the connectors against the processor subsystem chassis, use both hands to carefully place the service processor/PCI backplane down into the processor subsystem drawer. Align the mounting posts so that the holes in the backplane fit over the mounting posts.
3. As the service processor/PCI backplane is lowered over the mounting posts, ensure that the posts protrude above the service processor/PCI backplane.
4. Slide the service processor/PCI backplane toward the rear until the tops of the mounting posts engage the elongated holes in the backplane. Install all the screws to hold the backplane in place.  
**Attention:** In the next step the flex cable is disconnected. The flex cable connectors and latch are fragile. Do not use the latch handle to pull or push the connector. Use extreme care when using the latch handle to disconnect or reconnect either connector of the flex cable.
5. Connect the flex cable to the service processor/PCI backplane.
6. Using the notes you made earlier, reconnect the internal cables that were removed from the service processor/PCI backplane.
7. Perform the replacement procedures in “Disk Drive 4-Pack and Split (2+2) 4-Pack Cage” on page 565.
8. Replace the internal braces in the processor area of the service processor/PCI backplane.
9. Replace the brace in the position over the service processor/PCI backplane. Use the screws you saved earlier.
10. Install the RIO connector cards that you removed from the processor subsystem earlier; see “RIO Connector Card” on page 552.
11. Install all of the processor cards in the processor subsystem; see “Processor Card” on page 551.

**Note:** Be sure to follow the replacement procedures in “Processor Card” on page 551. When you are done, the covers should be installed and the processor subsystem should be in the operating position.

12. Install the PCI adapters that you removed from the processor subsystem earlier; see “PCI Adapters” on page 490.
13. Using the notes you made earlier, reconnect the cables to the rear of the processor subsystem.
14. Turn on the power as described in “Powering Off and Powering On the System” on page 484.
15. Reboot the system.
16. If the processor/PCI backplane was replaced, locate the backup copy of the service processor settings. Use the “Save or Restore Hardware Management Policies,” in the “Introduction to Tasks and Service Aids” section of the *@server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, to restore the service processor settings saved in NVRAM. If you cannot run the appropriate task, or the service processor settings were not backed up, the service processor settings must be entered manually.

### Notes:

1. If you are replacing a service processor/PCI backplane on a system with an HMC attached, you must set the system name through the Main Menu (for a privileged user) of the service processor menus. Reboot the HMC after setting the system name. This action allows the HMC to recognize the attached managed system by its new name. If the HMC does not recognize the attached managed system, the default assigned name is “unnamed.” After the system is selectable by its new name on the HMC console, the rebuild managed system task can be executed at the HMC console to restore partition information.
2. If you are replacing a service processor/PCI backplane, make sure you enter the I/O type as described in “Change I/O Type” on page 436.

3. If you are replacing a service processor/PCI backplane, make sure you set the time and date using the operating system date command or **smitty** in AIX.

**Note:** To restore the service processor settings and to set the date and time using service processor (if the system is running Linux), see “Restoring Service Processor Settings” on page 466.

## System Backplane

This procedure is for removing and replacing the system board.

### Removal

To replace a system backplane, do the following:

1. Turn off power as described in “Powering Off and Powering On the System” on page 484.
2. Perform the removal procedures under “Service Processor/PCI Backplane” on page 553.
3. Remove the screws that hold the processor crossover cards (if present), and lift it out of the system.
4. Remove all the screws that hold the system backplane.
5. Lift the system backplane out of the system.

### Replacement

To replace a system backplane, do the following:

1. Inspect the new system backplane for damage.  
**Attention:** In the next step the flex cable is disconnected and reconnected. The flex cable connectors and handles are fragile. Use extreme care when using the handle to disconnect or reconnect either connector of the flex cable.
2. Move the flex cable from the old system backplane to the new system backplane.
3. Taking care not to hit the connectors against the processor subsystem chassis, use both hands to carefully place the system board down into the processor subsystem drawer, then slide the backplane against the rear bulkhead.
4. Replace the screws used to hold the backplane in the processor subsystem.
5. Place the processor crossover card in position in the subsystem and fasten it in the bottom of the processor subsystem with screws.
6. Perform the replacement procedures under “Service Processor/PCI Backplane” on page 553.
7. Turn on the power as described in “Powering Off and Powering On the System” on page 484.
8. Reboot the system.

# Battery

## CAUTION:

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

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

Dispose of the battery according to local regulations.

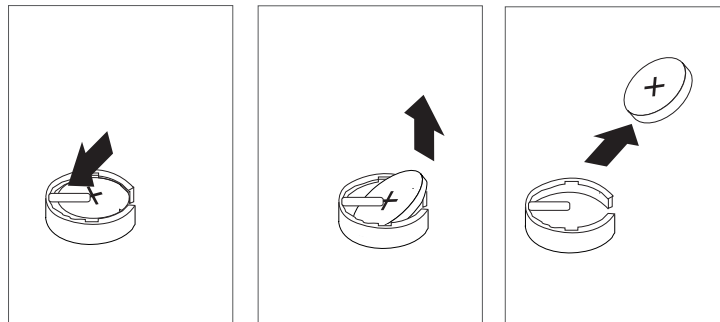
C9

The battery is located on the service processor/PCI backplane.

**Note:** If you are replacing a the time-of-day battery on the service processor/PCI backplane with a new one, save the service processor settings so that you will be able to restore the service processor settings after the battery is replaced. See “Saving and Restoring Service Processor Settings” on page 420 for information about saving the service processor settings.

## Removal

1. Turn off the power as described in “Powering Off and Powering On the System” on page 484.
2. Place the processor subsystem into the service position; see “Service Position” on page 487
3. Perform the top cover removal procedure; see “Processor Subsystem Top Covers” on page 488.
4. Locate the battery.
5. Use one finger to gently press the top edge of the battery in and down from the battery socket. Then use your thumb and index finger to pull the battery out of the socket.



## Replacement

Reverse the removal procedure to install a new battery.

### Notes:

1. Ensure that the battery polarity is correct; place the battery in the socket with the positive side facing up.
2. Restore the service processor settings. See “Saving and Restoring Service Processor Settings” on page 420 for information about restoring the service processor settings.
3. Ensure that the customer restores the service processor settings such as passwords. Also ensure that the customer sets the time and date using the operating system date command or **smitty** in AIX.

**Note:** To restore the service processor settings and to set the date and time using service processor (if the system is running Linux), see “Restoring Service Processor Settings” on page 466.



## Deconfiguring or Configuring a SCSI Drive

**Attention:** The Linux operating system does not support these hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

Use this procedure if you are removing or installing a SCSI disk drive while the system power is turned on.

**Attention:** Handle the hot-swap disk drive with care because it is very fragile and can be easily damaged if exposed to shock, electrostatic discharge, or rough handling.

### 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](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 F3s, Cancel, to go back to the first menu and select **System Storage Management (Physical and Logical Storage)**.
12. Select **Removable Disk Management**.
13. Select **Remove a Disk**.
14. Select the desired disk from the list on the screen and press Enter.
15. Follow the instructions on the screen to remove the drive.
16. When you are asked "Are you sure?," press Enter. The power LED on the drive that you selected will remain on.
17. 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. See the removal procedure under "Disk Drive Assembly" on page 562.
18. Press F10 to exit `smitty`.

## Configuring (Replacing)

**Attention:** The Linux operating system does not support these hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

**Attention:** Handle the hot-swap disk drive with care because it is very fragile and can be easily damaged if exposed to shock, electrostatic discharge, or rough handling.

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. See the replacement procedure under "Disk Drive Assembly".
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. See the *AIX System Management Guide: Operating System and Devices* to finish the drive 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](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`.

## Disk Drive Assembly

**Attention:** The Linux operating system does not support these hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

**Note:** This procedure is a hot-swap-procedure.

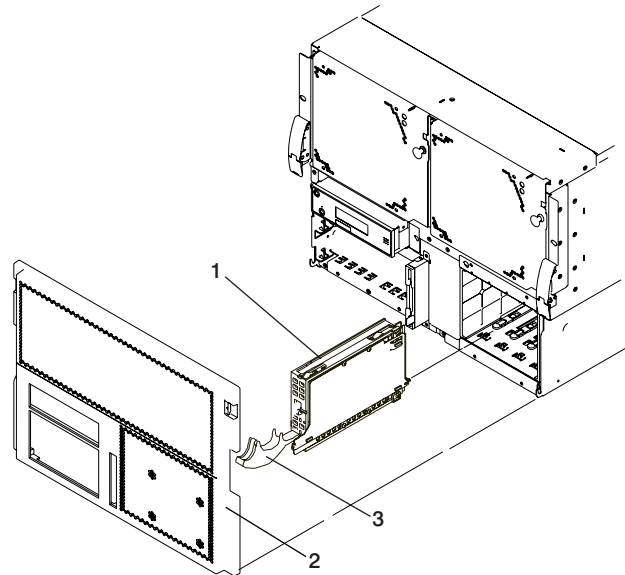
**Attention:** Activity on both media devices, if they exist, must be stopped prior to performing hot-plug procedures on any device on the same SCSI bus with the media devices. Before you perform the following procedure, ensure that the customer has taken appropriate actions to backup and remove the data for the drive you are removing, and that the drive can be 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.

## Removal

**Attention:** The Linux operating system does not support these hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

To remove a hot-plug disk drive, do the following:

1. Ensure that the drive you are removing is deconfigured from the system. See “Deconfiguring or Configuring a SCSI Drive” on page 561.
2. Remove the front bezel.
3. 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.
4. Log in as root user.
5. At the command line, type `smitty`.
6. Select **System Storage Management (Physical and Logical Storage)**.
7. Select **Removable Disk Management**.
8. Select **Remove a Disk**.
9. Select the desired disk from the list on the screen and press Enter.
10. 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 Disk drive  
2 Front bezel

3 Disk drive handle

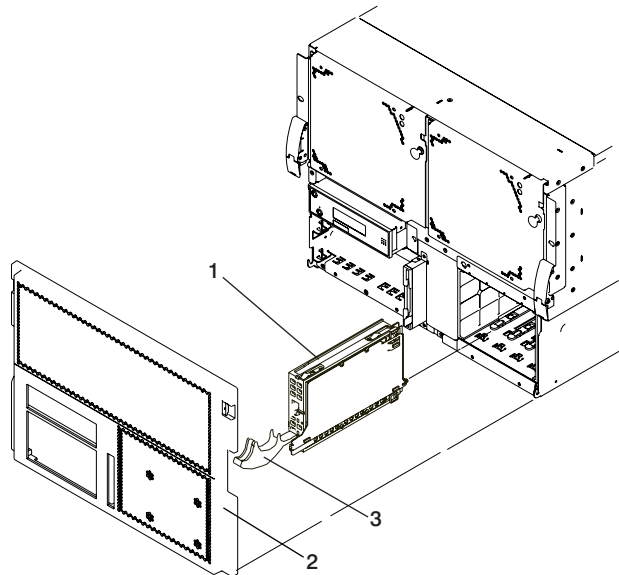
11. Press F10 to exit **smitty**.

