RS/6000 Enterprise Server Model F80
@server pSeries 620 Models 6F0 and 6F1



# Service Guide

SA38-0568-03

**Fourth Edition (April 2002)**

Before using this information and the product it supports, read the information in “Safety Notices” on page xi, Appendix A, “Environmental Notices” on page 391, and Appendix B, “Notices” on page 393.

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## Safety Notices

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

- xii
- 53
- 309
- 339

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

- xii
- xii
- 53
- 309
- 370

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

## Electrical Safety

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

**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.**

**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.**

## Laser Safety Information

**CAUTION:**
**This product may contain a CD-ROM which is a class 1 laser product.**

## 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.**

## 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 Enterprise Server Model F80 and @server pSeries 620 Models 6F0 and 6F1, as well as to adapters and attached devices that do not have their own service information. In this book, the Enterprise Server Model F80 and @server pSeries 620 Models 6F0 and 6F1 are hereafter referred to as the ″system″ or the ″server.″

This book also contains Maintenance Analysis Procedures (MAPs) that are not common to other systems. MAPs that are common to all systems are contained in the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

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

## ISO 9000

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

## Online Publications

RS/6000 and pSeries publications are available online. To access the online books, visit our Web site at: http://www.rs6000.ibm.com/resource/hardware_docs/

## Related Publications

The following publications are available for purchase:

- The *System Unit Safety Information*, order number SA23-2652, contains translations of safety information used throughout this book.
- The *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User's Guide*, order number SA38-0567, contains information to help users set up, install options, configure and modify the system, and solve minor problems.
- The *RS/6000 and @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 *PCI Adapter Placement Reference*, order number SA38-0538, contains guidelines for placement of PCI adapters into I/O slots of Models F80, 6F0, and 6F1 systems. This manual is intended to help when planning to install adapters so that optimum, tested adapter configurations are used.
- The *RS/6000 and @server pSeries 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 *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

- The *Site and Hardware Planning Information*, order number SA38-0508, contains information to help you plan your installation.
- *SSA Adapters User's Guide and Maintenance Information*, order number SA33-3272, is intended to help users and service representatives work with and diagnose problems with SSA adapters and devices.
- *RS/6000 SP Systems Service Guide*, order number GA22-7442, is intended to help users and service representatives work with and diagnose problems with SP systems.
- *Clustered @server Installation and Service Guide*, order number SA22-7863, is intended to help users and service representatives work with and diagnose problems with clustered @server systems.

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- pSeries
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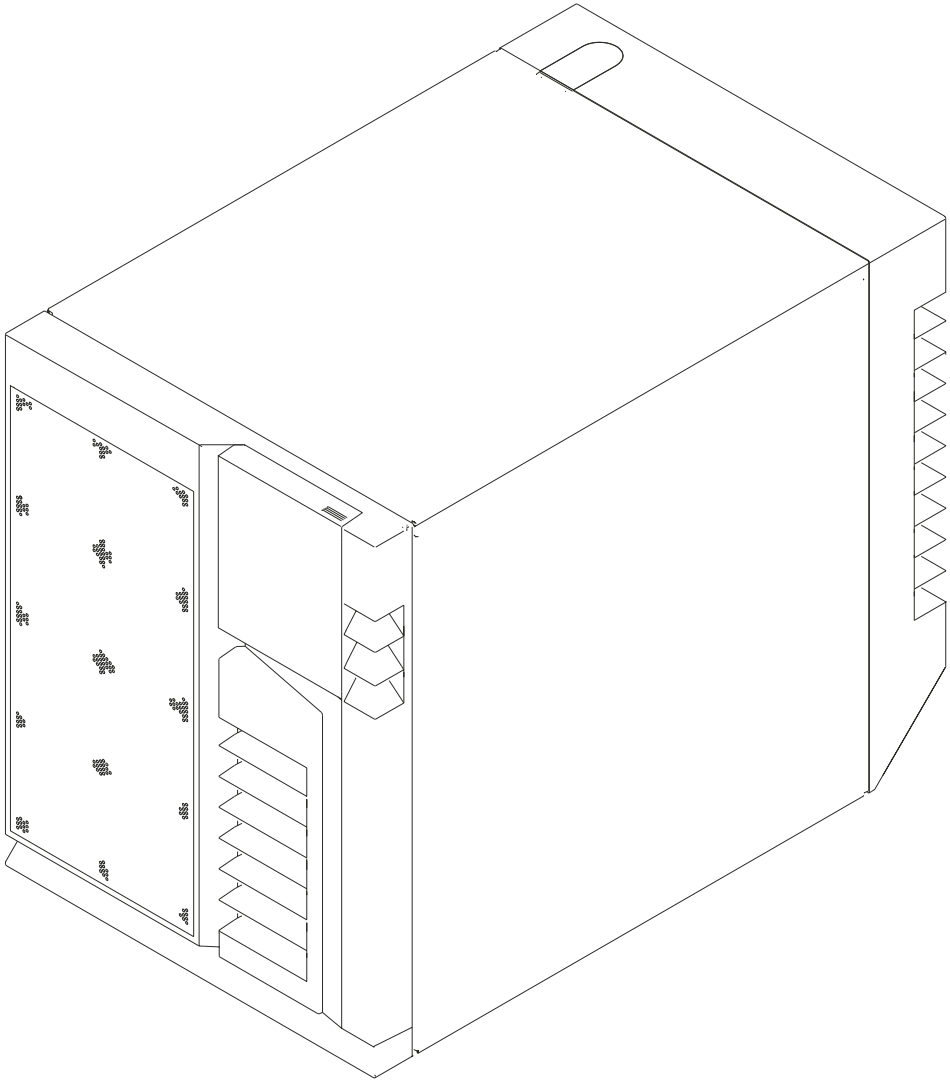
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# Chapter 1. Reference Information

This chapter provides an overview of the system, including a logical description and a physical overview of the system. Additional details pertaining to the system are also provided. These include:

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

## Overview



This system is a high-performance entry server in a deskside system unit. It provides 64-bit symmetric multiprocessing (SMP) with true multithreaded application support in a double-wide deskside box.

## Bus Architecture

Ten PCI slots are available:

- Six of the slots are 64-bit PCI full-sized slots at 66 MHz, 3.3 volts.
- Four of the slots are 64-bit PCI full-sized slots at 33 MHz, 5 volts.
- Bus 1 contains:
  - PCI slot 3
  - PCI slot 4
  - PCI slot 5
  - Integrated Ultra2 SCSI
- Bus 2 contains:
  - PCI slot 6
  - PCI slot 7
  - PCI slot 8
  - Integrated Ethernet (32-bit)
- Bus 3 contains:
  - PCI slot 9
  - PCI slot 10
  - PCI slot 11
  - PCI slot 12

The PCI buses support both 32-bit and 64-bit adapters. Slots 3, 4, 5, 8, 9, and 10 support adapters running at 3.3 volts at up to 66 MHz. Slots 6, 7, 11, and 12 support adapters running at 5 volts at 33 MHz. The server data flows are shown in “Data Flow with One-Way Processor” on page 6 and “Data Flow with Two- to Six-Way Processor” on page 7.

## Microprocessor

The Models F80 and 6F1 can have one to six processors, of either of two processor types, in various configurations:

- Minimum configuration is one 450 MHz processor, which has 2 MB of L2 cache.
- Two or four 450 MHz processors, each with 4 MB of L2 cache.
- Six 500 MHz processors, each with 4 MB of L2 cache.

  OR
- Minimum configuration is either one 600 MHz processor, which has 2 MB of L2 cache, or one 750 MHz processor, which has 8 MB of L2 cache.
- Two or four 600 MHz processors, each with 4 MB of L2 cache.
- Two or four 750 MHz processors, each with 8 MB of L2 cache.
- Six 668 MHz processors, each with 8 MB of L2 cache.
- Six 750 MHz processors, each with 8 MB of L2 cache.

The Model 6F0 can have one to four processors, of either of two processor types, in various configurations:

- Minimum configuration is one 450 MHz processor, which has 2 MB of L2 cache.
- Two or four 450 MHz processors, each with 4 MB of L2 cache.

  OR

- Minimum configuration is either one 600 MHz processor, which has 2 MB of L2 cache, or one 750 MHz processor, which has 8 MB of L2 cache.
- Two or four 600 MHz processors, each with 4 MB of L2 cache.
- Two or four 750 MHz processors, each with 8 MB of L2 cache.

## Memory

- 256 MB (minimum) to 32 GB (maximum).
- One or two memory riser cards; each riser card has 16 sockets. 128 MB, 256 MB, 512 MB and 1 GB dual inline memory modules (DIMMs) are available.
- Certain 32 MB DIMMs from older systems can also be used when upgrading the system memory.

## Media Drives

Three media bays are available:

- Optional media bay (D17) that can accommodate 5.25-inch drives such as CD-ROM drives, tape drives, or other removable media drives
- Standard CD-ROM drive with sliding tray (D16)
- Standard 3.5-inch, 1.44 MB diskette drive (D15)

## Internal Hard Disk Drives

Three bays are available to install disk drives, as follows:

- Disk bay 3, a two-position SCSI disk drive bay (D13 and D14)

  This bay supports two SCSI disk drives.
- Disk bay 2, a six-position hot-plug disk drive bay (D07 - D12)

  This bay can accommodate a six-position SCSI disk drive cage or a six-position SSA disk drive cage.
- Disk bay 1, a six-position hot-plug disk drive bay (D01 - D06)

  This bay can accommodate a six-position SCSI disk drive cage or a six-position SSA disk drive cage.

## Power Supply

- 575-watt power supply (two required), usable with 100-127 V ac (low voltage) or 200-240 V ac (high voltage)

## Keyboard

- Standard: 101-key enhanced keyboard
- Optional: 101/102-key or 106-key enhanced keyboard

## Mouse

- Three-button

## Operator Panel

- 32-character LED diagnostics display
- Power and Reset buttons

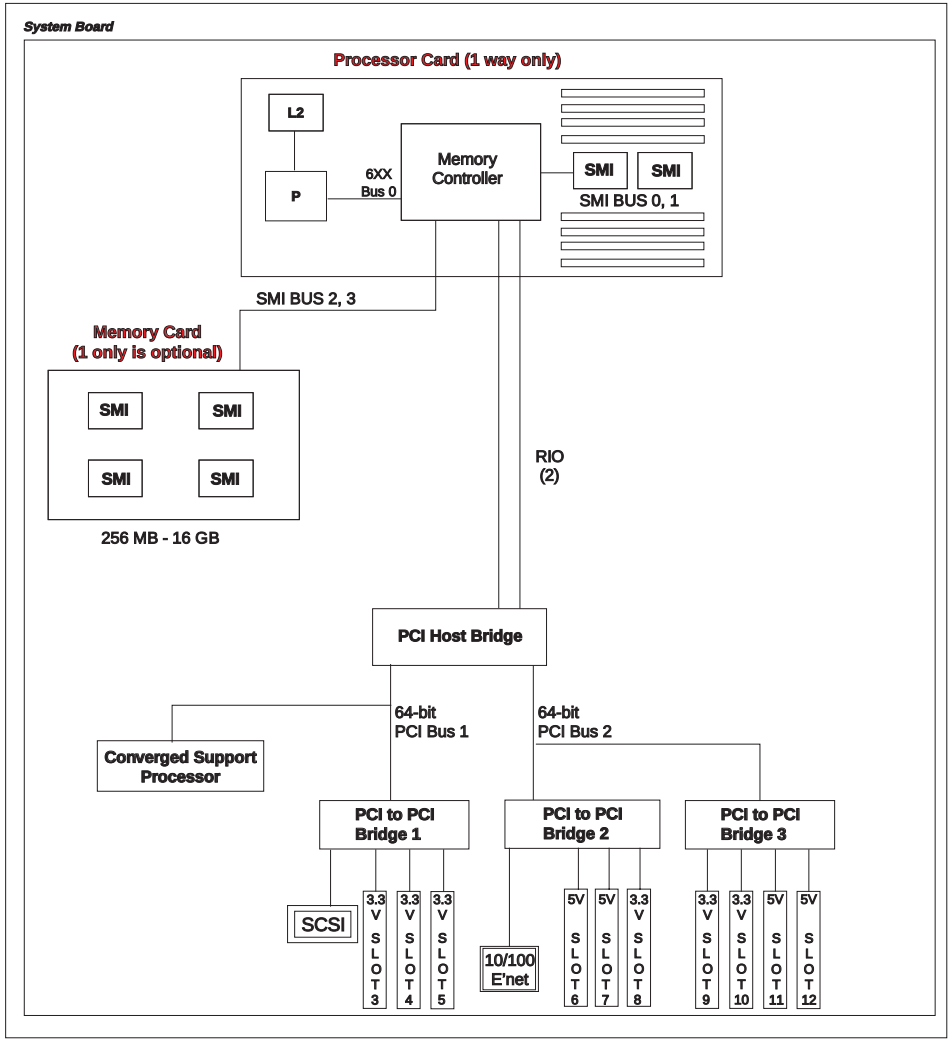
## Input/Output Ports

- 25-pin parallel
- 9-pin serial (4)
- Keyboard
- Mouse
- Ultra 2 SCSI LVD
- 10/100BaseT Ethernet

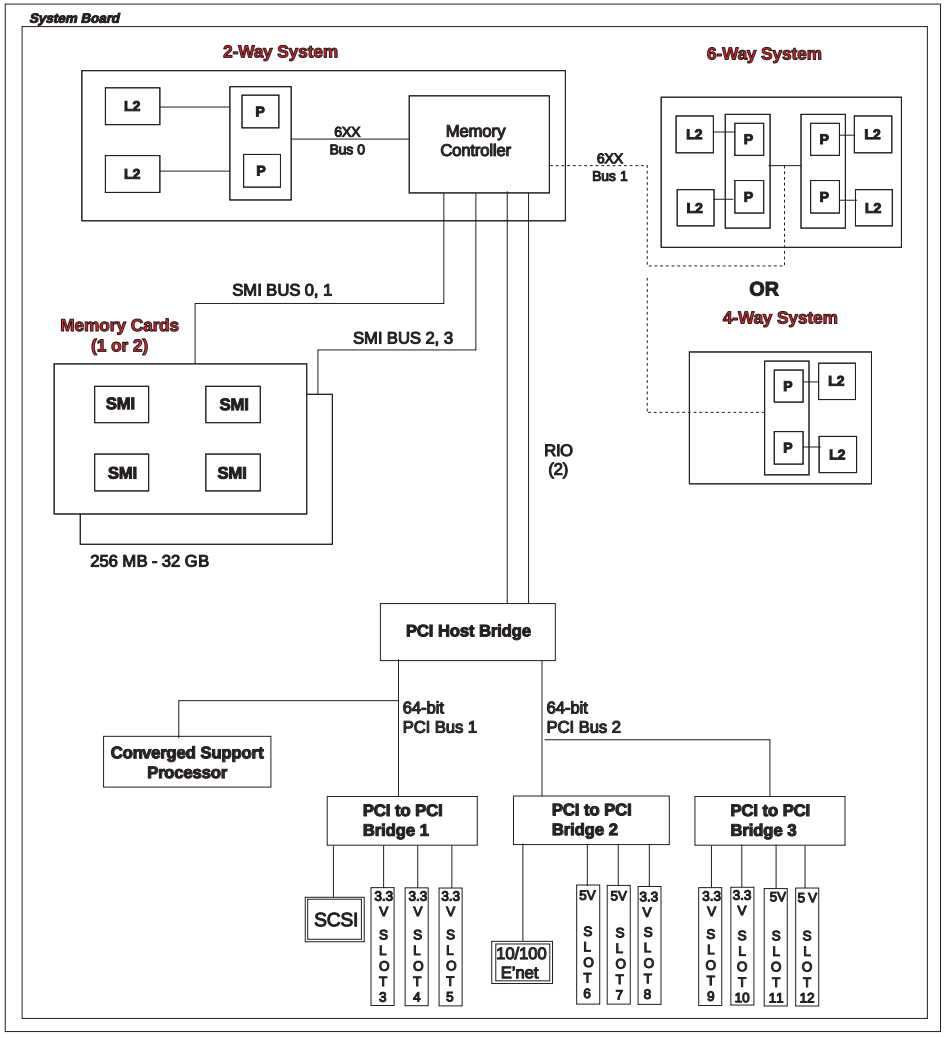
## Security Features

- Power-on password
- Privileged-access password
- Unattended start mode

## Data Flow with One-Way Processor

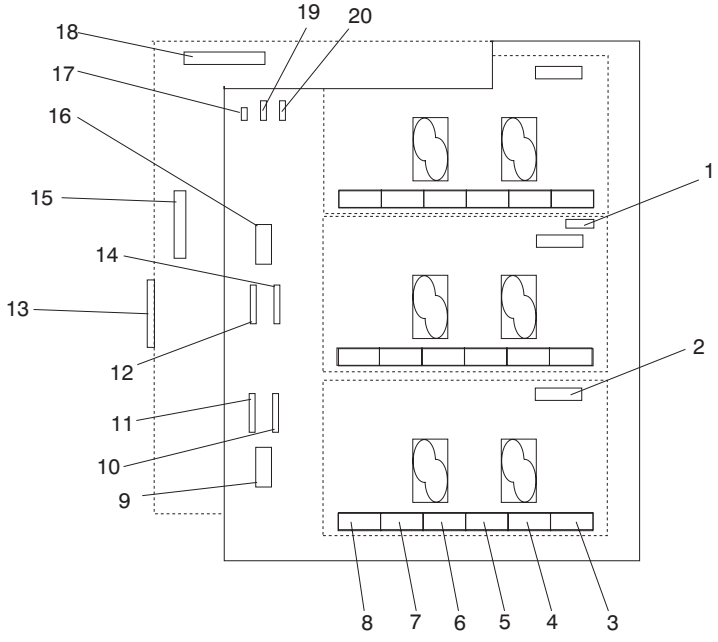


## Data Flow with Two- to Six-Way Processor



## Power Flow

The following diagram shows the right side of the system with the cover removed.




| | | | |
|---|---|---|---|
| **1** | 110 V ac/220 V ac power into system board assembly | **11** | Power 1 to DASD bay 1 (DB1) |
| **2** | 110 V ac/220 V ac power into power supply V1 | **12** | Power 1 to DASD bay 2 (DB2) |
| **3** | 2.5 V dc out of power supply V1 into system board | **13** | Power to cooling fans |
| **4** | 2.5/3.3 V dc out of power supply V1 into system board | **14** | Power 2 to DASD bay 2 (DB2) |
| **5** | 3.3 V dc out of power supply V1 into system board | **15** | Signal to diskette drive |
| **6** | 5 V dc out of power supply V1 into system board | **16** | I2C to DASD bay 2 (DB2) |
| **7** | Ground out of power supply V1 into system board | **17** | Power to diskette drive |
| **8** | 12 V dc out of power supply V1 into system board | **18** | Signal to operator panel |
| **9** | I2C to DASD bay 1 (DB1) | **19** | Power to media drive bay |
| **10** | Power 2 to DASD bay 1 (DB1) | **20** | Power 1 to two-position disk drive bay 3 (DB3) |

## Powering Off and Powering On the System

This section provides procedures for powering off and powering on the system.

## Powering Off the System

If the system is operating under AIX, type the **shutdown** command to power off the system.

If you cannot use this method, you can power off the system by using the following operator-panel power button procedure:

**Attention:** Using the operator-panel power button to power off the system might cause unpredictable results in the data files, and the next IPL will take longer to complete.

1. Open the access door.
2. Press the power button on the operator panel.

   `B0FF` appears in the operator panel display. The operator panel power LED starts blinking at a fast rate.

When the power-off sequence is complete, the system goes into standby power mode, as evidenced by the following:

- `0K` displays in the operator panel display.
- The operator panel power LED starts blinking at a slow rate.

## Powering On the System

Perform the following steps to power on the system:

1. Open the access door. Look for `0K` on the operator panel display, which indicates that the system is in standby mode.
2. Press the power button on the operator panel.

   The power LED on the operator panel starts blinking at a fast rate. Checkpoint codes (9xxx) appear in the operator panel display. For details, see “IPL Flow” on page 83.

When the power-on sequence is complete, the power LED on the operator panel stops blinking and stays on.

## Powering Off and Powering On the System Using the Service Processor

The system can be powered off and on using the System Power Control menu, which is a service processor menu that is available to the privileged user. See “System Power Control Menu” on page 260.

## Console Strategy

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

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

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

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

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

You can also initiate a firmware console selection sequence from the System Management Services (SMS) menus.

## Power-On Self-Test

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

## POST Indicators

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

The POST screen displays the following words:

| | |
|---|---|
| **Memory** | Memory test |
| **Keyboard** | Initialize the keyboard and mouse. The window for pressing a key to access the System Management Services, or to initiate a service mode boot, is now open. See “POST Keys” for more information. |
| **Network** | Self-test on network adapters |
| **SCSI** | Adapters are being initialized |
| **Speaker** | Sounds an audible tone at the end of POST |

## POST Keys

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

**Note:** The program function keys (F1-F12) on a keyboard attached to the system unit are no longer used and will be ignored during POST. After the keyboard POST indicator displays, you must use the numeric number keys to enter input.

### 1 Key

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

### 5 Key

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

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

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 bootlist that was set up using the AIX service aids.

## 8 Key

To enter the open firmware command line, press the numeric 8 key *after* the word **keyboard** displays and before the last word (**speaker**) displays during startup. After you press the 8 key, the remaining POST indicators display until initialization completes.

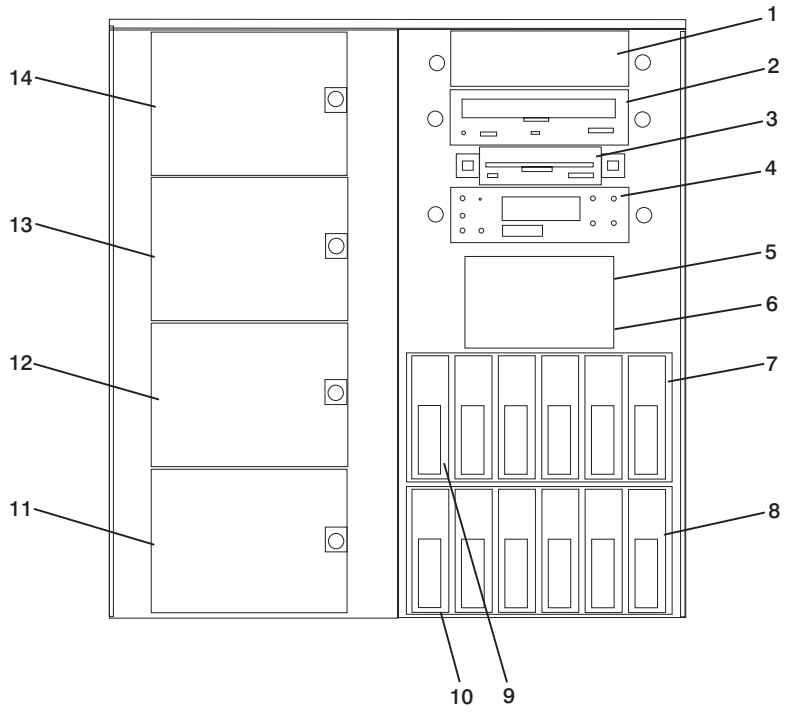
When initialization and POST are complete, the open firmware command line (an `0K` prompt) displays.

The open firmware command line should only be used by service personnel to obtain additional debug information.

To exit from the open firmware command prompt, type `reset-all` or power off the system and reboot.

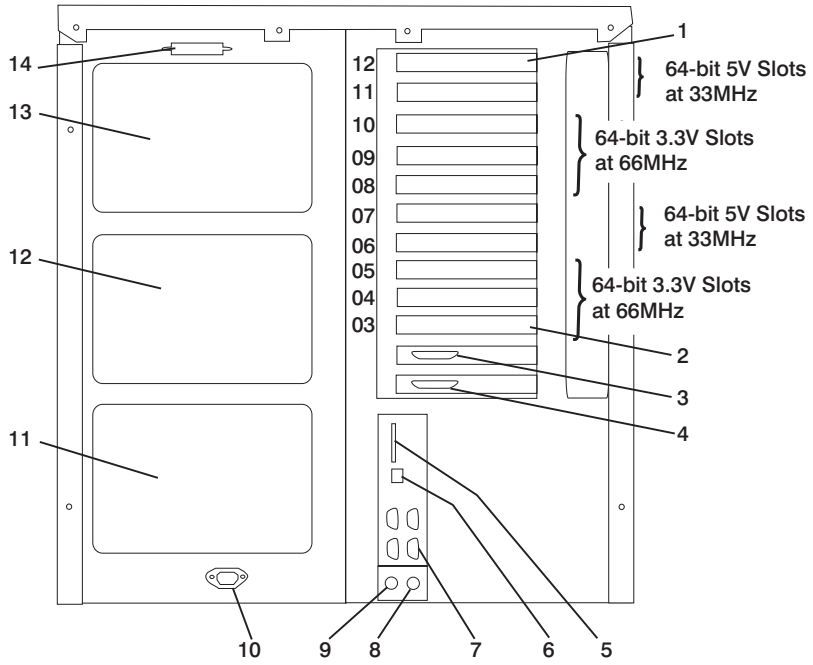
## System Unit Locations

### Front View




| | | | |
|---|---|---|---|
| **1** | **Media Bay (Optional Drive):** Bay D17 - This position is for installing an optional media device. | **5 & 6** | **Two-Position SCSI Disk Drive Bay:** Bay D14 (top), Bay D13 (bottom). Bays for the installation of two SCSI disk drives. |
| **2** | **CD-ROM Drive:** Bay D16 | **7 & 8** | **Disk Drive Bay:** Bank DB2 (top), Bay DB1 (bottom) (SES or SSA). Bays for the installation of SCSI or SSA disk drives or RAID arrays. |
| **3** | **Diskette Drive:** Bay D15 | **9 & 10** | **Disk Drive:** Bay D07 (top left), Bay D12 (top right). Bay D01 (bottom left), Bay D06 (bottom right). Disk drives in a SCSI or SSA disk drive bay. |
| **4** | **Operator Panel Display** | **11 - 14** | **Fan Positions:** Fan F01 (bottom), Fan F04 (top). Fans F01 and F03 are required. Fans F02 and F04 are required only for the redundant power option. |

## Rear View




**1 & 2** **Expansion Slots:** For adding PCI adapters.
- **1** Expansion Slot C12
- **2** Expansion Slot C3

**3** **Test Port:** For testing during manufacturing.

**4** **Parallel Port:** For connecting a parallel printer or other parallel devices.

**5** **External SCSI Port:** For connecting external SCSI devices.

**6** **100BaseT Ethernet Port:** For attaching your computer to an Ethernet/Twisted pair connection through a 100BaseT connector.

**7** **9-Pin Serial Ports:** For a TTY terminal, modem, or other serial devices.*

**8** **Keyboard Port:** For keyboard connection.

**9** **Mouse Port:** For mouse connection.

**10** **Power Connector:** For connecting the power cable.

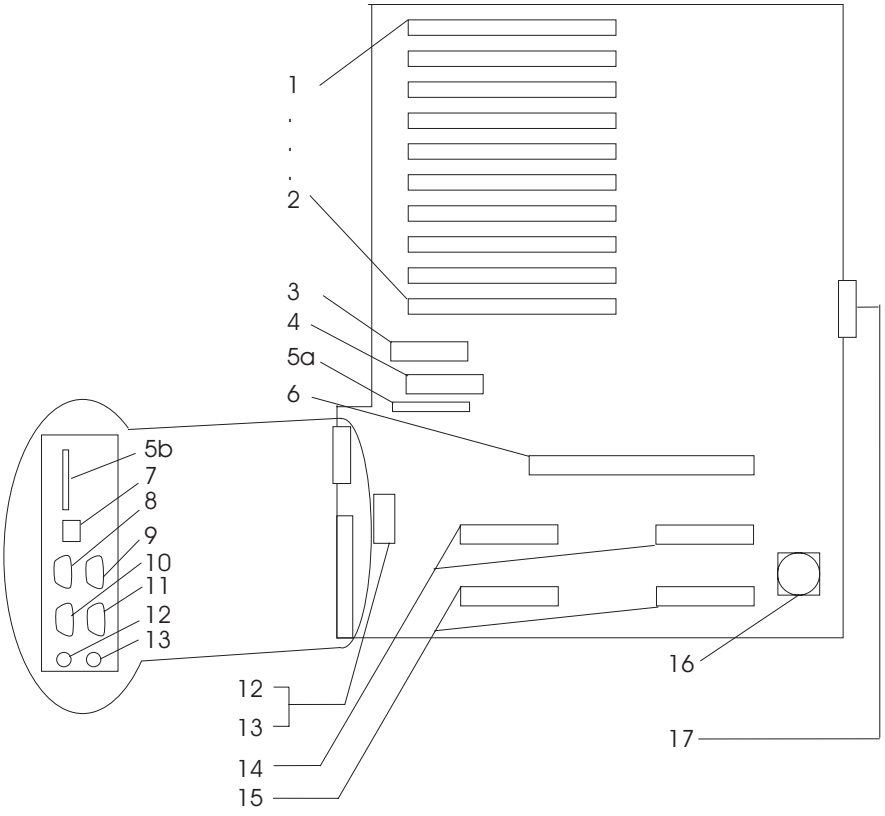
**11 & 12** **Power Supplies:** V1 (bottom), V2 (middle) Power supplies are installed from the side of the system unit.

**13** **Redundant Power Supply V3 (Optional)**

**14** **Disk Drive Bulkhead Connector:** For attaching internal disk drive bays to an SSA adapter or connecting internal hardfiles to the external SCSI port **(5)** or a SCSI adapter.

*Serial ports 1 and 2 can only be used for service processor menus. No ″heartbeat-type″ devices can be used on these ports. ″Heartbeat-type″ devices or cables must be installed on serial port 3 or serial port 4.

## System Board

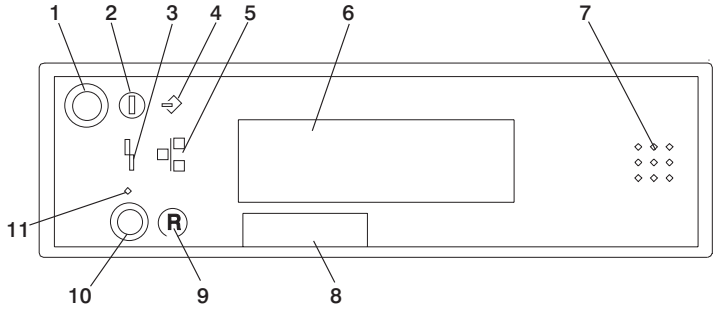



| | | | |
|---|---|---|---|
| **1 & 2** | **Expansion Slots:** For adding PCI adapters.<br>**1** Expansion Slot C12<br>**2** Expansion Slot C3 | **8 - 11** | **9-Pin Serial Ports:** For a TTY terminal, modem, or other serial devices. |
| **3** | **Test Port:** For manufacturing use only. | **12** | **Mouse Port** |
| **4** | **Parallel Port** | **13** | **Keyboard Port** |
| **5** | **SCSI Port**<br>• 5a Internal Port 1 speed must be set to fast/wide<br>• 5b External Port 2 Ultra-2 | **14 & 15** | **Memory Riser Card Slots** |
| **6** | **Processor Card Connector** | **16** | **Battery** |
| **7** | **100BaseT Ethernet Port** | **17** | **Fan Cable Connector** |

**Note:** For locations of diskette and operator panel connectors, see “Power Flow” on page 8. For AIX location codes and physical location codes, see “System Board Locations” on page 22.

## Operator Panel

The following diagram shows the locations of the operator panel display and the operator panel pushbuttons.




| | | | |
|---|---|---|---|
| **1** | **Power-On Button** | **7** | **Speaker** |
| **2** | **Power-On LED (Green)** | **8** | **Serial Number Plate** |
| **3** | **System Attention LED (Yellow)** | **9** | **Reset Icon** |
| **4** | **SCSI Activity LED (Green)** | **10** | **Reset Button** |
| **5** | **LAN Activity LED (Green)** | **11** | **Service Processor Reset Button** |
| **6** | **Operator Panel Display** | | |

**Note:** The service processor reset button must be activated very carefully. An insulated paper clip is recommended. Unbend the clip so that it has a straight section about two inches long. Insert the clip straight into the hole, keeping the clip perpendicular to the plastic bezel. When you engage the reset switch, you should feel the detent of the switch. After you press the switch, the service processor resets and then shuts down the system.

## System Memory

Two slots are available for memory riser cards. Each riser card had 16 sockets. See “System Board” on page 15, which illustrates the positions of the memory riser cards in the system.

Four sizes of DIMMs are available: 128 MB, 256 MB, 512 MB, and 1 GB. Certain 32 MB DIMMs from older RS/6000 systems can also be used when upgrading system memory.

## One-Way Processor Memory Placement Rules

The rules for one-way processor memory are as follows:

- Minimum memory is 1 pair of DIMMs in slots 1 and 8 (see “Processor Card Memory DIMM Locations for Service Processor Menus” on page 270).
- Maximum memory is 4 DIMM pairs in slots 1 through 8 (see “Processor Card Memory DIMM Locations for Service Processor Menus” on page 270).
- Each memory riser slot must have a memory filler card installed.

- When you are installing a memory riser card:
  - Memory DIMMs must be moved from the one-way processor card to the memory riser card.
  - The memory riser card must then have a minimum of 1 quad (four DIMMs).

### Riser Card Memory Placement Rules

The rules for memory riser cards are as follows:

- Memory quads must contain DIMMs of equal memory size.
- Quad memory size may be mixed on a riser card.
- The minimum memory is four DIMMs, which must occupy quad A, slots 1, 2, 15 and 16 (see “Memory Riser Card and Memory DIMM Locations” on page 23).
- Populate the riser card starting with quad A and continuing with quads B, C, and D (see “Memory Riser Card and Memory DIMM Locations” on page 23).

## Logical and Physical Locations

This 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 unit’s firmware and the AIX operating system.

## 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 connector to parent. The following are examples:

- P1-C1 identifies a processor card C1 plugged into planar P1.
- P1-M1 identifies a memory riser card M1 plugged into planar P1.
- P-1-Z1-A3 identifies a SCSI device with SCSI ID 3 attached to SCSI bus 1 on planar 1.
- P1-K1 identifies a keyboard attached to K1 on planar P1.
- P1/S1 identifies serial port 1 controller on planar P1, the connector for serial port 1, or the cable attached to serial port 1.
- P1-I2/E3 identifies an Ethernet controller 3, on the card in slot 2 (I2) on planar 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 P1.

The period (·) identifies sublocations (DIMMs on a memory riser card, SCSI addresses, cables). The following are examples:

- P1-M1.4 identifies DIMM 4 on memory riser card 1 plugged into planar P1.
- P1-C1.1 identifies processor 1 on processor card 1 plugged into planar 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 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 P1.

Depending on the AIX and firmware levels, AIX diagnostics may include the extended location information when identifying a planar 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 as described in Chapter 5, “Error Code to FRU Index” on page 105, a location code for a failing part may also be specified. If the location code includes a blank space followed by a lowercase `x` followed by a number, this is an error code with multiple FRU callouts. This error can typically happen with memory DIMMs, memory riser cards, 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.

For example, if the location code `P1-M1.1 x2` was displayed, this indicates memory pair A (two DIMMs) on the first memory riser card was suspected.

You can determine the FRU part numbers of the electronic assemblies in the system in two ways:

- 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).

- Typing the **lscfg -vp | pg** command on the AIX command line

  Type the following command: `lscfg -vp | pg` to display the detailed VPD of all assemblies. Notice that the FRU part number information for processors and memory DIMMs may be at the bottom of the command output.

## AIX Location Codes

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

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

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

- The AB value identifies a bus type or PCI parent bus as assigned by the firmware.
- The CD value identifies adapter number, 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.

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

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

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.

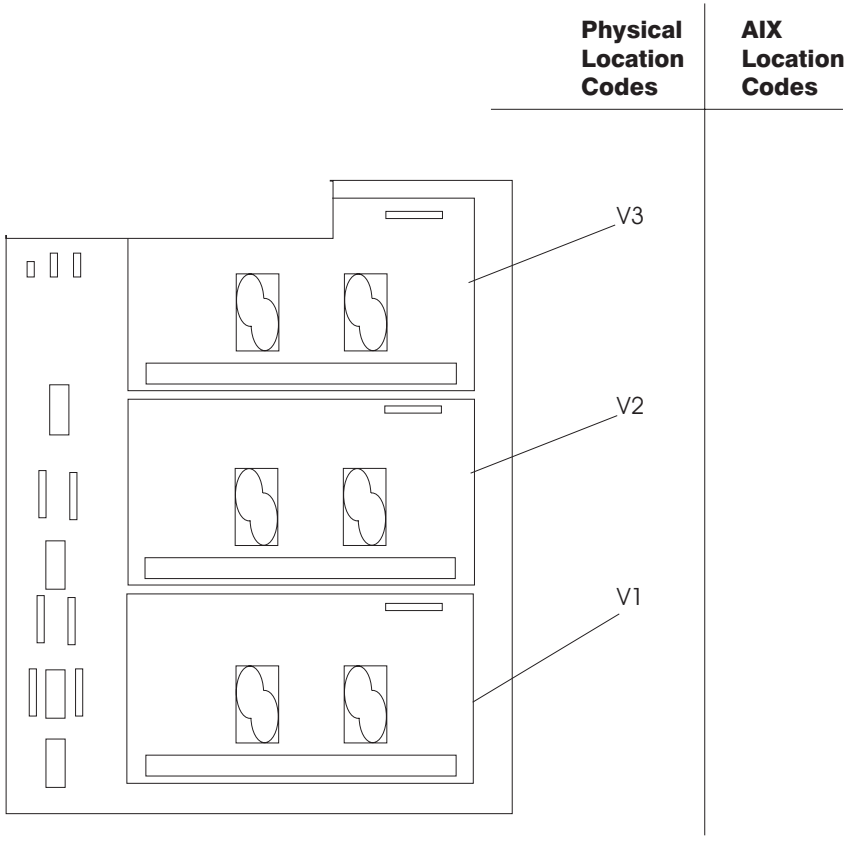
Examples of physical location codes and AIX location codes are:
- PCI adapter in Slot 1
- Location code P1-I1
- AIX location code 20-58

## AIX and Physical Location Code Reference Tables

The following diagrams identify the physical locations in the system. These locations correspond to the tables on “System Location Codes” on page 25, which contain location codes that are used to identify functional units in the system.