## Replacement

**Attention:** The Linux operating system does not support these hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

**Note:** All four bays in each DASD 4-pack must be occupied. If a bay does not have a DASD assembly, it must be occupied by a filler assembly.

1. To replace a hot-plug disk drive, do the following:
  - a. Ensure the disk drive handle is open (perpendicular to the drive).
  - b. Align the drive assembly so that it engages the guide rails in the bay.
  - c. Push the drive assembly into the bay until the tray handle engages the lock mechanism.
  - d. Push the disk drive handle in until it locks. The lit LED on the disk drive will turn on.



1 Disk drive  
2 Front bezel

3 Disk drive handle

2. Log in as root user.
3. At the command line, type `smitty`.
4. Select **Devices**.
5. 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.
6. Press F10 to exit **smitty**.
7. Replace disk drive cover and the front bezel.
8. Close the rack doors.

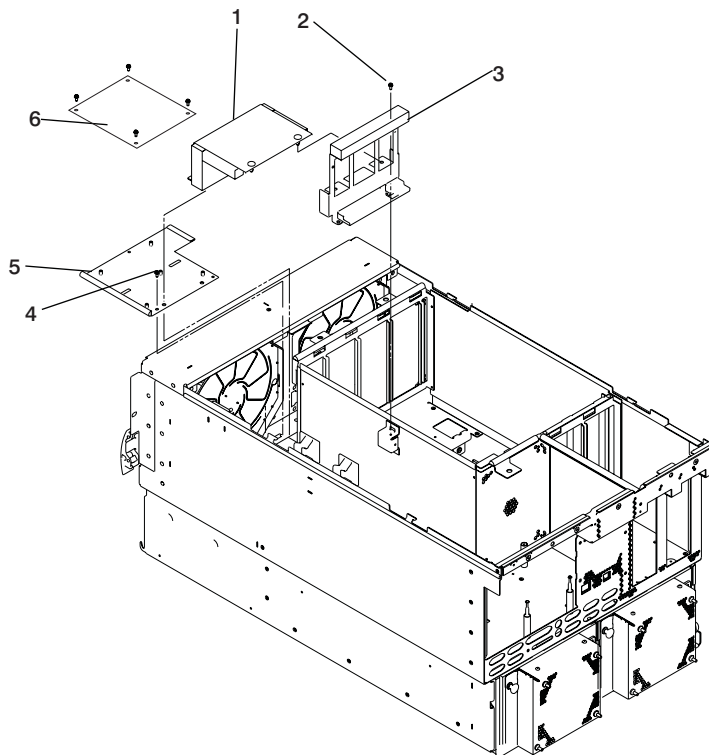
## SCSI Repeater Card

### Removal

1. Turn off the power as described in “Powering Off and Powering On the System” on page 484.
2. Remove the bezel from the processor subsystem by grasping the top of the bezel on either side, and pulling it outward. Simultaneously lift the bezel off the hooks on either side of the bottom of the processor subsystem.
3. Perform the top cover removal procedure; see “Processor Subsystem Top Covers” on page 488.

**Note:** Leave the system in the service position after removing the top covers.

4. Disconnect the cables from the SCSI repeater card.
5. Remove screws that hold the the SCSI repeater card.



- |                                |                      |
|--------------------------------|----------------------|
| 1 Air cover                    | 4 Screw              |
| 2 Screw                        | 5 Front cover plate  |
| 3 PCI adapter cassette bracket | 6 SCSI Repeater Card |

6. Lift the SCSI repeater card out of the processor subsystem chassis.

### Replacement

To replace the SCSI repeater card, perform the steps of the removal procedure in reverse order.

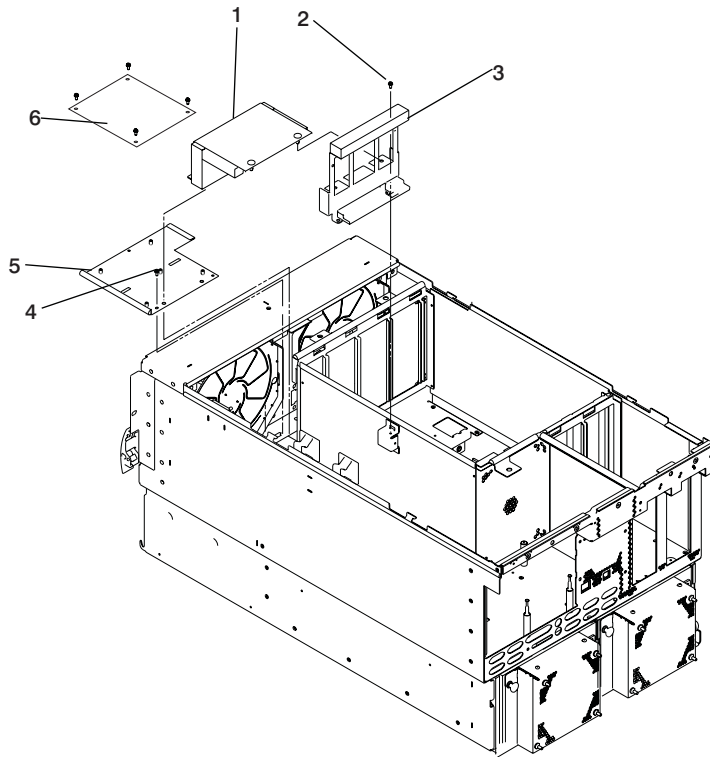
## Disk Drive 4-Pack and Split (2+2) 4-Pack Cage

### Removal

1. Turn off the power as described in “Powering Off and Powering On the System” on page 484.
2. Remove the bezel from the processor subsystem by grasping the top of the bezel on either side, and pulling it outward. Simultaneously lift the bezel off the hooks on either side of the bottom of the processor subsystem.
3. Perform the top cover removal procedure; see “Processor Subsystem Top Covers” on page 488.

**Note:** Leave the system in the service position after removing the top covers.

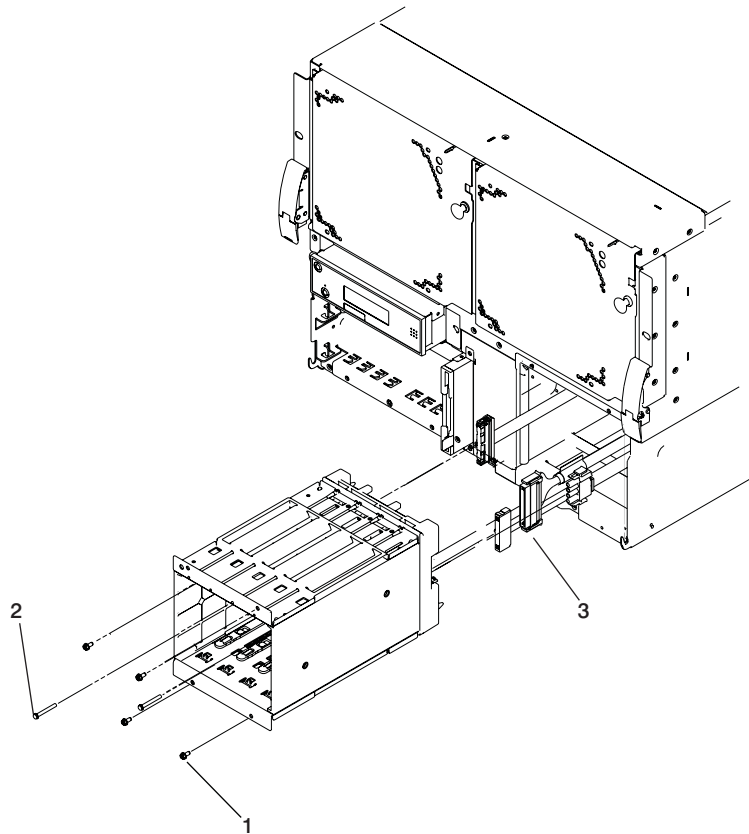
4. Remove the disk drives and the disk drive fillers as described in the removal procedure under “Disk Drive Assembly” on page 562.
5. If installed, remove the SCSI repeater card as described in the removal procedure under “SCSI Repeater Card” on page 565.
6. Remove the screws that hold card mounting plate.
7. Remove the screws that hold the mid-cover plate.



- 1 Air cover
- 2 Screw
- 3 PCI adapter cassette bracket

- 4 Screw
- 5 Front cover plate
- 6 SCSI Repeater Card

8. Remove the flange screws from the front of the disk drive 4-pack.



1 SCSI and Power Cables  
2 Cage Screws

3 Flange Screws

9. Remove the two cage screws from the lower-left and upper-right corners of the inside rear of disk drive 4-pack cage.
10. Grasp the disk drive 4-pack cage from the front of the processor subsystem drawer and pull the 4-pack cage out far enough to access the cables that are attached to the disk drive backplane.
11. Disconnect the cables that are attached to the disk drive backplane.

## Replacement

1. Perform steps 2 on page 565 through 11 of the removal instructions in reverse order.
2. Turn on the power as described in "Powering Off and Powering On the System" on page 484.

## Media Drives

**Attention:** The Linux operating system does not support these hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

**Attention:** Do not open the drive; no user adjustments or serviceable parts are inside.

### 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

This procedure is a hot-swap procedure.

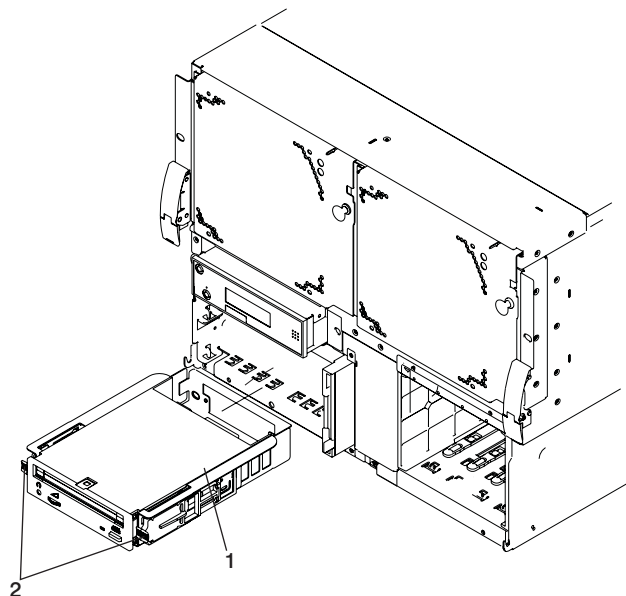
### Removal

**Attention:** Activity on both media devices, if they exist, must be stopped prior to performing hot-plug procedures on any device on the same SCSI bus with the media devices. Before you perform the following procedure, ensure that the customer has taken appropriate actions to remove the media from the drive you are removing, and that the drive can be 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.

1. Remove the bezel from the processor subsystem by grasping the top of the bezel on either side, and pulling it outward. Simultaneously lift the bezel off the hooks on either side of the bottom of the processor subsystem.
2. Locate the hot-plug media device you plan to remove. If you are removing a faulty media drive, a lit amber LED located at the front left side of each media drive will help you isolate the faulty drive.
3. Log on to the system as root user or use CE login.
4. At the command line, type diag.
5. Select **Task Selection**.
6. Select **Hot Plug Task**.
7. Select **SCSI Hot Swap Manager**.
8. Select the desired media drive from the list on the screen and press Enter. A message, The LED should be in the Remove state for the selected device. You may now remove or replace the device. Use 'Enter' to indicate that you are finished. appears on the screen.
9. Ensure that the media drive is in idle mode (the activity light remains off).



10. Pull the release levers that hold the SCSI media drive assembly in the subsystem.



1 Media drive

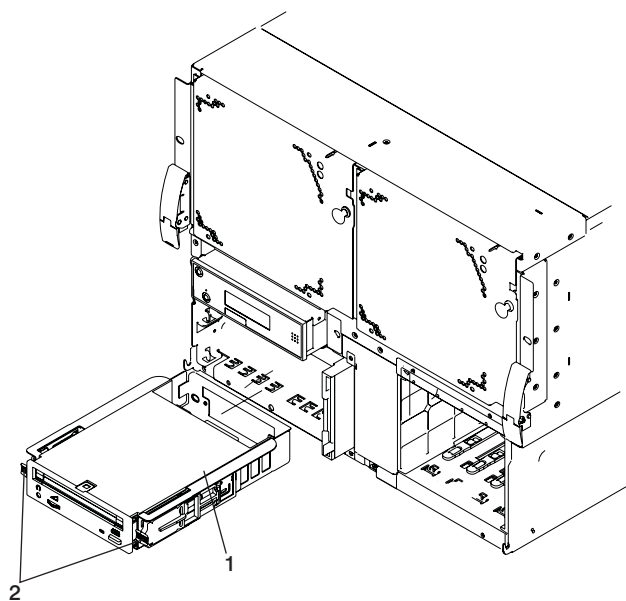
2 Release levers

11. Carefully, holding the release levers, pull the drive assembly straight out until you can remove the drive from the subsystem.

## Replacement

**Attention:** To precondition the media bay to allow hot-plug replacement of a media drive, the hot-plug removal procedure for media drives must have been performed first.

1. Carefully, holding the release levers in the unlocked position, push the drive assembly into the subsystem until the auto-docking connector is seated.



1 Media drive

2 Release levers

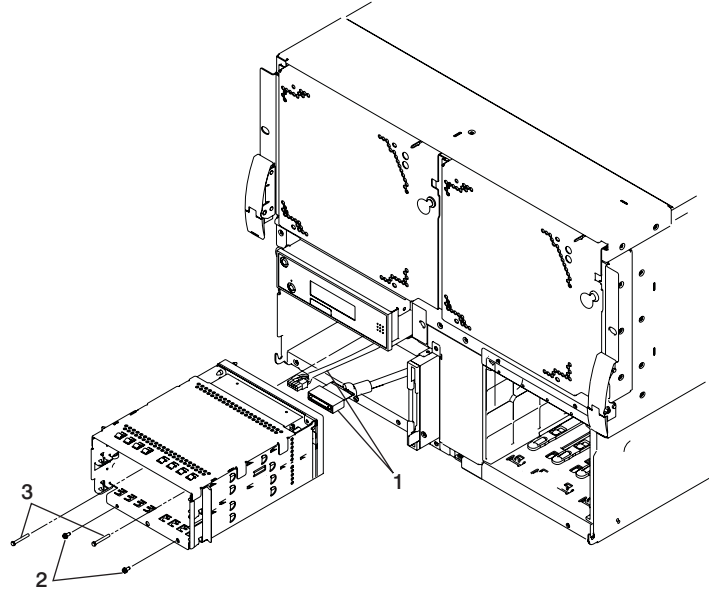
2. When you are sure that the drive is seated in the media bay, press Enter .
3. Press F3 to return to the SCSI Hot Swap Manager.

4. Choose **Configure Added/Replaced Devices**.
5. Press F10 to exit diagnostics.
6. Replace the bezel.

## Media Cage

### Removal

1. Turn off the power as described in "Powering Off and Powering On the System" on page 484.
2. Remove the bezel from the processor subsystem by grasping top of the bezel on either side, and pull it outward. Simultaneously lift the bezel off the hooks on either side of the bottom of the processor subsystem.
3. Remove the media drives or drive fillers from the media cage.



1 SCSI and Power Cables  
2 Long Screws

3 Flange Screws

4. Remove the flange screws from the front of the media cage with short blade screwdriver.
5. Remove the two long screws from lower-left and upper-right corners of the inside rear of disk drive 4-pack.
6. Grasp the media bay from the front of the processor subsystem drawer and pull the cage out about two inches toward the front.
7. Disconnect the cables that are attached to the media cage backplane assembly.

### Replacement

Perform steps 2 on page 565 through 7 of the removal instructions in reverse order.

## Diskette Drive

### Removal

1. Turn off the power as described in "Powering Off and Powering On the System" on page 484.
2. Remove the bezel from the processor subsystem by grasping top of the bezel on either side, and pull it outward. Simultaneously lift the bezel off the hooks on either side of the bottom of the processor subsystem.
3. Loosen the screws that attach the diskette to the processor subsystem.
4. Carefully pull the drive assembly out until you can access the cables at the rear.
5. Disconnect the power cable from the rear of the drive assembly.
6. Disconnect the diskette signal cable from the rear of the drive assembly.

### Replacement

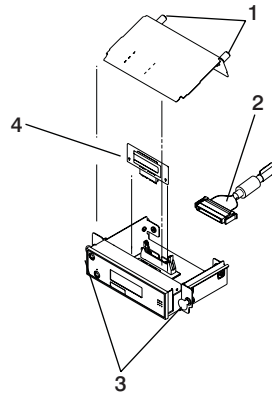
**Attention:** Before removing or replacing a diskette drive, turn off the power as described in "Powering Off and Powering On the System" on page 484.

Reverse the removal procedure to install a new diskette drive.

## Operator Panel

### Removal

1. Turn off power as described in “Powering Off and Powering On the System” on page 484.
2. Remove the bezel from the processor subsystem by grasping top of the bezel on either side, and pull it outward. Simultaneously lift the bezel off the hooks on either side of the bottom of the processor subsystem.
3. Pull the two latch buttons to release the operator panel.



1 Cover Screws

2 Operator Panel Cable

3 Latch Buttons

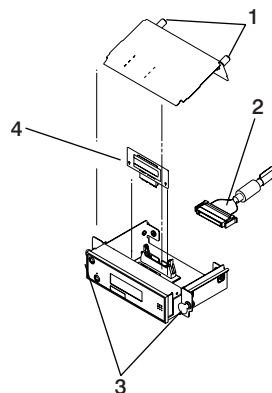
4 Capacity Card

4. Pull the operator panel straight out the front of the processor subsystem.
5. Disconnect the operator panel cable from the operator panel.

**Note:** If the operator panel is being replaced with a new one, remove the VPD module and the capacity card from the old operator panel and install them in the new operator panel.

### Replacement

1. Remove the cover from the new operator panel.



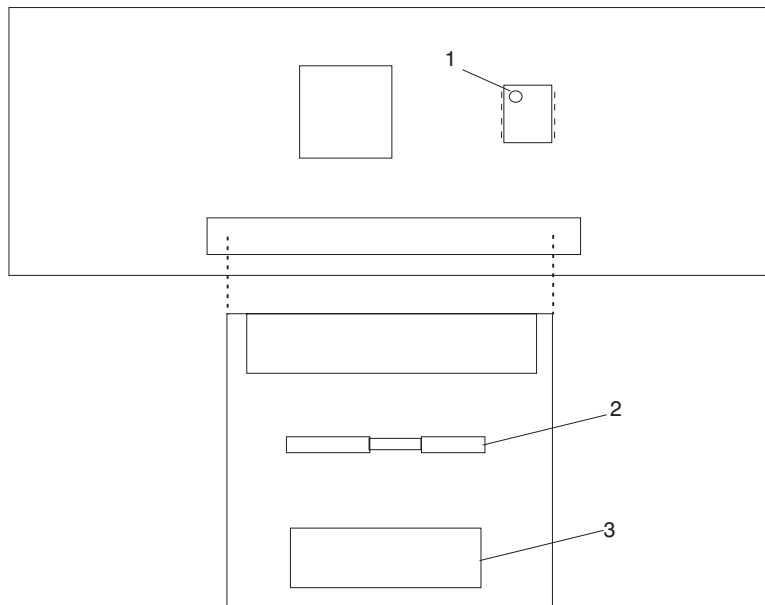
1 Cover Screws

2 Operator Panel Cable

3 Latch Buttons

4 Capacity Card

2. Remove the VPD module and the CUoD capacity card (if installed) from the old operator panel and insert them in the new operator panel. Make sure you insert the VPD module in the same position as it was in the old operator panel.