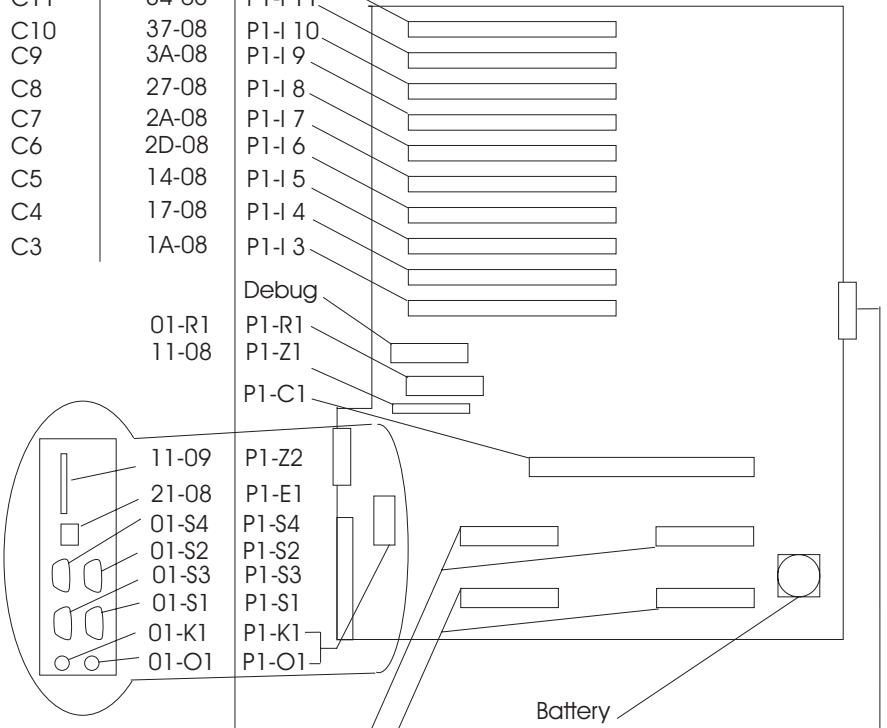
The following diagram shows the right side of the system with the cover removed.

### Power Supply Locations



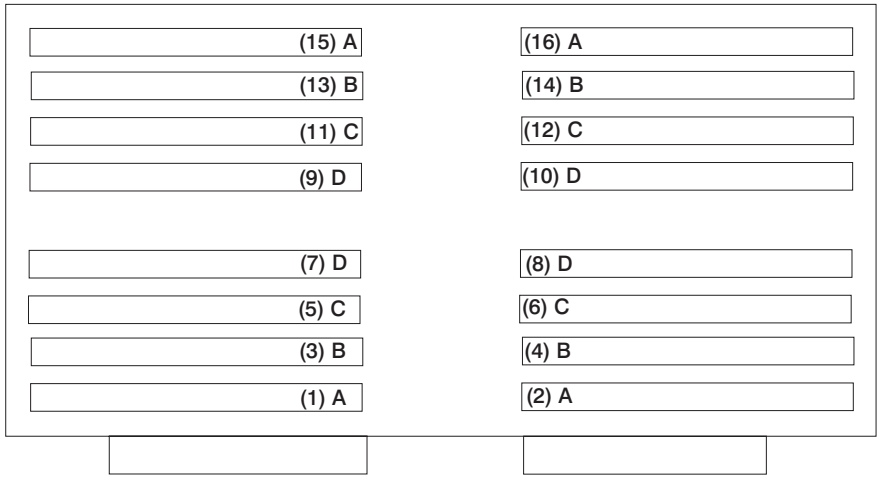
## System Board Locations

| Slot Name | AIX Location Codes | Physical Location Codes |
|---|---|---|
| C12 | 31-08 | P1-I 12 |
| C11 | 34-08 | P1-I 11 |
| C10 | 37-08 | P1-I 10 |
| C9 | 3A-08 | P1-I 9 |
| C8 | 27-08 | P1-I 8 |
| C7 | 2A-08 | P1-I 7 |
| C6 | 2D-08 | P1-I 6 |
| C5 | 14-08 | P1-I 5 |
| C4 | 17-08 | P1-I 4 |
| C3 | 1A-08 | P1-I 3 |
| | | Debug |
| | 01-R1 | P1-R1 |
| | 11-08 | P1-Z1 |
| | | P1-C1 |
| | 11-09 | P1-Z2 |
| | 21-08 | P1-E1 |
| | 01-S4 | P1-S4 |
| | 01-S2 | P1-S2 |
| | 01-S3 | P1-S3 |
| | 01-S1 | P1-S1 |
| | 01-K1 | P1-K1 |
| | 01-O1 | P1-O1 |
| | 00-00 | P1-M1 |
| | 00-00 | P1-M2 |



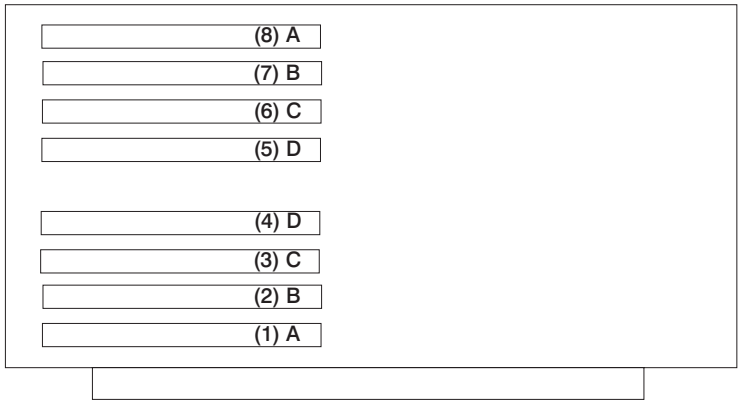

**Note:** See “System Board” on page 15 for descriptions of connectors.

## Memory Riser Card and Memory DIMM Locations




| Location Code | Memory DIMMs |
|---|---|
| P1-M1.n | Memory DIMMs on riser card 1 (n denotes DIMM number) |
| P1-M2.n | Memory DIMMs on riser card 2 (n denotes DIMM number) |
| P1-M1.1 x4 | Memory quad A (DIMMs 1, 2, 15, 16) |
| P1-M1.3 x4 | Memory quad B (DIMMs 3, 4, 13, 14) |
| P1-M1.5 x4 | Memory quad C (DIMMs 5, 6, 11, 12) |
| P1-M1.7 x4 | Memory quad D (DIMMs 7, 8, 9, 10) |
| P1-M2.1 x2 | Memory pair A (DIMMs 1 and 15) |
| P1-M2.1 x4 | Memory quad A (DIMMs 1, 2, 15, 16) |
| P1-M2.3 x4 | Memory quad B (DIMMs 3, 4, 13, 14) |
| P1-M2.5 x4 | Memory quad C (DIMMs 5, 6, 11, 12) |
| P1-M2.7 x4 | Memory quad D (DIMMs 7, 8, 9, 10) |
| P1-M1.1 x16 | All memory DIMMs on riser card 1 |
| P1-M2.1 x16 | All memory DIMMs on riser card 2 |
| P1-M1 x2 | All memory DIMMs on riser cards 1 and 2 |

## One-Way Processor Card Memory DIMM Locations




| Location Code | Memory DIMMs |
|---|---|
| P1-C1-Mn | Memory DIMMs on processor card (n denotes DIMM number) |
| P1-C1-M1 x2 | Memory pair A (DIMMs 1 and 8) |
| P1-C1-M2 x2 | Memory pair B (DIMMs 2 and 7) |
| P1-C1-M3 x2 | Memory pair C (DIMMs 3 and 6) |
| P1-C1-M4 x2 | Memory pair D (DIMMs 4 and 5) |
| P1-C1-M1 x8 | All memory DIMMs on processor card |

## System Location Codes

If a returned value is not listed in this table, see ″Physical Location Code Standard Prefixes″ under ″Diagnostic Numbers and Codes″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

| FRU Name | Slot Name | Location Code | AIX Location Code | Physical Connection | Logical Connection |
|---|---|---|---|---|---|
| System board | | P1 | | | |
| Processor Card | C01 | P1-C1 | | | |
| Processor 1 | | P1-C1 | 00-00 | | |
| Processor 2 | | P1-C1 | 00-02 | | |
| Processor 3 | | P1-C1 | 00-04 | | |
| Processor 4 | | P1-C1 | 00-06 | | |
| Processor 5 | | P1-C1 | 00-08 | | |
| Processor 6 | | P1-C1 | 00-0A | | |
| Memory DIMMs (1-way) | | P1-C1-M1 to P1-C1-M8 | 00-00 | See “One-Way Processor Card Memory DIMM Locations” on page 24 | |
| Memory riser card 1 | M01 | P1-M1 | 00-00 | | |
| Memory DIMM 1-16 | | P1-M1.1 to P1-M1.16 | 00-00 | See “Memory Riser Card and Memory DIMM Locations” on page 23 | |
| Memory riser card 2 | M02 | P1-M2 | 00-00 | | |
| Memory DIMM 1-16 | | P1-M2.1 to P1-M2.16 | 00-00 | See “Memory Riser Card and Memory DIMM Locations” on page 23 | |
| PCI Host Bridge Bus 1 | | P1 | 00-fff7f09000 | | |
| ISA Bus | | P1 | 10-80 | | |
| PCI to PCI Bridge 1 | | P1 | 10-58, 10-5A, 10-5C, 10-5E | | |

| FRU Name | Slot Name | Location Code | AIX Location Code | Physical Connection | Logical Connection |
|---|---|---|---|---|---|
| PCI Slot 3 | C03 | P1/I3 | 10-5A | J10, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 1 |
| PCI Slot 3 Device | | P1-I3 | 1A-08 to 1A-0F or 1B-xx or 1C-xx | J10, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 1 |
| PCI Slot 4 | C04 | P1/I4 | 10-5C | J11, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 1 |
| PCI Slot 4 Device | | P1-I4 | 17-08 to 17-0F or 18-xx or 19-xx | J11, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 1 |
| PCI Slot 5 | C05 | P1/I5 | 10-5E | J12, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 1 |
| PCI Slot 5 Device | | P1-I5 | 14-08 to 14-0F or 15-xx or 16-xx | J12, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 1 |
| Internal SCSI controller | | P1/Z1 | 11-08 | | PCI to PCI Bridge 1 |
| External SCSI controller | | P1/Z2 | 11-09 | | PCI to PCI Bridge 1 |
| PCI Host Bridge Bus 2 | | P1 | 00-fff7f0a000 | | |
| PCI to PCI Bridge 2 | | P1 | 20-58, 20-5A, 20-5B (unused), 20-5C, 20-5E | | |
| PCI Slot 6 | C06 | P1/I6 | 20-5A | J13, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 2 |
| PCI Slot 6 Device | | P1-I6 | 2D-08 to 2D-0F or 2E-xx or 2F-xx | J13, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 2 |
| PCI Slot 7 | C07 | P1/I7 | 20-5C | J14, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 2 |

| FRU Name | Slot Name | Location Code | AIX Location Code | Physical Connection | Logical Connection |
|---|---|---|---|---|---|
| PCI Slot 7 Device | | P1-I7 | 2A-08 to 2A-0F or 2B-xx or 2C-xx | J14, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 2 |
| PCI Slot 8 | C08 | P1/I8 | 20-5E | J14, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 2 |
| PCI Slot 8 Device | | P1-I8 | 27-08 to 27-0F or 28-xx or 29-xx | J14, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 2 |
| Integrated Ethernet | | P1/E1 | 21-08 | | PCI to PCI Bridge 2 |
| PCI to PCI Bridge 3 | | P1 | 20-60, 20-62, 20-63, 20-64, 20-65 (unused), 20-66, | | |
| PCI Slot 9 | C09 | P1/I9 | 20-60 | J16, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 3 |
| PCI Slot 9 Device | | P1-I9 | 3A-08 to 3A-0F or 3B-xx or 3C-xx | J16, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 3 |
| PCI Slot 10 | C10 | P1/I10 | 20-62 | J17, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 3 |
| PCI Slot 10 Device | | P1-I10 | 37-08 to 37-0F or 38-xx or 39-xx | J17, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 3 |
| PCI Slot 11 | C11 | P1/I11 | 20-64 | J18, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 3 |
| PCI Slot 11 Device | | P1-I11 | 34-08 to 34-0F or 35-xx or 36-xx | J18, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 3 |
| PCI Slot 12 | C12 | P1/I12 | 20-66 | J19, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 3 |

| FRU Name | Slot Name | Location Code | AIX Location Code | Physical Connection | Logical Connection |
|---|---|---|---|---|---|
| PCI Slot 12 Device | | P1-I12 | 31-08 to 31-0F or 32-xx or 33-xx | J19, 64 BIT See Note 1 on page 30. | PCI to PCI Bridge 3 |
| Diskette Controller | | P1/D1 | 01-D1 | | |
| Diskette Drive | D15 | P1-D1 | 01-D1-00-00 | | |
| Keyboard Controller/Connector | | P1/K1 | 01-K1-00 | | |
| Keyboard | | P1-K1 | 01-K1-00-00 | | |
| Mouse Controller | | P1/K1 | 01-K1-01 | | |
| Mouse Connnector | | P1/O1 | 01-K1-01 | | |
| Mouse | | P1-O1 | 01-K1-01-00 | | |
| Parallel Port Controller | | P1/R1 | 01-R1 | | |
| Serial Port 1 Controller | | P1/S1 | 01-S1 | | |
| Serial Port 2 Controller | | P1/S2 | 01-S2 | | |
| Serial Port 3 Controller | | P1/S3 | 01-S3 | | |
| Serial Port 4 Controller | | P1/S4 | 01-S4 | | |
| TOD Battery | | P1-V4 | | | |
| System Firmware | | P1/Y1 | | | |
| Service Processor Firmware | | P1/Y2 | | | |
| PRD Code | | P1/Y2 | | | |
| SPCN Firmware | | P1/Y3 | | | |
| SPCN VPD | | P1/Y4 | | | |
| Operator Panel | NB1 | L1 | | | |
| Operator Panel VPD Module | | L1-N1 | | | |
| Fan 1 | F01 | F1 | | | |
| Fan 2 | F02 | F2 | | | |
| Fan 3 | F03 | F3 | | | |
| Fan 4 | F04 | F4 | | | |
| Power Supply 1 | | V1 | | | |
| Power Supply 2 | | V2 | | | |
| Power Supply 3 | | V3 | | | |
| DASD 6-Pack 1 backplane (SES or SSA) | DB1 | B1 | SCSI: xx-xx-00-15,0 SSA: See Note 4 on page 30. | See Note 3 on page 30. | |

| FRU Name | Slot Name | Location Code | AIX Location Code | Physical Connection | Logical Connection |
|---|---|---|---|---|---|
| DASD 6-Pack 1, Drive 1 | D1 | B1.1 | SCSI: xx-xx-00-8,0 SSA: See Note 4 on page 30. | | |
| DASD 6-Pack 1, Drive 2 | D2 | B1.2 | SCSI: xx-xx-00-9,0 SSA: See Note 4 on page 30. | | |
| DASD 6-Pack 1, Drive 3 | D3 | B1.3 | SCSI: xx-xx-00-10,0 SSA: See Note 4 on page 30. | | |
| DASD 6-Pack 1, Drive 4 | D4 | B1.4 | SCSI: xx-xx-00-11,0 SSA: See Note 4 on page 30. | | |
| DASD 6-Pack 1, Drive 5 | D5 | B1.5 | SCSI: xx-xx-00-12,0 SSA: See Note 4 on page 30. | | |
| DASD 6-Pack 1, Drive 6 | D6 | B1.6 | SCSI: xx-xx-00-13,0 SSA: See Note 4 on page 30. | | |
| DASD 6-Pack 2 backplane (SES or SSA) | DB2 | B2 | SCSI: xx-xx-00-15,0 SSA: See Note 4 on page 30. | See Note 3 on page 30. | |
| DASD 6-Pack 2, Drive 1 | D7 | B2.1 | SCSI: xx-xx-00-8,0 SSA: See Note 4 on page 30. | | |
| DASD 6-Pack 2, Drive 2 | D8 | B2.2 | SCSI: xx-xx-00-9,0 SSA: See Note 4 on page 30. | | |

| FRU Name | Slot Name | Location Code | AIX Location Code | Physical Connection | Logical Connection |
|---|---|---|---|---|---|
| DASD 6-Pack 2, Drive 3 | D9 | B2.3 | SCSI: xx-xx-00-10,0 SSA: See Note 4. | | |
| DASD 6-Pack 2, Drive 4 | D10 | B2.4 | SCSI: xx-xx-00-11,0 SSA: See Note 4. | | |
| DASD 6-Pack 2, Drive 5 | D11 | B2.5 | SCSI: xx-xx-00-12,0 SSA: See Note 4. | | |
| DASD 6-Pack 2, Drive 6 | D12 | B2.6 | SCSI: xx-xx-00-13,0 SSA: See Note 4. | | |
| 2-Pack DASD Drive 1 | D13 | P1-Z1-A4 | 11-08-00-4,0 | See Note 2. | |
| 2-Pack DASD Drive 2 | D14 | P1-Z1-A2 | 11-08-00-2,0 | See Note 2. | |
| Tape Drive | D17 | P1-Z1-A0 | 11-08-00-0,0 | See Note 2. | |
| CD-ROM Drive | D16 | P1-Z1-A1 | 11-08-00-1,0 | See Note 2. | |

**Notes:**

1. The physical location code for the PCI slots, when empty, uses the P1/Ix notation, where the '/' identifies an integrated device (in this case the empty slot). A PCI device plugged into the slot uses the P1-Ix notation, where the '–' identifies a plugged device.
2. 11 is for the integrated SCSI device. -4,0 and -2,0 are hardcoded on the DASD 2-pack; -0,0 is the tape drive; -1,0 is the CD-ROM.
3. xx-xx is dependent on which SCSI controller is driving the 6-pack.
4. Use the link verification utility in the SSA service aids under AIX diagnostics to identify individual SSA drives.

## Specifications

This section contains specifications for the system.

The mechanical packaging, cooling, power supply, and environmental requirements for the system are as follows:

## Dimensions

In horizontal orientation, the dimensions are:

- Height - 610 mm (24.0 inches)
- Width - 483 mm (19.0 inches)

- Depth - 728 mm (28.7 inches)

## Weight

70 kg (155 lb) Minimum to 95 kg (209 lb) Maximum

## Operating Environment

Temperature - 10° to 38°C (50° to 100°F)

Humidity - 8% to 80% noncondensing

Wet Bulb - 23° C (73° F) operating and nonoperating

Maximum Altitude - 2135 m (7000 feet)

## Operating Voltage

### 100 to 125 V ac 50 to 60 Hz:

- Power Source Loading
  0.86kVA maximum
- Electrical Output
  780 watts

### 200 to 245 V ac 50 to 60 Hz

- Power Source Loading
  1.2kVA maximum
- Electrical Output
  1090 watts maximum

## Heat Output (Maximum)

**Operating** 478 BTUs per hour

## Acoustics

- Non-Redundant:
  - 2 Way/4 Way:
    **Operating** 6.1 Bels
    **Idle** 5.9 Bels
- Redundant:
  - 6 Way:
    **Operating** 6.8 Bels
    **Idle** 6.6 Bels

### System Service Clearances

Install the system so that it can be moved to an area providing 457 mm (18 in.) on the front and 457 mm (18 in.) on the left side.

If you are planning to install a Models F80, 6F0, or 6F1 system in an RS/6000 SP system environment, refer to *RS/6000 SP Planning Volume 1, Hardware and Physical Environment*, order number GA22-7280, for server-planning information.

## External AC Power Cables

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

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

- Electrical cables, type ST
- Attachment plugs complying with National Electrical Manufacturers Association (NEMA) L6-30P
- Appliance couplers complying with International Electrotechnical Commission (IEC) Standard 320, Sheet C13 and C14

Power cables used in other countries consist of the following:

- Electrical cables, Type HD21 or HD22
- Attachment plugs approved by the appropriate testing organization for the specific countries where they are used
- Appliance couplers complying with the International Electrotechnical Commission (IEC) Standard 320, Sheet C13 and C14

Refer to "Power Cords" on page 384 for power cable replacement information.

## Service Inspection Guide

Perform a service inspection on the server when:

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

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

**Note:** The owner of the server is responsible to correct any unsafe condition.

Perform the following checks:

1. Check the covers for sharp edges and for damage or alterations that expose the internal parts of the server unit.
2. Check the covers for proper fit to the server unit. They should be in place and secure.
3. Perform the appropriate power-off procedures.
4. Open the covers.
5. Check for alterations or attachments. If there are any, check for obvious safety hazards, such as broken wires, sharp edges, or broken insulation.
6. Check the internal cables for damage.
7. Check for dirt, water, and any other contamination within the server unit.
8. Check the voltage label on the back of the server unit to ensure that it matches the voltage at the outlet.
9. Check the external power cable for damage.
10. With the external power cable connected to the server unit, check for 0.1 ohm or less resistance between the ground lug on the external power cable plug and the metal frame.
11. 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.
12. Close the doors.
13. Perform the appropriate power-on procedures.

# Chapter 2. Diagnostics Overview

Models F80, 6F0, and 6F1 systems use an integrated set of software diagnostic procedures to facilitate isolation of failing components and system maintenance. This book, along with the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*, are the basis of the diagnostic procedures for Models F80, 6F0, and 6F1 systems. In particular, the following sections in this book are important for the trained service representative to understand and use when isolating a failure on the system:

- Chapter 4, “Checkpoints” on page 83
- Chapter 5, “Error Code to FRU Index” on page 105
- Chapter 6, “Loading the System Diagnostics In Service Mode” on page 249
- Chapter 10, “Parts Information” on page 377

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

## Maintenance Analysis Procedures (MAPs)

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

The MAPS are as follows:

- Entry MAP
- Quick Entry MAP
- Problem Determination MAP
- Power MAP
- Minimum Configuration MAP

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

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

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

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

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

## Checkpoints

These servers use various types of checkpoints, error codes, and SRNs, which are referred to throughout this book (primarily in Chapter 4, “Checkpoints” on page 83, Chapter 5, “Error Code to FRU Index” on page 105, Chapter 6, “Loading the System Diagnostics In Service Mode” on page 249, and Chapter 10, “Parts Information” on page 377). These codes may appear in the service processor boot progress log, the AIX error log, and the operator panel display. Understanding the definition and relationships of these codes is important to the service personnel who are installing or maintaining these servers.

Codes that can appear on the operator panel or in error logs are as follows:

**Checkpoints**

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

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

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

**Exxx** Exxx checkpoints indicate that a system processor is in control and is initializing the system resources. Control is being passed to AIX when `E105` (normal mode boot) or `E15B` (service mode boot) displays on the operator panel.

**Note:** Location code information may also display on the operator panel during this time.

**0xxx** 0xxx codes are AIX checkpoints and configuration codes. Location codes may also be shown on the operator panel display during this time.

**2xxx** 2xxx codes are AIX checkpoints and configuration codes. Location codes may also be shown on the operator panel display during this time.

**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.

**Error Codes**

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

Checkpoints can become error codes if the system fails to advance past the point at which the code was presented.

For a list of checkpoints, see Chapter 4, "Checkpoints" on page 83. Each entry provides a description of the event and the recommended action if the system fails to advance.

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

## FRU Isolation

For a list of error codes and recommended actions for each code, see Chapter 5, "Error Code to FRU Index" on page 105. These actions can refer to Chapter 10, "Parts Information" on page 377, Chapter 3, "Maintenance Analysis Procedures (MAPs)" on page 41, or provide informational message and directions. If a replacement part is indicated, direct reference is made to the part name. The respective AIX and physical location codes are listed for each occurrence as required. For a list of locations codes, see "AIX and Physical Location Code Reference Tables" on page 21.

To look up part numbers and view component diagrams, see Chapter 10, "Parts Information" on page 377. 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 which make up these servers.

## Electronic Service Agent for the @server pSeries and RS/6000

Service support for your system can be enhanced through the use of the application program, Electronic Service Agent. This application provides a number of advantages for the systems customer, including automatic error reporting and analysis without customer intervention. The Electronic Service Agent kit includes the *Electronic Service Agent for @server pSeries and RS/6000* CD, order number LCD4–1060, which contains documentation to help you set up and use Electronic Service Agent.

## Using the Service Processor and Electronic Service Agent Features

The service processor and Electronic 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.

## Service Processor

The service processor runs on its own power boundary and continually monitors hardware attributes, the AIX operating system, and the environmental conditions within the system. Any system failure which prevents the system from returning to an operational state (a fully functional AIX operating system) is reported by the service processor. The service processor is controlled by firmware and does not require the AIX operating system to be operational to perform its tasks. If any system failures are detected, the service processor has the ability to take predetermined corrective actions. The methods of corrective actions are:

- Surveillance
- Call home
- AIX operating system monitoring

Surveillance is a function in which the service processor monitors the system through *heartbeat* communication with the system firmware. The heartbeat is a periodic signal that the firmware can monitor. During system startup, the firmware surveillance monitor is automatically enabled to check for heartbeats from the firmware. If a heartbeat is not detected within a default period, the service processor cycles the system power and attempts to restart until the system either restarts successfully, or a predetermined retry threshold is reached. In the event the service processor is unsuccessful in bringing the system online (or in the event that the user asked to be alerted to any service processor-assisted restarts), the system can call home to report the error.

The call home function can be initialized to call either a service center telephone number, a customer administration center, or a digital pager telephone number. The service processor can be configured to stop at the first successful call to any of the numbers listed, or can be configured to call every number provided. If connected to the service center, the service processor transmits the relevant system information (the system's serial number and model type) and service request number (SRN). If connected to a digital pager service, the service processor inputs a customer voice telephone number defined by the customer. An established sequence of digits or the telephone number to a phone near the failed system could be used to signal a system administrator to a potential system failure.

During normal operations, the service processor can also be configured to monitor the AIX operating system. If AIX does not respond to the service processor heartbeat, the service processor assumes the operating system is hung. The service processor can automatically initiate a restart and, if enabled, initiate the call home function to alert the appropriate people to the system hang. Enabling operating system surveillance also enables AIX detect any service processor failures and report those failures to the Electronic Service Agent application.

Unlike the Electronic Service Agent, the service processor cannot be configured in a client/server environment where one system can be used to manage all dial-out functions for a set of systems.

Prior to installing the Electronic Service Agent feature, ensure that you have the latest level of system firmware. You also need a properly configured modem. For more information on configuring a modem, see “Modem Configuration Menu” on page 274.

## Electronic Service Agent

The Electronic Service Agent is a software extension to the AIX operating system that monitors the system while the AIX operating system is running. The Electronic Service Agent monitors and analyzes all recoverable system failures, and, if needed, can automatically place a service call to a service center (without user intervention).

The service center receives the machine type/serial number, host name, SRN, and a problem description. The service center analyzes the problem report and, if warranted, dispatches a service person to the customer site. The service center also determines if any hardware components need to be ordered prior to the service person’s arrival.

The Electronic Service Agent code also gives the user the option to establish a single system as the problem reporting server. A single system, accessible over the user network, can be used as the central server for all the other systems on the local area network (LAN) that are running the Electronic Service Agent application. If the Electronic Service Agent application on a remote client decides a service request needs to be placed, the client forwards the information to the Electronic Service Agent server that dials the service center telephone number from its locally attached modem. In this scenario, the user only needs to maintain a single analog line for providing call-out capabilities for a large set of servers.

When used in a scalable parallel (SP) environment, a client/server type implementation is configured. The Electronic Service Agent client code runs on each of the SP nodes. The server component runs on the control workstation. In the event of any system failures, the relevant information is transmitted to the control workstation through the integrated Ethernet. After it has been alerted to the system failure, the control workstation initiates actions to prepare and send the service request.

A modem is required for enabling automated problem reporting to the service center. Configuration files for several types of modems are included as part of the Electronic Service Agent package. Refer to “Modem Configuration Menu” on page 274 for more information on configuring your modem.

# Chapter 3. Maintenance Analysis Procedures (MAPs)

This chapter contains maintenance analysis procedures (MAPs) for the Models F80, 6F0, and 6F1 systems.

## Entry MAP

Use the following table to determine your starting point.

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 is captured in NVRAM for your use in fixing the problem. The AIX error log and SMIT are only available when diagnostics are run from the hard drive.

**Notes:**

1. If more than eight digits are displayed in the top line of the operator panel display, use only the first eight digits to find the error in the tables. The digits that display beyond the first eight digits are location codes that can assist you in diagnosing the problem. See “AIX and Physical Location Code Reference Tables” on page 21.
2. Licensed programs frequently rely on system information stored on the VPD module on the operator panel assembly. If the MAPs indicate that the operator panel assembly should be replaced, swap the VPD module from the old operator panel to the new one. 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.
3. If a network adapter or the system board is replaced, the network administrator must be notified so that the client IP addresses used by the server 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 server that addresses this system is updated.
4. If you are servicing an SP system, go to the start of ″Call MAP 100″ in the *RS/6000 SP Systems Service Guide*, order number GA22-7442.
5. If you are servicing a clustered @server system, go to the start of ″Call MAP 100″ in the *Clustered @server Installation and Service Guide*, order number SA22-7863.

| Symptom | Starting Point |
|---|---|
| You have a problem that does not prevent the system from booting. | Go to the *Fast Path MAP* in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| You do not have a symptom. | Go to *MAP 0020: Problem Determination Procedure* in the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| You have an SRN. | Go to the *Fast Path MAP* in the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |

| Symptom | Starting Point |
|---|---|
| The system stops and a 3-digit number is displayed in the operator panel display. | Record SRN 101-xxx, where xxx is the 3-digit number displayed in the operator panel display, then go to the *Fast Path MAP* in the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| The system stops and a 4-digit number beginning with 0 or 2 is displayed in the operator panel display. | Go to the *Fast Path MAP* in the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| The system will not boot. | Go to "Quick Entry MAP". |
| All other symptoms. | Go to "Quick Entry MAP". |

## Quick Entry MAP

## Quick Entry MAP Table of Contents


| Problem Description | Page No. |
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**Attention:** If you replace FRUs or perform an action and the problem is still not corrected, go to "MAP 1540: Minimum Configuration" on page 57 unless otherwise indicated in the tables.

If you replace FRUs or perform an action and the problem is corrected, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

| Symptom | Action |
|---|---|
| **Service Actions** | |
| You have parts to exchange or a corrective action to perform. | 1. Go to Chapter 9, “Removal and Replacement Procedures” on page 309.<br>2. Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| You need to verify that a part exchange or corrective action corrected the problem. | Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| You need to verify correct system operation. | Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| **A Repeating Pattern of Error Code Data Appears on the Operator Panel Display** | |
| A sequence of displays, each appearing for 5 seconds, repeats continuously as follows: A blank display, followed by an 8-digit error code, followed by up to nine full panels of dump data. | 1. Record the 8-digit error code seen after the five second blank display.<br>2. Reset the service processor via the pinhole reset.<br>3. Go to ″Checkpoints and Error Codes Index″ “Checkpoint and Error Code Index” on page 106 with the error code you have recorded. |
| **OK does not appear in the operator panel display before pressing the power on button** | |
| A bouncing or scrolling ball remains on the operator panel display, or the operator panel display is filled with dashes. | If an ASCII terminal IS available, connect it to the system through serial port 1.<br>1. If the service processor menu is displayed:<br>a. Replace the operator panel assembly. Refer to “Operator Panel” on page 351.<br>b. Replace the system board. Refer to note 3 on page 41.<br>2. If the service processor menu is not displayed, replace the system board. Refer to note 3 on page 41.<br><br>If an ASCII terminal is NOT available, replace the following, one at a time.<br>1. Operator panel assembly. Refer to “Operator Panel” on page 351.<br>2. System board. Refer to note 3 on page 41. |
| You have a blank display on the operator panel. | Go to “MAP 1520: Power” on page 53. |
| **8-Digit Error Codes** | |
| You have an 8-digit error code displayed in the operator panel display or on the console. | Record the error code. Go to Chapter 5, “Error Code to FRU Index” on page 105. |
| **System Stops With An 8-Digit Number Displayed** | |
| The system stops with an 8-digit error code displayed in the operator panel display or on the console. | Record the error code. Go to Chapter 5, “Error Code to FRU Index” on page 105. |

| Symptom | Action |
|---|---|
| **System Stops With A 4-Digit Number That Does Not Begin With 0 or 2 Displayed** | |
| The system stops and a 4-digit checkpoint that does not begin with 0 or 2 displayed in the operator panel display or on the console. | If the number displayed begins with the characters ″8″, ″9″, ″A″, or ″B″, then go to “Service Processor Checkpoints” on page 85.<br><br>If the number displayed is in the range E1xx-EFFF, make note of any location code that is displayed on the second line of the operator panel. If the location code indicates a card slot (for example, P1-I3), replace the card in the indicated slot. If this does not correct the problem, then go to “Firmware Checkpoints” on page 91.<br><br>For all other numbers record SRN 101-xxxx, where **xxxx** is the four-digit number displayed in the operator panel, then go to the *Fast Path MAP* in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.<br>**Note:** If the operator panel displays two sets of numbers, use the bottom set of numbers as the error code. |
| **System Stops With A 3-Digit Number Displayed** | |
| The system stops and a 3-digit number is displayed in the operator panel display or on the console. | 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 *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| **System Stops or Hangs With Alternating Numbers Displayed in the Operator Display Panel** | |
| The operator panel display alternates between the code ″E1FD″ and another ″Exxx″ code. | Record both codes. Go to “Firmware Checkpoints” on page 91. |
| The operator panel display alternates between the codes ″E1DE″ and ″E1AD″. | Record both codes. Go to “Firmware Checkpoints” on page 91. |
| **There Is a Display Problem (Blank, Distortion, Blurring, Etc.).** | |

| Symptom | Action |
| --- | --- |
| All display problems. | • If using a graphics display:<br>1. Go to the problem determination procedures for the display.<br>2. If you do not find a problem, replace the display adapter.<br>3. If you do not find a problem, suspect the system board. Go to “MAP 1540: Minimum Configuration” on page 57.<br>• If using an ASCII terminal:<br>1. Make sure that the ASCII terminal is connected to S1.<br>2. If problems persist, go to the problem determination procedures for the terminal.<br>3. If you do not find a problem, replace the service processor card.<br>4. If you do not find a problem, suspect the system board. Go to “MAP 1540: Minimum Configuration” on page 57. |
| **Power and Cooling Problems** | |
| The power LEDs on the operator panel and the power supply do not start flashing within 30 seconds of AC power application. | Go to “MAP 1520: Power” on page 53. |
| The power LEDs on the operator panel and the power supply do not come on or stay on. | Go to “MAP 1520: Power” on page 53. |
| The power LEDs on the operator panel and the power supply come on and stay on but the system does not power on. | Go to “MAP 1520: Power” on page 53. |
| The cooling fan(s) do not come on or come on but do not stay on. | Go to “MAP 1520: Power” on page 53. |
| **Flashing 888 in Operator Panel Display** | |
| 888 is displayed in the operator panel. | Go to the *Fast Path MAP* in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| **Other Symptoms or Problems** | |
| You have OK displayed. | The service processor is ready. Go to *MAP 0020: Problem Determination Procedure* in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| You have STBY displayed. | The service processor is ready. The system was shut down by the operating system and is still powered on. This condition can be requested by a privileged system user with no faults. See the service processor error log for possible operating system fault indications. |

| Symptom | Action |
| --- | --- |
| All of the system POST indicators are displayed on the system console, the system pauses and then restarts. The term *POST indicators* refers to the device mnemonics that appear during the power-on self-test (POST). | Go to “Boot Problems and Concerns” on page 102. |
| The system stops and all of the POST indicators are displayed on the system console. The term *POST indicators* refers to the device mnemonics that appear during the power-on self-test (POST). | Go to “MAP 1540: Minimum Configuration” on page 57 to isolate the problem. |
| The system stops and the message ″STARTING SOFTWARE PLEASE WAIT...″ is displayed on the system console. | Go to “Firmware Checkpoints” on page 91. |
| The system does not respond to the password being entered, or the system login prompt is displayed when booting in service mode. | 1. If the password is being entered, or the service mode boot is being initiated on 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:<br>a. Keyboard<br>b. System planar, Location: P1<br>2. If the password is being entered, or the service mode boot is being initiated from an ASCII terminal, first ensure that the terminal is connected to S1 or S2, then use the problem determination procedures for the ASCII terminal.<br>3. If the problem persists, replace the system planar, Location: P1 |
| No codes are displayed on the operator panel within a few seconds of turning on the system. The operator panel is blank before the system is powered on. | Reseat the operator panel cable. If the problem is not resolved, replace these parts in the following order:<br>1. Operator panel assembly. (See VPD note 2 on page 41.)<br>2. System board (See system board note 3 on page 41.)<br>3. If the problem is fixed, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. If the problem persists, go to “MAP 1540: Minimum Configuration” on page 57 to isolate the problem. |

| Symptom | Action |
| --- | --- |
| The SMS configuration list or boot sequence selection menu shows more SCSI devices attached to a controller/adapter than are actually attached. | A device may be set to use the same SCSI bus ID as the control adapter. Note the ID being used by the controller/adapter (this can be checked or changed through an SMS utility), and verify that no device attached to the controller is set to use that ID.<br><br>If settings do not appear to be in conflict:<br>1. Replace the SCSI cable.<br>2. Replace the device.<br>3. Replace the SCSI adapter (or system board if connected to one of the two integrated SCSI controllers on the system board). (See system board note 3 on page 41 if the system board is replaced.)<br><br>**Note:** In a ″twin-tailed″ configuration where there is more than one initiator device (normally another system) attached to the SCSI bus, it may be necessary to change the ID of the SCSI controller or adapter with the System Management Services. |
| The System Management Services menu is displayed. | The device or media you are attempting to boot from may be faulty.<br>1. Check the SMS error log for any errors. To check the error log:<br>a. Choose **error log**.<br>b. If an error is logged, check the time stamp.<br>c. If the error was logged during the current boot attempt, record it.<br>d. Look up the error in “Firmware Checkpoints” on page 91 and do the listed action.<br>e. If no recent error is logged in the error log, continue to the next step below.<br>2. Go to “Boot Problems and Concerns” on page 102. |
| You have a problem that does not prevent the system from booting. | Go to the *Fast Path MAP* in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| You have an SRN. | Go to the *Fast Path MAP* in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| You suspect a cable problem. | See *RS/6000 and @server pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems*. |

| Symptom | Action |
|---|---|
| You do not have a symptom. | Go to *MAP 0020: Problem Determination Procedure* in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| You do not have a determined symptom. | Go to *MAP 0020: Problem Determination Procedure* in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |
| **You Cannot Find the Symptom in this Table** | |
| All other problems. | Go to *MAP 0020: Problem Determination Procedure* in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |

## MAP 1020: Problem Determination

### Purpose of this MAP

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

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 264).

Be prepared to record code numbers and use those numbers in the course of analyzing a problem.

The service processor may have been set by the user to monitor server 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 *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 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 that same service aid to restore the settings at the end of your service action.

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

In addition to the parameters in the table below, you can disconnect the modem to prevent incoming signals that could cause the Models F80, 6F0, or 6F1 to power on.

Following are the service processor settings. The service processor menus are described in Chapter 7, “Using the Service Processor” on page 251.

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

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 in loading the diagnostic programs.

**Note:** Be prepared to answer questions regarding the operator panel display and to perform certain actions based on displayed POST indicators.