1 VPD Module

2 CUoD Capacity Card Connector

3 Operator Panel Cable Connector

3. Gently pry the serial number plate to remove it from the old operator panel then replace it in the new operator panel.
4. Reconnect the operator panel cable to the new operator panel.
5. Reinstall the cover on the new operator panel.
6. Push the operator panel into the chassis until the push-buttons engage, and push in the buttons.
7. Turn on the power as described in "Powering Off and Powering On the System" on page 484.

## Power Supplies

Use the following procedures to remove or replace a processor-subsystem power supply.

**Attention:** The processor-subsystem power supplies are replaced concurrently with the system operational when the remove and replace instructions are followed. Check for FRU redundancy to determine if the repair can be performed concurrently. If you cannot determine redundancy, delay the repair until the system can be shut down.

### Removal

1. From the rear of the processor subsystem, locate the power supply to be replaced. If one power supply has failed and the subsystem is running on the other power supply, remove the failing power supply without shutting down the system.
2. Remove the fan from the rear of the power supply.
3. Pull out the push-button latch to release the power supply handle.
4. Open the handle completely. This disengages the connectors on the opposite end of the power supply.
5. Using the handle of the power supply, pull the power supply straight out from the processor subsystem.

### Replacement

1. Ensure that the power supply handle and the push-button latch are in the open position.
2. Slide the power supply into the power supply bay until it contacts the front of the bay.
3. Push in on the power supply and move the power supply handle to the closed position.
4. Press the push-button latch on the power supply handle to hold the handle in the closed position.
5. Reinstall the fan on the rear of the power supply.

## Fans

Use the following removal and replacement procedures for fans. If the processor system has a failing fan but the system has not shut down, this procedure can be performed with power on.

### Removal

1. Locate the fan to be replaced.
2. Remove the fan by releasing the latch button and pulling the fan away from the power supply.

### Replacement

1. Pull the fan latch button out to the open position and then install the fan by engaging its left side to the mounting holes.
2. Swing the fan into the mounting position and push it inward until the connector fully engages, then push the push-button latch.

## Power Distribution Assembly

Use the following procedures to remove or replace a power distribution assembly.

### Removal

1. Turn off power as described in “Powering Off and Powering On the System” on page 484.
2. Perform the removal procedures under “System Backplane” on page 559.
3. Perform the removal procedures under “Disk Drive 4-Pack and Split (2+2) 4-Pack Cage” on page 565.
4. Perform the removal procedures under “Media Cage” on page 571.
5. Perform the removal procedures under “Power Supplies” on page 575.
6. Remove the screws that hold the power distribution assembly and lift it out of the system.

### Replacement

Reverse the removal procedure to install the power distribution assembly.



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## Chapter 11. Parts Information

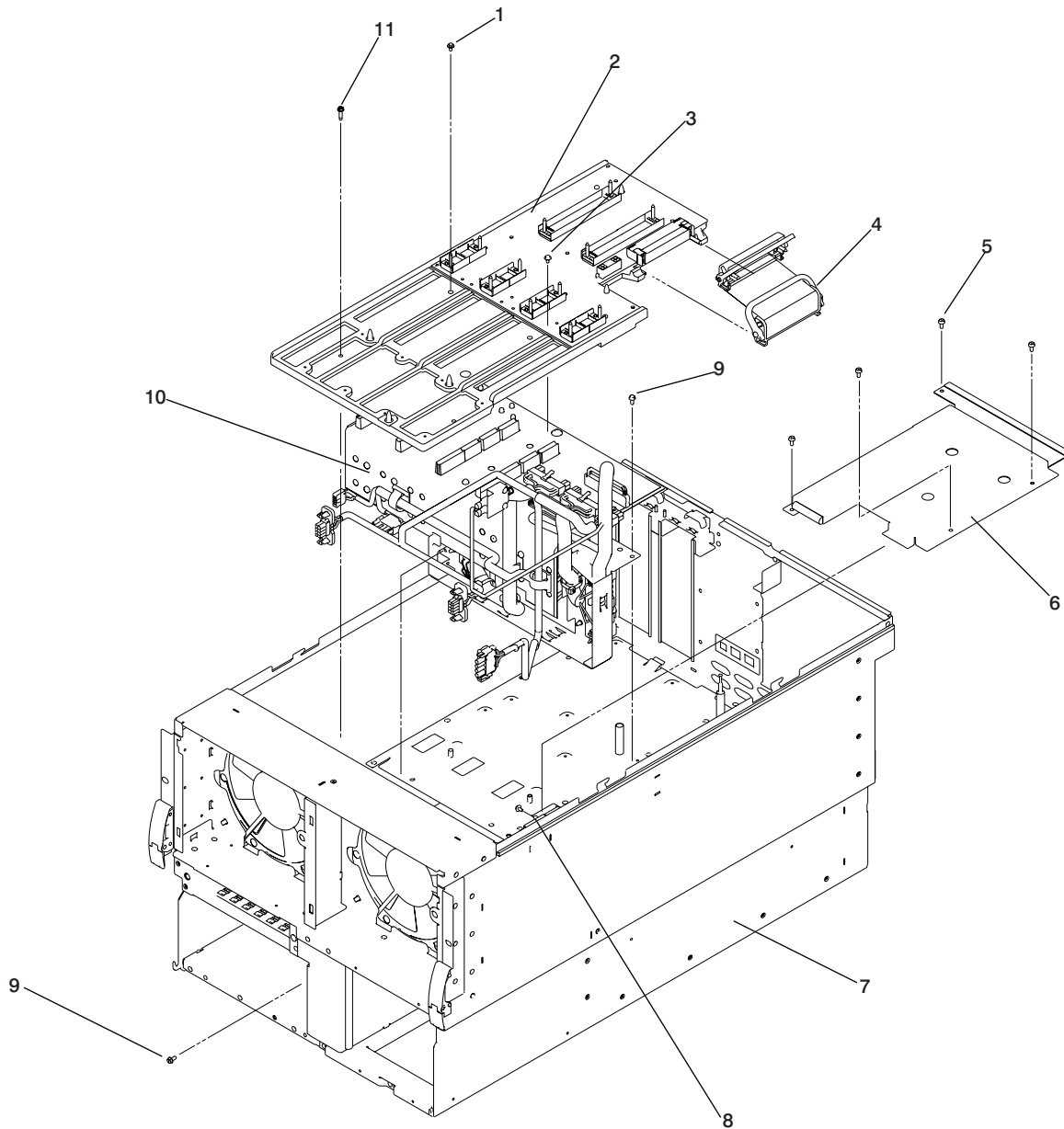
This chapter contains parts information for the @server pSeries 650.

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## 7038 Model 6M2 Processor Subsystem

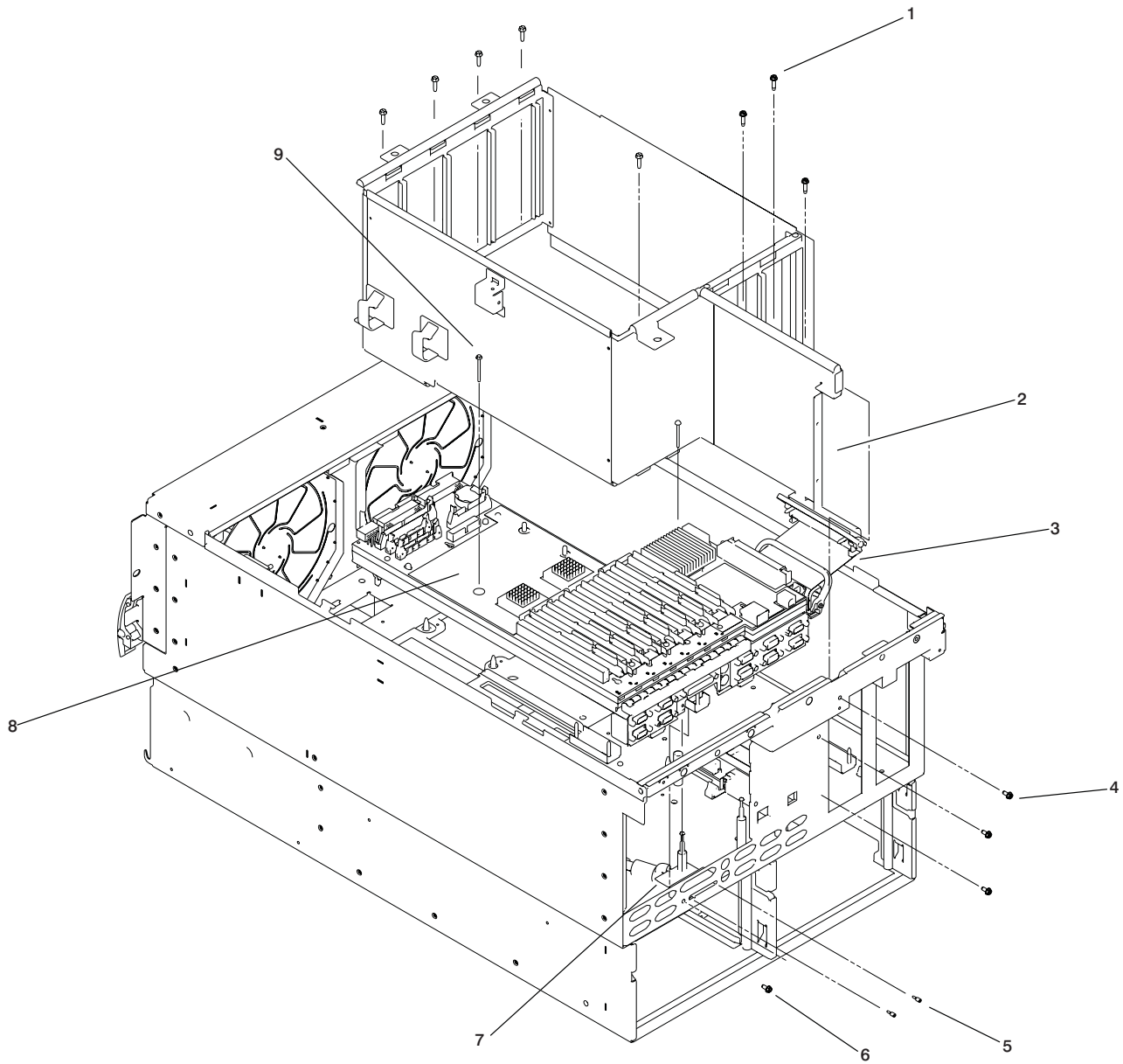
Parts information for the processor subsystem chassis follows:

### Front View



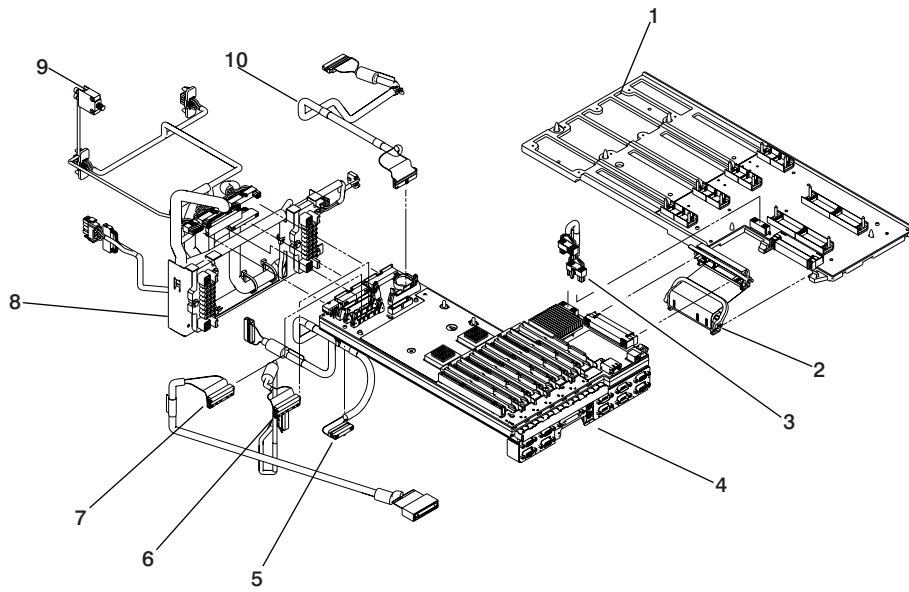
Index	Part Number	Units Per Assy	Description
1	34G6909	2	Mounting screws, system backplane
2	09P3876	1	System backplane assembly
3	34G6909	8	Mounting screw, system backplane
4	21P5195	1	Flex cable assembly
5	75G2878	4	Mounting screws, system unit bottom
6	53P1881	1	System unit bottom cover
7	21P5735	1	Chassis
8	53P0874	1	Cover interlock switch
9	34G6909	1	Interlock switch retaining screw
	75G2878	1	Power subframe mounting screw
10	97P2677	1	Power distribution cable harness
11	21P8169	5	Mounting screw

## Rear View



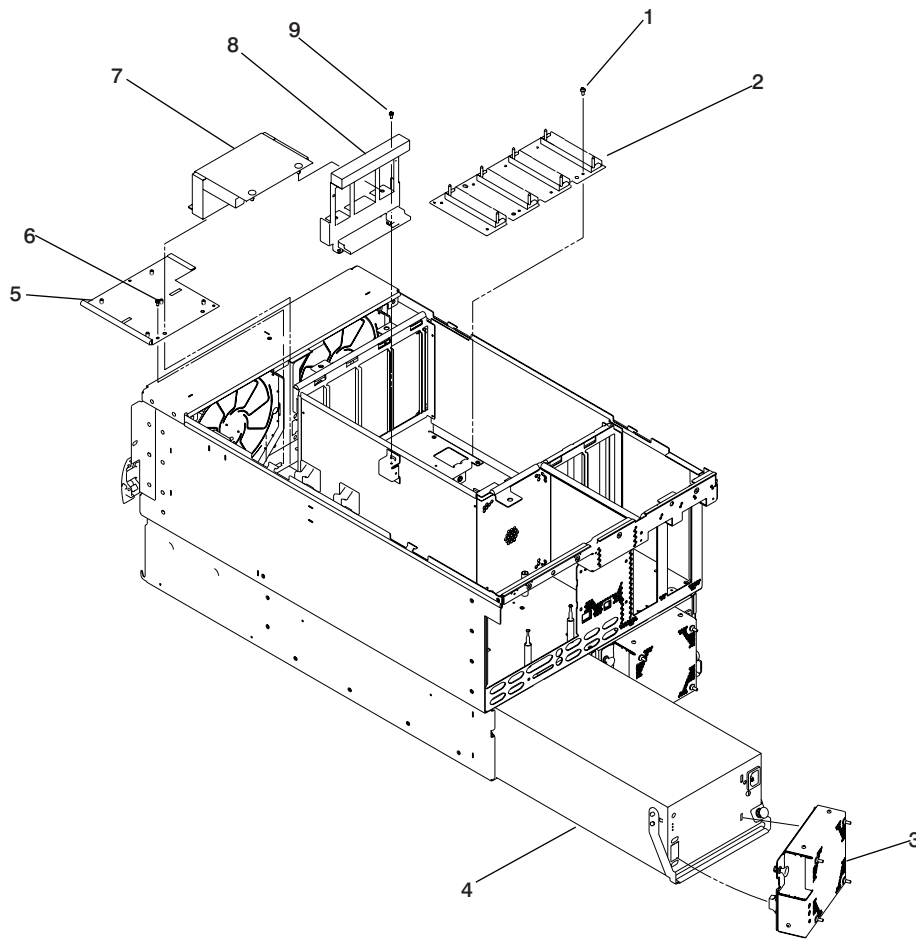
Index	Part Number	Units Per Assy	Description
1	21P8169	8	Mounting screw, processor chassis
2	21P5783	1	Processor card cage
3	21P5195	See page 579	Flex cable assembly (same part as shown on 579)
4	75G2878	3	Mounting screw, processor card cage to rear bulkhead
5	07L7411	2	Standoff, external SCSI cable
6	75G2878	1	Mounting screw
7	21P5204	1	SCSI cable to bulkhead, external SCSI
8	00P4062 16G8095	1	Service processor/PCI backplane assembly TOD Battery
9	53P0067		Mounting screw, service processor/PCI backplane assembly

## Internal Cables



Index	Part Number	Units Per Assy	Description
1	Reference only		PCI slot plugging bracket (part of the service processor/PCI backplane assembly)
2	21P5195	See page 579	Flex cable assembly (same part shown on 579)
3	21P5196	1	Service processor/PCI backplane power cable
4	00P4062	See page 581	Service processor/PCI backplane (same part shown on 581)
5	21P5197	1	Diskette drive signal cable
6	21P5199	1	SCSI cable, integrated SCSI controller to SCSI backplane
7	21P5204	See page 581	SCSI cable to bulkhead, external SCSI (same part as shown on 581)
8	97P2677	See page 579	Power distribution cable harness (same part shown on 579)
9	53P0874	1	Cover interlock switch
	34G6909	1	Interlock switch retaining screw
10	97P2933	1	Operator Panel Cable

## Processor Connector Cards, Power, and Cooling

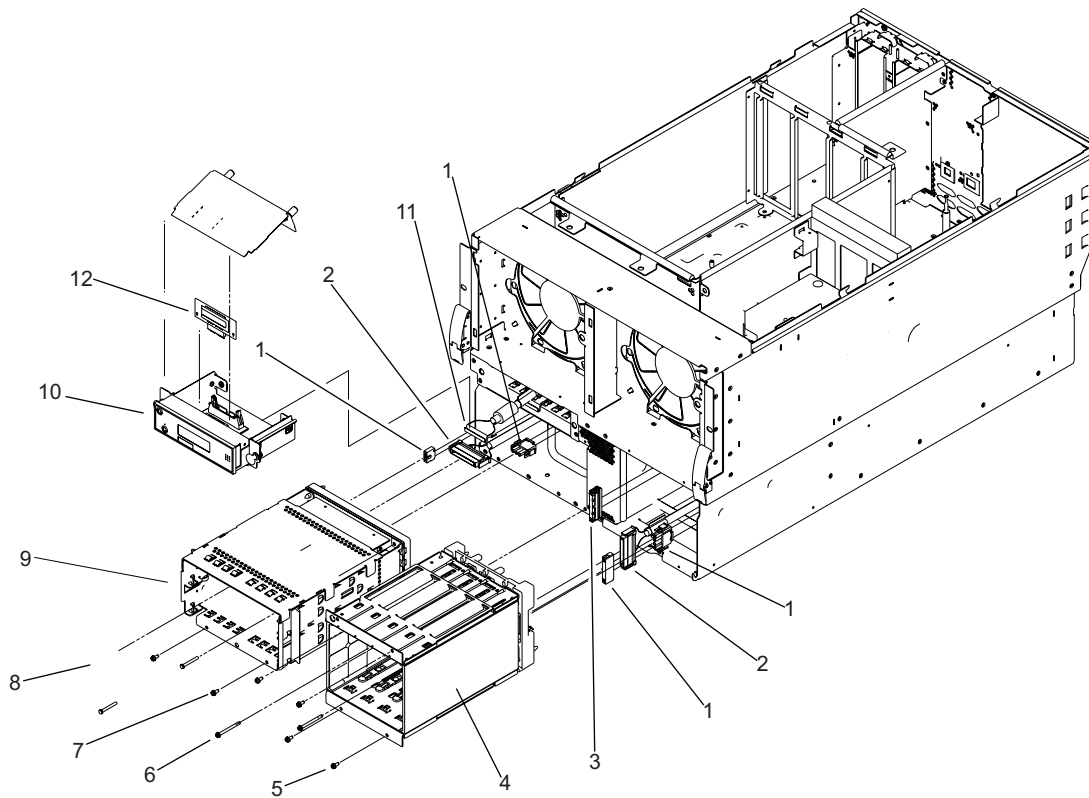




Index	Part Number	Units Per Assy	Description
1	34G6909	Up to 12	Mounting screws, processor bus connector
2	09P6257	1	4W Processor bus connector
	09P6261		6W Processor bus connector
	09P6266		8W Processor bus connector
3	21P4491	2	Fan, power supply
4	21P4437	2	Power supply
5	21P5890	1	Front cover plate
6	75G2878	3	Mounting screws, front cover plate
7	53P4333	1	Air cover
8	53P1883	1	PCI adapter cassette bracket
9	75G2878	2	Mounting screws, PCI adapter bracket
	See note		PCI adapters
	44P0239	6	PCI adapter cassette (long)
	00P3981	1	PCI adapter cassette (short)
	00P4680	As needed	Blindswap Adapter Bracket Kit, contains all brackets listed below
	31L8728*	As needed	Bracket for S/390 ESCON Channel PCI Adapter, FC 2751 type 5-5
	44P2676*	As needed	Bracket for Gigabit Ethernet - SX PCI Adapter, FC 2969 type 9-U or 10/100/1000 Base-T Ethernet PCI Adapter, FC 2975 type A-A
	44P0321*	As needed	Bracket for 10/100 BaseT Ethernet PCI Adapter, FC 4962 type A-F
	53P5450*	As needed	Bracket for Gigabit Ethernet PCI-X Adapter, FC 5700 or 10/100/1000 Base-TX Ethernet PCI-X Adapter, FC 5701
	44P2661*	As needed	Bracket for Dual Channel Ultra3 SCSI PCI Adapter, FC 6203 type 4-Y
	44P2675*	As needed	Bracket for 2 Gigabit Fibre Channel Adapter, FC 6228 type 4-W
* Not separately orderable, for reference only			

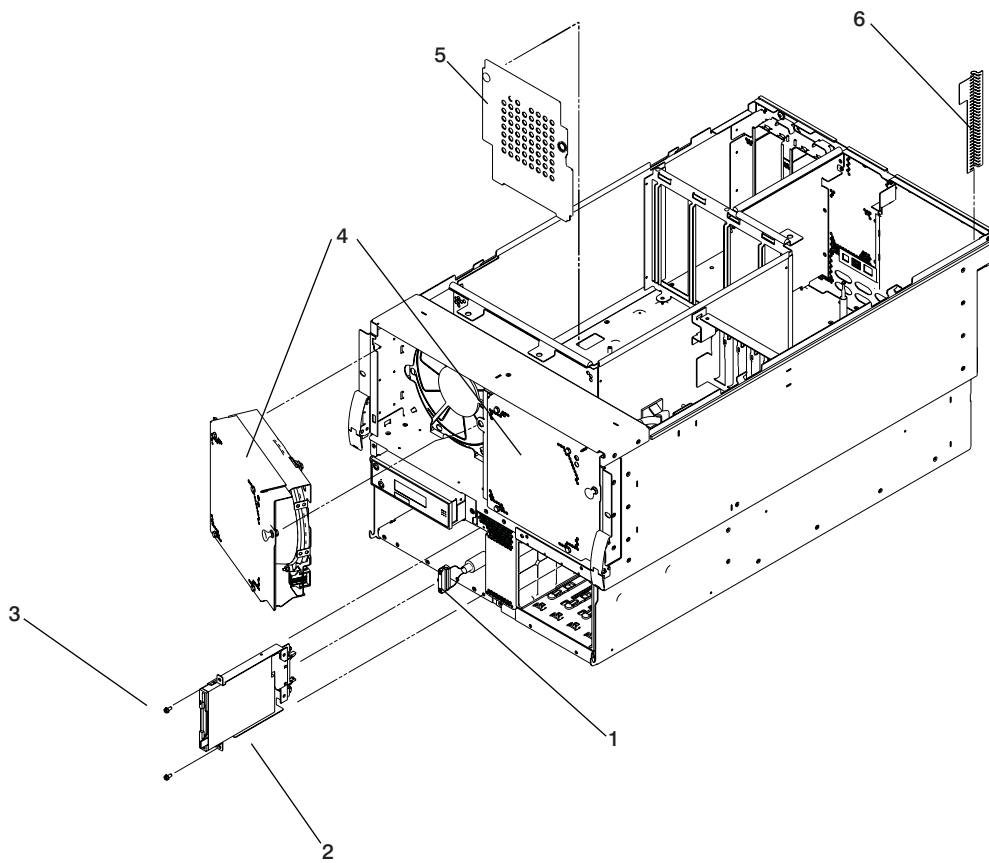
**Note:** See @server pSeries Diagnostic Information for Multiple Bus Systems for part numbers.

## Media Bays and Disk Bays



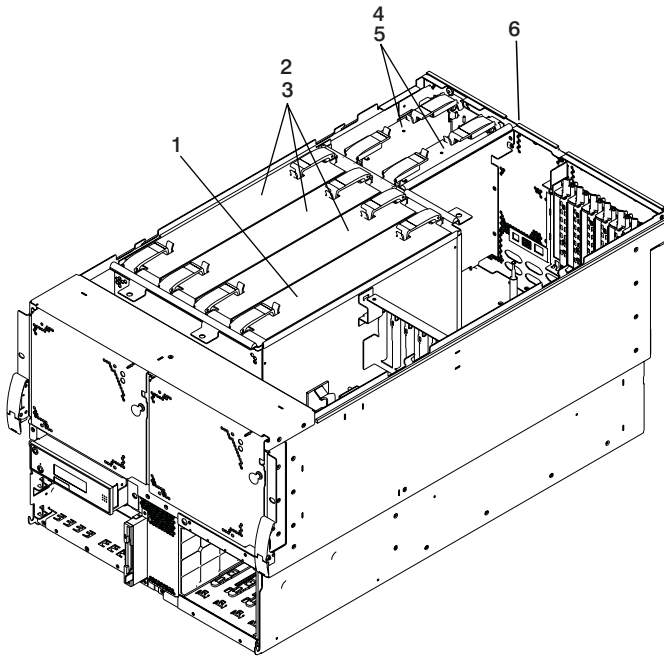
Index	Part Number	Units Per Assy	Description
1	97P2677	See page 579	Power distribution cable harness (same part shown on 579)
2	21P5205	1	SCSI cable, disk-drive backplane to media backplane
3	21P5199	See page 583	SCSI cable, internal (same part shown on 583)
4	21P5882	Up to 1	Disk drive cage and backplane (one four-pack, one SCSI bus)
	00P2542	Up to 1	Split disk drive backplane (two two-packs, two SCSI buses)
	00P3136	Up to 1	Disk drive cage for split backplane
	00P2542	Up to 1	Disk drive repeater card for split backplane
	97P2358	Up to 1	SCSI cables out through PCI slot 7 (cables attached to short PCI cassette)
	09L3299	Up to 1	External SCSI cable from SCSI port to PCI slot 7 SCSI Bus
5	75G2878	4	Mounting screw, DASD cage outer cage
6	04N3392	2	Mounting screw, DASD cage inner
7	75G2878	2	Mounting screw, media cage
8	04N3392	2	Mounting screw, media cage
9	21P7315	1	Media cage and backplane assembly
10	97P2908	1	Operator panel
11	97P2933	See page 583	Operator panel cable (same part shown on 583)
12	53P3017	1	CUoD capacity card

## Cooling and Diskette Drive



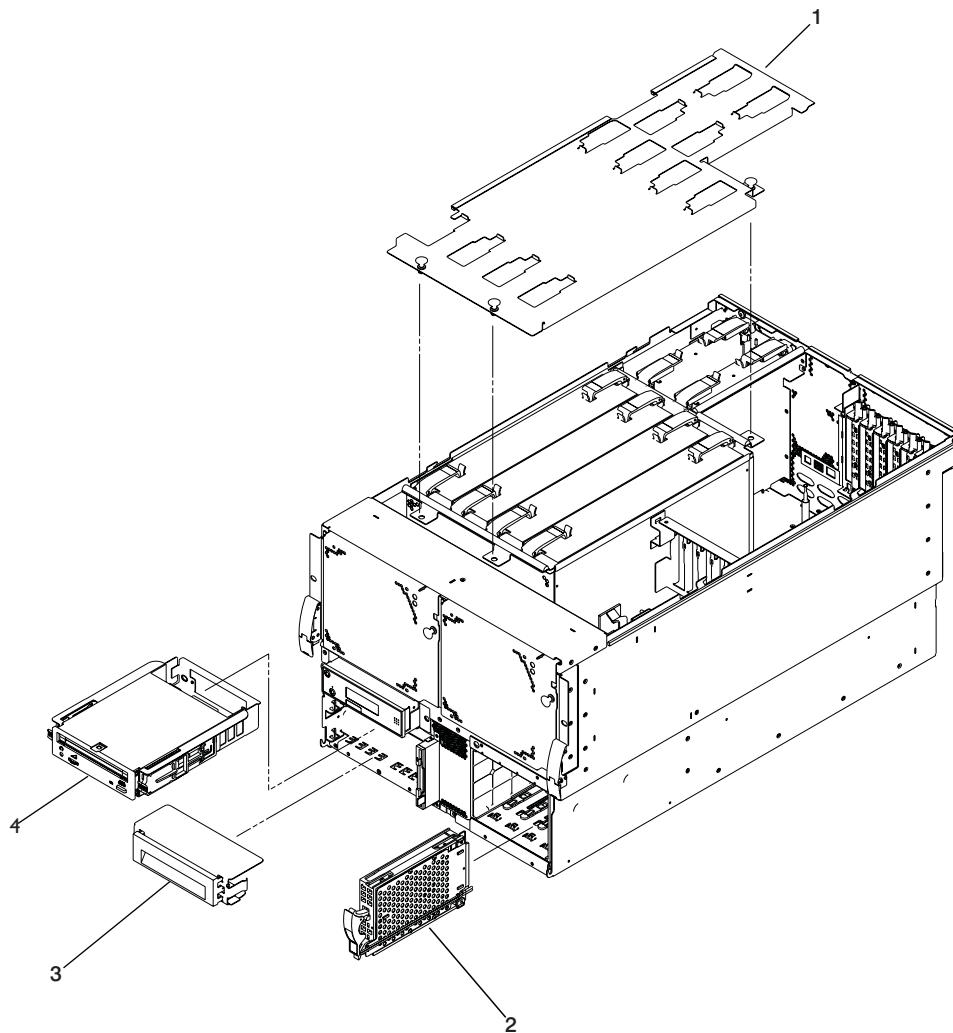
<b>Index</b>	<b>Part Number</b>	<b>Units Per Assy</b>	<b>Description</b>
1	21P5197	See page 583	Diskette drive signal cable (same part shown on 583)
2	21P5892	1	Slim diskette drive
3	75G2878	2	Mounting screw, diskette drive
4	21P4490	2	Fan assembly, processor subsystem
5	53P4334	1	Air baffle
6	52P4069	1	Spring gasket