1. Insert the diagnostic CD-ROM disc into the CD-ROM drive.
2. Turn off the power. Refer to “Powering Off the System” on page 9.
3. Turn on the power. Refer to “Powering On the System” on page 9.
4. When the keyboard indicator is displayed (the word **keyboard**), press the numeric 5 key on the system console.
5. Enter a password if requested.
6. Wait until the diagnostics are loaded or the system appears to stop.
7. Find your symptom in the following table, then follow the instructions given in the Action column.

| Symptom | Action |
|---|---|
| The system stopped and a code is displayed on the operator panel. | Go to “Entry MAP” on page 41. |
| The system stops with a prompt to enter a password. | Enter the password. You are not allowed to continue until a correct password is 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 diagnostics operating instructions are displayed. | Go to MAP 0020 in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |

| Symptom | Action |
| --- | --- |
| The system login prompt is displayed. | You may not have pressed the correct key, or you may not have pressed the key soon enough when you were to indicate a service mode IPL of the diagnostic programs. If this is the case, start over at the beginning of this Step.<br>**Note:** Perform the system shutdown procedure before turning off the system.<br><br>If you are sure you pressed the correct key in a timely manner, go to “Step 1020-2” on page 52. |
| The system does not respond when the password is entered. | Go to “Step 1020-2” on page 52. |
| The system stopped. A POST indicator is displayed on the system console and an eight-digit error code is not displayed. | If the POST indicator represents:<br>• Memory, go to “MAP 1540: Minimum Configuration” on page 57.<br>• Keyboard<br>1. Replace the keyboard cable.<br>2. Replace the keyboard.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57.<br>• Network, go to “MAP 1540: Minimum Configuration” on page 57.<br>• SCSI, go to “MAP 1540: Minimum Configuration” on page 57.<br>• Speaker, go to “MAP 1540: Minimum Configuration” on page 57. |
| The system stops with a 4-digit number displayed in the operator panel display. | If the number displayed begins with the character ″8″, ″9″, ″A″, or ″B″, go to “Service Processor Checkpoints” on page 85.<br><br>If the number displayed is in the range E1xx-EFFF, go to “Firmware Checkpoints” on page 91.<br><br>For all other numbers, record SRN 101-xxx, where xxx are the last three digits of the four digits of the four-digit number displayed in the operator panel display. Then go to the ″Fast Path MAP″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.<br>**Note:** If the operator panel displays two sets of numbers, use the bottom set of numbers as the error code. |
| The System Management Services menu is displayed. | Go to “Step 1020-4” on page 52. |

| Symptom | Action |
| --- | --- |
| All other symptoms. | If you were directed here from the Entry MAP, go to “MAP 1540: Minimum Configuration” on page 57. Otherwise, find the symptom in the “Entry MAP” on page 41. |

## 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, which extends into only one horizontal row. | Record error code M0KBD001; then go to “Step 1020-3”. |
| Type 102 keyboard (W.T.). Identified by the size of the Enter key, which extends into two horizontal rows. | Record error code M0KBD002; then go to “Step 1020-3”. |
| Type 106 keyboard. Identified by the Japanese characters. | Record error code M0KBD003; then go to “Step 1020-3”. |
| ASCII terminal keyboard | Go to the documentation provided with the ASCII terminal and continue 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 105.

   **Note:** If the eight-digit error code is not listed in Chapter 5, “Error Code to FRU Index” on page 105, look for it in the following:
   - Any supplemental service manual for the device
   - The diagnostic problem report screen for additional information
   - The Service Hints service aid
   - The CEREADME file (by using the Service Hints service aid in *RS/6000 and @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**) is displayed, press the 1 key on the system console.
3. When the System Management Services menu appears, check the error log for any errors.
   a. Choose **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 Chapter 5, “Error Code to FRU Index” on page 105 and do the listed action.
   e. If no recent error is logged in the error log, go to “MAP 1540: Minimum Configuration” on page 57.

## MAP 1520: Power

**Note:** This is not a start-of-call MAP. Use this Power MAP only if you have been directed here from a MAP step in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

This procedure is used to locate power problems in system units. If a problem is detected, this procedure helps you isolate the problem to a failing FRU.

Observe the following safety notice 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.**

**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.**

**DANGER**

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

### Step 1520-1

You may be directed to this MAP for several reasons:

1. The power LED on the operator panel is not flashing, the operator panel display is blank, and the power supply fans are not turning.

Go to “Step 1520-2”.

2. The power LED on the operator panel is flashing, the operator panel display is blank and the power supply fans are turning.

   Go to “Step 1520-3”.

3. OK, STBY or DIAG STBY is displayed on the operator panel display and the power LED on the operator panel is flashing. There is no indication of activity when the power button is pressed. The power LED does not come on solid and none of the fans, including the fans in the power supplies, start to turn.

   Go to “Step 1520-3”.

4. OK, STBY or DIAG STBY is displayed on the operator panel display and the power LED on the operator panel is flashing. When the power button is pressed, the system begins to power on, but the power LED on the operator panel does not stay on.

   Go to “Step 1520-3”.

## Step 1520-2

1. Press the power button to turn off the power.
2. Unplug the system unit power cable from the system unit and the wall outlet.
3. Check that the external power cable to the system unit has continuity.
4. Check that the power outlet has been wired correctly with the correct voltage.
5. Connect the system unit power cable to the system unit and the wall outlet.

**Did you find a problem?**

**NO** Go to “Step 1520-3”.

**YES** Correct the problem. Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1520-3

1. Press the power button to turn off the power.
2. Unplug the system unit power cable from the wall outlet.
3. If you have not already done so, remove the right side cover and locate the power supplies.
4. Grasp the handle of the bottom power supply, pivot it downward and pull the power supply out of the system unit
5. Connect the system unit power cable to the wall outlet.
6. Press the power button to turn on the power.

**Do the fans in the front of the machine come on and the power LED on the operator panel come on and stay on?**

**NO** Reinstall the power supply that you removed.

Repeat this step for the center and top power supplies if they are installed.

If the symptom did not change and all the FRUs have been exchanged, go to "Step 1520-4".

**YES** Replace the power supply that you removed.

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1520-4

1. Press the power button to turn off the power.
2. Unplug the system unit power cable from the wall outlet.
3. Exchange the operator panel electronics assembly.
4. Connect the system unit power cable to the wall outlet.
5. Press the power button to turn on the power.

**Do the fans in the front of the machine come on and the power LED on the operator panel come on and stay on?**

**NO** Reinstall the original operator panel electronics assembly. Go to "Step 1520-5".

**YES** Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1520-5

The cooling fans, memory riser cards, or CPU card may be defective.

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

1. Front cooling fans (one at a time)
2. Memory riser cards (one at a time)
3. Processor card

To test each FRU:

1. Press the power button to turn off the power.
2. Unplug the system unit power cable from the wall outlet.
3. Exchange one of the FRUs in the list.
4. Connect the system unit power cable to the wall outlet.
5. Press the power button to turn on the power.

**Do the fans in the front of the machine and the power LED on the operator panel come on and stay on?**

**NO** Reinstall the original FRU.

- If the one-way processor card was just installed, remove all of the memory DIMMs from the processor card. If the system does not come up, replace the processor card.

Reinstall the memory DIMMs on the processor card, one pair at a time, until the problem recurs. Replace the memory DIMM pair (one DIMM at a time) that was just installed.

- If the memory riser card was just installed, remove all of the memory DIMMs from the memory riser card. If the system does not come up, replace the memory riser card.

  Reinstall the memory DIMMs on the memory riser card, one quad at a time, until the problem recurs. Replace the memory DIMM quad (one DIMM at a time) that was just installed.

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

If the symptom did not change and all FRUs have been exchanged, go to "Step 1520-6".

**YES** Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1520-6

1. Press the power button to turn off the power.
2. Unplug the system unit power cable from the wall outlet.
3. Record the slot numbers of all the PCI adapters. Label and record the location of any cables attached to the adapters. Disconnect any cables attached to the adapters and remove all the adapters.
4. Unplug the power cable from the diskette drive.
5. Unplug the power cable(s) from the 2-pack and 6-pack assemblies.
6. Unplug the disk drives from the 2-pack and 6-pack assemblies.
7. Unplug the power cables from all the SCSI devices in the media bays.
8. Connect the system unit power cable to the wall outlet.
9. Press the power button to turn on the power.

**Do the fans in the front of the machine come on and the power LED on the operator panel come on and stay on?**

**NO** Replace the system board.

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**YES** Go to "Step 1520-7".

## Step 1520-7

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

1. Diskette drive power cable
2. 2-pack and 6-pack assembly power cable(s) (one at a time)
3. Disk drives (one at a time)

4. SCSI device power cable(s), lowest bay to highest bay
5. PCI adapters, lowest slot to highest slot

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

1. Press the power button to turn off the power.
2. Unplug the system unit power cable from the wall outlet.
3. Install or connect one of the parts in the list.
4. Connect the system unit power cable to the wall outlet.
5. Press the power button to turn on the power.

**Do the fans in the front of the machine and the power LED on the operator panel come on and stay on?**

**NO** Replace the last part installed.

Repeat these steps until all the parts have been installed.

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

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to “Step 1520-1” on page 53 in this MAP and follow the instructions for the new symptom.

**YES** Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## MAP 1540: Minimum Configuration

### Purpose of this MAP

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

**Notes:**

1. Be sure to unplug the power cable before removing or installing the processor card, memory riser card(s), or system board to avoid damage to them.
2. This MAP assumes that a CD-ROM drive is installed and connected to the integrated SCSI adapter, and a Diagnostics CD-ROM is available.
3. If a power-on password or privileged-access password is installed, you are prompted to enter the password before the diagnostic CD-ROM can load.
4. The term *POST indicators* refers to the device mnemonics (words memory, keyboard, network, scsi, and speaker) that appear during the power-on self-test (POST).

5. The service processor may have recorded one or more symptoms in its error log. It is a good idea to examine that error log before proceeding (see Service Processor System Information Menu).
6. The service processor may have been set by the user to monitor server 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. |
| 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:<br>a. Number of reboot attempts to **0** (zero)<br>b. Use OS-Defined restart policy to **No**<br>c. Enable supplemental restart policy to **No**. |
| Call Out | From the Call-In/Call-Out Setup Menu, go to the Serial Port Selection Menu and disable call-out on both serial ports. |

## Step 1540-1

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 System 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.

   **Note:** If you cannot insert the diagnostic CD-ROM, go to “Step 1540-2”.
6. When the word keyboard is displayed (the word **keyboard** on an ASCII terminal or the keyboard and hand icon on a graphical display), press the numeric 5 key.
7. Enter the appropriate password when you are prompted to do so.

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

**NO** Go to “Step 1540-2”.

**YES** Go to “Step 1540-19” on page 71.

## Step 1540-2

1. Turn off the power.
2. If you have not already done so, configure the service processor with the instructions in note 6. Then return here and continue.
3. Exit service processor menus and unplug the system unit power cable from the wall outlet.

4. Disconnect all external cables (such as parallel, serial 1, serial 2, serial 3, serial 4, keyboard, mouse, 100BaseT Ethernet, SCSI).
5. Remove both side covers, as described in “Removing the Covers” on page 311.
6. Record the slot numbers of the PCI adapters. Label and record the location of any cables attached to the adapters. Disconnect any cables attached to the adapters and remove all the adapters.
7. If the system has a one-way processor card with memory DIMMs installed, record the DIMM locations and remove all the memory DIMMs except the ones in slots 1 and 8 (pair A). If a memory riser card with memory DIMMs is installed in slot P1-M1, record the DIMM locations and remove all the memory DIMMs, except the ones in slots 1, 2, 15, and 16 (quad A). Make sure the minimum memory DIMMs configuration of 256 MB is installed in the memory riser card in the first slot of the system, or the one-way processor card if there is no memory riser card. Use either a pair or a quad, depending on the memory DIMMs/memory riser cards available.
8. Replace the second memory riser card from slot P1-M2 (if present), with a memory filler card if one is available. Otherwise, record the DIMM locations, remove all the memory DIMMs from the second memory riser card, and install it back in slot P1-M2.
9. Disconnect the SCSI cable from the SCSI connector on the system board.
10. Disconnect the diskette drive cable from the diskette drive connector on the system board. (Removing fan 3 enables better access).
11. Disconnect the internal parallel and debug port cables.
12. Disconnect the signal and power connectors from the 2-pack and 6-pack assemblies.
13. Remove the hot swap disk drive(s) from the hot swap bays.
14. Disconnect the signal and power connectors from all the SCSI devices except the CD-ROM drive.
15. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
16. Turn on the power.
17. Wait for the operator panel to stabilize at a checkpoint.

    **Note:** Checkpoints E1F2 and E1F3 are stable as soon as they appear. Other checkpoints may take up to 3 minutes to ensure stability, depending on system configuration.

**Does the operator panel stabilize with code E1F2, E1F3, E1F7 or 20EE000B?**

**NO** Go to “Step 1540-3” on page 60.

**YES** If the system has a one-way processor card with additional memory DIMMs to be tested, go to “Step 1540-4” on page 60.

If the system has memory riser cards with additional memory DIMMs to be tested, go to “Step 1540-6” on page 62.

If there are no additional memory DIMMs to be tested, go to “Step 1540-8” on page 63.

## Step 1540-3

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

**Note:** If the system stopped with a checkpoint or error code different from the one that directed you to this MAP, perform the action indicated by the new checkpoint or error code. If the new checkpoint or error code has no action indicated or the action does not correct the problem, continue with this step.

1. Turn off the power, remove the power cable, and replace the FRUs, one at a time, with new or previously removed FRUs in the following order:
   a. Memory DIMMs quad A on memory riser card 1, if present, with new or previously removed DIMMs.
   b. Memory riser card (Location: P1-M1), if present, with a new or previously removed memory riser card.
   c. Memory riser card (Location: P1-M2), if present, with a new or previously removed memory riser card.
   d. Memory DIMMs pair A on one-way processor card, if present, with new or previously removed DIMMs.
   e. Processor card (Location: P1-C1)
   f. Operator panel (Location: L1)
   g. Operator panel cable
   h. System board (Location: P1) (see note 3 on page 41)
2. Plug in the power cable and wait for OK in the operator panel display.
3. Turn on the power.
4. Wait for the operator panel to stabilize at a checkpoint.

   **Note:** Checkpoints E1F2 and E1F3 are stable as soon as they appear. Other checkpoints may take up to 3 minutes to ensure stability, depending on system configuration.

**Does the operator panel stabilize with code E1F2, E1F3, E1F7 or 20EE 000B?**

**NO** Reinstall the original FRU.

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

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

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 in this MAP and follow the instructions for the new symptom.

**YES** Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1540-4

No failure was detected with this configuration.

1. Turn off the power and unplug the system unit power cable from the wall outlet.
2. Install a pair of memory DIMMs on the processor card.

3. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
4. Turn on the power.
5. Wait for the operator panel to stabilize at a checkpoint.

   **Note:** Checkpoints E1F2 and E1F3 are stable as soon as they appear. Other checkpoints may take up to 3 minutes to ensure stability, depending on system configuration.

**Does the operator panel stabilize with code E1F2, E1F3, E1F7 or 20EE000B?**

**NO** Go to "Step 1540-5".

**YES** Repeat this step until all the memory DIMMs are installed and tested.

Go to "Step 1540-8" on page 63.

## Step 1540-5

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

1. Turn off the power and unplug the system unit power cable from the wall outlet.
2. Exchange the FRUs in the following order:
   - Last pair of memory DIMMs installed (one DIMM at a time)
   - Processor card
   - System board (see note 3 on page 41)
3. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
4. Turn on the power.
5. Wait for the operator panel to stabilize at a checkpoint.

   **Note:** Checkpoints E1F2 and E1F3 are stable as soon as they appear. Other checkpoints may take up to 3 minutes to ensure stability, depending on system configuration.

**Does the operator panel stabilize with code E1F2, E1F3, E1F7 or 20EE000B?**

**NO** Reinstall the original FRU.

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

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

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to "Step 1540-1" on page 58, and follow the instructions for the new symptom.

**YES** Go to "MAP 410: Repair Checkout" in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1540-6

No failure was detected with this configuration.

1. Turn off the power and unplug the system unit power cable from the wall outlet.
2. Install a quad of memory DIMMs on the memory riser card.
3. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
4. Turn on the power.
5. Wait for the operator panel to stabilize at a checkpoint.

**Note:** Checkpoints E1F2 and E1F3 are stable as soon as they appear. Other checkpoints may take up to 3 minutes to ensure stability, depending on system configuration.

**Does the operator panel stabilize with code E1F2, E1F3, E1F7 or 20EE000B?**

**NO** Go to "Step 1540-7".

**YES** Repeat this step until all the memory DIMMs are installed and tested on the first memory riser card.

Record the positions of the memory DIMMs in the second memory riser card (if previously installed).

Remove all of the memory DIMMs from the second memory riser card except the first quad.

Repeat this step until all the memory DIMMs are installed and tested on second memory riser card.

Go to "Step 1540-8" on page 63.

## Step 1540-7

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

1. Turn off the power and unplug the system unit power cable from the wall outlet.
2. Exchange the following FRUs in the order listed:
   - Last quad of memory DIMMs installed (one DIMM at a time)
   - Memory riser card
   - System board (see note 3 on page 41).
3. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
4. Turn on the power.
5. Wait for the operator panel to stabilize at a checkpoint.

**Note:** Checkpoints E1F2 and E1F3 are stable as soon as they appear. Other checkpoints may take up to 3 minutes to ensure stability, depending on system configuration.

**Does the operator panel stabilize with code E1F2, E1F3, E1F7 or 20EE000B?**

**NO** Reinstall the original FRU.

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

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

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58, and follow the instructions for the new symptom.

**YES** Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1540-8

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

   **Notes:**

   a. If an ASCII terminal has been defined as the system console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.

   b. If a display attached to a display adapter has been defined as the system console, install the display adapter and connect the display to it. Plug the keyboard into the keyboard connector on the rear of the system unit.
3. Turn on the power.
4. If the ASCII terminal or graphics display (including display adapter) are connected differently than before, the Console Selection screen appears and requires that a new console be selected.
5. When the keyboard indicator is displayed, press the number 1 key on the directly attached keyboard or the number 1 key on an ASCII terminal to start the SMS menu.
6. Enter the appropriate password when you are prompted to do so.
7. Wait until the SMS screen is displayed or the system appears to stop.

**Is the SMS screen displayed?**

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

In the following order, exchange the FRUs that have not been exchanged:

1. Go to the problem determination procedures (test procedures) for the device attached to the S1 serial port or the display attached to the graphics adapter, and test those devices. If a problem is found, follow the procedures for correcting the problem on that device.
2. Graphics adapter (if installed).
3. Cable (async or graphics, including internal async cable).
4. System board (see note 3 on page 41).

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

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

If the symptom changed, check for loose cards and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 and follow the instructions for the new symptom.

**YES** Go to “Step 1540-9”.

## Step 1540-9

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and unplug the system unit power cable from the wall outlet.
3. Plug the internal SCSI cable into the SCSI connector on the system board.
4. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
5. Turn on the power.
6. After the keyboard indicator is displayed, press the number 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password when you are prompted to do so.

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

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

In the following order, exchange the FRUs that have not been exchanged:

1. SCSI cable
2. CD-ROM drive
3. System board (see note 3 on page 41)
4. Processor card

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

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

If the symptom changed, check for loose cards and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 and follow the instructions for the new symptom.

**YES** Go to “Step 1540-10”.

## Step 1540-10

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

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and unplug the system unit power cable from the wall outlet.

3. Connect the signal and power connectors to one of the SCSI devices (CD-ROM drive, tape drive, or disk drive). Do not connect the signal and power connectors to the 2-pack and 6-pack assemblies at this time.
4. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
5. Turn on the power.
6. After the keyboard indicator is displayed, press the numeric 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password when you are prompted to do so.

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

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

In the following order, exchange the FRUs that have not been exchanged:
1. SCSI cable
2. Last SCSI device connected (for example, CD-ROM drive, tape drive, or disk drive)
3. System board (see note 3 on page 41)
4. Processor card

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

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

If the symptom changed, check for loose cards and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 and follow the instructions for the new symptom.

**YES** Repeat this step, adding one SCSI device at a time, until all the SCSI devices that were attached to integrated SCSI adapter connector, except the 2-pack and 6-pack assemblies, are connected and tested.

If the system has a 2-pack assembly, go to step “Step 1540-11”.

If the system has only 6-pack assemblies, go to “Step 1540-13” on page 67.

## Step 1540-11

The system is working correctly with this configuration. The 2-pack assembly may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and unplug the power cable from the wall outlet.
3. Connect the signal and power connectors to the 2-pack assembly.
4. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
5. Turn on the power.
6. After the keyboard indicator is displayed, press the number 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.

7. Enter the appropriate password when you are prompted to do so.

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

**NO** The last device connected or the SCSI cable or CD-ROM is defective.

One of the FRUs remaining in the system is defective. In the following order, exchange the FRUs that have not been exchanged:
1. SCSI cable
2. 2-pack assembly.

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

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

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 and follow the instructions for the new symptom.

**YES** Go to “Step 1540-12”.

## Step 1540-12

The system is working correctly with this configuration. One of the disk drives that you removed from the 2-pack assembly bay may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and unplug the system unit power cable from the wall outlet.
3. Install a disk drive in the 2-pack assembly bay.
4. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
5. Turn on the power.
6. After the keyboard indicator is displayed, press the number 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password when you are prompted to do so.

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

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

In the following order, exchange the FRUs that have not been exchanged.
1. Last disk drive installed
2. 2-pack assembly

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

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

If the symptom has changed check for loose cards, cables, and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 and follow the instructions for the new symptom.

**YES** Repeat this step until all the disk drives are installed.

Go to “Step 1540-13”.

## Step 1540-13

The system is working correctly with this configuration. A 6-pack assembly may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and unplug the power cable from the wall outlet.
3. Connect the signal and power connectors to the 6-pack assembly.
4. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
5. Turn on the power.
6. After the keyboard indicator is displayed, press the number 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password when you are prompted to do so.

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

**NO** The last device connected or the SCSI cable or CD-ROM is defective.

One of the FRUs remaining in the system is defective. In the following order, exchange the FRUs that have not been exchanged:

1. SCSI cable
2. 6-pack assembly

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

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

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 and follow the instructions for the new symptom.

**YES** Repeat this step until all the 6-pack assemblies are connected and tested. Go to “Step 1540-14”.

## Step 1540-14

The system is working correctly with this configuration. One of the disk drives that you removed from the 6-pack assembly bay may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and unplug the system unit power cable from the wall outlet.
3. Install a disk drive in the 6-pack assembly bay.

4. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
5. Turn on the power.
6. After the keyboard indicator is displayed, press the number 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password when you are prompted to do so.

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

**NO** In the following order, exchange the FRUs that have not been exchanged.

1. Last disk drive installed
2. 6-pack assembly

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

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

If the symptom has changed check for loose cards, cables, and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 and follow the instructions for the new symptom.

**YES** Repeat this step until all the disk drives are installed.

Go to “Step 1540-15”.

## Step 1540-15

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

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and unplug the power cable from the wall outlet.
3. Connect the diskette drive cable into the diskette drive connector on the system board.
4. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
5. Turn on the power.
6. After the keyboard indicator is displayed, press the number 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password when you are prompted to do so.

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

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

In the following order, exchange the FRUs that have not been exchanged:

1. Diskette drive
2. Diskette drive cable

3. System board (see note 3 on page 41)

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

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

If the symptom has changed check for loose cards, cables, and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 and follow the instructions for the new symptom.

**YES** Go to “Step 1540-16”.

## Step 1540-16

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

1. Make sure the diagnostic CD-ROM is inserted into the CD-ROM drive.
2. Turn off the power and unplug the power cable from the wall outlet.
3. Attach a device (parallel, serial1, serial2, serial3, keyboard, mouse, 100BaseT Ethernet, or SCSI) that had been removed.

   **Note:** If the device you attached requires supplemental media, use the Process Supplemental Media task to load the supplemental media first.
4. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
5. Turn on the power.
6. After the keyboard indicator is displayed, press the number 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password when you are prompted to do so.

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

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

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

1. Device and cable (last one attached)
2. System board (see note 3 on page 41)

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

If the symptom has changed check for loose cards, cables, and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 and follow the instructions for the new symptom.

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

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

Go to “Step 1540-17”.

## Step 1540-17

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

1. Turn off the power and unplug the system unit power cable from the wall outlet.
2. Install a FRU (adapter) and connect any cables and devices that were attached to it.

   **Note:** If the FRU you installed requires supplemental media, use the Process Supplemental Media task to load the supplemental media first.
3. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display
4. Turn on the power.
5. After the keyboard indicator is displayed, press the number 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.
6. Enter the appropriate password when you are prompted to do so.

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

**NO** Go to “Step 1540-18”.

**YES** Repeat this step until all of the FRUs (adapters) are installed.

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1540-18

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

1. Make sure the diagnostic CD-ROM disc is inserted into the CD-ROM drive.
2. Turn off the power and unplug the system unit power cable from the wall outlet.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
5. Turn on the power.
6. If the Console Selection screen is displayed, choose the system console.
7. After the keyboard indicator is displayed, press the number 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.
8. Enter the appropriate password if prompted to do so.

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

**NO** Repeat this step until the defective device or cable is identified or all the devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

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

1. Adapter (last one installed)
2. System board (see note 3 on page 41)

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

If the symptom changed, check for loose cards and obvious problems. If you do not find a problem, return to "Step 1540-1" on page 58 and follow the instructions for the new symptom.

**YES** The last device or cable that you disconnected is defective.

Exchange the defective device or cable.

Go to "MAP 410: Repair Checkout" in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1540-19

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select **Advanced Diagnostics Routines**.
4. If the DEFINE TERMINAL screen is displayed, you must define the terminal following the instructions on the screen before you can continue with the diagnostics. This is a separate and different operation from selecting the console display.
5. If the NEW RESOURCE screen displays, select an option from the bottom of the screen.

   **Note:** Adapters or devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.
6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select **All Resources** (if you were sent here from "Step 1540-23" on page 72, select the adapter/device you loaded from the supplemental media).

**Did you get an SRN?**

**NO** Go to "Step 1540-21" on page 72.

**YES** Go to "Step 1540-20".

## Step 1540-20

Look at the FRU part numbers associated with the SRN, or perform the action indicated by the SRN.

**Have you exchanged all the FRUs that correspond to the failing function codes?**

**NO** Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics has run with no trouble found. Run diagnostics after each FRU is exchanged.

If the system board or a network adapter is replaced, see note 3 on page 41.

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

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

## Step 1540-21

**Does the system have adapters or devices that require supplemental media?**

**NO** Go to “Step 1540-22”.

**YES** Press the number 3 key to return to the FUNCTION SELECTION screen.

Go to “Step 1540-23”.

## Step 1540-22

Consult the PCI adapter configuration documentation for your operating system to verify that all installed adapters are configured correctly.

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

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

## Step 1540-23

1. Select **Task Selection**.
2. Select **Process Supplemental Media** and follow the on-screen instructions to process the media.
3. Supplemental media must be loaded and processed one at a time.

**Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?**

**NO** Go to “Step 1540-24”.

**YES** Press ″F3″ to return to the FUNCTION SELECTION screen.

Go to “Step 1540-19” on page 71.

## Step 1540-24

The Adapter or device is probably defective.

- If the supplemental media is for an adapter, replace the FRUs in the following order:
  1. Adapter
  2. System board (see note 3 on page 41)
- If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. Adapter to which the device is attached

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

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

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, return to “Step 1540-1” on page 58 and follow the instructions for the new symptom.

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 1540-25

Try taking out the adapters.

1. Ensure that the diagnostics and the operating system are shut down.
2. Turn off the power.
3. If you have not already done so, configure the service processor with the instructions in note 6 on page 58. Then return here and continue.
4. Exit Service Processor Menus, and unplug the system unit power cable from the wall outlet.
5. Remove both side covers, as described in “Removing the Covers” on page 311.
6. Record the slot numbers of the PCI adapters. Label and record the location of any cables attached to the adapters. Disconnect any cables attached to the adapters and remove all the adapters.
7. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
8. Turn on the power.

**Does the system stop with code 2680 0Dxx, E151, E152, E153, E154, E155, E156, E15F, E170, or E172 displayed on the operator panel?**

**NO** Go to “Step 1540-27” on page 74.

**YES You still have the same problem.**
Go to “Step 1540-26”.

## Step 1540-26

Try changing the system planar.

1. Turn off the power and unplug the system unit power cable from the wall outlet.
2. Replace the system board (see note 3 on page 41).
3. Connect the system unit power cable to the wall outlet (and wait for OK on the operator panel display).
4. Turn on the power.

**Does the system stop with code 2680 0Dxx, E151, E152, E153, E154, E155, E156, E15F, E170, or E172 displayed on the operator panel?**

**NO** Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**YES** Reinstall the original FRU, then go to “Step 1540-2” on page 58.

## Step 1540-27

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

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

**Does the system stop with code 2680 0Dxx, E151, E152, E153, E154, E155, E156, E15F, E170, or E172 displayed on the operator panel?**

**NO** Repeat this step until all of the FRUs (adapters) are installed, then go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**YES** Go to “Step 1540-28”.

## Step 1540-28

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

1. Turn off the power and unplug the system unit power cable from the wall outlet.
2. Starting with the last installed adapter, disconnect one attached device and cable.
3. Connect the system unit power cable to the wall outlet and wait for OK on the operator panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the keyboard indicator is displayed, press the number 5 key on the directly attached keyboard or the number 5 key on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

**Does the system stop with code 2680 0Dxx, E151, E152, E153, E154, E155, E156, E15F, E170, or E172 displayed on the operator panel?**

**NO** The last device or cable that you disconnected is defective.

Exchange the defective device or cable.

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

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

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:
1. Adapter (last one installed)
2. System board (see note 3 on page 41)

If the symptom did not change and all the FRUs have been exchanged, return to “Step 1540-2” on page 58.

## SSA Maintenance Analysis Procedures (MAPs)

These maintenance analysis procedures (MAPs) describe how to analyze a continuous failure that has occurred in a system that contains two or more disk drive modules. Failing field-replaceable units (FRUs) of the system unit can be isolated with these MAPs.

### Using SSA MAPs

**Attention:** Turning off the power to an SSA hot-swap disk drive can cause a system fault unless you first make the SSA hot-swap disk drive modules unavailable to the system unit. To do this:

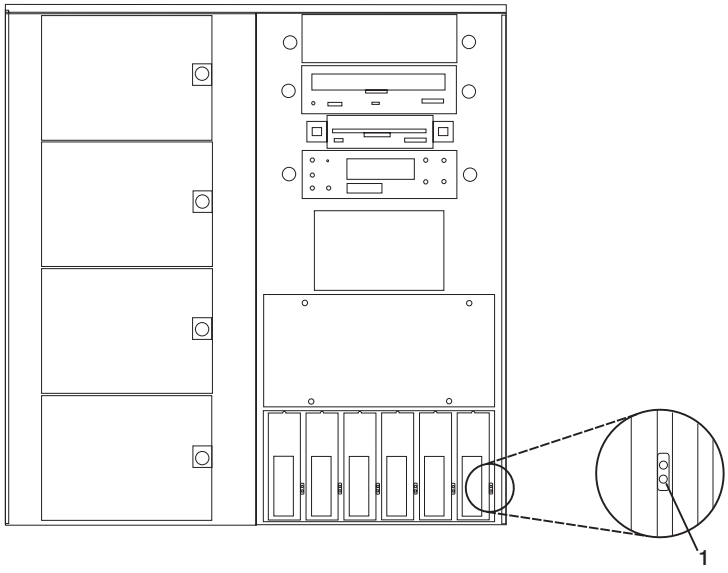
1. Use the system-management task menus to make the disk drive modules unavailable.
2. If the system unit has more than one SSA adapter, make the SSA hot-swap disk drive modules unavailable to the system for each of the paths to the SSA hot-swap disk drive.

**Attention:** Unless the system unit must be turned off for some other reason, *do not turn off the power to the system unit when servicing an SSA hot-swap disk drive or the external SSA cable*.

- To isolate the FRUs associated within the failing SSA hot-swap disk drive, perform the actions and answer the questions given in this MAP.
- When you are instructed to exchange two or more FRUs in sequence, do the following:
  1. Exchange the first FRU in the list for a new one.
  2. Verify that the problem is solved. For some problems, verification means running the diagnostic programs (see the using-system service procedures).
  3. If the problem remains:
     a. Reinstall the original FRU.
     b. Exchange the next FRU in the list for a new one.
  4. Repeat steps 2 and 3 until either the problem is solved, or all the related FRUs have been exchanged.

5. Perform the next action indicated by the MAP.

SSA disk drives have light emitting diodes (LEDs) to identify the state of the disk drive **(1)** shown in the following diagram.




Slot LEDs and drive LEDs are visible when the front cover and the disk drive bay cover are removed. The following table defines the amber and green status LEDs.

| Status LEDs | | |
|---|---|---|
| **LED** | **Status** | **Definition** |
| Green (Top) | Flashing | Drive activity |
| | Off | Drive not spinning and no activity |
| | On Steady | Drive spinning and no activity |
| | Slow Blink | One link not active |
| Amber (Bottom) | On Steady | Service action |
| | | Concurrent maintenance |
| | | Both links are bad |
| | Slow Blink | Identify only |
| | Off | Power good |

## MAP 2010: SSA Hot-Swap Disk Drive–Start

This MAP is the entry point to the MAPs for the SSA hot-swap disk drive. If you are not familiar with these MAPs, read “Using SSA MAPs” on page 75.

You might have been sent here because:

- The system problem determination procedures sent you here.
- Action from an SRN list sent you here.
- A problem occurred during the installation of an SSA hot-swap disk drive module.
- Another MAP sent you here.
- A customer observed a problem that was not detected by the system problem-determination procedures.

### Step 2010-1

**Have you been sent to this MAP from the Configuration Verification service aid?**

**NO** Go to “Step 2010-3” on page 78.

**YES** Go to “Step 2010-2”.

### Step 2010-2

One of the following conditions exists. Take the action described.

1. You have an hdisk that has no associated pdisk.
   a. Issue the system **cfgmgr** command.
   b. Retry the Configuration Verification service aid.
   c. If the problem remains, a software error has probably occurred. Call your support center for assistance.
2. You have a pdisk that has no associated hdisk.
   a. Run diagnostics (using system verification mode) on the pdisk.
   b. If you get an SRN, go to Table 12 on page 429 and follow the actions described.

If you do not get an SRN, the disk formatting may be incompatible with the system (the disk was most likely formatted on a different type of using system).

1) Format the pdisk.
2) Issue the system **cfgmgr** command.
3) Retry the Configuration Verification service aid.

3. If the problem remains, a software error has probably occurred. Call your support center for assistance.

## Step 2010-3

**Have the system diagnostics or problem determination procedures given you a 5-digit SRN for the SSA hot-swap disk drive?**

**NO** Go to “Step 2010-4”.

**YES** Go to “Service Request Numbers (SRNs)” on page 427.

## Step 2010-4

If the system diagnostics are available, go to “Step 2010-5”.

If the stand-alone diagnostics are available, but the system diagnostics are not available, run the stand-alone diagnostics, then go to “Step 2010-5”.

If the system diagnostics and stand-alone diagnostics are not available, go to “Step 2010-1” on page 77.

## Step 2010-5

Run the diagnostics in the problem determination mode.

**Note:** Do not run the advanced diagnostics, because errors are logged on other using systems that share the same loop.

**Did the diagnostics give you a 5-digit SRN for the SSA hot-swap disk drive?**

**NO** Go to “Step 2010-6”.

**YES** Go to “Service Request Numbers (SRNs)” on page 427.

## Step 2010-6

**Are all LEDs off on the drives in a 6 pack?**

**NO** Go to step “Step 2010-9” on page 79.

**YES** Go to “Step 2010-7”.

## Step 2010-7

**Are any power cables loose or in need of replacement?**

**NO** Go to “Step 2010-8” on page 79.

**YES** Fix or replace the power cables as required. Go to ″MAP 410: Repair

Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* to verify the repair.

## Step 2010-8

Replace the backplane. Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* to verify the repair.

## Step 2010-9

**Is there only one drive with no LEDs on?**

**NO** Go to step “Step 2010-10”.

**YES** Replace the following FRUs:

1. Backplane
2. Disk drive assembly

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* to verify the repair.

## Step 2010-10

**Is the green (top) LED off on one or more disk drives on a backplane?**

**NO** Go to step “Step 2010-11”.

**YES** Replace the following FRUs:

1. Backplane
2. EPOW cable

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* to verify the repair.

## Step 2010-11

**Is green (top) LED in the drive at the end of the backplane flashing?**

**NO** Go to step “Step 2010-8”.

**YES** Go to step “Step 2010-12”.

## Step 2010-12

Replace the SSA link cable closest to the flashing LED.

**Did the LED stop flashing?**

**NO** Go to step “Step 2010-13” on page 80.

**YES** Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* to verify the repair.

## Step 2010-13

Replace the following:

1. Backplane
2. Disk drive with the second LED flashing

Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* to verify the repair.

---

# MAP 2323: SSA hot-swap disk drive Intermittent Link Verification

This MAP helps you isolate FRUs that are causing an intermittent SSA link problem. You are here because you have an SRN from the series 21xxx through 29xxx, or you have SRN 33xx.

If you are not familiar with the SSA link, go to “SSA Loops and Links” on page 438.

**Attention:** Unless the system needs to be switched off for some other reason, *do not turn off the system when servicing the SSA loop.*

## Step 2323-1

1. Run the Link Verification service aid to the SSA adapter for which the error has been logged. A list of pdisks is displayed.

   **Note:** On the Link Verification screen, each adapter port is identified by the number of its related connector on the adapter card, as follows:
   - Adapter port 0 is identified as A1
   - Adapter port 1 is identified as A2
   - Adapter port 2 is identified as B1
   - Adapter port 3 is identified as B2

   SRNs 21xxx through 29xxx and SRN 33xxx include the adapter port number (0-3).
2. Go to “Step 2323-2”.

## Step 2323-2

1. Observe the SRN that sent you to this MAP. The last three characters are in the format *PAA*, where *P* is the number of the SSA adapter port, and *AA* is the SAA address of the device.

   Note the value of *PAA* in the SRN. For example:
   - If the SRN is 24002, *PAA* = 002.
   - If the SRN is 24104, *PAA* = 104.
2. Observe the Link Verification screen, and identify the physical device that is represented by *PAA* in the SRN. This device is the first of the two devices that are connected by the failing link.

   If the SRN is in the series 21xxx through 29xxx, the second device of two is located at *PAA*-1.

If the SRN is 33xxx, the second device of the two is located at *PAA*+1.

**Note:** If the SSA address (*AA*) in the SRN is higher than the highest SSA address that is displayed for the adapter port (*P*), that address is the address of the SSA adapter.

3. Go to "Step 2323-3".

### Step 2323-3

If a pdisk has a status other than good, use the identify function to find the pdisks on each side of that drive, and replace the defective drive. Then go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* to verify the repair.

If not, continue.

The problem is in the SSA link between the two devices identified in "Step 2323-2" on page 80.

Exchange, in the sequence shown, the following FRUs for new FRUs. Ensure that for *each* FRU exchange, you go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* to verify the repair.

1. One of the two devices that are identified by the SRN (see "Removing Hot-Plug SSA Disk Drives" on page 324)
2. The other of the two devices
3. The internal SSA connections
4. The external SSA cable

## MAP 2324: SSA hot-swap disk drive RAID

This map helps you solve problems that have occurred in SSA RAID arrays.

You have been sent to this MAP because you have one of the following SRNs: 46000, 47000, 47500, 49000, 49100, 49500.

**Attention:** Unless the using system needs to be switched off for some other reason, *do not turn off the power when servicing an SSA link*.

Before starting this MAP, ensure that all the disk drives are working correctly:

1. Run diagnostics in Problem Determination mode to identify any disk drive problems that have occurred.
2. Run the Link Verification service aid to find all power problems, SSA link problems, and SSA disk drives that have a Failed status.
3. Correct all those problem before you continue.

If you still have a problem, go to MAP 2324 in *Advanced SerialRAID Adapters User's Guide and Maintenance Information*, order number SA33-3285.

SSA documentation is available online. To access the online books, visit the following Web site:

`http://xenon.ssd.hursley.ibm.com/extweb/docs`

# Chapter 4. Checkpoints

Checkpoints display on the operator panel as the system goes through powering on and the initial program load (IPL). This chapter explains the IPL flow of the system and provides a table that lists checkpoints that you might see in the operator panel.

## IPL Flow

The IPL process starts when ac power is connected to the system. The IPL process has four phases:

- **Phase 1: Service Processor Initialization**

  Phase 1 starts when ac power is connected to the system and ends when OK is displayed in the operator panel. 8xxx checkpoints, and several 9xxx checkpoints, are displayed during this phase. 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-up is initiated by pressing the power-on button on the operator panel. 9xxx checkpoints are displayed during this time. 91FF, the last checkpoint in this phase, indicates the transition to Phase 3 is taking place.

- **Phase 3: System Resource Initialization**

  At Phase 3, a system processor takes over control and continues initializing system 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 AIX boot program. Location codes may also be displayed in the second line of the operator panel.

- **Phase 4: AIX Boot**

  When AIX starts to boot, checkpoints in the form 0xxx and 2xxx are displayed. Location codes may also be displayed in the second line of the operator panel. This phase ends when the AIX login prompt appears on the AIX console.

The following table outlines the IPL phases from power-on to the AIX login prompt, matching the phases to corresponding operator panel checkpoints for a typical system 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 | 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 => blank | 2 to 30+ | Number of SSA drives |
| | | | Number of SCSI drives |
| | | | Number of Async sessions |

| Phase # | Checkpoints on Operator Panel | Time in phase (minutes) | Major contributors to time in phase |
|---|---|---|---|
| | | | Number of processors<br>Number of adapters<br>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 264 for information on how to access the service processor error log.

**Note:** Go to “MAP 1540: Minimum Configuration” on page 57 for any of the following checkpoint conditions:

- A four-digit code in the range of 8xxx through EFFF not listed in the checkpoint tables.
- A four-digit code is in the checkpoint tables, but does not contain a repair action or FRU listing.
- All of the FRUs listed in the repair action have been replaced 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 displayed checkpoint that begins with anything other than 8, 9, A, B, or E, go to the *RS/6000 and @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 85. |
| You have a code of the form Exxx. | Go to “Firmware Checkpoints” on page 91. |
| You have a four-character code that is *not* of the form 8xxx, 9xxx, Axxx, Bxxx, or Exxx. | Refer to the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* manual. |

## Service Processor Checkpoints

Service processor checkpoints are in the range 8xxx to Bxxx. The message **OK** indicates successful service processor testing and initialization. Firmware checkpoints are listed in “Firmware Checkpoints” on page 91.

**Note:** A spinning (or twirling) slash will be shown 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 90 |
| 8004 | Verify base code checksum | See note 1 on page 90 |
| 8008 | Verify base code mirror checksum | See note 1 on page 90 |
| 8009 | Set NVRAM configuration in TITAN | See note 1 on page 90 |
| 800F | Start base code | See note 1 on page 90 |
| 8010 | Start supervisor in base code | See note 1 on page 90 |
| 8012 | Initialize hardware interrupts | See note 1 on page 90 |
| 8014 | Allocate and initialize area in DRAM | See note 1 on page 90 |
| 8016 | Initialize debugger and build VPD | See note 1 on page 90 |
| 8018 | Initialize service processor interfaces | See note 1 on page 90 |
| 801A | Initialize external FLASH load | See note 1 on page 90 |
| 801B | Initialize and test ISA hub chip | See note 1 on page 90 |
| 801C | Initialize and test SUPER I/O chip | See note 1 on page 90 |
| 801F | Initialize diskette, verify VDASD and start operational loader | See note 1 on page 90 |
| 809x | Related to recovery mode system firmware update from diskette | See note 3 on page 90 |
| 8092 | Diskette initialization during recovery mode system firmware update | See note 3 on page 90 |
| 8098 | Firmware image being read during recovery mode system firmware update | See note 3 on page 90 |
| 809C | Firmware image being written during recovery mode system firmware update | See note 3 on page 90 |
| 809F | Diskette error during recovery mode system firmware update | See note 3 on page 90 |
| 8100 | Start operational loader | See note 1 on page 90 |

*Table 1. Service Processor Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| 81xx | Load code into DRAM from VDASD (where xx = number of loads) | See note 1 on page 90 |
| 81FE | Load service processor operating system | See note 1 on page 90 |
| 81FF | Start service processor operating system | See note 1 on page 90 |
| 9000 | Primary service processor task initializing | See note 1 on page 90 |
| 9009 | IPL ROS has started | See note 1 on page 90 |
| 9010 | Primary service processor thread waiting for response | See note 1 on page 90 |
| 9020 | Service processor state set to pre-standby | See note 1 on page 90 |
| 9021 | Service processor state set to standby | See note 1 on page 90 |
| 9022 | Service processor state set to IPL | See note 1 on page 90 |
| 9030 | Waiting for secondary thread acknowledge | See note 1 on page 90 |
| 9033 | I/O base initialization | See note 1 on page 90 |
| 9034 | I2C initialization | See note 1 on page 90 |
| 9035 | ISA initialization | See note 1 on page 90 |
| 9036 | Mailbox initialization | See note 1 on page 90 |
| 9037 | SLLA initialization (VPD) | See note 1 on page 90 |
| 9038 | NVRAM initialization | See note 1 on page 90 |
| 9039 | U552 initialization | See note 1 on page 90 |
| 903A | Serial I/O initialization | See note 1 on page 90 |
| 903B | SPCN initialization | See note 1 on page 90 |
| 9051 | End of reset/reload operation: service processor dump has completed | See note 1 on page 90 |
| 9060 | Checking/configuring modem on serial port 1 | See note 4 on page 90 |
| 9061 | Checking/configuring modem on serial port 2 | See note 4 on page 90 |
| 906A | Create mailbox processing thread | See note 1 on page 90 |
| 906B | Create menu interface thread | See note 1 on page 90 |
| 906C | Create general thread | See note 1 on page 90 |
| 906D | Create SPCN thread | See note 1 on page 90 |
| 9080 | Start VPD collection program | See note 1 on page 90 |
| 9081 | Start SC VPD data collection | See note 1 on page 90 |

*Table 1. Service Processor Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| 9082 | I2C/SPCN VPD data collection | See note 1 on page 90 |
| 9083 | End SC VPD data collection | See note 1 on page 90 |
| 9084 | End I2C VPD data collection | See note 1 on page 90 |
| 90FD | Waiting for IBIST to complete | See note 1 on page 90 |
| 9101 | Create CEC box | See note 1 on page 90 |
| 9102 | Open load source | See note 1 on page 90 |
| 9103 | Verify open status of load source | See note 1 on page 90 |
| 9104 | Load IPL LIDs | See note 1 on page 90 |
| 9105 | System flush | See note 1 on page 90 |
| 9106 | Scan interface BATs | See note 1 on page 90 |
| 9107 | ABIST | See note 1 on page 90 |
| 9108 | LBIST | See note 1 on page 90 |
| 9109 | LBIST | See note 1 on page 90 |
| 910A | Configure and initialize processors | See note 1 on page 90 |
| 910B | Configure main storage (system memory) | See note 1 on page 90 |
| 910C | Initialize main storage (system memory) | See note 1 on page 90 |
| 910D | Configure and initialize I/O | See note 1 on page 90 |
| 910E | Test main storage (system memory) | See note 1 on page 90 |
| 910F | Free IPL LIDS | See note 1 on page 90 |
| 9110 | Load runtime LIDS | See note 1 on page 90 |
| 9111 | Load dump LIDS | See note 1 on page 90 |
| 9112 | Enable attention | See note 1 on page 90 |
| 9113 | Enable function 22 | See note 1 on page 90 |
| 9114 | Load IPL ROS | See note 1 on page 90 |
| 9115 | Load system data areas (NACA/PACA) | See note 1 on page 90 |
| 9116 | Start IPL ROS execution | See note 1 on page 90 |
| 9118 | Waiting for VPD collection to complete | See note 1 on page 90 |

*Table 1. Service Processor Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| 9184 | Firmware image being loaded into service processor's control storage during firmware update. | 1. Remove, then reapply power to the system. If the service processor enters recovery mode, (indicated by A1FD 0000 in the display), attempt to update the firmware again in recovery mode. If the service processor comes up to the OK prompt, try again to update the firmware using the service processor menus.<br>2. Call service support |
| 91FF | Control being handed to system processor from service processor | See note 2 on page 90 |
| 9380 | Built-in-self-test (BIST) | See note 2 on page 90 |
| 94B0 | Wire test faulty driver status refcode | See note 2 on page 90 |
| 94B1 | Wire test shorted net status refcode | See note 2 on page 90 |
| 94B2 | Wire test L2 cache status refcode | See note 2 on page 90 |
| 94BB | Wire test status SRC refcode | See note 2 on page 90 |
| 9501 | Main storage initialization | See note 2 on page 90 |
| 9502 | Main storage L3 cache march test | See note 2 on page 90 |
| 9503 | Main storage L3 connections test | See note 2 on page 90 |
| 9504 | Main storage L3 cache march test | See note 2 on page 90 |
| 9505 | MS extra testing (RIO, etc.) | See note 2 on page 90 |
| 9506 | MS cleanup | See note 2 on page 90 |
| 99FD | Service processor receiving firmware update module | See note 1 on page 90 |
| 99FF | Service processor writing firmware update module | See note 1 on page 90 |
| A800 | Start Service Processor dump process | See note 1 on page 90 |
| A801 | Start dump to debug port | See note 1 on page 90 |
| A802 | Start dump to debug port | See note 1 on page 90 |
| A803 | NVRAM not usable | See note 1 on page 90 |
| A804 | NVRAM dump done | See note 1 on page 90 |
| A805 | Start dump to flash | See note 1 on page 90 |
| A806 | Flash dump area done | See note 1 on page 90 |
| A807 | Flash area not usable | See note 1 on page 90 |
| A808 | Flash error log to debug port | See note 1 on page 90 |
| A809 | Flash erase start | See note 1 on page 90 |

*Table 1. Service Processor Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| A80A | Flash erase end | See note 1 on page 90 |
| A80B | Reserved; not used | See note 1 on page 90 |
| A80C | Reserved; not used | See note 1 on page 90 |
| A80D | Reserved; not used | See note 1 on page 90 |
| A80E | Reserved; not used | See note 1 on page 90 |
| A80F | Service processor dump done | See note 1 on page 90 |
| B00B | Firmware delaying to determine if MOPs error is the result of power disturbance. After delay, SPCN is queried for CEC power status. | 1. Remove, then reapply power to the system.<br>2. Call service support. |
| B0F5 | Delayed power-off sequence has begun executing | See note 1 on page 90 |
| B0FA | Delayed power-off acknowledged | See note 1 on page 90 |
| B0FF | Power-off requested program executing | See note 1 on page 90 |

**Notes:**

1. If the system fails to progress after this checkpoint is put in the display, do the following:
   a. Activate the service processor pinhole reset switch on the system's operator panel.
   b. If the hang repeats, check with service support to see if there is a firmware update that fixes the problem.
   c. If not, or the update does not fix the problem, change the system board.
   d. If this procedure does not fix the problem, call service support.
2. If the system fails to progress after this checkpoint is put in the display, do the following:
   a. Activate the service processor pinhole reset switch on the system's operator panel.
   b. If the hang repeats, check with service support to see if there is a firmware update that fixes the problem.
   c. If not, or the update does not fix the problem, go to "MAP 1540: Minimum Configuration" on page 57.
   d. If this procedure does not fix the problem, call service support.
3. Recovery mode flash update has failed. Do the following:
   a. Activate the service processor pinhole reset switch on the system's operator panel, and try the recovery mode flash update again.
   b. If the system hangs again, make a new set of firmware update diskettes, using new, blank diskettes. Retry the flash update with the new diskettes.
   c. If the same hang occurs with the new diskettes, replace the following FRUs one at a time, in this order:
      1) Diskette drive
      2) System board
   d. If this procedure does not fix the problem, call service support.
4. The service processor was unable to configure the modem(s) attached to the serial port(s). 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 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 this order:
      1) Modem cable
      2) Modem
      3) System board
   d. If this procedure does not fix the problem, call service support.

## Firmware Checkpoints

Firmware uses checkpoints (progress codes) in the range of Exxx to EFFF. These checkpoints occur during system startup and can be useful in diagnosing certain problems. Service processor checkpoints are listed in “Service Processor Checkpoints” on page 85.

**Attention:** If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Minimum Configuration” on page 57 unless otherwise indicated in the tables.

If you replace FRUs or perform an action and the problem is corrected, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**Note:** Firmware can hang due to multiple causes. In many cases, it can be caused by the primary processor or a memory problem in the first 64 MB of real memory. If a location code is not provided with the checkpoint, the following procedure will use the primary processor and low memory as the probable FRUs.

1. If firmware is hung (E100 through EFFF) and a location code is displayed on the second line of the operator panel, use that location code as the primary FRU.
2. If no location code is present or if replacing the primary FRU indicated in the location code did not fix the problem, then perform the following action:
   a. Power off the system and go to the service processor menus.
   b. From the service processor main menu, select option 3, **System Information Menu**, then select option 5, **Read NVRAM**.
   c. Enter `330` when prompted for an address.
   d. Look at the byte of data at address 330. If the value is FF, go to note 3. If the value is 00-0F, replace the processor card, location: P1-C1. Attempt to reboot the system. If the system hangs at the same checkpoint, go to note 3. If the system hangs at a new checkpoint, perform the actions associated with the new checkpoint.
3. Power off the system. From the service processor main menu, select option 3, **System Information Menu**, then option 8, **Memory Configuration/Deconfiguration Menu**. Identify the first configured DIMM pair if DIMMs reside on a one-way processor card, or the first configured memory riser card and quad of DIMMs. Replace the first group of DIMMs.
4. If replacing the first group of configured DIMMs does not fix the problem, replace the memory riser card. If the problem is still not fixed, go to “MAP 1540: Minimum Configuration” on page 57.

*Table 2. Firmware Checkpoints*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E100 | Reserved | See the note on page 84. |
| E101 | Create RTAS node | See the note on page 84. |
| E102 | Load/Init RTAS | See the note on page 84. |

*Table 2. Firmware Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E105 | Transfer control to operating system (normal boot). | See “Boot Problems and Concerns” on page 102. |
| E10A | Load RTAS device tree | See the note on page 84. |
| E10B | Set RTAS device properties | See the note on page 84. |
| E122 | RTAS sensor setup complete | See the note on page 84. |
| E130 | Build device tree | See the note on page 84. |
| E134 | Create memory node | See the note on page 84. |
| E137 | Create openprom node | See the note on page 84. |
| E138 | Create options node | See the note on page 84. |
| E139 | Create node aliases and system aliases | See the note on page 84. |
| E13A | Create packages node | See the note on page 84. |
| E140 | Operating system load | See the note on page 84. |
| E149 | Create boot mgr node | See the note on page 84. |
| E14C | Create terminal-emulator node | See the note on page 84. |
| E14D | Loading boot image | See “Boot Problems and Concerns” on page 102. |
| E14F | NVRAM initialization | See the note on page 84. |
| E150 | Create host (primary) PCI controller node | 1. If a location code is associated with the checkpoint, replace the adapter identified by the location code. See “Determining Location Code” on page 105.<br>If a network adapter is replaced, see “Replacing the Network Adapter” on page 105.<br>2. Replace the system board. See note 3 on page 41. |
| E151 | Probing primary PCI bus | Go to “Step 1540-25” on page 73. |
| E152 | Probing for adapter FCODE; evaluate if present | Follow the repair action listed for checkpoint E151. |
| E153 | End probe/evaluate of adapter FCODE | 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 | Follow the repair action listed for checkpoint E151. |
| E15A | Create 64-bit host (primary) PCI controller node | See the note on page 91. |

*Table 2. Firmware Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E15B | Transferring control to operating system (service mode boot) | See “Boot Problems and Concerns” on page 102. |
| E15C | Probe primary 64-bit PCI bus | See the note on page 91. |
| E15D | Create host PCI controller node | See the note on page 91. |
| E15F | Adapter VPD probe | Follow the repair action listed for checkpoint E151. |
| E162 | SP node VPD creation | See the note on page 91. |
| E163 | Create CPU VPD | See the note on page 91. |
| E165 | Create planar-clock VPD | See the note on page 91. |
| E166 | Create CEC VPD | See the note on page 91. |
| E167 | Collect power cards VPD. | See the note on page 91. |
| E170 | Start of PCI Bus Probe | Follow the repair action listed for checkpoint E151. |
| E172 | First pass PCI device probe | Follow the repair action listed for checkpoint E151. |
| E174 | Establishing host connection | If the system is not connected to an active network or if the target server is inaccessible (this can also result from incorrect IP parameters being supplied), the system will still attempt to boot. Because time-out durations are necessarily long to accommodate retries, the system may appear to be hung.<br><br>Restart the system and access the firmware SMS utilities. In the utilities, check:<br>• Is the intended boot device correctly specified in the boot list?<br>• Are the IP parameters correct?<br>• Verify the network connection (network could be down).<br>• Have network administrator verify the server configuration for this client.<br>• Attempt to “ping” the target server using the SMS “Ping” utility. |
| E175 | BootP request | Refer to checkpoint E174. |
| E176 | TFTP file transfer | See “Boot Problems and Concerns” on page 102. |
| E177 | Transfer failure due to TFTP error condition | See “Boot Problems and Concerns” on page 102. |

*Table 2. Firmware Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E17B | Processor clock speed check measurement | System board.<br><br>See the note on page 84. |
| E180 | Service processor command setup | See the note on page 84. |
| E183 | Service processor post | See the note on page 84. |
| E186 | Request PS1 VPD | See the note on page 84. |
| E187 | Add PS1 VPD to NVRAM and device tree | See the note on page 84. |
| E188 | Request PS2 VPD | See the note on page 84. |
| E189 | Add PS2 VPD to NVRAM and device tree | See the note on page 84. |
| E18C | VPD and data communications with I/O planar complete | See the note on page 84. |
| E190 | Create ISA node | See the note on page 84. |
| E191 | Create ISA reserved node | See the note on page 84. |
| E193 | Initialize Super I/O | See the note on page 84. |
| E196 | Probe ISA bus | See the note on page 84. |
| E199 | Reboot after flash | Try to boot system a second time. If this does not work, replace the system board.<br><br>See the note on page 84. |
| E19B | Create service processor node | See the note on page 84. |
| E19C | Create tablet node | See the note on page 84. |
| E19D | Create NVRAM node | See the note on page 84. |
| E19E | Real-time clock (RTC) initialization | Refer to error code 28030xxx in “Firmware Error Codes” on page 117. |
| E1AD | See description of checkpoint E1DE | See the note on page 84. |
| E1B0 | Create lpt node | See the note on page 84. |
| E1B1 | Create serial node | See the note on page 84. |
| E1B2 | Create audio node | See the note on page 84. |
| E1B3 | Create 8042 node | See the note on page 84. |
| E1B6 | Probe for (ISA) keyboard | See the note on page 84. |
| E1BD | Probe for (ISA) mouse | See the note on page 84. |
| E1BF | Create pwr-mgmt node | See the note on page 84. |
| E1C4 | Build ISA timer chip node | See the note on page 84. |
| E1C5 | Create ISA interrupt controller (pic) node | See the note on page 84. |

*Table 2. Firmware Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E1C6 | Create DMA node | See the note on page 84. |
| E1D0 | Create PCI SCSI node | Perform Repair actions from checkpoint E156. |
| E1D3 | Create SCSI block device node (SD) | Perform Repair actions from checkpoint E156. |
| E1D4 | Create SCSI byte device node (ST) | Perform Repair actions from checkpoint E156. |
| E1DB | Create floppy controller (FDC) node | Replace the system board. See the note on page 84. |
| E1DC | Dynamic console selection. | If a console is attached but nothing is displayed on it, follow the steps associated with ″All display problems″ in the Entry MAP tables.<br><br>If selection screen(s) can be seen on the terminals and the appropriate key on the input device associated with the desired display or terminal is pressed, within 60 seconds, but there is no response to the keystroke:<br>• If selecting the console with a keyboard attached to the system, replace the keyboard. If replacing the keyboard does not fix the problem, replace the service processor (Location Code: P1).<br>• If selecting the console with an ASCII terminal, suspect the ASCII terminal. Use the problem determination procedures for the terminal. Replace the service processor (Location Code: P1) if these procedures do not reveal a problem.<br>**Note:** Terminal settings should be set to:<br>– 9600 Baud<br>– No Parity<br>– 8 Data bits<br>– 1 Stop bit |
| E1DE | Alternating pattern of E1DE and E1AD is used to indicate a default catch condition before the firmware ″checkpoint″ word is available. | See the note on page 84. |
| E1DF | Create diskette drive (disk) node | See the note on page 84. |
| E1F0 | Start O.B.E. | See the note on page 84. |

*Table 2. Firmware Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E1F1 | Begin selftest sequence on boot device(s). Begin SMS. | See the note on page 84. |
| E1F2 | Power-on password prompt. | Prompt should be visible on the system console.<br><br>If a console is attached but nothing is displayed on it, go to the “Entry MAP” on page 41 with the symptom ″All display problems.″ |
| E1F3 | Privileged-access password prompt | Prompt should be visible on the system console.<br><br>If a console is attached but nothing is displayed on it, go to the “Entry MAP” on page 41 with the symptom ″All display problems.″ |
| E1F5 | Build boot device list | See the note on page 84. |
| E1F6 | Determine boot device sequence | See the note on page 84. |
| E1F7 | No boot image located | Follow the repair actions listed for error code 20EE000B. |
| E1FB | Scan SCSI bus for attached devices | If a location code is available, follow the repair actions listed for error code 21A000XX. |

*Table 2. Firmware Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E1FD | The operator panel alternates between the code E1FD and another Exxx code, where Exxx is the point at which the error occurred. | Checkpoint E1FD indicates that an error has occurred during system startup. The display alternates between E1FD and another checkpoint, Exxx, where the error occurred. Check the list of checkpoints for Exxx. If the description for that checkpoint does not resolve the problem, return here for more instruction.<br><br>Checkpoint E1FD may be displayed when an adapter or peripheral is malfunctioning. To find which device is most likely to have caused the error, follow these steps.<br>1. Check the ″progress codes from last boot″ in the service processor's information menu. Look for the last location code that was displayed before the E1FD error code.<br>2. The device pointed to by this location is suspect.<br>3. If the progress code listing only contains the E1FD and Exxx checkpoints, restart the system and power off when the E1FD and Exxx codes are displayed. Repeat step 1.<br>4. Try removing the suspect device (if it is not integrated). Remove power from the system before changing the hardware configuration.<br>5. Restart the system. If it now boots normally, without stopping at checkpoint E1FD, the device that was removed in the previous step should be replaced.<br>6. If the above steps have not resolved the problem, go to “MAP 1540: Minimum Configuration” on page 57. |

*Table 2. Firmware Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E440 | Validate NVRAM, initialize partitions as needed | 1. Verify that the system firmware levels are at the current release levels, update as necessary.<br>2. Replace system board (location: P1) if problem persists.<br><br>See the note on page 84. |
| E441 | Generate /options node NVRAM configuration variable properties | 1. Verify that the system firmware levels are at the current release levels, update as necessary.<br>2. Replace system board (location: P1) if problem persists.<br><br>See the note on page 84. |
| E442 | Validate NVRAM partitions | 1. Verify that the system firmware levels are at the current release levels, update as necessary.<br>2. Replace system board (location: P1) if problem persists.<br><br>See the note on page 84. |
| E443 | Generate NVRAM configuration variable dictionary words | Suspect a system firmware problem if problem persists. Verify that the system firmware is at current release level. Update back-level system firmware if necessary.<br><br>See the note on page 84. |
| E500 | Configure remote I/O subsystem | 1. Configure I/O subsystem.<br>2. The appearance of this code indicates that the I/O subsystem configuration has started or progressed to the point where the code can be displayed.<br><br>See the note on page 84. |

*Table 2. Firmware Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E51y (E511 - E5FF) Where y is not equal to 0. | Configure remote I/O subsystem components | The E51y (E511 to E5FF) codes are reserved for activities relating to configuration or testing of the I/O subsystem, or remote I/O subsystem. A hang at one of these codes implies that a severe error occurred during the programming of I/O subsystem registers or when interacting with adapters plugged into the system. The last two digits in the checkpoint can be used to help isolate the location of the I/O activity that caused the problem. "**y**" indicates the PCI bus occurrence.<br><br>If y=_, then the PCI bus is:<br>`Y = PCI bus`<br>`1 = 0`<br>`2 = 1`<br><br>See "AIX and Physical Location Code Tables" in Chapter 1, for location codes.<br><br>Using the information above, go to "MAP 1540: Minimum Configuration" on page 57. |
| E600 | SSA PCI adapter open firmware has run successfully. | If a location code is associated with the checkpoint, replace the adapter identified by the location code. See "Determining Location Code" on page 105. |
| E601 | SSA PCI adapter BIST has started but failed to complete after four seconds. | If a location code is associated with the checkpoint, replace the adapter identified by the location code. See "Determining Location Code" on page 105. |
| E602 | SSA PCI adapter open firmware has started. | If a location code is associated with the checkpoint, replace the adapter identified by the location code. See "Determining Location Code" on page 105. |
| E603 | SSA PCI adapter BIST has completed with an error. | If a location code is associated with the checkpoint, replace the adapter identified by the location code. See "Determining Location Code" on page 105. |

*Table 2. Firmware Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E604 | SSA PCI adapter BIST and subsequent POSTs have completed successfully. | If a location code is associated with the checkpoint, replace the adapter identified by the location code. See “Determining Location Code” on page 105. |
| E605 | SSA PCI adapter BIST has completed successfully but the subsequent POSTs have failed. | If a location code is associated with the checkpoint, replace the adapter identified by the location code. See “Determining Location Code” on page 105. |
| E60E | SSA PCI adapter open firmware about to exit (no stack corruption). | If a location code is associated with the checkpoint, replace the adapter identified by the location code. See “Determining Location Code” on page 105. |
| E60F | SSA PCI adapter open firmware has run unsuccessfully. | If a location code is associated with the checkpoint, replace the adapter identified by the location code. See “Determining Location Code” on page 105. |
| E6FF | SSA PCI adapter open firmware about to exit (with stack corruption). | If a location code is associated with the checkpoint, replace the adapter identified by the location code. See “Determining Location Code” on page 105. |
| E700 | Create system firmware VPD. | Replace the system board, Location: P1. See the note on page 84. |
| E701 | Create memory VPD. | Replace the memory. See the note on page 84. |
| E702 | Create processor card VPD. | Go to “MAP 1540: Minimum Configuration” on page 57. |
| E703 | Create operator panel VPD. | Replace the operator panel, Location: L1. See “Operator Panel Replacement” on page 105. |
| E704 | Create CEC VPD. | See the note on page 84. |
| E705 | Create clock card VPD. | See the note on page 84. |
| E706 | Create RIO extender card VPD. | Replace the system planar, Location: P1. See the note on page 84. |
| E707 | Create system VPD. | Replace the system planar, Location: P1. See the note on page 84. |
| E708 | Create RIO to PCI adapter VPD. | Replace the system planar, Location: P1. See the note on page 84. |

*Table 2. Firmware Checkpoints (continued)*

| Checkpoint | Description | Action/ Possible Failing FRU |
|---|---|---|
| E709 | Create VPD via SPCN. | Replace the system planar, Location: P1. See the note on page 84. |
| E70A | Create service processor VPD. | Replace the system planar, Location: P1. See the note on page 84. |
| E8xx | RTAS initialization problem. | Call for support. |
| EAA1 | Probe PCI-PCI bridge. | Follow the repair actions for checkpoint E151. |

**Note:** If you receive a four-digit code in the range of E1xx to EFFF that is not listed in the table above, go to “MAP 1540: Minimum Configuration” on page 57.

## Boot Problems and Concerns

Depending on the boot device, a checkpoint may be displayed on the operator panel for an extended period of time while the boot image is retrieved from the device. This is particularly true for tape and network boot attempts. If booting from CD-ROM or tape, watch for activity on the drive's LED indicator. A blinking LED indicates that the loading of either the boot image or additional information required by the operating system being booted is still in progress. If the checkpoint is displayed for an extended period of time and the drive LED is not indicating any activity, there might be a problem loading the boot image from the device.

**Note:** For network boot attempts, if the system is not connected to an active network or if the target server is inaccessible (this can also result from incorrect IP parameters being supplied), the system will still attempt to boot. Because time-out durations are necessarily long to accommodate retries, the system may appear to be hung.

This procedure assumes that a CD-ROM drive is connected to the internal SCSI connector and that a diagnostics CD-ROM is available.

### Step 1

Restart the system and access the firmware SMS main menu. Select **Multiboot**.

1. If the intended boot device is correctly specified in the boot list:
   a. Remove all removable media from devices in the boot list from which you do not want to boot.
   b. If attempting to boot from the network, go to "Step 2".
   c. If attempting to boot from a disk drive or CD-ROM, go to "Step 3" on page 103.
2. If the intended boot device is not correctly identified in the boot list, add it to the boot sequence using the SMS menus. If the device can be added, reboot the system. If the intended boot device cannot be added to the boot list, go to "Step 3" on page 103.

### Step 2

If attempting to boot from the network:

1. Verify that IP parameters are correct.
2. Attempt to ″ping″ the target server using the SMS Ping utility. If the ping is not successful, have the network administrator verify the server configuration for this client.
3. Check with the network administrator to ensure that the network is up.
4. Check the network cabling to the adapter.
5. Turn the power off, then on, and retry the boot operation.

## Step 3

Try to boot and run standalone diagnostics against the system, particularly against the intended boot device.

If diagnostics boot successfully:

1. Go to the Task Selection Menu and select Display Configuration and Resource List. If the intended boot device is not listed, go to ″MAP 0290: Missing Resource Problem Resolution″ in the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.
2. If an SRN, not an 8-digit error code, is reported, go to the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* manual.
3. 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:

1. Verify proper SCSI bus termination.
2. Check SCSI cabling.
3. It is possible that another attached SCSI device is causing the problem. Do the following:
   a. Disconnect the signal and power cables from the disk drive cage backplane.
   b. Disconnect the disk drive(s) in the disk drive cage from the backplane.
   c. Disconnect the signal and power cables from any other SCSI devices attached to the SCSI adapter that the CD-ROM drive is attached to.
   d. Try to boot the standalone diagnostics again.
   e. If you are still unable to load standalone diagnostics, go to “Step 4”.
   f. If standalone diagnostics load, one of the disconnected devices is causing the problem. Reconnect the devices one at a time and retry the boot operation until the problem recurs and replace the device that caused the problem. (If the problem appears to be one of the disk drives in the disk drive cage, be aware it could be either the disk drive or the backplane.) Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 4

It is possible that another installed adapter is causing the problem. Do the following:

1. Remove all installed adapters except the one the CD-ROM drive is attached to and the one used for the console.
2. Try to boot the standalone diagnostics again.
3. If unable to load standalone diagnostics, go to “Step 5” on page 104.
4. If standalone diagnostics load, reinstall adapters (and attached devices as applicable) one at a time and retry the boot operation until the problem recurs. Then replace the adapter or device that caused the problem. (The system board can also cause the device or adapter to fail.) Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Step 5

The CD-ROM drive, SCSI cable, SCSI adapter, graphics adapter, or the system board is most likely defective. A TTY terminal attached to the serial port also can be used to determine if the graphics adapter is causing the problem. This determination is done by removing the graphics adapter, attaching a TTY to the serial port, and retrying standalone diagnostics. If the standalone diagnostics load, replace the graphics adapter.

1. Replace the CD-ROM drive.
2. Replace the SCSI cable.
3. If the CD-ROM drive is attached to a SCSI adapter rather than the integrated SCSI on the system board, replace the SCSI adapter.
4. Replace the system board.
5. If you replaced the indicated FRUs and the problem is still not corrected, or the above descriptions did not address your particular situation, go to “MAP 1540: Minimum Configuration” on page 57.
6. Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

# Chapter 5. Error Code to FRU Index

**Attention:** Start your activity in this chapter by going to "Checkpoint and Error Code Index" on page 106. In this table, you may be asked to perform additional procedures before looking up the actions for a 4-character checkpoint or 8-character error code.

The Error Code to FRU Index lists fault symptoms and possible causes. The most likely cause is listed first. Use this index to help you decide which FRUs to replace when servicing the system.

- If you replace FRUs or perform an action and the problem is still not corrected, go to "MAP 1540: Minimum Configuration" on page 57 unless otherwise indicated in the tables.
- If you replace FRUs or perform an action and the problem is corrected, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**Note:** Do not shut down the system if the FRU was replaced by hot swap.

## Four-Character Checkpoints

Four-character progress codes and checkpoints in the form 8xxx, 9xxx, Axxx, Bxxx, and Exxx are listed in "Firmware Checkpoints" on page 91. If you have a four-character code that begins with any character other than 8, 9, A, B, or E, refer to the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Operator Panel Replacement

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.

## 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 gets updated.

## Determining Location Code

If you have an error code in the form 2xxx xxxx or Exxx, and no location code associated with it, the location code may possibly be found in three places, depending on the state of the system:

- 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 “Display Error Log” on page 299.
- 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 264, 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.

## Checkpoint and Error Code Index

The following table is an index to the checkpoints or error codes that you may receive to help diagnose a failure. Locate the code you received and follow the instructions to determine your next step.

*Table 3. Checkpoint and Error Code Index*

| Checkpoint or Error Code | What You Should Do |
|---|---|
| 0000 xxxx | Operator Panel Error Codes<br><br>Go to “Operator Panel Error Codes” on page 109 and follow the instructions in the Operator Panel Error Code table. |
| 1xxx xxxx | System Power Control Network (SPCN) Error Codes<br><br>Go to “SPCN Error Codes” on page 110 and follow the instructions in the SPCN Error Code table. |
| 2xxx xxxx | Firmware Error Codes<br><br>Go to “Firmware Error Codes” on page 117 and follow the instructions in the Firmware Error Code table. |
| 4xxx xxxx | Service Processor Error Codes<br>1. Perform slow boot. See “Performing Slow Boot” on page 107.<br>2. If the error codes are 406x xxxx or 450x xxxx, and if their actions call out memory DIMMs or cards containing memory DIMMs, go to “Memory-Related Error Codes” on page 108. For all other error codes, go to “Confirming Initial Error Code” on page 107.<br>3. Go to “Service Processor Error Codes” on page 138 and follow the instructions in the Service Processor Error Codes table. |
| 8xxx<br>9xxx<br>Axxx<br>Bxxx | Service Processor Checkpoints<br><br>Go to “Service Processor Checkpoints” on page 85 for more information on these checkpoints. |
| B006 xxxx<br>B1xx xxxx | Common Firmware Error Codes<br>1. Go to “Common Firmware Error Codes” on page 239, and follow the instructions in the Common Firmware Error Code table.<br>2. Perform slow boot. See “Performing Slow Boot” on page 107.<br>3. Confirm initial error code. See “Confirming Initial Error Code” on page 107. |
| Exxx | Firmware Checkpoints<br><br>Go to “Firmware Checkpoints” on page 91 for more information on these checkpoints. |

*Table 3. Checkpoint and Error Code Index (continued)*

| Checkpoint or Error Code | What You Should Do |
|---|---|
| Mxxx xxxx | Problem Determination-Generated Error Codes<br><br>Go to “Problem Determination-Generated Error Codes” on page 247, and follow the instructions in the More General Error Code table. |

## Performing Slow Boot

On this system, the error code displayed in the operator panel may not indicate the root cause of the problem. To fully analyze all of the available information, perform the following steps before doing a hardware repair or replacement:

1. Record the 8-character error code (and location code if present) in operator panel.
2. Do a slow-mode boot to the SMS menus. This can be specified using the System Power Control Menu on the service processor main menu. (A fast-mode boot skips much of the built-in diagnostic testing.) A slow-mode boot may yield a new 8-character error code on the operator panel and new errors in the service processor error log. If a new error code is reported, use it in subsequent steps to continue problem analysis. If the system hangs with the same error code, continue with the next step in the Checkpoint and Error Code Index. If no 8-character error code is displayed on the operator panel, use the original error code and continue with the next step in the Checkpoint and Error Code Index.

## 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 264).

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. Examine the time stamp associated with each error. (The time stamps in the service processor error log reflect coordinated universal time (CUT), which is also referred to as Greenwich mean time.)

Find the error code in the service processor error log that directed you to this note. (If the error code is not in the error log, perform the service actions for the error code that was first reported.) Examine the time stamps to 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. To get a list of possible FRUs, select the detail screen for each error code and 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 the problem is fixed, or you reach the error code that was first reported. If the system is still not fixed, go to “MAP 1540: Minimum Configuration” on page 57.

## Memory-Related Error Codes

You have been directed here because you have an 8-character error code that indicates a problem with system memory. This section will help you isolate to the failing FRU.

- If the location code or the service action calls out one DIMM, do the following:
  1. Replace the memory DIMM.
  2. Replace the memory group (pair or quad).
  3. Replace the memory card.
- If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration menu to verify memory DIMMs state (see ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information), then do the following:
  1. From the Memory Configuration/Deconfiguration menu, select the card(s) specified by the location code(s) of the failing DIMM(s). If the first character of the error status of any DIMM is 1, 2, or 3 (but not 0 or 4), this is a suspect DIMM. Record its location. See “System Information Menu” on page 264 for more information on the error status of the DIMMs.
  2. If only one DIMM was recorded in the previous step:
     a. Replace the DIMM.
     b. Replace the memory group (pair or quad).
     c. Replace the memory card.
  3. If more than one DIMM was recorded, and the DIMMs reside in more than one group (pair or quad):
     a. Replace the memory card.
     b. Replace all of the failing DIMMs.
  4. If more than one DIMM was recorded, and the DIMMs reside in one group (pair or quad):
     a. Replace all of the failing DIMMs.
     b. Replace the memory card.
- Boot the system to the SMS menus. Power off the system and go to the service processor Memory Configuration/Deconfiguration Menu to verify that all memory DIMMs are in the configured state after the repair action. Go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

## Operator Panel Error Codes

**Attention:** If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Minimum Configuration” on page 57 unless otherwise indicated in the tables.

If you replace FRUs or perform an action and the problem is corrected, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**Note:** Do not shut down the system if the FRU was replaced by hot swap.

*Table 4. Operator Panel Error Codes*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 0000 1111 | At power on, failure of power-good signal from power supply | 1. System board<br>Location: P1<br>2. Power supply<br>Location: V1 or V2 or V3 |
| 0000 1112 | At power off, failure of power-good signal from power supply | 1. System board<br>Location: P1<br>2. Power supply<br>Location: V1 or V2 or V3 |
| 0000 1113 | While power on, failure of power-good signal from power supply | 1. System board<br>Location: P1<br>2. Power supply<br>Location: V1 or V2 or V3 |
| 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 (by activating the pinhole reset switch or by disconnecting, then reconnecting, power).<br>2. System board, Location: P1 |
| 0000 3333 | SPCN communications error | System board, Location: P1 |
| 0000 3334 | I2C repeater error | System board, Location: P1 |
| 0000 BBBB | TOD battery malfunction | Location: P1-V4 |

## SPCN Error Codes

**Attention:** If a power supply or fan is hot-swapped, wait five minutes, then recheck the AIX error log. If the system has to be shut down to replace a power supply or fan, reboot the system, wait five minutes after the AIX login prompt appears, then recheck the AIX error log. If the detailed information for the most recent error with the same identifier indicates that the original problem has not been fixed by performing the first action in the action column, continue with the next action in the action column.