## Processor Cards and Memory



Index	Part Number	Units Per Assy	Description
1	97P3186	Up to 4	Processor board (1.2 GHz)
	00P4050	Up to 4	Processor board (1.45 GHz)
	00P4045	Up to 3	CUoD Processor board (1.45 GHz)
	53P3226	Up to 32	512 MB DIMM, up to eight per processor card
	53P3230	Up to 32	1 GB DIMM, up to eight per processor card
	53P3232	Up to 32	2 GB DIMM, up to eight per processor card
	53P1636	Up to 32	4 GB CUoD DIMM , up to eight per processor card
	53P1643	Up to 32	8 GB CUoD DIMM, up to eight per processor card
2	21P7880	Up to 3	Filler, processor
3	21P8036	Up to 2	Filler, RIO connector card
4	00P4056	Up to 2	RIO connector card
	00P5618	Up to 2	RIO-2 connector card
5	00P4059	Up to 2	RIO extender card
	00P5622	Up to 2	RIO-2 extender card
6	53P1882	1	Strain relief bracket

## Processor Subsystem Disks and Media

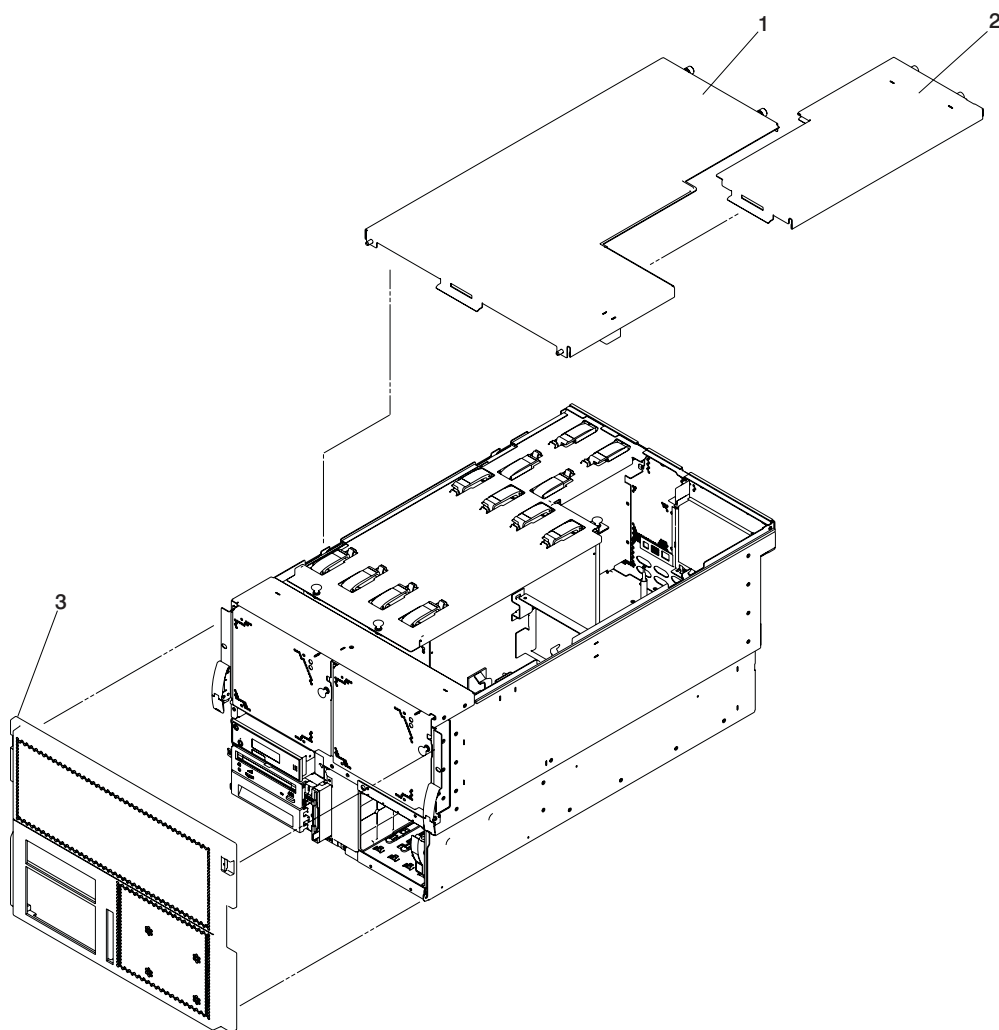




Index	Part Number	Units Per Assy	Description
1	53P1880	1	Processor top cover
2	See note	Up to 4	Disk drives
3	44H8406	1	Media filler
4	See note		Media device
5	97P2908	1	Operator panel (same part shown on page 587)

**Note:** See *@server pSeries Diagnostic Information for Multiple Bus Systems* for part numbers.

## Processor Subsystem Covers and Bezel



Index	Part Number	Units Per Assy	Description
1	21P5308	1	Processor top cover
2	21P5309	1	PCI access cover
3	21P8177	1	Front cover

## Processor Subsystem Internal Cables

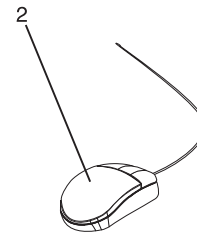
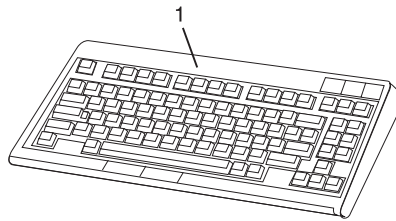


<b>Index</b>	<b>Part Number</b>	<b>Units Per Assy</b>	<b>Description</b>
1	21P5199	See page 583	SCSI cable, Internal (same part shown on page 583)
2	97P2677	See page 579	Power distribution cable harness (same part shown on page 579)
3	21P5196	See page 583	Power cable, service processor/PCI backplane (same part as shown on page 583)
4	21P5195	See page 579	Flex cable assembly (same part as shown on 579)
5	21P5204	See page 581	SCSI cable to bulkhead, external SCSI (same part as shown on page 581)
6	97P2933	See page 583	Operator panel cable (same part shown on page 583)
7	21P5197	See page 583	Diskette drive signal cable (same part shown on page 583)
8	21P5205	See page 587	SCSI cable, disk drive backplane to media backplane (same part shown on page 587)

## SPCN, RIO, and Rack Beacon Cables

Index	Part Number	Units Per Assy	Description
1	53P2231	Up to 12	Rack beacon junction box, 7-port mini connector (4693)
2	53P2237	Up to 12	Rack beacon connector cable, subsystem to junction box, 4-pin std to 4-pin mini connector, 3 meter (4691)
	07H6655	As needed	Velcro tape
3	53P2854	Up to 12	Rack beacon connector cable, 4-pin mini to 4-pin mini 0.25 meter (4692)
4	87G6235	Up to 9	SPCN cable, 2 meter
	09P1251	Up to 9	SPCN cable, 3 meter
	21F9469	Up to 9	SPCN cable, 6 meter
	21F9358	Up to 9	SPCN cable, 15 meter
5	21P5454	Up to 10	RIO cable, 1.2 meter
	53P2676	Up to 10	RIO cable, 3.5 meter
	21P5456	Up to 10	RIO cable, 10 meter

## Keyboards and Mouse



Index Number	FRU Part Number	Units Per Assy	Description
1	24P0440	1	Keyboard, 101 US English (ID 103P) USB
	24P0450	1	Keyboard, 101 French (ID 189) USB
	24P0458	1	Keyboard, 101 Italian (ID 142) USB
	24P0453	1	Keyboard, 101 German/Austrian (ID 129) USB
	24P0476	1	Keyboard, 101 UK English (ID 166) USB
	24P0470	1	Keyboard, 101 Spanish (ID 172) USB
	24P0459	1	Keyboard, 101 Japanese (ID 194) USB
	24P0444	1	Keyboard, 101 Brazilian Portuguese (ID 275) USB
	24P0431	1	Keyboard, 101 Swedish, Finnish (ID 153) USB
	24P0471	1	Keyboard, 101 LA Spanish (ID 171) USB
		1	Keyboard, 101 Korean (ID 413) USB
	24P0446	1	Keyboard, 101 Chinese (ID 467) USB
	24P0466	1	Keyboard, 101 Russian (ID 443) USB
2	09N5532	1	Three Button Mouse (USB) 8841

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## I/O Subsystem Parts

For information related to parts for the 7311 Model D10 I/O Subsystem, or the 7311 Model D20 I/O Subsystem, see the *pSeries 7311 Model D10 and Model D20 Service Guide*, order number SA38-0627.



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## Chapter 12. Fault and Attention LEDs

This chapter contains information about fault and attention LEDs, which assist in identifying failing components in your system.

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### Component LEDs

Individual LEDs are located on or near the failing components. The LEDs are located either on the component itself or on the carrier of the component (for example, memory card, fan, memory module, CPU). LEDs are either green or amber.

Green LEDs indicate one of two things:

- Electrical power is present.
- Activity is occurring on a link. (The system could be sending or receiving information.)

Amber-colored LEDs indicate a fault or identify condition. If your system or one of the components on your system has an amber-colored LED turned on or blinking, identify the problem and take the appropriate action to restore the system to normal.

The following table identifies the location, color and status of your system component LEDs.