**Attention:** If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Minimum Configuration” on page 57 unless otherwise indicated in the tables.

If you replace FRUs or perform an action and the problem is corrected, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**Note:** Do not shut down the system if the FRU was replaced by hot swap.

*Table 5. SPCN Error Codes*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 1011 00AC | ac loss or brownout detected | Information message |
| 1011 00EF | Room emergency power off detected | Information message |
| 1011 1510 | Power supply 1 ac source failure | 1. Check power input to power supply.<br>2. Power supply, Location: V1<br>3. System board, Location: P1 |
| 1011 1511 | Power supply 1 | 1. Power supply 1, Location: V1<br>2. If the problem is not resolved, reinstall the original supply in location V1. Then replace power supply 2, location V2, with the new supply.<br>3. If the problem is not resolved, reinstall the original supply in location V2. Then replace power supply 3 (if present), location V3, with the new supply.<br>4. Replace the system board Location: P1 |
| 1011 1512 | Power supply 1 | 1. Power supply, Location: V1<br>2. System board Location: P1 |

*Table 5. SPCN Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 1011 1513 | Power supply 1 | 1. Power supply, Location: V1<br>2. System board Location: P1 |
| 1011 1514 | Power supply 1 | 1. Power supply, Location: V1<br>2. System board Location: P1 |
| 1011 1516 | Power supply 1 missing | Power supply, Location: V1 |
| 1011 1520 | Power supply 2 ac source failure | 1. Check power input to power supply.<br>2. Power supply, Location: V2<br>3. System board, Location: P1 |
| 1011 1521 | Power supply 1 | 1. Power supply 2 Location: V2<br>2. If the problem is not resolved, reinstall the original supply in location V2. Then replace power supply 1, location V1, with the new supply.<br>3. If the problem is not resolved, reinstall the original supply in location V1. Then replace power supply 3 (if present), location V3, with the new supply.<br>4. Replace the system board Location: P1 |
| 1011 1522 | Power supply 2 non-power fault | 1. Power supply Location: V2<br>2. System board Location: P1 |
| 1011 1523 | Power supply 2 domain fault | 1. Power supply Location: V2<br>2. System board Location: P1 |
| 1011 1524 | Power supply 2 cooling fault | 1. Power supply Location: V2<br>2. System board Location: P1 |
| 1011 1526 | Power supply 2 missing | Power supply, Location: V2 |
| 1011 1530 | Power supply 3 ac source | 1. Check power input to power supply.<br>2. Power supply, Location: V3<br>3. System board, Location: P1 |

*Table 5. SPCN Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 1011 1531 | Power supply 1 | 1. Power supply 3<br>Location: V3<br>2. If the problem is not resolved, reinstall the original supply in location V3. Then replace power supply 1, location V1, with the new supply.<br>3. If the problem is not resolved, reinstall the original supply in location V1. Then replace power supply 2, location V2, with the new supply.<br>4. Replace the system board<br>Location: P1 |
| 1011 1532 | Power supply 3 | 1. Power supply<br>Location: V3<br>2. System board<br>Location: P1 |
| 1011 1533 | Power supply 3 | 1. Power supply<br>Location: V3<br>2. System board<br>Location: P1 |
| 1011 1534 | Power supply 3 | 1. Power supply<br>Location: V3<br>2. System board<br>Location: P1 |
| 1011 1536 | Power supply 3 missing | Power supply, Location: V3 |
| 1011 1611 | CEC regulator 1 fault | Processor unit, Location: P1-C1 |
| 1011 1612 | CEC regulator 1 non-power fault | 1. Processor unit<br>Location: P1-C1<br>2. System board<br>Location: P1 |
| 1011 1613 | CEC regulator 1 domain fault | Processor unit, Location: P1-C1 |
| 1011 1621 | CEC regulator 2 fault | Processor unit, Location: P1-C1 |
| 1011 1622 | CEC regulator 2 non-power fault | 1. Processor unit<br>Location: P1-C1<br>2. System board<br>Location: P1 |
| 1011 1623 | CEC regulator 2 domain fault | Processor unit, Location: P1-C1 |

*Table 5. SPCN Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 1011 1B01 | 12V loading | 1. Replace power supply V1<br>2. Use removed V1 to replace V2<br>3. Use removed V2 to replace V3 (if present)<br>4. System board, Location: P1 |
| 1011 1B02 | 5V loading | 1. Replace power supply V1<br>2. Use removed V1 to replace V2<br>3. Use removed V2 to replace V3 (if present)<br>4. System board, Location: P1 |
| 1011 1B03 | 3.3V loading | 1. Replace power supply V1<br>2. Use removed V1 to replace V2<br>3. Use removed V2 to replace V3 (if present)<br>4. System board, Location: P1 |
| 1011 1B04 | -12V loading | 1. Replace power supply V1<br>2. Use removed V1 to replace V2<br>3. Use removed V2 to replace V3 (if present)<br>4. System board, Location: P1 |
| 1011 1B05 | 1.8V loading | 1. Replace power supply V1<br>2. Use removed V1 to replace V2<br>3. Use removed V2 to replace V3 (if present)<br>4. System board, Location: P1 |
| 1011 1B06 | 2.5V loading | 1. Replace power supply V1<br>2. Use removed V1 to replace V2<br>3. Use removed V2 to replace V3 (if present)<br>4. System board, Location: P1 |
| 1011 1B07 | 2.5V loading | 1. Replace power supply V1<br>2. Use removed V1 to replace V2<br>3. Use removed V2 to replace V3 (if present)<br>4. System board, Location: P1 |
| 1011 2600 | Power-good fault | System board, Location: P1 |
| 1011 2601 | Power-good fault | System board, Location: P1 |
| 1011 2603 | Power domain fault | 1. Power supply, Location V1 or V2 or V3<br>2. System board, Location: P1 |
| 1011 2604 | Power domain fault | 1. Power supply, Location V1 or V2 or V3<br>2. System board, Location: P1 |
| 1011 2610 | Missing or misplugged memory | Inspect system memory for proper installation of memory riser cards and DIMMs. |

*Table 5. SPCN Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 1011 2611 | Regulator | 1. Processor card<br>Location: P1-C1<br>2. System board<br>Location: P1 |
| 1011 2612 | SPCN Problem | System board, Location: P1 |
| 1011 2613 | Power configuration fault | 220V ac required |
| 1011 3100 | I2C controller fault | System board, Location: P1 |
| 1011 3101 | I2C bus 1 fault | 1. Operator panel<br>Location: L1<br>2. System board<br>Location: P1 |
| 1011 3105 | I2C bus 5 fault | System board, Location: P1 |
| 1011 3106 | I2C bus 6 fault | System board, Location: P1 |
| 1011 3110 | DASD backplane 1 | DASD cage 1, Location: B1 |
| 1011 3111 | DASD backplane 2 | DASD cage 2, Location: B2 |
| 1011 3113 | RIO bus adapter | System board, Location: P1 |
| 1011 3114 | PCI backplane fault | System board, Location: P1 |
| 1011 3115 | Operator panel fault | Operator panel, Location: L1 |
| 1011 3116 | Fan controller fault | System board, Location: P1 |
| 1011 3118 | SPCN problem | System board, Location: P1 |
| 1011 3119 | DASD backplane 1 | DASD cage 1, Location: B1 |
| 1011 311A | DASD backplane 2 | DASD cage 2, Location: B2 |
| 1011 311C | Thermal sensor | 1. Operator panel<br>Location: L1<br>2. System board<br>Location: P1 |
| 1011 7610 | Fan 1 failure | 1. Fan 1<br>Location: F1<br>2. System board<br>Location: P1 |
| 1011 7611 | Missing fan 1 | Fan 1, Location: F1 |
| 1011 7620 | Fan 2 failure | 1. Fan 2<br>Location: F2<br>2. System board<br>Location: P1 |
| 1011 7621 | Missing fan 2 | Fan 2, Location: F2 |
| 1011 7630 | Fan 3 failure | 1. Fan 3<br>Location: F3<br>2. System board<br>Location: P1 |

*Table 5. SPCN Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 1011 7631 | Missing fan 3 | Fan 3, Location: F3 |
| 1011 7640 | Fan 4 failure | 1. Fan 4<br>Location: F4<br>2. System board<br>Location: P1 |
| 1011 7641 | Missing fan 4 | Fan 4, Location: F4 |
| 1011 7650 | Power supply 1 fan failure | 1. Power supply 1<br>Location: V1<br>2. System board<br>Location: P1 |
| 1011 7651 | Missing power supply 1 fan | Power supply 1, Location: V1 |
| 1011 7660 | Power supply 2 fan failure | 1. Power supply 2<br>Location: V2<br>2. System board<br>Location: P1 |
| 1011 7661 | Missing power supply 2 fan | Power supply 2, Location: V2 |
| 1011 7670 | Power supply 3 fan failure | 1. Power supply 3<br>Location: V3<br>2. System board<br>Location: P1 |
| 1011 7671 | Missing power supply 3 fan | Power supply 3, Location: V3 |
| 1011 8400 | VPD configuration problem | Ignore all location codes.<br>Go to MAP 1540: Minimum Configuration. |
| 1011 8401 | VPD access problem | Ignore all location codes.<br>Go to MAP 1540: Minimum Configuration. |
| 1011 8402 | VPD access problem | Ignore all location codes.<br>Go to MAP 1540: Minimum Configuration. |
| 1011 8403 | VPD level mismatch | Ignore all location codes.<br>Go to MAP 1540: Minimum Configuration. |
| 1011 8404 | Processor VPD mismatch | 1. Processor card, Location: P1-C1<br>2. System board, Location: P1 |
| 1011 8409 | Processor VPD | 1. Ensure that the processor card is the correct type for the system and is properly installed.<br>2. Processor card, Location: P1-C1 |
| 1011 840A | VPD +5 stuck high | Ignore all location codes.<br>Go to MAP 1540: Minimum Configuration. |

*Table 5. SPCN Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 1011 840B | VPD +5 stuck low | Ignore all location codes.<br>Go to MAP 1540: Minimum Configuration. |
| 1011 840C | Memory DIMM misplugged | Inspect system memory for proper installation of memory riser cards and DIMMs. |
| 1011 840D | SPCN configuration mismatch | System board, Location: P1 |
| 1011 840E | SPCN default configuration loaded | System board, Location: P1 |
| 1011 840F | Configuration ID not recognized | System board, Location: P1 |
| 1011 8413 | Invalid processor 1 VPD | Processor card, Location: P1-C1 |
| 1011 8423 | No processor 1 VPD | Processor card, Location: P1-C1 |
| 1011 9012 | Invalid address | System board, Location: P1 |
| 1011 9013 | Invalid address | System board, Location: P1 |
| 1011 9014 | Invalid address mode | Update system firmware |
| 1011 9038 | Slave node fault | System board, Location: P1 |
| 1011 9039 | Rack node fault | System board, Location: P1 |
| 1011 9042 | EEPROM failure | System board, Location: P1 |
| 1011 9043 | Download failure | 1. Check for system firmware update.<br>2. Call service support. |
| 1011 9046 | QDS packet sequence error | 1. Check for system firmware update.<br>2. Call service support. |
| 1011 9047 | QDS block sequence error | 1. Check for system firmware update.<br>2. Call service support. |
| 1011 9080 | Undefined status code received | System board, Location: P1 |
| 1011 90F0 | Rack dropped from configuration | 1. Reset system and reboot<br>2. System board, Location: P1 |
| 1011 9101 | SPCN failed to respond to CSP in time | System board, Location: P1 |
| 1011 9102 | Permanent address assignment failed | System board, Location: P1 |
| 1011 9103 | Download initialize timeout | System board, Location: P1 |
| 1011 9104 | Download completion timeout | System board, Location: P1 |
| 1011 9105 | Load damaged timeout | System board, Location: P1 |
| 1011 9109 | Download failure | System board, Location: P1 |
| 1011 9114 | Firmware image corrupted | System board, Location: P1 |

*Table 5. SPCN Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 1011 9116 | SPCN communication failure with operator panel | 1. Operator panel Location: L1<br>2. System board Location: P1 |

## Firmware Error Codes

**Attention:** If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Minimum Configuration” on page 57 unless otherwise indicated in the tables.

If you replace FRUs or perform an action and the problem is corrected, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**Note:** Do not shut down the system if the FRU was replaced by hot swap.

*Table 6. Firmware Error Codes*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 2011 0xxx | Power supply | |
| 2011 031y | Power supply failure | 1. Replace power supply “y”.<br>2. Check the ac power source. |
| 2022 0000 | RIO bus running slow | 1. Notify support<br>2. Processor card, Location: P1-C1<br>3. System board, Location: P1 (See note 3 on page 41.) |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 203w 0xyz | Remote I/O (RIO) configuration warning.<br><br>This code indicates that an RIO configuration was detected that does not result in complete loops. The system continues to boot, however performance or recovery capability may be reduced. In some cases, the problem may result in missing I/O. Remote I/O drawers are connected in loops. Use the letters w, y, and z in the error code to isolate the location of the open loop. Check RIO cables for loose connections, and verify power on the I/O drawers by the presence of fan motion.<br><br>The following numbers may be used to help isolate the failing component.<br>• w = loop number, this is either 0 or 1 in a system with 2 RIO loops.<br>• x = Always 0.<br>• y is either 1 or 2 on a system with 2 loops. y indicates the nearest associated RIO port number on the system according to the following table:<br>`y = Nearest RIO Port`<br>`1 = 0`<br>`2 = 1`<br>• z = B, indicates a missing return line from the I/O drawer to the system.<br>• z = C, indicates a missing link between two I/O drawers.<br>• z = E, indicates an I/O drawer was found connected to RIO port 3 with no return to the system, and no I/O drawer was found connected to RIO port 2. In this case, the I/O connected to RIO port 3 is removed from the configuration because the cause of the error and the proper location of the I/O cannot be determined. | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 20A8 0xxx | Remote initial program load (RIPL) error | |
| 20A8 0000 | Insufficient information to boot. | Verify the IP address. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 20A8 0001 | Client IP address is already in use by other network device | Change IP address. |
| 20A8 0002 | Cannot get gateway IP address | Refer to Table 2 on page 91 using code **E174**. |
| 20A8 0003 | Cannot get server hardware address | Refer to Table 2 on page 91 using code **E174**. |
| 20A8 0004 | Bootp failed | Refer to Table 2 on page 91 using code **E175**. |
| 20A80005 | File transmission (TFTP) failed. | Check network connection, try again. |
| 20A8 0006 | Boot image too large | Contact your next level of support for assistance. |
| 20D0 000F | Self-test failed on device, no error and/or location code information available | Refer to “System Location Codes” on page 25 to see if a location code is available for the device the error was reported against.<br>1. Replace device indicated by the location code (if available).<br>2. Go to “MAP 1540: Minimum Configuration” on page 57 |
| 20D0 0010 | Self-test failed on device, cannot locate package | Contact your service support representative for assistance. |
| 20D0 0011 | Firmware RTAS attempt to allocate memory failed. | Contact your next level of support for assistance. |
| 20E0 0xxx | Security | |
| 20E0 0001 | Privileged-access password entry error. | The password has been entered incorrectly. Retry installing the password. |
| 20E0 0004 | Battery drained or needs replacement | 1. Replace battery.<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20E0 0009 | Invalid password entered - system locked | The password has been entered incorrectly 3 times.<br><br>Turn off, then turn on the system unit, then enter the password correctly. |
| 20EE 0003 | IP parameter requires 3 dots ″.″ | Enter valid IP parameter.<br><br>Example: 000.000.000.000 |
| 20EE 0004 | Invalid IP parameter | Enter valid IP parameter.<br><br>Example: 000.000.000.000 |
| 20EE 0005 | Invalid IP parameter (>255) | Enter valid IP parameter.<br><br>Example: 255.192.002.000 |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 20EE 0006 | No recognized SCSI adapter present | This warning occurs when the selected SMS function cannot locate any SCSI adapter supported by the function. If a supported SCSI adapter is installed:<br>1. Replace SCSI adapter(s).<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20EE 0007 | Keyboard not found | 1. Plug in keyboard.<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20EE 0008 | No configurable adapters were found in the system by the remote IPL menu in the SMS utilities | This warning occurs when the remote IPL menu in the SMS utilities cannot locate any LAN adapters that are supported by the remote IPL function. If a supported device is installed:<br>1. Replace the device or adapter.<br>2. Replace the I/O drawer planar in the drawer(s) containing the adapter. |
| 20EE 0009 | Unable to communicate with the service processor | Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20EE 000B | The system was not able to find an operating system boot record on the devices listed in the boot list. This can be caused by the wrong devices being in the boot record, a problem that prevents the system from communicating with the device that contains the boot record, or the boot record being corrupted. | Go to “Boot Problems and Concerns” on page 102. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 20EE 000C | Pointer to the operating system not found in non-volatile storage. | Values normally found in non-volatile storage that point to the location of an operating system were not found. This can happen for two reasons; either your installed operating system does not support storing the values or some event occurred that caused the system to lose non-volatile storage information (drainage or replacement of the battery). If you are running AIX, this information can be reconstructed by running the **bootlist** command specifying the device that the operating system is installed on. Refer to your AIX documentation for the exact syntax and usage of the **bootlist** command.<br><br>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, use the System Management Services menus to modify the boot sequence (also known as boot list) to include devices that are known to contain a copy of the operating system. For example, select a hard disk known to have a copy of the operating system as the first and only device in the boot sequence (boot list) and attempt to boot again. |
| 20FB 0xxx | Permanent addressing to map SPCN addresses to match RIO addresses. **Note:** 20FB 0xxx error codes will cause the system to hang. | |
| 20FB 0010 | Failed to find the keyword offset of SPCN configuration table in NVRAM | 1. Clear NVRAM and retry<br>2. Check for system firmware update<br>3. Replace the system board. (See note 3 on page 41.) Location: P1 |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 20FB 0020 | Invalid SPCN configuration table flag before SPCN table update | 1. Clear NVRAM and retry<br>2. Check for system firmware update<br>3. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FB 0021 | Invalid SPCN configuration table flag after SPCN table update | 1. Clear NVRAM and retry<br>2. Check system firmware update<br>3. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FB 0030 | Failure to read SPCN address from PCI host bridge.<br><br>Uninitialized--failed to read SPCN address | 1. Check for system firmware update<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FB 0031 | Failure to read SPCN address from PCI host bridge.<br><br>Initialization in progress--SPCN initializing the VPD segments | 1. Check for system firmware update<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FB 0032 | Failure to read SPCN address from PCI host bridge. | 1. Check for system firmware update<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FB 003A | Failure to read SPCN address from PCI host bridge.<br><br>Invalid RIO or drawer number. | 1. Check for system firmware update<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FB 0040 | Failed to match SPCN address to SPCN node entry address. | 1. Check for system firmware update<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FB 0050 | CSP mailbox failed to update SPCN configuration table. | 1. Check for system firmware update<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FB 99xy | The number of I/O drawers reported by RIO does not match the number of I/O drawers reported by SPCN, where x is the number of drawers reported by RIO and y is the number of drawers reported by SPCN. This error code should cause the system to hang. | 1. Check RIO and SPCN cabling.<br>2. If there is an error code displayed by any of the secondary I/O drawers, perform the actions for that error code.<br>3. If there is no error code displayed by any of the secondary I/O drawers, examine the service processor error logs to obtain an error code. |
| 20FC 0xxx | Retrieving power, package, cooling VPD via SPCN. | |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 20FC 0010 | Failed to match RIO addressing with SPCN node entry address. | Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FC 0020 | Failed to retrieve power, package, cooling VPD via SPCN. Service processor mailbox failed to get VPD. | 1. Check for system firmware update<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FC 0021 | Failed to retrieve power, package, cooling VPD via SPCN. System mailbox failed to get power, packaging, and cooling device VPD. | 1. Check for system firmware update<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 20FC 0030 | Corrupted power, packaging, and cooling device VPD format in the SPCN configuration table. | 1. Check for system firmware update<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 2100 0001 | Unsupported SCSI bus mode | Before replacing any system components, refer to the notes in error code 21A0 0xxx.<br>1. Disconnect the SCSI cable from the SCSI controller the location code identifies and reboot the system.<br>2. If the error code persists, replace the SCSI controller (or I/O planar if SCSI controller is integrated).<br>3. Reconnect the SCSI cable disconnected in step 1, and remove all the SCSI devices attached to the cable and reboot the system.<br>4. If the error code persists, replace the SCSI cable.<br>5. One at a time, reconnect the SCSI devices disconnected in step 3. If the error code returns, replace the last SCSI device you reconnected.<br><br>If all SCSI devices have been reattached and the error code has not been returned, there may have been a bad connection. Go to ″MAP 410: Repair Checkout″ in in the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 2100 0002 | Unsupported SCSI bus mode - high voltage differential | Before eplacing any system components, refer to the notes in error code 21A0 0xxx.<br>1. Disconnect the SCSI cable from the SCSI controller the location code identifies and reboot the system.<br>2. If the error code persists, replace the SCSI controller (or I/O planar if SCSI controller is integrated).<br>3. Reconnect the SCSI cable disconnected in step 1, and remove all the SCSI devices attached to the cable and reboot the system.<br>4. If the error code persists, replace the SCSI cable.<br>5. One at a time, reconnect the SCSI devices disconnected in step 3. If the error code returns, replace the last SCSI device you reconnected.<br><br>If all SCSI devices have been reattached and the error code has not been returned, there may have been a bad connection. Go to ″MAP 410: Repair Checkout″ in in the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 2100 0004 | Cannot determine SCSI bus mode | Before eplacing any system components, refer to the notes in error code 21A0 0xxx.<br>1. Disconnect the SCSI cable from the SCSI controller the location code identifies and reboot the system.<br>2. If the error code persists, replace the SCSI controller (or I/O planar if SCSI controller is integrated).<br>3. Reconnect the SCSI cable disconnected in step 1, and remove all the SCSI devices attached to the cable and reboot the system.<br>4. If the error code persists, replace the SCSI cable.<br>5. One at a time, reconnect the SCSI devices disconnected in step 3. If the error code returns, replace the last SCSI device you reconnected.<br><br>If all SCSI devices have been reattached and the error code has not been returned, there may have been a bad connection. Go to ″MAP 410: Repair Checkout″ in in the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 21A0 0001 | SCSI DASD - test unit ready failed - hardware error | **Notes:**<br>1. Before replacing any system components:<br>a. Ensure that the controller and each device on the SCSI bus is assigned a unique SCSI ID.<br>b. Ensure that the SCSI bus is properly terminated.<br>c. Ensure that the SCSI signal and power cables are securely connected and not damaged.<br>2. The location code information is required to identify the ID of SCSI device failures as well as to indicate the location of the controller to which the device is attached. Check the system error logs to determine the location code information associated with the error code.<br>1. Replace the SCSI device.<br>2. Replace the SCSI cable.<br>3. Replace the SCSI backplane.<br>4. Replace the SCSI controller. |
| 21A0 0002 | SCSI DASD - test unit ready failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the media (removable media devices).<br>2. Replace the SCSI device. |
| 21A0 0003 | SCSI DASD - send diagnostic failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 21A0 0004 | SCSI DASD - send diagnostic failed - DevOfl cmd | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 21E0 0001 | SCSI tape - test unit ready failed - hardware error | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the SCSI device.<br>2. Replace the SCSI cable.<br>3. Replace the SCSI controller. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 21E0 0002 | SCSI tape - test unit ready failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the media.<br>2. Replace the SCSI device. |
| 21E0 0003 | SCSI tape - send diagnostic failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 21E0 0004 | SCSI tape - send diagnostic failed - DevOfl cmd | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 21ED 0001 | SCSI changer - test unit ready failed - hardware error | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the SCSI device.<br>2. Replace the SCSI cable.<br>3. Replace the SCSI controller. |
| 21ED 0002 | SCSI changer - test unit ready failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the media.<br>2. Replace the SCSI device. |
| 21ED 0003 | SCSI changer - send diagnostic failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 21ED 0004 | SCSI changer - send diagnostic failed - DevOfl cmd | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 21EE 0001 | Undetermined SCSI device type - test unit ready failed - hardware error | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the SCSI device.<br>2. Replace the SCSI cable.<br>3. If the missing SCSI devices are connected to the same backplane, replace the SCSI backplane (6-pack or 2-pack).<br>4. Replace the SCSI controller. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 21EE 0002 | Undetermined SCSI device type - test unit ready failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the media (removable media devices).<br>2. Replace the SCSI device. |
| 21EE 0003 | Undetermined SCSI device type - send diagnostic failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 21EE 0004 | Undetermined SCSI device type - send diagnostic failed - DevOfl cmd | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 21F0 0001 | SCSI CD-ROM - test unit ready failed - hardware error | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the SCSI device.<br>2. Replace the SCSI cable.<br>3. Replace the SCSI controller. |
| 21F0 0002 | SCSI CD-ROM - test unit ready failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the media.<br>2. Replace the SCSI device. |
| 21F0 0003 | SCSI CD-ROM - send diagnostic failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 21F0 0004 | SCSI CD-ROM - send diagnostic failed - DevOfl cmd | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 21F2 0001 | SCSI read/write optical - test unit ready failed - hardware error | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the SCSI device.<br>2. Replace the SCSI cable.<br>3. Replace the SCSI controller. |
| 21F2 0002 | SCSI read/write optical - test unit ready failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001.<br>1. Replace the media.<br>2. Replace the SCSI device. |
| 21F2 0003 | SCSI read/write optical - send diagnostic failed - sense data available | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 21F2 0004 | SCSI read/write optical - send diagnostic failed - DevOfl cmd | Before replacing any system components, refer to the notes in error code 21A0 0001. Replace the SCSI device. |
| 2200 0001 | PCI Ethernet BNC/RJ-45 or PCI Ethernet AUI/RJ-45 adapter internal wrap test failure | Replace the adapter. See "Determining Location Code" on page 105 for location code information related to this error. See "Replacing the Network Adapter" on page 105 for adapter information related to this error. |
| 2200 1001 | 10/100 Mbps Ethernet PCI adapter internal wrap test failure | Replace the adapter. See "Determining Location Code" on page 105 for location code information related to this error. See "Replacing the Network Adapter" on page 105 for adapter information related to this error. |
| 2201 0001 | PCI Auto LANstreamer token ring adapter failed to complete hardware initialization. | Replace the adapter. See "Determining Location Code" on page 105 for location code information related to this error. See "Replacing the Network Adapter" on page 105 for adapter information related to this error. |
| 2201 1001 | PCI token ring adapter failed to complete hardware initialization. | Replace the adapter. See "Determining Location Code" on page 105 for location code information related to this error. See "Replacing the Network Adapter" on page 105 for adapter information related to this error. |
| 25A0 0001 | Cache L2 controller failure | 1. Replace the processor card. Location: P1-C1<br>2. Replace the system board. (See note 3 on page 41.) Location: P1. |
| 25A1 0001 | Cache L2 SRAM failure | Replace the processor card. Location: P1-C1 |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 25A8 0xxx | NVRAM problems | Errors reported against NVRAM can be caused by low battery voltage and (more rarely) power outages that occur during normal system usage. With the exception of the 25A80000 error, these errors are warnings that the NVRAM data content had to be reestablished and do not require any FRU replacement unless the error is persistent. When one of these errors occurs, any system customization (for example, boot device list) information has been lost; the system may need to be reconfigured.<br><br>If the error is persistent, replace system board. (See note 3 on page 41.) Location: P1 |
| 25A8 0000 | Initialization failed, device test failed | Refer to Action under error code 25A80xxx. |
| 25A8 0001 | Init-NVRAM invoked, all of NVRAM initialized | Refer to Action under error code 25A80xxx. |
| 25A8 0002 | Init-NVRAM invoked, some data partitions may have been preserved. | Refer to Action under error code 25A80xxx. |
| 25A8 0011 | Data corruption detected, all of NVRAM initialized | Refer to Action under error code 25A80xxx. |
| 25A8 0012 | Data corruption detected, some data partitions may have been preserved. | Refer to Action under error code 25A80xxx. |
| 25A8 0021 | Data corruption detected during error log entry. All of NVRAM initialized | Refer to Action under error code 25A80xxx. |
| 25A8 0022 | Data corruption detected during error log entry. Some data partitions may have been preserved. | Refer to Action under error code 25A80xxx. |
| 25A8 0100 | NVRAM data validation check failed. | Turn off, turn on system unit and retry the operation before replacing any system component.<br><br>Refer to Action under error code 25A80xxx. |
| 25A8 0201 | Unable to expand target partition - Ssving configuration variable. | Refer to Action under error code 25A80xxx. |
| 25A8 0202 | Unable to expand target partition - writing error log entry. | Refer to Action under error code 25A80xxx. |
| 25A8 0203 | Unable to expand target partition - writing VPD data. | Refer to Action under error code 25A80xxx. |
| 25A8 0210 | Setenv/$Setenv parameter error - name contains a null character. | Refer to Action under error code 25A80xxx. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 25A8 0211 | Setenv/$Setenv parameter error - value contains a null character. | Refer to Action under error code 25A80xxx. |
| 25A8 0998 | NVRAMRC script evaluation error - command line execution error | Execution of a command line within the nvram configuration variable “nvramrc” (script) resulted in a “throw” being executed. This script can be modified by the system firmware **SMS** utilities, the operating system, PCI adapter ROM code or utility, or an operator (via the open firmware script editing command “nvedit”). It may not be possible to resolve the problem without a detailed analysis of the nvram script, the current system configuration, and device tree contents.<br>1. The problem can be caused by a SCSI adapter, whose SCSI bus ID has been changed from the default setting, no longer appearing in the system. This can be caused either by removing a SCSI adapter, or a problem with a SCSI adapter.<br>a. Select the SCSI ID utility from the **SMS** menu(s).<br>1) Verify the list of SCSI controllers/adapters. If the list is not correct, suspect a problem with the adapter(s) installed but not listed.<br>2) Select the option to save the configuration information.<br>3) Restart the system.<br>b. If the problem persists, boot the operating system and verify the SCSI bus IDs of any installed/available SCSI controllers (change as necessary), and restart the system.<br>2. Contact your support representative for further assistance. |
| 25A8 0999 | NVRAMRC script evaluation error - stack unbalanced on completion | This is a firmware debug environment error. There is no user action or FRU replacement for this error. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 25Cy y001 | Memory module is not supported. | Replace unsupported DIMM. Note that memory DIMMs are installed in groups but you may only receive an error for a single memory DIMM. Verify that all memory DIMMs in the group containing the specified memory DIMM are of the same type and size.<br><br>**yy** describes the memory DIMM as follows:<br><br>**00** Unrecognized/Unsupported memory DIMM<br><br>**28** 512 MB memory DIMM<br><br>**38** 128 MB memory DIMM<br><br>**58** 32 MB memory DIMM<br><br>**68** 256 MB memory DIMM<br><br>**78** 1 GB memory DIMM<br><br>**Notes:**<br><br>1. Refer to “System Memory” on page 16 for memory DIMM configuration rules. A memory DIMM must be replaced with a supported type of DIMM, and all DIMMs in a group must be of the same size.<br><br>2. Check the system error logs to determine the location code associated with the error code. Refer to “System Location Codes” on page 25 to locate the DIMM and the rest of its group. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 25Cy y002 | Memory module fails memory test. | If one memory DIMM is called out:<br>1. Replace the memory DIMM.<br>2. Replace the memory group.<br>3. Replace the memory riser card.<br><br>If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>1. From the memory configuration/deconfiguration menu, select the card(s) specified by the location code(s) of the failing memory DIMM(s). If the first character of the error status of any memory DIMM is 1, 2, or 3 (but not 0 or 4), this is a suspect memory DIMM. Record its location. See “System Information Menu” on page 264 for more information on the error status of memory DIMMs.<br>2. If only one DIMM was recorded in step one:<br>a. Replace the DIMM<br>b. Replace the memory group<br>c. Replace the memory riser card<br>3. If more than one DIMM was recorded in step one and the DIMMs reside in more than one group (pair or quad):<br>a. Replace the memory riser card<br>b. Replace all failing DIMMs<br>4. If more than one DIMM was recorded in step one and they reside in one group (pair or quad)l:<br>a. Replace all failing DIMMs<br>b. Replace the memory group<br>c. Replace the memory riser card |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 2602 0001 | Invalid PCI adapter vendor ID | 1. Move adapter to another slot (behind a different PCI bus).<br>2. Check for available firmware updates for adapter. Apply update if available.<br>3. Run AIX diagnostics on adapter. Replace if indicated.<br>4. Replace adapter. See “Replacing the Network Adapter” on page 105 for adapter information related to this error.<br>5. Check for system firmware updates. Apply if update available.<br>6. Replace system board. (See note 3 on page 41.) Location: P1 |
| 2602 0002 | Invalid PCI adapter device ID | 1. Move adapter to another slot (behind a different PCI bus).<br>2. Check for available firmware updates for adapter. Apply update if available.<br>3. Run AIX diagnostics on adapter. Replace if indicated.<br>4. Replace adapter. See “Replacing the Network Adapter” on page 105 for adapter information related to this error.<br>5. Check for system firmware updates. Apply if update available.<br>6. Replace system board. (See note 3 on page 41.) Location: P1 |
| 2602 0003 | Invalid PCI adapter class code | 1. Move adapter to another slot (behind a different PCI bus).<br>2. Check for available firmware updates for adapter. Apply update if available.<br>3. Run AIX diagnostics on adapter. Replace if indicated.<br>4. Replace adapter. See “Replacing the Network Adapter” on page 105 for adapter information related to this error.<br>5. Check for system firmware updates. Apply if update available.<br>6. Replace system board. (See note 3 on page 41.) Location: P1 |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 2602 0007 | Failed to allocate bus resources to PCI adapter | 1. Move adapter to another slot (behind a different PCI bus).<br>2. Check for available firmware updates for adapter. Apply update if available.<br>3. Run AIX diagnostics on adapter. Replace if indicated.<br>4. Replace adapter. See “Replacing the Network Adapter” on page 105 for adapter information related to this error.<br>5. Check for system firmware updates. Apply if update available.<br>6. Replace system board. (See note 3 on page 41.) Location: P1 |
| 2680 0A0y | MX-PCI bridge BIST failure | The problem is associated with bridge ″y.″<br><br>Replace the system board. (See note 3 on page 41.)<br><br>Location: P1 |
| 2680 0Cxx | Machine check occurred | 1. Replace the part identified by the location code associated with this error code.<br>2. If the location code associated with this error code identifies an adapter, replace it. See “Replacing the Network Adapter” on page 105 for adapter information related to this error. If replacing the adapter does not correct the problem, replace the system board. (See note 3 on page 41.) Location: P1<br><br>See “Determining Location Code” on page 105 for location code information related to this error. |
| 2803 0xxx | Real time clock (RTC) errors | |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 2803 0001 | RTC not updating - RTC initialization required | Errors reported against the real time clock can be caused by low battery voltage and (more rarely) power outages that occur during normal system usage. These errors are warnings that the real time clock data content needs to be reestablished 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.<br><br>To set/restore the time and date, use the operating system facility.<br><br>If the error is persistent:<br>1. Replace the battery.<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 2803 0002 | Bad time/date values | 1. Set time and date.<br>2. Refer to Action under error code 28030001. |
| 2803 0003 | RTC not updating - not correctable | Replace the system board. (See note 3 on page 41.) Location: P1 |
| 2803 0004 | RTC operating mode parameters (for example, data mode) changed | 1. Set time and date.<br>2. Refer to Action under error code 28030001. |
| 2803 0005 | RTC battery error | 1. Replace the battery.<br>**Note:** Password, time, and date need to be set.<br>2. Refer to Action under error code 28030001. |
| 2900 0002 | Keyboard/mouse controller failed self-test | Replace the system board. (See note 3 on page 41.) Location: P1 |
| 29A0 0003 | Keyboard not present/detected | 1. Keyboard<br>2. Keyboard cable<br>3. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 29A0 0004 | Keyboard stuck key detected | 1. Keyboard<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 29B0 0004 | Mouse not present/detected | 1. Mouse<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 2B2x xx11 | Processor is manually disabled. | Use the service processor menus to re-enable the processor and reboot the system. |

*Table 6. Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 2B20 0022 | Processor is deconfigured by the system. | 1. Replace the processor card, Location: P1-C1<br>2. System board, Location: P1 |
| 2B2x xx31 | Processor is failing POST | Replace the processor card. Location: P1-C1 |
| 2B20 0031 | Processor is failing POST or is manually disabled. | 1. If the processor is not enabled, use the service processor menus to enable the processor. Then reboot the system.<br>2. If the processor is failing POST, replace the processor card.<br><br>Location: P1-C1. |
| 2B20 0042 | Unknown processor card | Remove the unknown processor card. Location: P1-C1. |
| 2BA00000 | Service processor POST failure | Replace the system board. (See note 3 on page 41.) Location: P1 |
| 2BA0 0012 | Service processor reports self test failure | Replace the system board. (See note 3 on page 41.) Location: P1 |
| 2BA0 0013 | Service processor reports bad NVRAM CRC | If problem persists, replace the system board. (See note 3 on page 41.) Location: P1 |
| 2BA0 0017 | Service processor reports bad or low battery. | 1. Replace the battery.<br>2. Replace the system board. (See note 3 on page 41.) Location: P1 |
| 2BA0 0041 | Service processor VPD is corrupted. | Replace the system board. (See note 3 on page 41.) Location: P1 |

## Service Processor Error Codes

**Attention:** Follow the procedure defined in the “Checkpoint and Error Code Index” on page 106. If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Minimum Configuration” on page 57 unless otherwise indicated in the tables.

If you replace FRUs or perform an action and the problem is corrected, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**Note:** Do not shut down the system if the FRU was replaced by hot swap.