Unit (FRU)	LED Function	Location	Viewable Location	LED Color	OFF	ON	Blink
<b>Power and Packaging LEDs</b>							
Rack Indicator	Rack Summary	Top of Rack	External	Amber	Normal	Fault	Identify
	AC Input		External Front	Green	No Input	AC Good	Fault
Processor Subsystem Drawer	Attention	Operator Panel	External Front	Amber	Normal	Fault	Identify
	Power		External Front	Green	No AC	System On	Standby
Fans	Identify	FRU	External	Amber	Normal	Identify	N/A
	Power	FRU	External	Green	Power Off	Power On	N/A
Power Supply	Input Source	FRU	External Back	Green	No Input	AC Input Good	N/A
	Identify/COM Fail	FRU	External Back	Amber	Normal	N/A	1 Hz=Identify .25 Hz=Comm. Failed
	DC Output Good	FRU	External Back	Green	Standby Off	System On	Standby
Disk Drives (DASD)	Slot Power	DASD Backplane	External Front	Green	Power Off	Power On	N/A
	Activity	DASD Backplane	External Front	Green	Not Active	N/A	Activity
	Identify	DASD Backplane	External Front	Amber	Normal	Action Remove	Identify
Media	Slot Power	Backplane	External Front	Green	Power Off	Power On	N/A
	Activity/Identify	Backplane	External Front	Amber	Normal	Action	Identify
<b>Electronic Component LEDs</b>							
Processor Card	Identify	FRU (Top)	Internal Only	Amber	Normal	Identify	N/A
DIMMs	Identify	CPU card (Top)	Internal Only	Amber	Normal	Identify	N/A
RIO Connector Card	Identify	FRU (Top)	Internal Only	Amber	Normal	Identify	N/A
RIO Extender Card	Identify	FRU (Top)	Internal Only	Amber	Normal	Identify	N/A
Processor Backplane	Identify	FRU	Internal Only	Amber	Normal	Identify	N/A
Service Processor PCI Backplane	Identify	FRU	Internal Only	Amber	Normal	Identify	N/A
PCI Adapter Connectors (Slots)	Slot Power	Backplane	External Back	Green	Power Off	Power On	N/A
	Action/Identify	Backplane	External Back	Amber	Normal	N/A	Grn off - Action Grn on - Identify

Unit (FRU)	LED Function	Location	Viewable Location	LED Color	OFF	ON	Blink
Power and Packaging LEDs							
Fabric Backplane	No LED						
Disk Drive Backplane	No LED						
Media Backplane	No LED						
Port LED Indicators							
Rio Ports	Identify	Top of Each External Connector	External Back	Amber	Normal	N/A	Identify

## 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**

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### **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 please refer to the following web site:

<http://www.ibm.com/ibm/environment/products/prp.phtml>

This product may contain a sealed lead acid battery(s) or nickel-cadmium battery(s). The battery(s) must be recycled or disposed of properly. Recycling facilities may not be available in your area. In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used sealed lead acid, nickel cadmium and nickel metal hydride batteries and battery packs from IBM equipment. For information on proper disposal of the batteries in this product, please contact IBM at 1-800-426-4333. For information on disposal of sealed lead acid or nickel cadmium batteries outside the United States, contact your local waste disposal or recycling facility.

---

### **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).

Der Geräuschpegel der Einheit ist kleiner oder gleich 70 db(A).

## Declared Acoustical Noise Emissions

Product Configuration	Acoustical Characteristic			
	Declared A-Weighted Sound Power Level, $L_{WA_d}$ (B)		Declared A-Weighted Sound Pressure Level, $L_{pAm}$ (dB)	
	Operating	Idle	Operating	Idle
Processor Subsystem	6.1 <sup>5</sup>	6.1 <sup>5</sup>	44 <sup>6</sup>	44 <sup>6</sup>
<b>Notes:</b> <ol style="list-style-type: none"><li>Noise levels cited are for the typical configuration (A-Frame: Bulk Power, CEC cage, battery option, media drawer, and two I/O drawers).</li><li>The 0.6-B (6-dB) reduction in noise emission levels with the acoustical rear door corresponds to a factor of 4 reduction. That is, the noise level of a single A-Frame with Slimline covers is about the same as the noise level of four A-Frames with acoustical covers.</li><li><math>L_{WA_d}</math> is the upper-limit A-weighted sound power level; <math>L_{pAm}</math> is the mean A-weighted sound pressure level at the 1-meter bystander positions; 1 B = 10 dB.</li><li>All measurements made in conformance with ISO 7779 and declared in conformance with ISO 9296.</li></ol>				

---

## Appendix B. Notices

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## Appendix C. Service Processor Setup and Test

**Attention:** This procedure applies to modems attached to the serial ports (S1 and S2) on the system drawer. It does not affect the operation of the modem attached to the IBM Hardware Management Console for pSeries (HMC).

The call-out function is usually 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.

**Note:** Call-out and surveillance are disabled in partitioned systems.

---

### Service Processor Setup Checklist

1. Shut down the managed system, wait for the “OK” in the physical operator panel.
2. Open a virtual terminal on the HMC.
3. Bring up the service processor menus.
4. Set the system name.
5. Enable Surveillance.
6. Configure call-in/call-out.
7. Exit the service processor menus.
8. Remove all power by removing the power cords from both power supplies in the rear of the processor subsystem.
9. Attach modems (if needed).
10. Apply power by reconnecting the power cords to both power supplies in the rear of the processor subsystem.  
**Attention:** Make sure that system power remains off.
11. Test both of the following:
  - Call-In, page “Testing Call-In” on page 610
  - Call-Out, page “Testing Call-Out” on page 611
12. Use the “Save or Restore Hardware Management Policies,” in the “Introduction to Tasks and Service Aids” section of the *@server pSeries Diagnostic Information for Multiple Bus Systems* to back up the service processor settings.

**Note:** This is strongly recommended to protect the usefulness of the service processor and the availability of the server.

Your service processor is now ready for use.

---

## Testing the Setup

This section contains sample testing procedures to help ensure your setup is working.

These tests include communicating with the server 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 611.

The server should be powered off as a result of the “Service Processor Setup Checklist” on page 609.

## Testing Call-In

1. Go to your remote terminal and call in to your server. Your server 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 server, the login prompt displays at your remote terminal if you set up seamless modem transfer. 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 server 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 -F** to shut down your server.
8. The message No Carrier displays on your remote terminal.

## Testing Call-Out

During the setup, you entered your phone numbers for the pager and customer voice. These numbers are used for this test.

1. Your remote terminal is disconnected as a result of the Call-In test.
2. Call your server 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. This is your computer trying to page you.

If this test is successful, call-out is working correctly.

## 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. Modem Configurations

**Attention:** This appendix applies only to modems attached to the serial ports (S1 and S2) on the primary I/O book (location U1.18-P1-H2).

These configuration files do not apply to the modem attached to the IBM Hardware Management Console for pSeries (HMC).

---

### 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 the firmware in **/usr/share/modems** subdirectory (if your server is using AIX) with the following names. A listing of each specific file is included in this appendix.

### Generic Modem Configuration Files

AIX File Name	Service Processor Firmware File Name
modem_z.cfg	modem_z_sp
modem_z0.cfg	modem_z0_sp
modem_f.cfg	modem_f_sp
modem_f0.cfg	modem_f0_sp
modem_f1.cfg	modem_f1_sp

### Specific Modem Configuration Files

AIX File Name	Service Processor Firmware File Name
modem_m0.cfg	modem_m0_sp
modem_m1.cfg	modem_m1_sp

Use the following selection procedures and your modem manual to determine which of the configuration files is suitable for your use.

---

## Configuration File Selection

Use the following steps to select a configuration file:

1. Is your modem an IBM 7852-400?

If Yes, use modem configuration file **modem\_m0.cfg** and go to step 7.

**Note:** The IBM 7852-400 modem has DIP switches on the right side of the unit. See “IBM 7852-400 DIP Switch Settings” on page 616 for the correct switch settings.

If No, continue with step 2.

2. Is your modem an IBM 7857-017?

If Yes, use modem configuration file **modem\_m1.cfg** and go to step 7.

**Note:** The IBM 7857-017 modem has two telephone line connections on the back of the unit. One is marked **LL** (for Leased Line), and the other is marked **PTSN** (for Public Telephone Switched Network). The service processor expects to use the modem on the public network, so the telephone line should attach to the PTSN connector.

If No, continue with step 3.

3. Does your modem respond to the extended command set (prefixed with &)?

If Yes, go to step 5. If No, continue with step 4.

4. Does your modem respond to:

- ATZ reset command  
or
- ATZ $n$  reset commands, where  $n$  can be 0, 1, and so on?

If ATZ, configuration file **modem\_z.cfg** is recommended. If ATZ $n$ , configuration file **modem\_z0.cfg** is recommended.

Go to step 7.

5. Does your modem command set include a test for V.42 error correction at the remote modem (often called “Auto-Reliable Mode”)?

If Yes, disable this test. You can use sample configuration files **/usr/share/modem\_m0.cfg** or **/usr/share/modem\_m1.cfg** as models to help you create a file for your particular modem. See “Customizing the Modem Configuration Files” on page 616 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.

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 619 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.
#
# (C) COPYRIGHT International Business Machines Corp. 1996
# All Rights Reserved
# Licensed Materials - Property of IBM
#
# US Government Users Restricted Rights - Use, duplication or
# 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"                    # Numeric 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
DefaultT0 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 modem response.
                                # Trellis modulation disabled
                                # Retrain with adaptive rate
                                # Confirm commands successful
                                # Numeric response code
                                # AT compatible messages
                                # Answer on 2nd ring
                                # Confirm commands successful.

ignore "0\r" or "OK\r\n" timeout 2
send "AT#F0*Q2\r"

expect "0\r" or "OK\r\n" timeout 2
send "ATV0X0S0=2\r"

expect "0\r" timeout 2
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
                                           # Confirm successful command.
                                           # Wait before hanging up.
                                           # Assure command mode.
                                           # Allow mode switching delay.
                                           # Hang up.
                                           # Confirm successful command.

           expect "0\r" or "3\r" timeout 30
           delay 2
           send "+++"
           delay 2
           send "ATH0\r"
           expect "0\r" timeout 2
           done

ripos:   send "AT&F*E0E0\r"      # Reset to factory defaults.
                                           # *E0=data compression disabled
                                           # E0=echo disabled
                                           # Ignore modem response.
                                           # Trellis modulation disabled
                                           # Retrain with adaptive rate
                                           # Confirm successful command.
                                           # Numeric response code
                                           # AT compatible messages
                                           # Auto-Answer disabled
                                           # Confirm commands successful.
                                           #

           ignore "0\r" or "OK\r\n" timeout 2
           send "AT#F0*Q2\r"

           expect "0\r" or "OK\r\n" timeout 2
           send "ATV0X0S0=0\r"

           expect "0\r" timeout 2
           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
DefaultT0 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
DefaultT0 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
DefaultT0 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
DefaultT0 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 "\r" or "OK\r\n" timeout 2 # Ignore modem response.
         send "ATE0T\r"            # Initialize modem: Echo OFF,
         expect "\r" or "OK\r\n" timeout 2 # Enable responses (Numeric),
         send "ATQ0V0X0T\r"        # Limit response codes.
         expect "\r" timeout 2      # Confirm commands successful.
         send "ATS0=0\r"           # Set AutoAnswer OFF
         expect "\r" timeout 2      # Confirm command successful.
         send "AT&C1&D2&R1\r"      # Detect carrier and DTR,
                                     # Ignore RTS.
         expect "\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
DefaultT0 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.
                                # Confirm command successful.
          expect "0\r" timeout 2
          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.
                                                    # Confirm command successful.

expect "0\r" timeout 2
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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