*Table 7. Service Processor Error Codes*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4066 0001 | Scan interface basic assurance tests detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4066 0003 | Scan interface basic assurance tests detected processor fault | All processors, Location: P1-C1 |
| 4066 0009 | Scan interface basic assurance tests detected memory fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4066 00A0 | Scan interface basic assurance tests detected service processor firmware fault | Update system firmware |
| 4066 00A1 | Scan interface basic assurance tests detected system firmware fault | 1. Check for AIX updates<br>2. Check for system firmware updates |
| 4066 00A2 | Scan interface basic assurance tests detected service processor firmware (PRD) fault | Update system firmware |
| 4066 00A3 | Scan interface basic assurance tests detected memory plugging fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4066 00A4 | Scan interface basic assurance tests detected application caused fault | Application software |
| 4066 00A5 | Scan interface basic assurance tests detected invalid system configuration | Verify that system components are supported and properly installed |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4066 00A6 | Scan interface basic assurance tests detected no usable memory | 1. Ensure that memory is properly installed<br>2. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57<br>4. If the problem is not fixed, call service support. |
| 4066 00A7 | Scan interface basic assurance tests detected hardware problem | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4066 00B0 | Scan interface basic assurance tests detected bus controller lock-unlock failure | System board, Location: P1 |
| 4066 00B1 | Scan interface basic assurance tests detected bus controller failure | System board, Location: P1 |
| 4066 00B7 | Scan interface basic assurance tests detected insufficient hardware resources to continue IPL | This error code appears after the initial testing by the service processor firmware on the processors and memory completed successfully, but a problem occurred when the firmware tried to communicate outside the processor and memory complex. Suspect a problem with the backplane, location: P1. |
| 4066 0100 | Scan interface basic assurance tests detected memory riser card fault | Memory riser card Location: P1-M2 |
| 4066 0101 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.15 |
| 4066 0102 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.1 |
| 4066 0103 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.16 |
| 4066 0104 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.2 |
| 4066 010D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.1 x4 |
| 4066 0111 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.13 |
| 4066 0112 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.3 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4066 0113 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.14 |
| 4066 0114 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.4 |
| 4066 011D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.3 x4 |
| 4066 0121 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.11 |
| 4066 0122 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.5 |
| 4066 0123 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.12 |
| 4066 0124 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.6 |
| 4066 012D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.5 x4 |
| 4066 0131 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.9 |
| 4066 0132 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.7 |
| 4066 0133 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.10 |
| 4066 0134 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.8 |
| 4066 013D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M2.7 x4 |
| 4066 01FF | Scan interface basic assurance tests detected memory failure on riser card 2 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4066 0200 | Scan interface basic assurance tests detected memory riser card fault | Memory DIMM Location: P1-M1 |
| 4066 0201 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.15 |
| 4066 0202 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.1 |
| 4066 0203 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.16 |
| 4066 0204 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.2 |
| 4066 020D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.1 x4 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4066 020E | Scan interface basic assurance tests detected memory pair A fault | Memory Pair A, Location: P1-M1.1 x2 |
| 4066 0211 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.13 |
| 4066 0212 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.3 |
| 4066 0213 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.14 |
| 4066 0214 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.4 |
| 4066 021D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.3 x4 |
| 4066 0221 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.11 |
| 4066 0222 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.5 |
| 4066 0223 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.12 |
| 4066 0224 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.6 |
| 4066 022D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.5 x4 |
| 4066 0231 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.9 |
| 4066 0232 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.7 |
| 4066 0233 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.10 |
| 4066 0234 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.8 |
| 4066 023D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-M1.7 x4 |
| 4066 02FF | Scan interface basic assurance tests detected memory failure on riser card 1 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4066 0300 | Scan interface basic assurance tests detected processor card fault | Processor card Location: P1-C1 |
| 4066 0301 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M8 |
| 4066 0302 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4066 030D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 x2 |
| 4066 0311 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M7 |
| 4066 0312 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 |
| 4066 031D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 x2 |
| 4066 0321 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M6 |
| 4066 0322 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 |
| 4066 032D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 x2 |
| 4066 0331 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M5 |
| 4066 0332 | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 |
| 4066 033D | Scan interface basic assurance tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 x2 |
| 4066 03FF | Scan interface basic assurance tests detected memory failure on processor card that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4066 3101 | Scan interface basic assurance tests detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 4066 3281 | Scan interface basic assurance tests detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 4066 3284 | Scan interface basic assurance tests detected PCI controller PHB0 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4066 3285 | Scan interface basic assurance tests detected PCI controller PHB1 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4066 3286 | Scan interface basic assurance tests detected PCI controller PHB2 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4067 0001 | 6xx bus processor runtime diagnostics detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4067 0003 | 6xx bus processor runtime diagnostics detected processor fault | All processors, Location: P1-C1 |
| 4067 0009 | 6xx bus processor runtime diagnostics detected memory fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4067 00A0 | 6xx bus processor runtime diagnostics detected service processor firmware fault | Update system firmware |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4067 00A1 | 6xx bus processor runtime diagnostics detected system firmware fault | 1. Check for AIX updates<br>2. Check for system firmware updates |
| 4067 00A2 | 6xx bus processor runtime diagnostics detected service processor firmware (PRD) fault | Update system firmware |
| 4067 00A3 | 6xx bus processor runtime diagnostics detected memory plugging fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4067 00A4 | 6xx bus processor runtime diagnostics detected application caused fault | Application software |
| 4067 00A5 | 6xx bus processor runtime diagnostics detected invalid system configuration | Verify that system components are supported and properly installed |
| 4067 00A6 | 6xx bus processor runtime diagnostics detected no usable memory | 1. Ensure that memory is properly installed<br>2. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57<br>4. If the problem is not fixed, call service support. |
| 4067 00A7 | 6xx bus processor runtime diagnostics detected hardware problem | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4067 00B0 | 6xx bus processor runtime diagnostics detected bus controller lock-unlock failure | System board, Location: P1 |
| 4067 00B1 | 6xx bus processor runtime diagnostics detected bus controller failure | System board, Location: P1 |
| 4067 00B7 | 6xx bus processor runtime diagnostics detected insufficient hardware resources to continue IPL | This error code appears after the initial testing by the service processor firmware on the processors and memory completed successfully, but a problem occurred when the firmware tried to communicate outside the processor and memory complex. Suspect a problem with the backplane, location: P1. |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4067 0100 | 6xx bus processor runtime diagnostics detected memory riser card fault | Memory riser card Location: P1-M2 |
| 4067 0101 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.15 |
| 4067 0102 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.1 |
| 4067 0103 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.16 |
| 4067 0104 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.2 |
| 4067 010D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.1 x4 |
| 4067 0111 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.13 |
| 4067 0112 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.3 |
| 4067 0113 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.14 |
| 4067 0114 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.4 |
| 4067 011D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.3 x4 |
| 4067 0121 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.11 |
| 4067 0122 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.5 |
| 4067 0123 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.12 |
| 4067 0124 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.6 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4067 012D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.5 x4 |
| 4067 0131 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.9 |
| 4067 0132 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.7 |
| 4067 0133 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.10 |
| 4067 0134 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.8 |
| 4067 013D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.7 x4 |
| 4067 01FF | 6xx bus processor runtime diagnostics detected memory failure on riser card 2 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4067 0200 | 6xx bus processor runtime diagnostics detected memory riser card fault | Memory DIMM Location: P1-M1 |
| 4067 0201 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.15 |
| 4067 0202 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.1 |
| 4067 0203 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.16 |
| 4067 0204 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.2 |
| 4067 020D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.1 x4 |
| 4067 020E | 6xx bus processor runtime diagnostics detected memory pair A fault | Memory Pair A, Location: P1-M1.1 x2 |
| 4067 0211 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.13 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4067 0212 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.3 |
| 4067 0213 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.14 |
| 4067 0214 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.4 |
| 4067 021D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.3 x4 |
| 4067 0221 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.11 |
| 4067 0222 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.5 |
| 4067 0223 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.12 |
| 4067 0224 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.6 |
| 4067 022D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.5 x4 |
| 4067 0231 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.9 |
| 4067 0232 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.7 |
| 4067 0233 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.10 |
| 4067 0234 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.8 |
| 4067 023D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.7 x4 |
| 4067 02FF | 6xx bus processor runtime diagnostics detected memory failure on riser card 1 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4067 0300 | 6xx bus processor runtime diagnostics detected processor card fault | Processor card Location: P1-C1 |
| 4067 0301 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M8 |
| 4067 0302 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 |
| 4067 030D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 x2 |
| 4067 0311 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M7 |
| 4067 0312 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 |
| 4067 031D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 x2 |
| 4067 0321 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M6 |
| 4067 0322 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 |
| 4067 032D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 x2 |
| 4067 0331 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M5 |
| 4067 0332 | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 |
| 4067 033D | 6xx bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 x2 |
| 4067 03FF | 6xx bus processor runtime diagnostics detected memory failure on processor card that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4067 3101 | 6xx bus processor runtime diagnostics detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1 C1<br>2. System board, Location: P1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4067 3281 | 6xx bus processor runtime diagnostics detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1 C1<br>2. System board, Location: P1 |
| 4067 3284 | 6xx bus processor runtime diagnostics detected PCI controller PHB0 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4067 3285 | 6xx bus processor runtime diagnostics detected PCI controller PHB1 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4067 3286 | 6xx bus processor runtime diagnostics detected PCI controller PHB2 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4068 0002 | Other bus processor runtime diagnostics detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4068 0003 | Other bus processor runtime diagnostics detected processor fault | All processors, Location: P1-C1 |
| 4068 0009 | Other bus processor runtime diagnostics detected memory fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4068 00A0 | Other bus processor runtime diagnostics detected service processor firmware fault | Update system firmware |
| 4068 00A1 | Other bus processor runtime diagnostics detected system firmware fault | 1. Check for AIX updates<br>2. Check for system firmware updates |
| 4068 00A2 | Other bus processor runtime diagnostics detected service processor firmware (PRD) fault | Update system firmware |
| 4068 00A3 | Other bus processor runtime diagnostics detected memory plugging fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4068 00A4 | Other bus processor runtime diagnostics detected application caused fault | Application software |
| 4068 00A5 | Other bus processor runtime diagnostics detected invalid system configuration | Verify that system components are supported and properly installed |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4068 00A6 | Other bus processor runtime diagnostics detected no usable memory | 1. Ensure that memory is properly installed<br>2. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57<br>4. If the problem is not fixed, call service support. |
| 4068 00A7 | Other bus processor diagnostics detected hardware problem | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4068 00B0 | Other bus processor runtime diagnostics detected bus controller lock-unlock failure | System board, Location: P1 |
| 4068 00B1 | Other bus processor runtime diagnostics detected bus controller failure | System board, Location: P1 |
| 4068 00B7 | Other bus processor runtime diagnostics detected insufficient hardware resources to continue IPL | This error code appears after the initial testing by the service processor firmware on the processors and memory completed successfully, but a problem occurred when the firmware tried to communicate outside the processor and memory complex. Suspect a problem with the backplane, location: P1. |
| 4068 0100 | Other bus processor runtime diagnostics detected memory riser card fault | Memory riser card Location: P1-M2 |
| 4068 0101 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.15 |
| 4068 0102 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.1 |
| 4068 0103 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.16 |
| 4068 0104 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4068 010D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.1 x4 |
| 4068 0111 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.13 |
| 4068 0112 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.3 |
| 4068 0113 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.14 |
| 4068 0114 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.4 |
| 4068 011D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.3 x4 |
| 4068 0121 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.11 |
| 4068 0122 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.5 |
| 4068 0123 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.12 |
| 4068 0124 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.6 |
| 4068 012D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.5 x4 |
| 4068 0131 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.9 |
| 4068 0132 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.7 |
| 4068 0133 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.10 |
| 4068 0134 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.8 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4068 013D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M2.7 x4 |
| 4068 01FF | Other bus processor runtime diagnostics detected memory failure on riser card 2 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4068 0200 | Other bus processor runtime diagnostics detected memory riser card fault | Memory DIMM Location: P1-M1 |
| 4068 0201 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.15 |
| 4068 0202 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.1 |
| 4068 0203 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.16 |
| 4068 0204 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.2 |
| 4068 020D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.1 x4 |
| 4068 020E | Other bus processor runtime diagnostics detected memory pair A fault | Memory Pair A, Location: P1-M1.1 x2 |
| 4068 0211 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.13 |
| 4068 0212 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.3 |
| 4068 0213 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.14 |
| 4068 0214 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.4 |
| 4068 021D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.3 x4 |
| 4068 0221 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.11 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4068 0222 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.5 |
| 4068 0223 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.12 |
| 4068 0224 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.6 |
| 4068 022D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.5 x4 |
| 4068 0231 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.9 |
| 4068 0232 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.7 |
| 4068 0233 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.10 |
| 4068 0234 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.8 |
| 4068 023D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-M1.7 x4 |
| 4068 02FF | Other bus processor runtime diagnostics detected memory failure on riser card 1 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4068 0300 | Other bus processor runtime diagnostics detected processor card fault | Processor card Location: P1-C1 |
| 4068 0301 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M8 |
| 4068 0302 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 |
| 4068 030D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 x2 |
| 4068 0311 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M7 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4068 0312 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 |
| 4068 031D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 x2 |
| 4068 0321 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M6 |
| 4068 0322 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 |
| 4068 032D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 x2 |
| 4068 0331 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M5 |
| 4068 0332 | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 |
| 4068 033D | Other bus processor runtime diagnostics detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 x2 |
| 4068 03FF | Other bus processor runtime diagnostics detected memory failure on processor card that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4068 3101 | Other bus processor runtime diagnostics detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 4068 3281 | Other bus processor runtime diagnostics detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 4068 3284 | Other bus processor runtime diagnostics detected PCI controller PHB0 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4068 3285 | Other bus processor runtime diagnostics detected PCI controller PHB1 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4068 3286 | Other bus processor runtime diagnostics detected PCI controller PHB2 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4069 0001 | Memory tests detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4069 0003 | Memory tests detected processor fault | All processors, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4069 0009 | Memory tests detected memory fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4069 00A0 | Memory tests detected service processor firmware fault | Update system firmware |
| 4069 00A1 | Memory tests detected system firmware fault | 1. Check for AIX updates<br>2. Check for system firmware updates |
| 4069 00A2 | Memory tests detected service processor firmware (PRD) fault | Update system firmware |
| 4069 00A3 | Memory tests detected memory plugging fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4069 00A4 | Memory tests detected application caused fault | Application software |
| 4069 00A5 | Memory tests detected invalid system configuration | Verify that system components are supported and properly installed |
| 4069 00A6 | Memory tests detected no usable memory | 1. Ensure that memory is properly installed<br>2. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57<br>4. If the problem is not fixed, call service support. |
| 4069 00A7 | Memory tests detected hardware problem | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 4069 00B0 | Memory tests detected bus controller lock-unlock failure | System board, Location: P1 |
| 4069 00B1 | Memory tests diagnostics detected bus controller failure | System board, Location: P1 |
| 4069 00B7 | Memory test detected insufficient hardware resources to continue IPL | This error code appears after the initial testing by the service processor firmware on the processors and memory completed successfully, but a problem occurred when the firmware tried to communicate outside the processor and memory complex. Suspect a problem with the backplane, location: P1. |
| 4069 0100 | Memory tests detected memory riser card fault | Memory riser card Location: P1-M2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4069 0101 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.15 |
| 4069 0102 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.1 |
| 4069 0103 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.16 |
| 4069 0104 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.2 |
| 4069 010D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.1 x4 |
| 4069 0111 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.13 |
| 4069 0112 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.3 |
| 4069 0113 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.14 |
| 4069 0114 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.4 |
| 4069 011D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.3 x4 |
| 4069 0121 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.11 |
| 4069 0122 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.5 |
| 4069 0123 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.12 |
| 4069 0124 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.6 |
| 4069 012D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.5 x4 |
| 4069 0131 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.9 |
| 4069 0132 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.7 |
| 4069 0133 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.10 |
| 4069 0134 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.8 |
| 4069 013D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M2.7 x4 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4069 01FF | Memory tests detected memory failure on riser card 2 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4069 0200 | Memory tests detected memory riser card fault | Memory DIMM Location: P1-M1 |
| 4069 0201 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.15 |
| 4069 0202 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.1 |
| 4069 0203 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.16 |
| 4069 0204 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.2 |
| 4069 020D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.1 x4 |
| 4069 020E | Memory tests detected memory pair A fault | Memory Pair A, Location: P1-M1.1 x2 |
| 4069 0211 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.13 |
| 4069 0212 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.3 |
| 4069 0213 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.14 |
| 4069 0214 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.4 |
| 4069 021D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.3 x4 |
| 4069 0221 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.11 |
| 4069 0222 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.5 |
| 4069 0223 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.12 |
| 4069 0224 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.6 |
| 4069 022D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.5 x4 |
| 4069 0231 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.9 |
| 4069 0232 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.7 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4069 0233 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.10 |
| 4069 0234 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.8 |
| 4069 023D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-M1.7 x4 |
| 4069 02FF | Memory tests detected memory failure on riser card 1 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4069 0300 | Memory tests detected processor card fault | Processor card Location: P1-C1 |
| 4069 0301 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M8 |
| 4069 0302 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 |
| 4069 030D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 x2 |
| 4069 0311 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M7 |
| 4069 0312 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 |
| 4069 031D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 x2 |
| 4069 0321 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M6 |
| 4069 0322 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 |
| 4069 032D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 x2 |
| 4069 0331 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M5 |
| 4069 0332 | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 |
| 4069 033D | Memory tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 x2 |
| 4069 03FF | Memory tests detected memory failure on processor card that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 4069 3101 | Memory tests detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4069 3281 | Memory tests detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 4069 3284 | Memory tests detected PCI controller PHB0 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4069 3285 | Memory tests detected PCI controller PHB1 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4069 3286 | Memory tests detected PCI controller PHB2 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406A 0001 | Self tests detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406A 0003 | Self tests detected processor fault | All processors, Location: P1-C1 |
| 406A 0009 | Self tests detected memory fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406A 00A0 | Self tests detected service processor firmware fault | Update system firmware |
| 406A 00A1 | Self tests detected system firmware fault | 1. Check for AIX updates<br>2. Check for system firmware updates |
| 406A 00A2 | Self tests detected service processor firmware (PRD) fault | Update system firmware |
| 406A 00A3 | Self tests detected memory plugging fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406A 00A4 | Self tests detected application caused fault | Application software |
| 406A 00A5 | Self tests detected invalid system configuration | Verify that system components are supported and properly installed |
| 406A 00A6 | Self tests detected no usable memory | 1. Ensure that memory is properly installed<br>2. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57<br>4. If the problem is not fixed, call service support. |
| 406A 00A7 | Self tests detected hardware problem | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406A 00B0 | Self tests detected bus controller lock-unlock failure | System board, Location: P1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406A 00B1 | Self tests diagnostics detected bus controller failure | System board, Location: P1 |
| 406A 00B7 | Self test detected insufficient hardware resources to continue IPL | This error code appears after the initial testing by the service processor firmware on the processors and memory completed successfully, but a problem occurred when the firmware tried to communicate outside the processor and memory complex. Suspect a problem with the backplane, location: P1. |
| 406A 0100 | Self tests detected memory riser card fault | Memory riser card Location: P1-M2 |
| 406A 0101 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.15 |
| 406A 0102 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.1 |
| 406A 0103 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.16 |
| 406A 0104 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.2 |
| 406A 010D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.1 x4 |
| 406A 0111 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.13 |
| 406A 0112 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.3 |
| 406A 0113 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.14 |
| 406A 0114 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.4 |
| 406A 011D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.3 x4 |
| 406A 0121 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.11 |
| 406A 0122 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.5 |
| 406A 0123 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.12 |
| 406A 0124 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.6 |
| 406A 012D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.5 x4 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406A 0131 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.9 |
| 406A 0132 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.7 |
| 406A 0133 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.10 |
| 406A 0134 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.8 |
| 406A 013D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M2.7 x4 |
| 406A 01FF | Self tests detected memory failure on riser card 2 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406A 0200 | Self tests detected memory riser card fault | Memory DIMM Location: P1-M1 |
| 406A 0201 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.15 |
| 406A 0202 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.1 |
| 406A 0203 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.16 |
| 406A 0204 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.2 |
| 406A 020D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.1 x4 |
| 406A 020E | Self tests detected memory pair A fault | Memory Pair A, Location: P1-M1.1 x2 |
| 406A 0211 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.13 |
| 406A 0212 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.3 |
| 406A 0213 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.14 |
| 406A 0214 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.4 |
| 406A 021D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.3 x4 |
| 406A 0221 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.11 |
| 406A 0222 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.5 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406A 0223 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.12 |
| 406A 0224 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.6 |
| 406A 022D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.5 x4 |
| 406A 0231 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.9 |
| 406A 0232 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.7 |
| 406A 0233 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.10 |
| 406A 0234 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.8 |
| 406A 023D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-M1.7 x4 |
| 406A 02FF | Self tests detected memory failure on riser card 1 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406A 0300 | Self tests detected processor card fault | Processor card Location: P1-C1 |
| 406A 0301 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M8 |
| 406A 0302 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 |
| 406A 030D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 x2 |
| 406A 0311 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M7 |
| 406A 0312 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 |
| 406A 031D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 x2 |
| 406A 0321 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M6 |
| 406A 0322 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 |
| 406A 032D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 x2 |
| 406A 0331 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M5 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406A 0332 | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 |
| 406A 033D | Self tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 x2 |
| 406A 03FF | Self tests detected memory failure on processor card that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406A 3101 | Self tests detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406A 3281 | Self tests detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406A 3284 | Self tests detected PCI controller PHB0 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406A 3285 | Self tests detected PCI controller PHB1 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406A 3286 | Self tests detected PCI controller PHB2 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406B 0001 | Wire tests detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406B 0003 | Wire tests detected processor fault | All processors, Location: P1-C1 |
| 406B 0009 | Wire tests detected memory fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406B 00A0 | Wire tests detected service processor firmware fault | Update system firmware |
| 406B 00A1 | Wire tests detected system firmware fault | 1. Check for AIX updates<br>2. Check for system firmware updates |
| 406B 00A2 | Wire tests detected service processor firmware (PRD) fault | Update system firmware |
| 406B 00A3 | Wire tests detected memory plugging fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406B 00A4 | Wire tests detected application caused fault | Application software |
| 406B 00A5 | Wire tests detected invalid system configuration | Verify that system components are supported and properly installed |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406B 00A6 | Wire tests detected no usable memory | 1. Ensure that memory is properly installed<br>2. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57<br>4. If the problem is not fixed, call service support. |
| 406B 00A7 | Wire tests detected hardware problem | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406B 00B0 | Wire tests detected bus controller lock-unlock failure | System board, Location: P1 |
| 406B 00B1 | Wire tests diagnostics detected bus controller failure | System board, Location: P1 |
| 406B 00B7 | Wire test detected insufficient hardware resources to continue IPL | This error code appears after the initial testing by the service processor firmware on the processors and memory completed successfully, but a problem occurred when the firmware tried to communicate outside the processor and memory complex. Suspect a problem with the backplane, location: P1. |
| 406B 0100 | Wire tests detected memory riser card fault | Memory riser card Location: P1-M2 |
| 406B 0101 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.15 |
| 406B 0102 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.1 |
| 406B 0103 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.16 |
| 406B 0104 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.2 |
| 406B 010D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.1 x4 |
| 406B 0111 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.13 |
| 406B 0112 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.3 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406B 0113 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.14 |
| 406B 0114 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.4 |
| 406B 011D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.3 x4 |
| 406B 0121 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.11 |
| 406B 0122 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.5 |
| 406B 0123 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.12 |
| 406B 0124 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.6 |
| 406B 012D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.5 x4 |
| 406B 0131 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.9 |
| 406B 0132 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.7 |
| 406B 0133 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.10 |
| 406B 0134 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.8 |
| 406B 013D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M2.7 x4 |
| 406B 01FF | Wire tests detected memory failure on riser card 2 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406B 0200 | Wire tests detected memory riser card fault | Memory DIMM Location: P1-M1 |
| 406B 0201 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.15 |
| 406B 0202 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.1 |
| 406B 0203 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.16 |
| 406B 0204 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.2 |
| 406B 020D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.1 x4 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406B 020E | Wire tests detected memory pair A fault | Memory Pair A, Location: P1-M1.1 x2 |
| 406B 0211 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.13 |
| 406B 0212 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.3 |
| 406B 0213 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.14 |
| 406B 0214 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.4 |
| 406B 021D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.3 x4 |
| 406B 0221 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.11 |
| 406B 0222 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.5 |
| 406B 0223 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.12 |
| 406B 0224 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.6 |
| 406B 022D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.5 x4 |
| 406B 0231 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.9 |
| 406B 0232 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.7 |
| 406B 0233 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.10 |
| 406B 0234 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.8 |
| 406B 023D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-M1.7 x4 |
| 406B 02FF | Wire tests detected memory failure on riser card 1 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406B 0300 | Wire tests detected processor card fault | Processor card Location: P1-C1 |
| 406B 0301 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M8 |
| 406B 0302 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406B 030D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 x2 |
| 406B 0311 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M7 |
| 406B 0312 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 |
| 406B 031D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 x2 |
| 406B 0321 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M6 |
| 406B 0322 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 |
| 406B 032D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 x2 |
| 406B 0331 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M5 |
| 406B 0332 | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 |
| 406B 033D | Wire tests detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 x2 |
| 406B 03FF | Wire tests detected memory failure on processor card that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406B 3101 | Wire tests detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406B 3281 | Wire tests detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406B 3284 | Wire tests detected PCI controller PHB0 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406B 3285 | Wire tests detected PCI controller PHB1 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406B 3286 | Wire tests detected PCI controller PHB2 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406C 0001 | IPL MOPs detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406C 0003 | IPL MOPs detected processor fault | All processors, Location: P1-C1 |
| 406C 0009 | IPL MOPs detected memory fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406C 00A0 | IPL MOPs detected service processor firmware fault | Update system firmware |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406C 00A1 | IPL MOPs detected system firmware fault | 1. Check for AIX updates<br>2. Check for system firmware updates |
| 406C 00A2 | IPL MOPs detected service processor firmware (PRD) fault | Update system firmware |
| 406C 00A3 | IPL MOPs detected memory plugging fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406C 00A4 | IPL MOPs detected application caused fault | Application software |
| 406C 00A5 | IPL MOPs detected invalid system configuration | Verify that system components are supported and properly installed |
| 406C 00A6 | IPL MOPs detected no usable memory | 1. Ensure that memory is properly installed<br>2. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57<br>4. If the problem is not fixed, call service support. |
| 406C 00A7 | IPL MOPs detected hardware problem | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406C 00B0 | IPL MOPs detected bus controller lock-unlock failure | System board, Location: P1 |
| 406C 00B1 | IPL MOPs detected bus controller failure | System board, Location: P1 |
| 406C 00B7 | IPL MOPS detected insufficient hardware resources to continue IPL | This error code appears after the initial testing by the service processor firmware on the processors and memory completed successfully, but a problem occurred when the firmware tried to communicate outside the processor and memory complex. Suspect a problem with the backplane, location: P1. |
| 406C 0100 | IPL MOPs detected memory riser card fault | Memory riser card Location: P1-M2 |
| 406C 0101 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.15 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406C 0102 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.1 |
| 406C 0103 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.16 |
| 406C 0104 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.2 |
| 406C 010D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.1 x4 |
| 406C 0111 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.13 |
| 406C 0112 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.3 |
| 406C 0113 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.14 |
| 406C 0114 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.4 |
| 406C 011D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.3 x4 |
| 406C 0121 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.11 |
| 406C 0122 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.5 |
| 406C 0123 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.12 |
| 406C 0124 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.6 |
| 406C 012D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.5 x4 |
| 406C 0131 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.9 |
| 406C 0132 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.7 |
| 406C 0133 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.10 |
| 406C 0134 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.8 |
| 406C 013D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M2.7 x4 |
| 406C 01FF | IPL MOPs detected memory failure on riser card 2 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406C 0200 | IPL MOPs detected memory riser card fault | Memory DIMM Location: P1-M1 |
| 406C 0201 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.15 |
| 406C 0202 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.1 |
| 406C 0203 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.16 |
| 406C 0204 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.2 |
| 406C 020D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.1 x4 |
| 406C 020E | IPL MOPs detected memory pair A fault | Memory Pair A, Location: P1-M1.1 x2 |
| 406C 0211 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.13 |
| 406C 0212 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.3 |
| 406C 0213 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.14 |
| 406C 0214 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.4 |
| 406C 021D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.3 x4 |
| 406C 0221 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.11 |
| 406C 0222 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.5 |
| 406C 0223 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.12 |
| 406C 0224 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.6 |
| 406C 022D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.5 x4 |
| 406C 0231 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.9 |
| 406C 0232 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.7 |
| 406C 0233 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.10 |
| 406C 0234 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.8 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406C 023D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-M1.7 x4 |
| 406C 02FF | IPL MOPs detected memory failure on riser card 1 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406C 0300 | IPL MOPs detected processor card fault | Processor card Location: P1-C1 **Note:** If this error occurs on a Model 6F0Model 256/F0, first verify that the correct type of processor card is installed in the system. Up to four processors are supported in a Model 6F0Model 256/F0 system; if a 6-way processor is plugged into the system, this error code will be generated and the system will not boot. |
| 406C 0301 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M8 |
| 406C 0302 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 |
| 406C 030D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 x2 |
| 406C 0311 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M7 |
| 406C 0312 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 |
| 406C 031D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 x2 |
| 406C 0321 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M6 |
| 406C 0322 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 |
| 406C 032D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 x2 |
| 406C 0331 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M5 |
| 406C 0332 | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 |
| 406C 033D | IPL MOPs detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 x2 |
| 406C 03FF | IPL MOPs detected memory failure on processor card that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406C 3101 | IPL MOPs detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406C 3281 | IPL MOPs detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406C 3284 | IPL MOPs detected PCI controller PHB0 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406C 3285 | IPL MOPs detected PCI controller PHB1 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406C 3286 | IPL MOPs detected PCI controller PHB2 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406D 0001 | Attention handler detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406D 0003 | Attention handler detected processor fault | All processors, Location: P1-C1 |
| 406D 0009 | Attention handler detected memory fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406D 00A0 | Attention handler detected service processor firmware fault | Update system firmware |
| 406D 00A1 | Attention handler detected system firmware fault | 1. Check for AIX updates<br>2. Check for system firmware updates |
| 406D 00A2 | Attention handler detected service processor firmware (PRD) fault | Update system firmware |
| 406D 00A3 | Attention handler detected memory plugging fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406D 00A4 | Attention handler detected application caused fault | Application software |
| 406D 00A5 | Attention handler detected invalid system configuration | Verify that system components are supported and properly installed |
| 406D 00A6 | Attention handler detected no usable memory | 1. Ensure that memory is properly installed<br>2. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57<br>4. If the problem is not fixed, call service support. |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406D 00A7 | Attention handler detected hardware problem | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406D 00B0 | Attention handler detected bus controller lock-unlock failure | System board, Location: P1 |
| 406D 00B1 | Attention handler diagnostics detected bus controller failure | System board, Location: P1 |
| 406D 00B7 | Attention handler detected insufficient hardware resources to continue IPL | This error code appears after the initial testing by the service processor firmware on the processors and memory completed successfully, but a problem occurred when the firmware tried to communicate outside the processor and memory complex. Suspect a problem with the backplane, location: P1. |
| 406D 0100 | Attention handler detected memory riser card fault | Memory riser card Location: P1-M2 |
| 406D 0101 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.15 |
| 406D 0102 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.1 |
| 406D 0103 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.16 |
| 406D 0104 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.2 |
| 406D 010D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.1 x4 |
| 406D 0111 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.13 |
| 406D 0112 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.3 |
| 406D 0113 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.14 |
| 406D 0114 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.4 |
| 406D 011D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.3 x4 |
| 406D 0121 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.11 |
| 406D 0122 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.5 |
| 406D 0123 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.12 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406D 0124 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.6 |
| 406D 012D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.5 x4 |
| 406D 0131 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.9 |
| 406D 0132 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.7 |
| 406D 0133 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.10 |
| 406D 0134 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.8 |
| 406D 013D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M2.7 x4 |
| 406D 01FF | Attention handler detected memory failure on riser card 2 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406D 0200 | Attention handler detected memory riser card fault | Memory DIMM Location: P1-M1 |
| 406D 0201 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.15 |
| 406D 0202 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.1 |
| 406D 0203 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.16 |
| 406D 0204 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.2 |
| 406D 020D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.1 x4 |
| 406D 020E | Attention handler detected memory pair A fault | Memory Pair A, Location: P1-M1.1 x2 |
| 406D 0211 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.13 |
| 406D 0212 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.3 |
| 406D 0213 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.14 |
| 406D 0214 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.4 |
| 406D 021D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.3 x4 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406D 0221 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.11 |
| 406D 0222 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.5 |
| 406D 0223 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.12 |
| 406D 0224 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.6 |
| 406D 022D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.5 x4 |
| 406D 0231 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.9 |
| 406D 0232 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.7 |
| 406D 0233 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.10 |
| 406D 0234 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.8 |
| 406D 023D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-M1.7 x4 |
| 406D 02FF | Attention handler detected memory failure on riser card 1 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406D 0300 | Attention handler detected processor card fault | Processor card Location: P1-C1 |
| 406D 0301 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M8 |
| 406D 0302 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 |
| 406D 030D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 x2 |
| 406D 0311 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M7 |
| 406D 0312 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 |
| 406D 031D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 x2 |
| 406D 0321 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M6 |
| 406D 0322 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406D 032D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 x2 |
| 406D 0331 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M5 |
| 406D 0332 | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 |
| 406D 033D | Attention handler detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 x2 |
| 406D 03FF | Attention handler detected memory failure on processor card that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406D 3101 | Attention handler detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406D 3281 | Attention handler detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406D 3284 | Attention handler detected PCI controller PHB0 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406D 3285 | Attention handler detected PCI controller PHB1 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406D 3286 | Attention handler detected PCI controller PHB2 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406E 0001 | Scan control routines detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406E 0003 | Scan control routines detected processor fault | All processors, Location: P1-C1 |
| 406E 0009 | Scan control routines detected memory fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406E 00A0 | Scan control routines detected service processor firmware fault | Update system firmware |
| 406E 00A1 | Scan control routines detected system firmware fault | 1. Check for AIX updates<br>2. Check for system firmware updates |
| 406E 00A2 | Scan control routines detected service processor firmware (PRD) fault | Update system firmware |
| 406E 00A3 | Scan control routines detected memory plugging fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406E 00A4 | Scan control routines detected application caused fault | Application software |
| 406E 00A5 | Scan control routines detected invalid system configuration | Verify that system components are supported and properly installed |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406E 00A6 | Scan control routines detected no usable memory | 1. Ensure that memory is properly installed<br>2. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57<br>4. If the problem is not fixed, call service support. |
| 406E 00A7 | Scan control routines detected hardware problem | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406E 00B0 | Scan control routines detected bus controller lock-unlock failure | System board, Location: P1 |
| 406E 00B1 | Scan control routines detected bus controller failure | System board, Location: P1 |
| 406E 00B7 | Scan control routines detected insufficient hardware resources to continue IPL | This error code appears after the initial testing by the service processor firmware on the processors and memory completed successfully, but a problem occurred when the firmware tried to communicate outside the processor and memory complex. Suspect a problem with the backplane, location: P1. |
| 406E 0100 | Scan control routines detected memory riser card fault | Memory riser card Location: P1-M2 |
| 406E 0101 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.15 |
| 406E 0102 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.1 |
| 406E 0103 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.16 |
| 406E 0104 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.2 |
| 406E 010D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.1 x4 |
| 406E 0111 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.13 |
| 406E 0112 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.3 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406E 0113 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.14 |
| 406E 0114 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.4 |
| 406E 011D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.3 x4 |
| 406E 0121 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.11 |
| 406E 0122 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.5 |
| 406E 0123 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.12 |
| 406E 0124 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.6 |
| 406E 012D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.5 x4 |
| 406E 0131 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.9 |
| 406E 0132 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.7 |
| 406E 0133 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.10 |
| 406E 0134 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.8 |
| 406E 013D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M2.7 x4 |
| 406E 01FF | Scan control routines detected memory failure on riser card 2 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406E 0200 | Scan control routines detected memory riser card fault | Memory DIMM Location: P1-M1 |
| 406E 0201 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.15 |
| 406E 0202 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.1 |
| 406E 0203 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.16 |
| 406E 0204 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.2 |
| 406E 020D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.1 x4 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406E 020E | Scan control routines detected memory pair A fault | Memory Pair A, Location: P1-M1.1 x2 |
| 406E 0211 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.13 |
| 406E 0212 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.3 |
| 406E 0213 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.14 |
| 406E 0214 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.4 |
| 406E 021D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.3 x4 |
| 406E 0221 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.11 |
| 406E 0222 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.5 |
| 406E 0223 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.12 |
| 406E 0224 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.6 |
| 406E 022D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.5 x4 |
| 406E 0231 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.9 |
| 406E 0232 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.7 |
| 406E 0233 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.10 |
| 406E 0234 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.8 |
| 406E 023D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-M1.7 x4 |
| 406E 02FF | Scan control routines detected memory failure on riser card 1 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406E 0300 | Scan control routines detected processor card fault | Processor card Location: P1-C1 |
| 406E 0301 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M8 |
| 406E 0302 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406E 030D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 x2 |
| 406E 0311 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M7 |
| 406E 0312 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 |
| 406E 031D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 x2 |
| 406E 0321 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M6 |
| 406E 0322 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 |
| 406E 032D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 x2 |
| 406E 0331 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M5 |
| 406E 0332 | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 |
| 406E 033D | Scan control routines detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 x2 |
| 406E 03FF | Scan control routines detected memory failure on processor card that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406E 3101 | Scan control routines detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406E 3281 | Scan control routines detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406E 3284 | Scan control routines detected PCI controller PHB0 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406E 3285 | Scan control routines detected PCI controller PHB1 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406E 3286 | Scan control routines detected PCI controller PHB2 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406F 0001 | Error code generation/logging detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406F 0003 | Error code generation/logging detected processor fault | All processors, Location: P1-C1 |
| 406F 0009 | Error code generation/logging detected memory fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406F 00A0 | Error code generation/logging detected service processor firmware fault | Update system firmware |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406F 00A1 | Error code generation/logging detected system firmware fault | 1. Check for AIX updates<br>2. Check for system firmware updates |
| 406F 00A2 | Error code generation/logging detected service processor firmware (PRD) fault | Update system firmware |
| 406F 00A3 | Error code generation/logging detected memory plugging fault | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406F 00A4 | Error code generation/logging detected application caused fault | Application software |
| 406F 00A5 | Error code generation/logging detected invalid system configuration | Verify that system components are supported and properly installed |
| 406F 00A6 | Error code generation/logging detected no usable memory | 1. Ensure that memory is properly installed<br>2. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>3. Go to “MAP 1540: Minimum Configuration” on page 57<br>4. If the problem is not fixed, call service support. |
| 406F 00A7 | Error code generation/logging detected hardware problem | Go to “MAP 1540: Minimum Configuration” on page 57. |
| 406F 00B0 | Error code generation/logging detected bus controller lock-unlock failure | System board, Location: P1 |
| 406F 00B1 | Error code generation/logging detected bus controller failure | System board, Location: P1 |
| 406F 00B7 | Error code generation/logging detected insufficient hardware resources to continue IPL | This error code appears after the initial testing by the service processor firmware on the processors and memory completed successfully, but a problem occurred when the firmware tried to communicate outside the processor and memory complex. Suspect a problem with the backplane, location: P1. |
| 406F 0100 | Error code generation/logging detected memory riser card fault | Memory riser card Location: P1-M2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406F 0101 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.15 |
| 406F 0102 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.1 |
| 406F 0103 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.16 |
| 406F 0104 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.2 |
| 406F 010D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.1 x4 |
| 406F 0111 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.13 |
| 406F 0112 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.3 |
| 406F 0113 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.14 |
| 406F 0114 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.4 |
| 406F 011D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.3 x4 |
| 406F 0121 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.11 |
| 406F 0122 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.5 |
| 406F 0123 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.12 |
| 406F 0124 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.6 |
| 406F 012D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.5 x4 |
| 406F 0131 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.9 |
| 406F 0132 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.7 |
| 406F 0133 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.10 |
| 406F 0134 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.8 |
| 406F 013D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M2.7 x4 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406F 01FF | Error code generation/logging detected memory failure on riser card 2 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406F 0200 | Error code generation/logging detected memory riser card fault | Memory DIMM Location: P1-M1 |
| 406F 0201 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.15 |
| 406F 0202 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.1 |
| 406F 0203 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.16 |
| 406F 0204 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.2 |
| 406F 020D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.1 x4 |
| 406F 020E | Error code generation/logging detected memory pair A fault | Memory Pair A, Location: P1-M1.1 x2 |
| 406F 0211 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.13 |
| 406F 0212 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.3 |
| 406F 0213 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.14 |
| 406F 0214 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.4 |
| 406F 021D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.3 x4 |
| 406F 0221 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.11 |
| 406F 0222 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.5 |
| 406F 0223 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.12 |
| 406F 0224 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.6 |
| 406F 022D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.5 x4 |
| 406F 0231 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.9 |
| 406F 0232 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.7 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406F 0233 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.10 |
| 406F 0234 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.8 |
| 406F 023D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-M1.7 x4 |
| 406F 02FF | Error code generation/logging detected memory failure on riser card 1 that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406F 0300 | Error code generation/logging detected processor card fault | Processor card Location: P1-C1 |
| 406F 0301 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M8 |
| 406F 0302 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 |
| 406F 030D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M1 x2 |
| 406F 0311 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M7 |
| 406F 0312 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 |
| 406F 031D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M2 x2 |
| 406F 0321 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M6 |
| 406F 0322 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 |
| 406F 032D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M3 x2 |
| 406F 0331 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M5 |
| 406F 0332 | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 |
| 406F 033D | Error code generation/logging detected memory DIMM fault | Memory DIMM Location: P1-C1-M4 x2 |
| 406F 03FF | Error code generation/logging detected memory failure on processor card that cannot be automatically isolated. | Go to “MAP 1540: Minimum Configuration” on page 57, and run minimum configuration for further isolation. |
| 406F 3101 | Error code generation/logging detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |
| 406F 3281 | Error code generation/logging detected RIO port 0 fault | 1. RIO port 0, Location: P1-C1<br>2. System board, Location: P1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 406F 3284 | Error code generation/logging detected PCI controller PHB0 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406F 3285 | Error code generation/logging detected PCI controller PHB1 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 406F 3286 | Error code generation/logging detected PCI controller PHB2 fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4506 244C | Memory system and scan interface basic assurance tests detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 244D | Memory system and scan interface basic assurance tests detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 244E | Memory system and scan interface basic assurance tests detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 244F | Memory system and scan interface basic assurance tests detected 6W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 248A | Memory system and scan interface basic assurance tests detected operator panel fault | Operator panel, Location : L1 |
| 4506 24A1 | Memory system and scan interface basic assurance tests detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 24A2 | Memory system and scan interface basic assurance tests detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 24A3 | Memory system and scan interface basic assurance tests detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 24A4 | Memory system and scan interface basic assurance tests detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 25B6 | Memory system and scan interface basic assurance tests detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4506 25BB | Memory system and scan interface basic assurance tests detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 25BD | Memory system and scan interface basic assurance tests detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 25BE | Memory system and scan interface basic assurance tests detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4506 25BF | Memory system and scan interface basic assurance tests detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4506 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4506 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4506 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4506 263D | Memory system and scan interface basic assurance tests detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4506 281F | Memory system and scan interface basic assurance tests detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4506 282E | Memory system and scan interface basic assurance tests detected system board fault | 1. System board, Location: P1 (See note 3 on page 41.)<br>2. Processor card, Location: P1-C1 |
| 4506 283F | Memory system and scan interface basic assurance tests detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4506 288D | Memory system and scan interface basic assurance tests detected memory riser fault | 1. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>2. Memory riser card, Location: P1-M1 or P1-M2 or P1-C1 |
| 4506 2A00 | Memory system and scan interface basic assurance tests detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4506 300A | Memory system and scan interface basic assurance tests detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4506 300B | Memory system and scan interface basic assurance tests detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4506 300C | Memory system and scan interface basic assurance tests detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4506 300D | Memory system and scan interface basic assurance tests detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4506 300E | Memory system and scan interface basic assurance tests detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4506 301F | Memory system and scan interface basic assurance tests detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4506 303A | Memory system and scan interface basic assurance tests detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4507 244C | Memory system and 6xx bus processor runtime diagnostics detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4507 244D | Memory system and 6xx bus processor runtime diagnostics detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4507 244E | Memory system and 6xx bus processor runtime diagnostics detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4507 244F | Memory system and 6xx bus processor runtime diagnostics detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4507 248A | Memory system and 6xx bus processor runtime diagnostics detected operator panel fault | Operator panel, Location : L1 |
| 4507 24A1 | Memory system and 6xx bus processor runtime diagnostics detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4507 24A2 | Memory system and 6xx bus processor runtime diagnostics detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4507 24A3 | Memory system and 6xx bus processor runtime diagnostics detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4507 24A4 | Memory system and 6xx bus processor runtime diagnostics detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4507 25B6 | Memory system and 6xx bus processor runtime diagnostics detected 650W power supply fault | Power supply, Location: V1 or V2 or V3 |
| 4507 25BB | Memory system and 6xx bus processor runtime diagnostics detected 1W 600 MHz processor fault | 1W Processor card, Location: P1-C1 |
| 4507 25BD | Memory system and 6xx bus processor runtime diagnostics detected 2W 600 MHz processor fault | 2W Processor card, Location: P1-C1 |
| 4507 25BE | Memory system and 6xx bus processor runtime diagnostics detected 4W 600 MHz processor fault | 4W Processor card, Location: P1-C1 |
| 4507 25BF | Memory system and 6xx bus processor runtime diagnostics detected 6W 668 MHz processor fault | 6W Processor card, Location: P1-C1 |
| 4507 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4507 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4507 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4507 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4507 263D | Memory system and 6xx bus processor runtime diagnostics detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4507 281F | Memory system and 6xx bus processor runtime diagnostics detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4507 282E | Memory system and 6xx bus processor runtime diagnostics detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4507 283F | Memory system and 6xx bus processor runtime diagnostics detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4507 285D | Memory system and 6xx bus processor runtime diagnostics detected fan controller card fault | Fan controller card, Location: U0.1-X2 U1.1-X2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4507 288D | Memory system and 6xx bus processor runtime diagnostics detected memory riser fault | 1. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>2. Memory riser card, Location: P1-M1 or P1-M2 |
| 4507 2A00 | Memory system and 6xx bus processor runtime diagnostics detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4507 300A | Memory system and 6xx bus processor runtime diagnostics detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4507 300B | Memory system and 6xx bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4507 300C | Memory system and 6xx bus processor runtime diagnostics detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4507 300D | Memory system and 6xx bus processor runtime diagnostics detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4507 300E | Memory system and 6xx bus processor runtime diagnostics detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4507 301F | Memory system and 6xx bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4507 303A | Memory system and 6xx bus processor runtime diagnostics detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4508 244C | Memory system and other bus processor runtime diagnostics detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 244D | Memory system and other bus processor runtime diagnostics detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4508 244E | Memory system and other bus processor runtime diagnostics detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 244F | Memory system and other bus processor runtime diagnostics detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 248A | Memory system and other bus processor runtime diagnostics detected operator panel fault | Operator panel, Location : L1 |
| 4508 24A1 | Memory system and other bus processor runtime diagnostics detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 24A2 | Memory system and other bus processor runtime diagnostics detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 24A3 | Memory system and other bus processor runtime diagnostics detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 24A4 | Memory system and other bus processor runtime diagnostics detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 25B6 | Memory system and other bus processor runtime diagnostics detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4508 25BB | Memory system and other bus processor runtime diagnostics detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 25BD | Memory system and other bus processor runtime diagnostics detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 25BE | Memory system and other bus processor runtime diagnostics detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 25BF | Memory system and other bus processor runtime diagnostics detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4508 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4508 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4508 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4508 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4508 263D | Memory system and other bus processor runtime diagnostics detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4508 281F | Memory system and other bus processor runtime diagnostics detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4508 282E | Memory system and other bus processor runtime diagnostics detected system board fault | Replace the system board. Location: P1 (See note 3 on page 41.) |
| 4508 283F | Memory system and other bus processor runtime diagnostics detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4508 288D | Memory system and other bus processor runtime diagnostics detected memory riser fault | 1. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>2. Memory riser card, Location: P1-M1 or P1-M2 |
| 4508 2A00 | Memory system and other bus processor runtime diagnostics detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4508 300A | Memory system and other bus processor runtime diagnostics detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4508 300B | Memory system and other bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4508 300C | Memory system and other bus processor runtime diagnostics detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4508 300D | Memory system and other bus processor runtime diagnostics detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4508 300E | Memory system and other bus processor runtime diagnostics detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4508 301F | Memory system and other bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4508 303A | Memory system and other bus processor runtime diagnostics detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4509 244C | Memory system and memory test detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 244D | Memory system and memory test detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 244E | Memory system and memory test detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 244F | Memory system and memory test detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 248A | Memory system and memory test detected operator panel fault | Operator panel, Location : L1 |
| 4509 24A1 | Memory system and memory test detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 24A2 | Memory system and memory test detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 24A3 | Memory system and memory test detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 24A4 | Memory system and memory test detected 6W 500 MHz processor fault | Processor card Location: P1-C1 |
| 4509 25B6 | Memory system and memory test detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4509 25BB | Memory system and memory test detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4509 25BD | Memory system and memory test detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 25BE | Memory system and memory test detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 25BF | Memory system and memory test detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4509 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4509 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4509 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4509 263D | Memory system and memory test detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4509 281F | Memory system and memory test detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4509 282E | Memory system and memory test detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4509 283F | Memory system and memory test detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4509 288D | Memory system and memory test detected memory riser fault | 1. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>2. Memory riser card, Location: P1-M1 or P1-M2 |
| 4509 2A00 | Memory system and memory test detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4509 300A | Memory system and memory test detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4509 300B | Memory system and memory test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4509 300C | Memory system and memory test detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4509 300D | Memory system and memory test detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4509 300E | Memory system and memory test detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4509 301F | Memory system and memory test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4509 303A | Memory system and memory test detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450A 244C | Memory system and self test detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 244D | Memory system and self test detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 244E | Memory system and self test detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 244F | Memory system and self test detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 248A | Memory system and self test detected operator panel fault | Operator panel, Location : L1 |
| 450A 24A1 | Memory system and self test detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 24A2 | Memory system and self test detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 24A3 | Memory system and self test detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 24A4 | Memory system and self test detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 25B6 | Memory system and self test detected 650W power supply fault | Power supply, Location: V1 or V2 or V3 |
| 450A 25BB | Memory system and self test detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 25BD | Memory system and self test detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450A 25BE | Memory system and self test detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 25BF | Memory system and self test detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 450A 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 450A 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 450A 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 450A 263D | Memory system and self test detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 450A 281F | Memory system and self test detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 450A 282E | Memory system and self test detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 450A 283F | Memory system and self test detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 450A 288D | Memory system and self test detected memory riser fault | 1. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>2. Memory riser card, Location: P1-M1 or P1-M2 |
| 450A 2A00 | Memory system and self test detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450A 300A | Memory system and self test detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450A 300B | Memory system and self test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450A 300C | Memory system and self test detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450A 300D | Memory system and self test detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450A 300E | Memory system and self test detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450A 301F | Memory system and self test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450A 303A | Memory system and self test detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450B 244C | Memory system and wire test detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 244D | Memory system and wire test detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 244E | Memory system and wire test detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 244F | Memory system and wire test detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 248A | Memory system and wire test detected operator panel fault | Operator panel, Location : L1 |
| 450B 24A1 | Memory system and wire test detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 24A2 | Memory system and wire test detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 24A3 | Memory system and wire test detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 24A4 | Memory system and wire test detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 25B6 | Memory system and wire test detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 450B 25BB | Memory system and wire test detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 25BD | Memory system and wire test detected 2W processor fault | Processor card, Location: P1-C1 |
| 450B 25BE | Memory system and wire test detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450B 25BF | Memory system and wire test detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 450B 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 450B 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 450B 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 450B 263D | Memory system and wire test detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 450B 281F | Memory system and wire test detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 450B 282E | Memory system and wire test detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 450B 283F | Memory system and wire test detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 450B 288D | Memory system and wire test detected memory riser fault | 1. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>2. Memory riser card, Location: P1-M1 or P1-M2 |
| 450B 2A00 | Memory system and wire test detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450B 300A | Memory system and wire test detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450B 300B | Memory system and wire test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450B 300C | Memory system and wire test detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450B 300D | Memory system and wire test detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450B 300E | Memory system and wire test detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450B 301F | Memory system and wire test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450B 303A | Memory system and wire test detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450C 244C | Memory system and IPL detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 244D | Memory system and IPL detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 244E | Memory system and IPL detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 244F | Memory system and IPL detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 248A | Memory system and IPL detected operator panel fault | Operator panel, Location : L1 |
| 450C 24A1 | Memory system and IPL detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 24A2 | Memory system and IPL detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 24A3 | Memory system and IPL detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 24A4 | Memory system and IPL detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 25B6 | Memory system and IPL detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 450C 25BB | Memory system and IPL detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 25BD | Memory system and IPL detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 25BE | Memory system and IPL detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 25BF | Memory system and IPL detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 450C 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 450C 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 450C 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 450C 263D | Memory system and IPL detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450C 281F | Memory system and IPL detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 450C 282E | Memory system and IPL detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 450C 283F | Memory system and IPL detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 450C 288D | Memory system and IPL detected memory riser fault | 1. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>2. Memory riser card, Location: P1-M1 or P1-M2 |
| 450C 2A00 | Memory system and IPL detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450C 300A | Memory system and IPL detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450C 300B | Memory system and IPL detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450C 300C | Memory system and IPL detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450C 300D | Memory system and IPL detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450C 300E | Memory system and IPL detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450C 301F | Memory system and IPL detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450C 303A | Memory system and IPL detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450D 244C | Memory system and attention handler detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 244D | Memory system and attention handler detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 244E | Memory system and attention handler detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 244F | Memory system and attention handler detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450D 248A | Memory system and attention handler detected operator panel fault | Operator panel, Location : L1 |
| 450D 24A1 | Memory system and attention handler detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 24A2 | Memory system and attention handler detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 24A3 | Memory system and attention handler detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 24A4 | Memory system and attention handler detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 25B6 | Memory system and attention handler detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 450D 25BB | Memory system and attention handler detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 25BD | Memory system and attention handler detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 25BE | Memory system and attention handler detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 25BF | Memory system and attention handler detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 450D 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 450D 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 450D 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 450D 263D | Memory system and attention handler detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 450D 281F | Memory system and attention handler detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 450D 282E | Memory system and attention handler detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 450D 283F | Memory system and attention handler detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450D 288D | Memory system and attention handler detected memory riser fault | 1. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>2. Memory riser card, Location: P1-M1 or P1-M2 or P1-C1 |
| 450D 2A00 | Memory system and attention handler detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450D 300A | Memory system and attention handler detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450D 300B | Memory system and attention handler detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450D 300C | Memory system and attention handler detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450D 300D | Memory system and attention handler detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450D 300E | Memory system and attention handler detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450D 301F | Memory system and attention handler detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450D 303A | Memory system and attention handler detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450E 244C | Memory system and scan control routines detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 244D | Memory system and scan control routines detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 244E | Memory system and scan control routines detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 244F | Memory system and scan control routines detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 248A | Memory system and scan control routines detected operator panel fault | Operator panel, Location : L1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450E 24A1 | Memory system and scan control routines detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 24A2 | Memory system and scan control routines detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 24A3 | Memory system and scan control routines detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 24A4 | Memory system and scan control routines detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 25B6 | Memory system and scan control routines detected 650W power supply fault | Power supply, Location: V1 or V2 or V3 |
| 450E 25BB | Memory system and scan control routines detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 25BD | Memory system and scan control routines detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 25BE | Memory system and scan control routines detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 25BF | Memory system and scan control routines detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 450E 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 450E 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 450E 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 450E 263D | Memory system and scan control routines detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 450E 281F | Memory system and scan control routines detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 450E 282E | Memory system and scan control routines detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 450E 283F | Memory system and scan control routines detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450E 288D | Memory system and scan control routines detected memory riser fault | 1. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>2. Memory riser card, Location: P1-M1 or P1-M2 |
| 450E 2A00 | Memory system and scan control routines detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450E 300A | Memory system and scan control routines detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450E 300B | Memory system and scan control routines detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450E 300C | Memory system and scan control routines detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450E 300D | Memory system and scan control routines detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450E 300E | Memory system and scan control routines detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450E 301F | Memory system and scan control routines detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450E 303A | Memory system and scan control routines detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450F 244C | Memory system and error code generation/logging detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 244D | Memory system and error code generation/logging detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 244E | Memory system and error code generation/logging detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 244F | Memory system and error code generation/logging detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 248A | Memory system and error code generation/logging detected operator panel fault | Operator panel, Location : L1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450F 24A1 | Memory system and error code generation/logging detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 24A2 | Memory system and error code generation/logging detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 24A3 | Memory system and error code generation/logging detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 24A4 | Memory system and error code generation/logging detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 25B6 | Memory system and error code generation/logging detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 450F 25BB | Memory system and error code generation/logging detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 25BD | Memory system and error code generation/logging detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 25BE | Memory system and error code generation/logging detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 25BF | Memory system and error code generation/logging detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 450F 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 450F 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 450F 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 450F 263D | Memory system and error code generation/logging detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 450F 281F | Memory system and error code generation/logging detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 450F 282E | Memory system and error code generation/logging detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 450F 283F | Memory system and error code generation/logging detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 450F 288D | Memory system and error code generation/logging detected memory riser fault | 1. If more than one DIMM is called out, go to the service processor Memory Configuration/Deconfiguration Menu to verify memory DIMMs state. See ″Memory Configuration/Deconfiguration Menu″ on page 266 for more information.<br>2. Memory riser card, Location: P1-M1 or P1-M2 |
| 450F 2A00 | Memory system and error code generation/logging detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 450F 300A | Memory system and error code generation/logging detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450F 300B | Memory system and error code generation/logging detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450F 300C | Memory system and error code generation/logging detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450F 300D | Memory system and error code generation/logging detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450F 300E | Memory system and error code generation/logging detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450F 301F | Memory system and error code generation/logging detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 450F 303A | Memory system and error code generation/logging detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4606 244C | I/O system and scan interface basic assurance tests detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 244D | I/O system and scan interface basic assurance tests detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 244E | I/O system and scan interface basic assurance tests detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4606 244F | I/O system and scan interface basic assurance tests detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 248A | I/O system and scan interface basic assurance tests detected operator panel fault | Operator panel, Location : L1 |
| 4606 24A1 | I/O system and scan interface basic assurance tests detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 24A2 | I/O system and scan interface basic assurance tests detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 24A3 | I/O system and scan interface basic assurance tests detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 24A4 | I/O system and scan interface basic assurance tests detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 25B6 | I/O system and scan interface basic assurance tests detected 650W power supply fault | Power supply, Location: V1 or V2 or V3 |
| 4606 25BB | I/O system and scan interface basic assurance tests detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 25BD | I/O system and scan interface basic assurance tests detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 25BE | I/O system and scan interface basic assurance tests detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 25BF | I/O system and scan interface basic assurance tests detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 263D | I/O system and scan interface basic assurance tests detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4606 281F | I/O system and scan interface basic assurance tests detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4606 282E | I/O system and scan interface basic assurance tests detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4606 283F | I/O system and scan interface basic assurance tests detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4606 288D | I/O system and scan interface basic assurance tests detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4606 2A00 | I/O system and scan interface basic assurance tests detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4606 300A | I/O system and scan interface basic assurance tests detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4606 300B | I/O system and scan interface basic assurance tests detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4606 300C | I/O system and scan interface basic assurance tests detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4606 300D | I/O system and scan interface basic assurance tests detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4606 300E | I/O system and scan interface basic assurance tests detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4606 301F | I/O system and scan interface basic assurance tests detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4606 303A | I/O system and scan interface basic assurance tests detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4607 244C | I/O system and 6xx bus processor runtime diagnostics detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 244D | I/O system and 6xx bus processor runtime diagnostics detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 244E | I/O system and 6xx bus processor runtime diagnostics detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 244F | I/O system and 6xx bus processor runtime diagnostics detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 248A | I/O system and 6xx bus processor runtime diagnostics detected operator panel fault | Operator panel, Location : L1 |
| 4607 24A1 | I/O system and 6xx bus processor runtime diagnostics detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4607 24A2 | I/O system and 6xx bus processor runtime diagnostics detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 24A3 | I/O system and 6xx bus processor runtime diagnostics detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 24A4 | I/O system and 6xx bus processor runtime diagnostics detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 25B6 | I/O system and 6xx bus processor runtime diagnostics detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4607 25BB | I/O system and 6xx bus processor runtime diagnostics detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 25BD | I/O system and 6xx bus processor runtime diagnostics detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 25BE | I/O system and 6xx bus processor runtime diagnostics detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 25BF | I/O system and 6xx bus processor runtime diagnostics detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 263D | I/O system and 6xx bus processor runtime diagnostics detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4607 281F | I/O system and 6xx bus processor runtime diagnostics detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4607 282E | I/O system and 6xx bus processor runtime diagnostics detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4607 283F | I/O system and 6xx bus processor runtime diagnostics detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4607 288D | I/O system and 6xx bus processor runtime diagnostics detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4607 2A00 | I/O system and 6xx bus processor runtime diagnostics detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4607 300A | I/O system and 6xx bus processor runtime diagnostics detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4607 300B | I/O system and 6xx bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4607 300C | I/O system and 6xx bus processor runtime diagnostics detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4607 300D | I/O system and 6xx bus processor runtime diagnostics detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4607 300E | I/O system and 6xx bus processor runtime diagnostics detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4607 301F | I/O system and 6xx bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4607 303A | I/O system and 6xx bus processor runtime diagnostics detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4608 244C | I/O system and other bus processor runtime diagnostics detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 244D | I/O system and other bus processor runtime diagnostics detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 244E | I/O system and other bus processor runtime diagnostics detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 244F | I/O system and other bus processor runtime diagnostics detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 248A | I/O system and other bus processor runtime diagnostics detected operator panel fault | Operator panel, Location : L1 |
| 4608 24A1 | I/O system and other bus processor runtime diagnostics detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 24A2 | I/O system and other bus processor runtime diagnostics detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 24A3 | I/O system and other bus processor runtime diagnostics detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 24A4 | I/O system and other bus processor runtime diagnostics detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4608 25B6 | I/O system and other bus processor runtime diagnostics detected 650W power supply fault | Power supply, Location: V1 or V2 or V3 |
| 4608 25BB | I/O system and other bus processor runtime diagnostics detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 25BD | I/O system and other bus processor runtime diagnostics detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 25BE | I/O system and other bus processor runtime diagnostics detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 25BF | I/O system and other bus processor runtime diagnostics detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 263D | I/O system and other bus processor runtime diagnostics detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4608 281F | I/O system and other bus processor runtime diagnostics detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4608 282E | I/O system and other bus processor runtime diagnostics detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4608 283F | I/O system and other bus processor runtime diagnostics detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4608 288D | I/O system and other bus processor runtime diagnostics detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4608 2A00 | I/O system and other bus processor runtime diagnostics detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4608 300A | I/O system and other bus processor runtime diagnostics detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4608 300B | I/O system and other bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4608 300C | I/O system and other bus processor runtime diagnostics detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4608 300D | I/O system and other bus processor runtime diagnostics detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4608 300E | I/O system and other bus processor runtime diagnostics detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4608 301F | I/O system and other bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4608 303A | I/O system and other bus processor runtime diagnostics detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4609 244C | I/O system and memory test detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 244D | I/O system and memory test detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 244E | I/O system and memory test detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 244F | I/O system and memory test detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 248A | I/O system and memory test detected operator panel fault | Operator panel, Location : L1 |
| 4609 24A1 | I/O system and memory test detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 24A2 | I/O system and memory test detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 24A3 | I/O system and memory test detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 24A4 | I/O system and memory test detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 25B6 | I/O system and memory test detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4609 25BB | I/O system and memory test detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 25BD | I/O system and memory test detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 25BE | I/O system and memory test detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 25BF | I/O system and memory test detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 263D | I/O system and memory test detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4609 281F | I/O system and memory test detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4609 282E | I/O system and memory test detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4609 283F | I/O system and memory test detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4609 288D | I/O system and memory test detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4609 2A00 | I/O system and memory test detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4609 300A | I/O system and memory test detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4609 300B | I/O system and memory test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4609 300C | I/O system and memory test detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4609 300D | I/O system and memory test detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4609 300E | I/O system and memory test detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4609 301F | I/O system and memory test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4609 303A | I/O system and memory test detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460A 244C | I/O system and self test detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 244D | I/O system and self test detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 244E | I/O system and self test detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 244F | I/O system and self test detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 248A | I/O system and self test detected operator panel fault | Operator panel, Location : L1 |
| 460A 24A1 | I/O system and self test detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 24A2 | I/O system and self test detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 24A3 | I/O system and self test detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 24A4 | I/O system and self test detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 25B6 | I/O system and self test detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 460A 25BB | I/O system and self test detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 460A 25BD | I/O system and self test detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 25BE | I/O system and self test detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 25BF | I/O system and self test detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 263D | I/O system and self test detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 460A 281F | I/O system and self test detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 460A 282E | I/O system and self test detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 460A 283F | I/O system and self test detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 460A 288D | I/O system and self test detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 460A 2A00 | I/O system and self test detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460A 300A | I/O system and self test detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460A 300B | I/O system and self test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460A 300C | I/O system and self test detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460A 300D | I/O system and self test detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460A 300E | I/O system and self test detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460A 301F | I/O system and self test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460A 303A | I/O system and self test detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460B 244C | I/O system and wire test detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 244D | I/O system and wire test detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 244E | I/O system and wire test detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 244F | I/O system and wire test detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 248A | I/O system and wire test detected operator panel fault | Operator panel, Location : L1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 460B 24A1 | I/O system and wire test detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 24A2 | I/O system and wire test detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 24A3 | I/O system and wire test detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 24A4 | I/O system and wire test detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 25B6 | I/O system and wire test detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 460B 25BB | I/O system and wire test detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 25BD | I/O system and wire test detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 25BE | I/O system and wire test detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 25BF | I/O system and wire test detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 263D | I/O system and wire test detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 460B 281F | I/O system and wire test detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 460B 282E | I/O system and wire test detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 460B 283F | I/O system and wire test detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 460B 288D | I/O system and wire test detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 460B 2A00 | I/O system and wire test detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460B 300A | I/O system and wire test detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460B 300B | I/O system and wire test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460B 300C | I/O system and wire test detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460B 300D | I/O system and wire test detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460B 300E | I/O system and wire test detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460B 301F | I/O system and wire test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 460B 303A | I/O system and wire test detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460C 244C | I/O system and IPL detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 244D | I/O system and IPL detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 244E | I/O system and IPL detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 244F | I/O system and IPL detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 248A | I/O system and IPL detected operator panel fault | Operator panel, Location : L1 |
| 460C 24A1 | I/O system and IPL detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 24A2 | I/O system and IPL detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 24A3 | I/O system and IPL detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 24A4 | I/O system and IPL detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 25B6 | I/O system and IPL detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 460C 25BB | I/O system and IPL detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 25BD | I/O system and IPL detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 25BE | I/O system and IPL detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 25BF | I/O system and IPL detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 460C 263D | I/O system and IPL detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 460C 281F | I/O system and IPL detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 460C 282E | I/O system and IPL detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 460C 283F | I/O system and IPL detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 460C 288D | I/O system and IPL detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 460C 2A00 | I/O system and IPL detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 460C 300A | I/O system and IPL detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460C 300B | I/O system and IPL detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460C 300C | I/O system and IPL detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460C 300D | I/O system and IPL detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460C 300E | I/O system and IPL detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460C 301F | I/O system and IPL detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460C 303A | I/O system and IPL detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460D 244C | I/O system and attention handler detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 244D | I/O system and attention handler detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 244E | I/O system and attention handler detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 244F | I/O system and attention handler detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 248A | I/O system and attention handler detected operator panel fault | Operator panel, Location : L1 |
| 460D 24A1 | I/O system and attention handler detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 24A2 | I/O system and attention handler detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 24A3 | I/O system and attention handler detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 24A4 | I/O system and attention handler detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 25B6 | I/O system and attention handler detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 460D 25BB | I/O system and attention handler detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 25BD | I/O system and attention handler detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 25BE | I/O system and attention handler detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 25BF | I/O system and attention handler detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 263D | I/O system and attention handler detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 460D 281F | I/O system and attention handler detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 460D 282E | I/O system and attention handler detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 460D 283F | I/O system and attention handler detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 460D 288D | I/O system and attention handler detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 460D 2A00 | I/O system and attention handler detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460D 300A | I/O system and attention handler detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460D 300B | I/O system and attention handler detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460D 300C | I/O system and attention handler detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460D 300D | I/O system and attention handler detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460D 300E | I/O system and attention handler detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460D 301F | I/O system and attention handler detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460D 303A | I/O system and attention handler detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460E 244C | I/O system and scan control routines detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 460E 244D | I/O system and scan control routines detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 244E | I/O system and scan control routines detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 244F | I/O system and scan control routines detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 248A | I/O system and scan control routines detected operator panel fault | Operator panel, Location : L1 |
| 460E 24A1 | I/O system and scan control routines detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 24A2 | I/O system and scan control routines detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 24A3 | I/O system and scan control routines detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 24A4 | I/O system and scan control routines detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 25B6 | I/O system and scan control routines detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 460E 25BB | I/O system and scan control routines detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 25BD | I/O system and scan control routines detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 25BE | I/O system and scan control routines detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 25BF | I/O system and scan control routines detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 263D | I/O system and scan control routines detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 460E 281F | I/O system and scan control routines detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 460E 282E | I/O system and scan control routines detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 460E 283F | I/O system and scan control routines detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 460E 288D | I/O system and scan control routines detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 460E 2A00 | I/O system and scan control routines detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460E 300A | I/O system and scan control routines detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460E 300B | I/O system and scan control routines detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460E 300C | I/O system and scan control routines detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460E 300D | I/O system and scan control routines detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460E 300E | I/O system and scan control routines detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460E 301F | I/O system and scan control routines detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460E 303A | I/O system and scan control routines detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460F 244C | I/O system and error code generation/logging detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 244D | I/O system and error code generation/logging detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 244E | I/O system and error code generation/logging detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 244F | I/O system and error code generation/logging detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 248A | I/O system and error code generation/logging detected operator panel fault | Operator panel, Location : L1 |
| 460F 24A1 | I/O system and error code generation/logging detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 24A2 | I/O system and error code generation/logging detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 24A3 | I/O system and error code generation/logging detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 460F 24A4 | I/O system and error code generation/logging detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 25B6 | I/O system and error code generation/logging detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 460F 25BB | I/O system and error code generation/logging detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 25BD | I/O system and error code generation/logging detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 25BE | I/O system and error code generation/logging detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 25BF | I/O system and error code generation/logging detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 263D | I/O system and error code generation/logging detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 460F 281F | I/O system and error code generation/logging detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 460F 282E | I/O system and error code generation/logging detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 460F 283F | I/O system and error code generation/logging detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 460F 288D | I/O system and error code generation/logging detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 460F 2A00 | I/O system and error code generation/logging detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 460F 300A | I/O system and error code generation/logging detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460F 300B | I/O system and error code generation/logging detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460F 300C | I/O system and error code generation/logging detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 460F 300D | I/O system and error code generation/logging detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460F 300E | I/O system and error code generation/logging detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460F 301F | I/O system and error code generation/logging detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 460F 303A | I/O system and error code generation/logging detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B26 244C | Processor system and scan interface basic assurance tests detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 244D | Processor system and scan interface basic assurance tests detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 244E | Processor system and scan interface basic assurance tests detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 244F | Processor system and scan interface basic assurance tests detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 248A | Processor system and scan interface basic assurance tests detected operator panel fault | Operator panel, Location : L1 |
| 4B26 24A1 | Processor system and scan interface basic assurance tests detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 24A2 | Processor system and scan interface basic assurance tests detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 24A3 | Processor system and scan interface basic assurance tests detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 24A4 | Processor system and scan interface basic assurance tests detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 25B6 | Processor system and scan interface basic assurance tests detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4B26 25BB | Processor system and scan interface basic assurance tests detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B26 25BD | Processor system and scan interface basic assurance tests detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 25BE | Processor system and scan interface basic assurance tests detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 25BF | Processor system and scan interface basic assurance tests detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B26 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B26 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B26 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B26 263D | Processor system and scan interface basic assurance tests detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4B26 281F | Processor system and scan interface basic assurance tests detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4B26 282E | Processor system and scan interface basic assurance tests detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4B26 283F | Processor system and scan interface basic assurance tests detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4B26 288D | Processor system and scan interface basic assurance tests detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4B26 2A00 | Processor system and scan interface basic assurance tests detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B26 300A | Processor system and scan interface basic assurance tests detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B26 300B | Processor system and scan interface basic assurance tests detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B26 300C | Processor system and scan interface basic assurance tests detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B26 300D | Processor system and scan interface basic assurance tests detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B26 300E | Processor system and scan interface basic assurance tests detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B26 301F | Processor system and scan interface basic assurance tests detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B26 303A | Processor system and scan interface basic assurance tests detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B27 244C | Processor system and 6xx bus processor runtime diagnostics detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 244D | Processor system and 6xx bus processor runtime diagnostics detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 244E | Processor system and 6xx bus processor runtime diagnostics detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 244F | Processor system and 6xx bus processor runtime diagnostics detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 248A | Processor system and 6xx bus processor runtime diagnostics detected operator panel fault | Operator panel, Location : L1 |
| 4B27 24A1 | Processor system and 6xx bus processor runtime diagnostics detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 24A2 | Processor system and 6xx bus processor runtime diagnostics detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 24A3 | Processor system and 6xx bus processor runtime diagnostics detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 24A4 | Processor system and 6xx bus processor runtime diagnostics detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B27 25B6 | Processor system and 6xx bus processor runtime diagnostics detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4B27 25BB | Processor system and 6xx bus processor runtime diagnostics detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 25BD | Processor system and 6xx bus processor runtime diagnostics detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 25BE | Processor system and 6xx bus processor runtime diagnostics detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 25BF | Processor system and 6xx bus processor runtime diagnostics detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4B27 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B27 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B27 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B27 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B27 263D | Processor system and 6xx bus processor runtime diagnostics detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4B27 281F | Processor system and 6xx bus processor runtime diagnostics detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4B27 282E | Processor system and 6xx bus processor runtime diagnostics detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4B27 283F | Processor system and 6xx bus processor runtime diagnostics detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4B27 288D | Processor system and 6xx bus processor runtime diagnostics detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4B27 2A00 | Processor system and 6xx bus processor runtime diagnostics detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B27 300A | Processor system and 6xx bus processor runtime diagnostics detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B27 300B | Processor system and 6xx bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B27 300C | Processor system and 6xx bus processor runtime diagnostics detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B27 300D | Processor system and 6xx bus processor runtime diagnostics detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B27 300E | Processor system and 6xx bus processor runtime diagnostics detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B27 301F | Processor system and 6xx bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B27 303A | Processor system and 6xx bus processor runtime diagnostics detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B28 244C | Processor system and other bus processor runtime diagnostics detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 244D | Processor system and other bus processor runtime diagnostics detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 244E | Processor system and other bus processor runtime diagnostics detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 244F | Processor system and other bus processor runtime diagnostics detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 248A | Processor system and other bus processor runtime diagnostics detected operator panel fault | Operator panel, Location : L1 |
| 4B28 24A1 | Processor system and other bus processor runtime diagnostics detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B28 24A2 | Processor system and other bus processor runtime diagnostics detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 24A3 | Processor system and other bus processor runtime diagnostics detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 24A4 | Processor system and other bus processor runtime diagnostics detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 25B6 | Processor system and other bus processor runtime diagnostics detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4B28 25BB | Processor system and other bus processor runtime diagnostics detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 25BD | Processor system and other bus processor runtime diagnostics detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 25BE | Processor system and other bus processor runtime diagnostics detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 25BF | Processor system and other bus processor runtime diagnostics detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B28 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B28 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B28 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B28 263D | Processor system and other bus processor runtime diagnostics detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4B28 281F | Processor system and other bus processor runtime diagnostics detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B28 282E | Processor system and other bus processor runtime diagnostics detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4B28 283F | Processor system and other bus processor runtime diagnostics detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4B28 288D | Processor system and other bus processor runtime diagnostics detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4B28 2A00 | Processor system and other bus processor runtime diagnostics detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B28 300A | Processor system and other bus processor runtime diagnostics detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B28 300B | Processor system and other bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B28 300C | Processor system and other bus processor runtime diagnostics detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B28 300D | Processor system and other bus processor runtime diagnostics detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B28 300E | Processor system and other bus processor runtime diagnostics detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B28 301F | Processor system and other bus processor runtime diagnostics detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B28 303A | Processor system and other bus processor runtime diagnostics detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B29 244C | Processor system and memory test detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 244D | Processor system and memory test detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 244E | Processor system and memory test detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B29 244F | Processor system and memory test detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 248A | Processor system and memory test detected operator panel fault | Operator panel, Location : L1 |
| 4B29 24A1 | Processor system and memory test detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 24A2 | Processor system and memory test detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 24A3 | Processor system and memory test detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 24A4 | Processor system and memory test detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 25B6 | Processor system and memory test detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4B29 25BB | Processor system and memory test detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 25BD | Processor system and memory test detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 25BE | Processor system and memory test detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 25BF | Processor system and memory test detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B29 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B29 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B29 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B29 263D | Processor system and memory test detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4B29 281F | Processor system and memory test detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B29 282E | Processor system and memory test detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4B29 283F | Processor system and memory test detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4B29 288D | Processor system and memory test detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4B29 2A00 | Processor system and memory test detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B29 300A | Processor system and memory test detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B29 300B | Processor system and memory test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B29 300C | Processor system and memory test detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B29 300D | Processor system and memory test detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B29 300E | Processor system and memory test detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B29 301F | Processor system and memory test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B29 303A | Processor system and memory test detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2A 244C | Processor system and self test detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 244D | Processor system and self test detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 244E | Processor system and self test detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 244F | Processor system and self test detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 248A | Processor system and self test detected operator panel fault | Operator panel, Location : L1 |
| 4B2A 24A1 | Processor system and self test detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2A 24A2 | Processor system and self test detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 24A3 | Processor system and self test detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 24A4 | Processor system and self test detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 25B6 | Processor system and self test detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4B2A 25BB | Processor system and self test detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 25BD | Processor system and self test detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 25BE | Processor system and self test detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 25BF | Processor system and self test detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2A 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2A 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2A 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2A 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2A 263D | Processor system and self test detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4B2A 281F | Processor system and self test detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4B2A 282E | Processor system and self test detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4B2A 283F | Processor system and self test detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4B2A 288D | Processor system and self test detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4B2A 2A00 | Processor system and self test detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2A 300A | Processor system and self test detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2A 300B | Processor system and self test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2A 300C | Processor system and self test detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2A 300D | Processor system and self test detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2A 300E | Processor system and self test detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2A 301F | Processor system and self test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2A 303A | Processor system and self test detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2B 244C | Processor system and wire test detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 244D | Processor system and wire test detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 244E | Processor system and wire test detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 244F | Processor system and wire test detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 248A | Processor system and wire test detected operator panel fault | Operator panel, Location : L1 |
| 4B2B 24A1 | Processor system and wire test detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 24A2 | Processor system and wire test detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 24A3 | Processor system and wire test detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 24A4 | Processor system and wire test detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 25B6 | Processor system and wire test detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2B 25BB | Processor system and wire test detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 25BD | Processor system and wire test detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 25BE | Processor system and wire test detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 25BF | Processor system and wire test detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2B 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2B 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2B 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2B 263D | Processor system and wire test detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4B2B 281F | Processor system and wire test detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4B2B 282E | Processor system and wire test detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4B2B 283F | Processor system and wire test detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4B2B 288D | Processor system and wire test detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4B2B 2A00 | Processor system and wire test detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2B 300A | Processor system and wire test detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2B 300B | Processor system and wire test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2B 300C | Processor system and wire test detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2B 300D | Processor system and wire test detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2B 300E | Processor system and wire test detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2B 301F | Processor system and wire test detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2B 303A | Processor system and wire test detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2C 244C | Processor system and IPL detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 244D | Processor system and IPL detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 244E | Processor system and IPL detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 244F | Processor system and IPL detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 248A | Processor system and IPL detected operator panel fault | Operator panel, Location : L1 |
| 4B2C 24A1 | Processor system and IPL detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 24A2 | Processor system and IPL detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 24A3 | Processor system and IPL detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 24A4 | Processor system and IPL detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 25B6 | Processor system and IPL detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4B2C 25BB | Processor system and IPL detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 25BD | Processor system and IPL detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 25BE | Processor system and IPL detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 25BF | Processor system and IPL detected 6W 668MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2C 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2C 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2C 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2C 263D | Processor system and IPL detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4B2C 281F | Processor system and IPL detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4B2C 282E | Processor system and IPL detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4B2C 283F | Processor system and IPL detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4B2C 288D | Processor system and IPL detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4B2C 2A00 | Processor system and IPL detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2C 300A | Processor system and IPL detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2C 300B | Processor system and IPL detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2C 300C | Processor system and IPL detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2C 300D | Processor system and IPL detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2C 300E | Processor system and IPL detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2C 301F | Processor system and IPL detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2C 303A | Processor system and IPL detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2D 244C | Processor system and attention handler detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 244D | Processor system and attention handler detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 244E | Processor system and attention handler detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 244F | Processor system and attention handler detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 248A | Processor system and attention handler detected operator panel fault | Operator panel, Location : L1 |
| 4B2D 24A1 | Processor system and attention handler detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2D 24A2 | Processor system and attention handler detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 24A3 | Processor system and attention handler detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 24A4 | Processor system and attention handler detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 25B6 | Processor system and attention handler detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4B2D 25BB | Processor system and attention handler detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 25BD | Processor system and attention handler detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 25BE | Processor system and attention handler detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 25BF | Processor system and attention handler detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2D 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2D 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2D 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2D 263D | Processor system and attention handler detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4B2D 281F | Processor system and attention handler detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4B2D 282E | Processor system and attention handler detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4B2D 283F | Processor system and attention handler detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4B2D 288D | Processor system and attention handler detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2D 2A00 | Processor system and attention handler detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2D 300A | Processor system and attention handler detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2D 300B | Processor system and attention handler detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2D 300C | Processor system and attention handler detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2D 300D | Processor system and attention handler detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2D 300E | Processor system and attention handler detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2D 301F | Processor system and attention handler detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2D 303A | Processor system and attention handler detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2E 244C | Processor system and scan control routines detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 244D | Processor system and scan control routines detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 244E | Processor system and scan control routines detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 244F | Processor system and scan control routines detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 248A | Processor system and scan control routines detected operator panel fault | Operator panel, Location : L1 |
| 4B2E 24A1 | Processor system and scan control routines detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 24A2 | Processor system and scan control routines detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 24A3 | Processor system and scan control routines detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 24A4 | Processor system and scan control routines detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2E 25B6 | Processor system and scan control routines detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4B2E 25BB | Processor system and scan control routines detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 25BD | Processor system and scan control routines detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 25BE | Processor system and scan control routines detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 25BF | Processor system and scan control routines detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2E 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2E 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2E 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2E 263D | Processor system and scan control routines detected memory filler fault | Memory filler card, Location: P1-M1 or P1-M2 |
| 4B2E 281F | Processor system and scan control routines detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4B2E 282E | Processor system and scan control routines detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4B2E 283F | Processor system and scan control routines detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4B2E 288D | Processor system and scan control routines detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4B2E 2A00 | Processor system and scan control routines detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2E 300A | Processor system and scan control routines detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2E 300B | Processor system and scan control routines detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2E 300C | Processor system and scan control routines detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2E 300D | Processor system and scan control routines detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2E 300E | Processor system and scan control routines detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2E 301F | Processor system and scan control routines detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2E 303A | Processor system and scan control routines detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2F 244C | Processor system and error code generation/logging detected 1W 2M 400 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 244D | Processor system and error code generation/logging detected 2W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 244E | Processor system and error code generation/logging detected 4W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 244F | Processor system and error code generation/logging detected 1W 2M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 248A | Processor system and error code generation/logging detected operator panel fault | Operator panel, Location : L1 |
| 4B2F 24A1 | Processor system and error code generation/logging detected 1W 2M 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 24A2 | Processor system and error code generation/logging detected 2W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 24A3 | Processor system and error code generation/logging detected 4W 450 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 24A4 | Processor system and error code generation/logging detected 6W 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 25B6 | Processor system and error code generation/logging detected 650W power supply fault | Power supply Location: V1 or V2 or V3 |
| 4B2F 25BB | Processor system and error code generation/logging detected 1W 600 MHz processor fault | Processor card, Location: P1-C1 |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2F 25BD | Processor system and error code generation/logging detected 2W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 25BE | Processor system and error code generation/logging detected 4W 600 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 25BF | Processor system and error code generation/logging detected 6W 668 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 25CB | 1W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2F 25EA | 4W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2F 25EB | 2W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2F 25F2 | 6W processor card fault | Replace the processor card, Location: P1-C1 |
| 4B2F 263D | Processor system and error code generation/logging detected memory filler fault | Memory filler card, Location: P1-M or P1-M2 |
| 4B2F 281F | Processor system and error code generation/logging detected SSA backplane fault | SSA 6-pack, Location: B1 or B2 |
| 4B2F 282E | Processor system and error code generation/logging detected system board fault | 1. System board, Location: P1<br>2. Processor card, Location: P1-C1 |
| 4B2F 283F | Processor system and error code generation/logging detected SCSI backplane fault | SCSI 6-pack, Location: B1 or B2 |
| 4B2F 288D | Processor system and error code generation/logging detected memory riser fault | Memory riser card, Location: P1-M1 or P1-M2 |
| 4B2F 2A00 | Processor system and error code generation/logging detected 6W 4M 500 MHz processor fault | Processor card, Location: P1-C1 |
| 4B2F 300A | Processor system and error code generation/logging detected 32MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2F 300B | Processor system and error code generation/logging detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2F 300C | Processor system and error code generation/logging detected 256MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

*Table 7. Service Processor Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| 4B2F 300D | Processor system and error code generation/logging detected 512MB (stacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2F 300E | Processor system and error code generation/logging detected 512MB (unstacked) DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2F 301F | Processor system and error code generation/logging detected 128MB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |
| 4B2F 303A | Processor system and error code generation/logging detected 1GB DIMM fault | Memory DIMM, Location: P1-M1.n or P1-M2.n or P1-C1-Mn |

## System Firmware Update Messages

*Table 8. System Firmware Update Messages*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| A1FD 0000 | Service processor flash recovery mode entered | Attention 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 |

## Common Firmware Error Codes

**Attention:** Follow the procedure defined in the “Checkpoint and Error Code Index” on page 106. If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Minimum Configuration” on page 57 unless otherwise indicated in the tables.

If you replace FRUs or perform an action and the problem is corrected, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**Note:** Do not shut down the system if the FRU was replaced by hot swap.

*Table 9. Common Firmware Error Codes*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| B006 1403 | Missing service processor resource | 1. Update system firmware<br>2. System board, Location: P1 |

*Table 9. Common Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| B006 1404 | Service processor firmware fault | 1. Update system firmware<br>2. System board, Location: P1 |
| B006 1405 | Service processor firmware fault | 1. Update system firmware<br>2. System board, Location: P1 |
| B006 1406 | Service processor program error | 1. Update system firmware<br>2. Check for AIX updates<br>3. System board, Location: P1 |
| B006 1407 | Service processor resource allocation problem | 1. Update system firmware<br>2. Check for AIX updates<br>3. System board, Location: P1 |
| B006 1408 | Service processor program error | 1. Update system firmware<br>2. Check for AIX updates<br>3. System board, Location: P1 |
| B006 1409 | Service processor program error | 1. Update system firmware<br>2. System board, Location: P1 |
| B10F 1000 | Service processor DRAM failure | System board, Location: P1 |
| B10F 1002 | Service processor failure | System board, Location: P1 |
| B10F 1005 | Service processor failure | System board, Location: P1 |
| B10F 1007 | Service processor failure | System board, Location: P1 |
| B10F 1008 | Service processor failure | System board, Location: P1 |
| B10F 100E | Service processor boot flash corrupted | System board, Location: P1 |
| B10F 100F | Service processor base flash corrupted | System board, Location: P1 |
| B10F 1300 | Service processor failure | System board, Location: P1 |
| B10F 1370 | Service processor flash update failure | 1. Retry flash update<br>2. System board, Location: P1 |
| B10F 1380 | Service processor program failure | 1. Update system firmware<br>2. System board, Location: P1 |
| B10F 1381 | Service processor flash module error | 1. Update system firmware<br>2. System board, Location: P1 |
| B10F 1384 | Service processor failure | System board, Location: P1 |
| B10F 1387 | Service processor failure | System board, Location: P1 |
| B10F 1400 | Service processor failure | System board, Location: P1 |
| B10F 1401 | Service processor failure | System board, Location: P1 |
| B10F 1670 | Service processor flash update failure | 1. Retry flash update<br>2. System board, Location: P1 |
| B10F 1672 | Service processor firmware update invalid | Call service support |
| B10F 1675 | Service processor failure | System board, Location: P1 |

*Table 9. Common Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| B10F 1681 | Service processor firmware update invalid | Call service support |
| B10F 1682 | Service processor firmware update invalid | Call service support |
| B10F 1683 | Service processor firmware update invalid | Call service support |
| 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 or by disconnecting then reconnecting power). Install a valid firmware update image for the specific system type and model. |
| B1FD 0015 | Too many firmware update diskettes inserted (or wrong or faulty update image) | 1. Ensure that the firmware update image is correct for the specific system type and model.<br>2. Replace the update diskettes with a new set of firmware update diskettes. |
| B1FD 0016 | Diskette read error | 1. The firmware diskette may be faulty. Try another diskette.<br>2. Replace the diskette drive.<br>3. Replace the system board Location: P1 |
| B1FD 001A | Service processor recovery mode update fault | Reset the service processor by activating the pinhole reset switch or by disconnecting and then reconnecting the power. |
| B1FD 001E | Service processor recovery mode update fault | Wrong firmware update diskette. Insert correct diskette. |
| B1FD 001F | Bad firmware update diskette | Replace diskette |
| B1xx 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. | Install a valid firmware update image for the specific system type and model. |
| B1xx 4600 | Service processor failure | System board, Location: P1 |
| B1xx 4601 | System processor subsystem | Go to “MAP 1540: Minimum Configuration” on page 57 |
| B1xx 4602 | RIO subsystem failure | 1. Processor card, Location: P1-C1<br>2. Replace the system board, Location: P1 (See note 3 on page 41.) |
| B1xx 4603 | Service processor firmware corrupted | 1. Reload system firmware<br>2. Replace the system board, Location: P1 (See note 3 on page 41.) |

*Table 9. Common Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| B1xx 4606 | Firmware failure | 1. Check for system firmware updates<br>2. Operator panel, Location: L1<br>3. Replace the system board, Location: P1 (See note 3 on page 41.) |
| B1xx 4608 | Service processor early termination | 1. Reset the system by disconnecting and reconnecting system power<br>2. Reload system firmware<br>3. Replace the system board, Location: P1 (See note 3 on page 41.) |
| B1xx 460A | Time of day clock has been reset | 1. Set time of day<br>2. System board, Location: P1 (See note 3 on page 41.) |
| B1xx 460B | NVRAM/TOD battery | Battery, Location: P1-V4 (See note 3 on page 41.) |
| B1xx 4611 | Service processor fault | 1. Processor card, Location: P1-C1<br>2. System board, Location: P1 (See note 3 on page 41.) |
| B1xx 4620 | Modem configuration failure | 1. Check modem configuration files<br>2. Check for system firmware updates<br>3. Modem<br>4. System board, Location: P1 (See note 3 on page 41.) |
| B1xx 4621 | Modem disconnect failure | 1. Check modem configuration files<br>2. Check for system firmware updates<br>3. Modem<br>4. System board, Location: P1 (See note 3 on page 41.) |
| B1xx 4622 | Service processor failure | 1. Operator panel, Location : L1<br>2. Check for system firmware updates<br>3. System board, Location: P1 |
| B1xx 4633 | System power control network failure | 1. Check for system firmware updates<br>2. System board, Location: P1 (See note 3 on page 41.) |
| B1xx 4634 | System power control network loop fault | 1. Check SPCN cabling<br>2. Go to “MAP 1540: Minimum Configuration” on page 57 |
| B1xx 4644 | Processor VPD failure | Ignore all location codes.<br>Go to MAP 1540: Minimum Configuration. |

*Table 9. Common Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| B1xx 4645 | Non-processor VPD failure | Ignore all location codes.<br>Go to MAP 1540: Minimum Configuration. |
| B1xx 4646 | General VPD failure | Ignore all location codes.<br>Go to MAP 1540: Minimum Configuration. |
| B1xx 4647 | The machine type and model reported by the CEC hardware do not match the machine type and model stored in the VPD module on the operator panel. | Replace the operator panel, Location: L1. Do not swap the VPD module from the old op panel onto the new op panel; leave the new, unprogrammed VPD module on the new op panel. Call service support to get instructions on reprogramming the machine type and model and the system serial number in the VPD module. |
| B1xx 4648 | CPU backplane VPD failure | Ignore all location codes.<br>Go to MAP 1540: Minimum Configuration. |
| B1xx 4650 | A system processor failure has been detected by the service processor. All system processors have been reset in an attempt to recover operations. | Information only. If the problem persists, check the error logs for other fault indications.<br><br>If no other fault indications are found, go to “MAP 1540: Minimum Configuration” on page 57 and run the minimum configuration. |
| B1xx 4651 | CPU VPD fault | Processor card, Location: P1-C1 |
| B1xx 4660 | Memory subsystem failure (cannot isolate) | Go to “MAP 1540: Minimum Configuration” on page 57 |
| B1xx 4661 | Memory riser card VPD failure | Go to “MAP 1540: Minimum Configuration” on page 57 |
| B1xx 4662 | Memory DIMM VPD failure | Go to “MAP 1540: Minimum Configuration” on page 57 |
| B1xx 4670 | Processor cooling | 1. Check ambient temperature<br>2. Check air supply to fans<br>3. Check fans for proper installation and operation<br>4. Check for unsupported cards (that may be too hot)<br>5. Operator panel, Location: L1 |

*Table 9. Common Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| B1xx 4671 | I/O cooling | 1. Check ambient temperature<br>2. Check air supply to fans<br>3. Check fans for proper installation and operation<br>4. Check for unsupported cards (that may be too hot)<br>5. Operator panel, Location: L1 |
| B1xx 4681 | JTAG Scan Interface | 1. Processor card, Location: P1-C1<br>2. System board, Location: P1 (See note 3 on page 41.) |
| B1xx 4690 | Operating system surveillance time out (AIX to service processor interface failure) | 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.<br>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: Look at the AIX error log entry containing B1xx4690. This will be a ″SCAN_ERROR_CHRP″ error with an identifier of BFEC0425. In the detail data, find the string ″B1xx4690″ (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. 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.<br>3. Call service support. |

*Table 9. Common Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| B1xx 4691 | System firmware surveillance time out (System firmware to service processor interface failure) | 1. Check for system firmware updates<br>2. Go to the service processor main menu and select **System Information Menu**, then select **Read Progress Indicators from Last System Boot**. Begin your repair action with the error code or checkpoint immediately preceding B1xx 4691. If a location code appears with the error code or checkpoint, replace the part at that location. If no location code is specified, and you have an 8-character error code, go to “Firmware Checkpoints” on page 91. If no location code is specified and you have a 4-character checkpoint, go to “Checkpoint and Error Code Index” on page 106.<br>3. If the problem is not resolved, call service support. |
| B1xx 4692 | Operator panel task interface failure | 1. Check for system firmware updates, Location: P1/Y1<br>2. If the problem is not solved, call service support. |
| B1xx 4693 | Service processor firmware error | 1. Check for system firmware updates<br>2. The type and model field in the VPD module may be set incorrectly. The type and model field can be viewed using the service processor function ″Read VPD Image from Last System Boot″, which is option 1 in the “System Information Menu” on page 264. If the type and model field is not set correctly, call service support.<br>3. Call service support |
| B1xx 4694 | Service processor firmware failure | 1. Check for system firmware updates<br>2. System board, Location: P1 (See note 3 on page 41.) |
| B1xx 4695 | System power control network to service processor interface failure | 1. Check for system firmware updates<br>2. System board, Location: P1 (See note 3 on page 41.) |

*Table 9. Common Firmware Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| B1xx 4696 | System firmware interface failure | 1. Check for system firmware update.<br>2. Call service support. |
| B1xx 4698 | Firmware problem | 1. Check for system firmware update.<br>2. Call service support. |
| B1xx 4699 | Service processor firmware failure | 1. Check for system firmware updates<br>2. Call service support |
| B1xx 469A | System firmware interface | 1. Check for system firmware updates<br>2. Call service support |
| B1xx 469B | Firmware to I/O interface | 1. Check for system firmware updates<br>2. System board, Location: P1 (See note 3 on page 41.) |
| B1xx 469C | Firmware to I/O interface | 1. Check for system firmware updates<br>2. System board, Location: P1 (See note 3 on page 41.) |
| B1xx 469E | Service processor firmware failure | 1. Check for system firmware updates<br>2. Go to “MAP 1540: Minimum Configuration” on page 57 |
| B1xx 469F | Service processor firmware failure | 1. Check for system firmware updates<br>2. Go to “MAP 1540: Minimum Configuration” on page 57 |
| B1xx 8FF0 | Informational message | No action required |

## Scan Log Dump Progress Codes

*Table 10. Scan Log Dump Progress Codes*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| D130 xxxx | Scan log dump in progress | Informational message only. As the dump progresses, the xxxx characters in the display will change. When the scan log dump is complete, the system may reboot, depending on the reboot policy settings. |

## Problem Determination-Generated Error Codes

**Attention:** If you replace FRUs or perform an action and the problem is still not corrected, go to “MAP 1540: Minimum Configuration” on page 57 unless otherwise indicated in the tables.

If you replace FRUs or perform an action and the problem is corrected, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**Note:** Do not shut down the system if the FRU was replaced by hot swap.

*Table 11. 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 *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | Go to “MAP 1540: Minimum Configuration” on page 57. |
| M0BT 0001 | The system hung during “Starting Software...”. This error code is generated by the customer performing “Problem Determination” in the *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | Go to “MAP 1540: Minimum Configuration” on page 57. |
| M0KB D000 | The system hung during keyboard POST. This error code is generated by the customer performing “Problem Determination” in the *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | Keyboard |
| M0KB D001 | The system did not respond to a keyboard entry. This error code is generated by the customer performing “Problem Determination” in the *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | 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 *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | Type 102 keyboard. |

*Table 11. Problem Determination Generated Error Codes (continued)*

| Error Code | Description | Action/ Possible Failing FRU |
|---|---|---|
| M0KB D003 | The system did not respond to a keyboard entry. This error code is generated by the customer performing “Problem Determination” in the *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | Kanji-type keyboard. |
| M0ME M002 | The system hung during memory POST. This error code is generated by the customer performing “Problem Determination” in the *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | Go to “MAP 1540: Minimum Configuration” on page 57. |
| M0NE T000 | The system hung during network POST. This error code is generated by the customer performing “Problem Determination” in the *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | Go to “MAP 1540: Minimum Configuration” on page 57. |
| M0PS 0000 | Power Failure. This error code is generated by the customer performing “Problem Determination” in the *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | Go to “MAP 1520: Power” on page 53. |
| M0SC SI00 | Unable to load diagnostics. This error code is generated by the customer performing “Problem Determination” in the *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | Go to “MAP 1540: Minimum Configuration” on page 57. |
| M0SC SI01 | Unable to load diagnostics. This error code is generated by the customer performing “Problem Determination” in the *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User’s Guide*. | Go to “MAP 1540: Minimum Configuration” on page 57. |

# Chapter 6. Loading the System Diagnostics In Service Mode

The system diagnostics can be booted from the default boot list or from the service mode boot list. (The service mode boot list can be modified using the system diagnostics “Display or Change Bootlist” service aid. The service mode boot list cannot be modified under the System Management Services.)

For more information about using standalone or online diagnostics, see “Using the Standalone and Online Diagnostics” in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.

**Attention:** If this system unit is attached to another system, be sure you isolate this system unit before stopping the operating system or running diagnostic programs. Some system-cabling changes (such as installing wrap plugs or removing a device from the configuration) may require action by the operator of the attached system before making the cabling changes on this system.

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.
3. Wait until the Power LED stops flashing and remains off, then press the power button to turn on the system.
4. Immediately insert the diagnostic CD-ROM into the CD-ROM drive.
5. When or after the **keyboard** indicator appears during startup, press the numeric 5 key on the keyboard.
6. Enter any requested passwords.

**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 stops flashing and remains off, 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.

## Default Boot List and Service Mode Bootlist

The default boot list is:
1. Diskette
2. CD-ROM
3. Tape
4. Hard file
5. Network
   - Token-ring
   - Ethernet

Pressing the numeric 5 key on the keyboard causes the system to load **standalone diagnostics** if a diagnostic CD is present in the CD-ROM drive.

Pressing the numeric 6 key on the keyboard loads **online diagnostics** from the hard file in the customized service mode boot list. No diagnostic CD should be in the CD-ROM drive because **online diagnostics** are typically run from a hard disk. Like the default boot list, the service mode boot list can contain five entries. The numeric 6 key works like the numeric 5 key with the following exceptions:

- The system searches for a boot record according to the service mode boot list.
- If the service mode boot list is discovered by a cyclical redundancy check to be corrupted, the system rebuilds the service mode boot list according to the default boot list. (The default boot list contains five entries, and for each matching device type found in the system unit, the system makes an entry in the custom boot list.)
- If no service mode boot list is present, the system uses the default boot list.

# Chapter 7. Using the Service Processor

The service processor menus make it possible for you to configure service processor options, as well as enable and disable functions.

Service processor menus are available using an ASCII terminal when `0K` is displayed on the operator panel or when the service processor has detected a server problem (such as a surveillance failure).

For a summary of the service processor functions and the methods used to invoke them, see the following table.

| Service Processor Functions | Service Processor Menus (ASCII terminals) | AIX Service Aids (ASCII or graphics terminals) | SMS (ASCII or graphics terminals) |
|---|---|---|---|
| Read VPD image from last system boot | Y[3] | | |
| Read System POST Errors | Y[3] | | |
| Read Service Processor Error Logs | Y[3] | | |
| View Progress Indicators from last boot | Y[3] | | |
| Power-off System | Y[2] | | |
| Read NVRAM | Y[2] | | |
| Start Talk Mode | Y[2] | | |
| Enable/Disable Console Mirroring | Y[2] | | |
| Setup Reboot/Restart Policy | Y[2] | Y[1] | |
| Enable/Disable Modem | Y[2] | Y[1] | |
| Setup Modem Configuration | Y[2] | Y[1] | |
| Setup Dial-out Phone Numbers | Y[2] | Y[1] | |
| Setup Surveillance | Y[2] | Y[1] | |
| Select Modem Line Speed | Y[2] | Y[1] | |
| Update System EPROMs | Y[2] | Y[1] | |
| Save/Restore Hardware Maintenance Policies | | Y[1] | |
| Change General-Access Password | Y[2] | | |
| Change Privileged-Access Password | Y[2] | | Y[2] |
| Select Language | Y[2] | | Y[2] |
| Enable/Disable Unattended Start Mode | Y[2] | Y[1] | Y[2] |

Passwords required (if set):
[1] Operating system root password
[2] Privileged-access password
[3] General-access (power-on) password

## Service Processor Menus

The service processor menus are divided into two groups:

- General user menus - 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.

## Accessing the Service Processor Menus Locally

Service processor menus can be accessed locally by connecting an ASCII terminal to serial port 1 (S1) or serial port 2 (S2). Access to the service processor menus is not available on serial port 3 (S3) or serial port 4 (S4). Because the presence of the ASCII terminal cannot be confirmed by the service processor, you must press a key (any key) on the ASCII keyboard to confirm its presence after `0K` appears in the operator panel display.

When you gain access, the service processor prompts you for a password (if 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.

- `0>` indicates serial port 1 (S1)
- `1>` indicates serial port 2 (S2)

## Accessing the Service Processor Menus Remotely

If your system has a modem connected and is configured for call-in (see “Modem Configuration Menu” on page 274), 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 set). When verified, the service processor menus display remotely.

## Saving and Restoring Service Processor Settings

All the settings 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 AIX 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 AIX 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 “Introducing Tasks and Service Aids” section of the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*, 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 ASCII terminal causes the main menu to be displayed.

## 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 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

 1>
```

- **Power-on System**

  Allows the user to start the system using the current ASCII terminal as the active console.

- **Power-off System**

  Allows the user to power off the system using the current ASCII terminal as the active console.

- **Read VPD Image from Last System Boot**

  Displays manufacturer vital product data, such as serial numbers, part numbers, and so on, that were stored during the system boot prior to the one in progress now.

- **Read Progress Indicators from Last System Boot**

  Displays a number of the boot progress indicators, which may include service processor checkpoints, IPL checkpoints, and/or AIX configuration codes, from the previous system boot. This information can be useful in diagnosing system faults.

  The progress indicator codes are listed from top (latest) to bottom (oldest).

  This information is not stored in non-volatile storage. If the system is powered off using the power-on button on the operator panel, this information is retained. If the ac power (dc power in a dc-powered system) is disconnected from the system, this information will be lost. For an example, refer to “LCD Progress Indicator Log” on page 292.

- **Read Service Processor Error Logs**

Displays the service processor error logs. For an example, refer to “Service Processor Error Log” on page 291.

- **Read System POST Errors**

  This option should only be used by service personnel to display additional error log information.

- **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 set, to access these menus.

## Main Menu

At the top of the Main Menu is a listing containing:

- 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. The system name is set 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: CL000313
        Copyright 2000 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

 1>
```

- **Service Processor Setup Menu**

  See “Service Processor Setup Menu” on page 256 for more information.
- **System Power Control Menu**

  See “System Power Control Menu” on page 260 for more information.
- **System Information Menu**

  See “System Information Menu” on page 264 for more information.
- **Language Selection Menu**

  See “Language Selection Menu” on page 272 for more information.
- **Call-In/Call-Out Setup Menu**

  See “Call-In/Call-Out Setup Menu” on page 273 for more information.
- **Set System Name**

  Allows setting of the system name.

## Service Processor Setup Menu

The Service Processor Setup menu shown below 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

 6. Reset Service Processor

 7. Reprogram Flash EPROM Menu

 8. Serial Port Snoop Setup Menu

98. Return to Previous Menu

99. Exit from Menus

 1>
```

**Note:** Unless otherwise stated in menu responses, settings become effective when a menu is exited using option 98 or 99.

## Passwords

Passwords can be any combination of up to eight alphanumeric characters. You can enter longer passwords, but the entries are truncated to include only the first eight characters. The privileged-access password can be set from service processor menus or from System Management Services (SMS) utilities (see Chapter 8, “Using System Management Services” on page 297). 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 correct passwords. The results of not recognizing a correct 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 AIX.

If the error threshold is reached by someone entering passwords remotely, the service processor commands the server to power down 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 |

**Note:** 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 access to 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**

  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 both 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 the other port. From this point on, the service processor only sends information to the active port and the mirror port. This capability can be enabled by local or remote users, providing local users the capability to monitor remote sessions. Console mirroring can be enabled for the current session only. For more information, see "Console Mirroring" on page 290.

- **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 this menu item activates the keyboards and displays for such communications while console mirroring is established. This is a full duplex link, so message interference is possible. Alternating messages between users works best.

- **OS Surveillance Setup Menu**

  This menu can be used to set up operating system (OS) surveillance.

```
       OS Surveillance Setup Menu

 1. Surveillance:
      Currently Enabled

 2. Surveillance Time Interval:
      5 minutes

 3. Surveillance Delay:
      10 minutes


98. Return to Previous Menu

1>
```

  – **Surveillance**

    Can be set to Enabled or Disabled.

  – **Surveillance Time Interval**

    Can be set to any number from 2 through 255.

  – **Surveillance Delay**

    Can be set to any number from 0 through 255.

  Refer to "Service Processor System Monitoring - Surveillance" on page 287 for more information about surveillance.

- **Reset Service Processor**

  If this option is selected, entering `Y` causes the service processor to reboot.

- **Reprogram Flash EPROM Menu**

  This option 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. They are as follows:

  – System power control network programming
  – Service processor programming
  – System firmware
  – Run-time abstraction services

- **Serial Port Snoop Setup Menu**

  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 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.

  Use the snoop serial port option to select the serial port to snoop.

  **Note:** Only serial port 1 is supported.

  After serial port snooping is correctly configured, at any point after the system unit is booted to AIX, whenever the reset string is typed on the main console, the system unit reboots.

  Pressing Enter after the reset string is not required, so make sure that the string is not common or trivial. A mixed-case string is recommended.

## System Power Control Menu

This menu is used to set power control options. Other menus that control boot options are available here:

```
       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

 1>
```

- **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. It 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 280.

- **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 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 option 30 (Refresh Modem Setting) 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 273 for information on configuring modems.

Option 2 is used to set the number of rings.

**Note:** In order for the ring-indicate power-on settings to take effect and ring-indicate power-on to be enabled, the service processor menus must be exited completely. Enter 99 at the Main Menu screen to completely exit the service processor menus.

- **Reboot/Restart Policy Setup Menu**

  The following menu controls reboot/restart policy:

```
       Reboot/Restart Policy Setup Menu

 1. Number of reboot attempts:
      Currently 1

 2. Use OS-Defined restart policy?
      Currently Yes

 3. Enable supplemental restart policy?
      Currently No

 4. Call-Out before restart:
      Currently Disabled

98. Return to Previous Menu

1>
```

  *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 re-initialized. 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. Values equal to or greater than 0 are valid. Only successive failed reboot/restart attempts are counted.

  – **Use OS-Defined restart policy** - Allows the service processor to react or not react in the same way as the operating system to major system faults by reading the setting of the operating system parameter **Automatically Restart/Reboot After a System Crash**. This parameter may or may not be defined, depending on the operating system or its version/level. If the operating system automatic restart setting is defined, then 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 Yes.

– **Enable supplemental restart policy** - The default setting is No. If set to Yes, the service processor restarts the system when the system loses control as detected by service processor surveillance, and either:

  The **Use OS-Defined restart policy** is set to No.

  OR

  The **Use OS-Defined restart policy** is set to Yes, and the operating system has no automatic restart policy.

  Refer to “Service Processor Reboot/Restart Recovery” on page 281.

– **Call-Out before restart (enabled/disabled)** - If a restart is necessary due to a system fault, you can enable the service processor to call out and report the event. This option can be valuable if the number of these events becomes excessive, signalling a bigger problem.

- **Power-On System**

  Allows immediate power-on of the system. For other power-on methods, see “Powering On the System” on page 9.

- **Power-Off System**

  Allows the user to power-off the system.

- **Enable/Disable Fast System Boot**

  Allows the user to select the speed of the system boot.

  **Attention:** Selecting the fast IPL results in several diagnostic tests being skipped and a shorter memory test being run.

- **Boot Mode Menu**

  The Boot Mode Menu allows you to select a boot mode.

```
       Boot Mode Menu

 1. Boot to SMS Menu:
      Currently Disabled

 2. Service Mode Boot from Saved List:
      Currently Disabled

 3. Service Mode Boot from Default List:
      Currently Disabled

 4. Boot to Open Firmware Prompt:
      Currently Disabled

98. Return to Previous Menu

1>
```

  To select a boot mode, select a number and press Enter. The item corresponding to the selected number toggles from disabled to enabled. If the same number is selected again, the item toggles from enabled to disabled. If a boot mode is enabled, the boot mode selected is performed, and the disabled/enabled selection is reset to disabled. Following is a description for 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 in service mode 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**

    When this selection is enabled, the system boots to the open firmware prompt.

    This option should only be used by service personnel to obtain additional debug information.

## 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

98. Return to Previous Menu

99. Exit from Menus

 1>
```

- **Read VPD Image from Last System Boot**

  Displays manufacturer's vital product data (VPD), such as serial numbers, part numbers, and so on, that were stored during the system boot prior to the one in progress now.

- **Read Progress Indicators from Last System Boot**

  Displays a number of the boot progress indicators, which may include service processor checkpoints, IPL checkpoints, and/or AIX configuration codes, from the previous system boot. This information can be useful in diagnosing system faults.

  The progress indicator codes are listed from top (latest) to bottom (oldest).

  This information is not stored in non-volatile storage. If the system is powered off using the power-on button on the operator panel, this information is retained. If the ac power (dc power in a dc-powered system) is disconnected from the system, this information will be lost. For an example, refer to "LCD Progress Indicator Log" on page 292.

- **Read Service Processor Error Logs**

  Displays the service processor error log. Refer to "Service Processor Error Log" on page 291 for an example of this error log.

- **Read System POST Errors**

  This option should only be used by service personnel to display additional error log information.

- **Read NVRAM**

  Displays non-volatile random access memory (NVRAM) content.

- **Read Service Processor Configuration**

  Displays current service processor configuration.

- **Processor Configuration/Deconfiguration Menu**

  This menu allows the user to change the system processor configuration. If it is necessary to take one of the processors offline, this menu allows you to deconfigure a processor, and then reconfigure the processor at a later time. An example of this menu is shown below:

```
        PROCESSOR CONFIGURATION/DECONFIGURATION MENU

 77. Enable/Disable CPU Repeat Gard: Currently Enabled

  1. 0  3.0  (00)  Configured by system
  2. 2  3.1  (31)  Deconfigured by system
  3. 4  3.2  (00)  Configured by system
  4. 6  3.3  (00)  Configured by system




 98. Return to Previous Menu

 1>
```

**Note:** This table is built from vital product data collected during the last boot sequence. The first time the system is powered up, or after the system's non-volatile 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 and should be ignored.

**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

A status of 00 indicates that the CPU has not had any errors logged against it by the service processor.

To enable or disable CPU Repeat Gard, use menu option 77. CPU Repeat Gard is enabled by default.

If CPU Repeat Gard is disabled, processors that are in the `deconfigured by system` state will be reconfigured. These reconfigured processors are then tested during the boot process, and if they pass, they remain online. If they fail the boot testing, they are deconfigured, even though CPU Repeat Gard is disabled.

The failure history of each CPU is retained. If a processor with a history of failures is brought back online by disabling Repeat Gard, it remains online if it passes testing during the boot process. However, if Repeat Gard is enabled, the processor is taken offline again because of its history of failures.

**Note:** 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.

The AIX Documentation library is available at the following Web address: http://www-1.ibm.com/servers/aix/library/. Select **Technical Publications**. AIX documentation is also contained on the AIX Documentation CD. The documentation is made accessible by loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.

- **Memory Configuration/Deconfiguration Menu**

  These menus allow the user to change the system memory configuration. If it is necessary to take one of the memory DIMMs offline, this menu allows you to deconfigure a DIMM, and then reconfigure the DIMM at a later time.

  When this option is selected, a menu displays, showing the memory riser cards in the system. Type the number of the memory riser card on which the DIMM is plugged that you want to configure or deconfigure. An example of this menu is shown below:

```
        MEMORY CONFIGURATION/DECONFIGURATION MENU

 77. Enable/Disable Memory Repeat Gard: Currently Enabled

  1. Memory riser card 1
  2. Memory riser card 2
 98. Return to Previous Menu
```

**Note:** If there is only one processor in the system, system memory may reside on that processor assembly. In that case, you are given the option to select the processor card from the list.

After you select a processor card or a memory riser card, a menu allowing the selection of a memory DIMM is displayed. The following is an example of this menu:

```
        MEMORY CONFIGURATION/DECONFIGURATION MENU

  77. Enable/Disable Memory Repeat Gard: Currently Enabled

   1. 11.17(00)  Configured by system   2. 11.19(00) Configured by system
  15. 11.16(00)  Configured by system  16. 11.18(00) Configured by system

   3. 11.21(00)  Configured by system   4. 11.23(00) Configured by system
  13. 11.20(00)  Configured by system  14. 11.24(00) Configured by system

  98. Return to Previous Menu

Memory DIMMs are managed as a group.
Deconfiguring a DIMM will make the whole group unavailable.

  0>
```

**Note:** This table is built from vital product data collected during the last boot sequence. The first time the system is powered up, or after the system's non-volatile RAM (NVRAM) has been erased, this table may be empty. The table is rebuilt during the next boot into AIX.

The system DIMMs are presented by group. If a memory riser card is present, quad A is shown first, followed by quads B, C, and D, if present. If memory is on a processor card, pair A is shown first, followed by pairs B, C, and D, if present. The menu selection index/DIMM number and the DIMM address correspond to the numbers shown in the diagrams "Memory Riser Card 1 Memory DIMM Locations for Service Processor Menus" on page 269, "Memory Riser Card 2 Memory DIMM Locations for Service Processor Menus" on page 269 and "Processor Card Memory DIMM Locations for Service Processor Menus" on page 270.

The fields in the previous table represent the following:

**Column 1** (1.) Menu selection index/DIMM number

**Column 2** (11.xx) Riser card 1

(10.xx) Riser card 2

(3.xx) Memory on processor card

**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

An error status of 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`. Memory DIMMs are managed as a group; deconfiguring a DIMM makes the whole group of four DIMMs unavailable.

In the example menu shown above, each line shows two DIMMs and indicates whether they are configured.

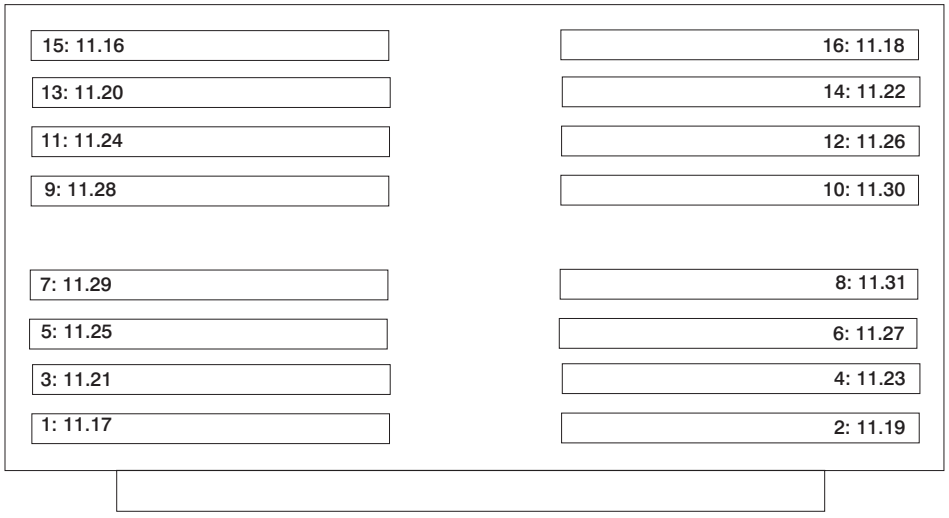
To enable or disable Memory Repeat Gard, use menu option 77 of the Processor Configuration/Deconfiguration Menu.

If Memory Repeat Gard is disabled, DIMMs that are in the `deconfigured by system` state will be reconfigured. These reconfigured DIMMs 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 Memory Repeat Gard is disabled.

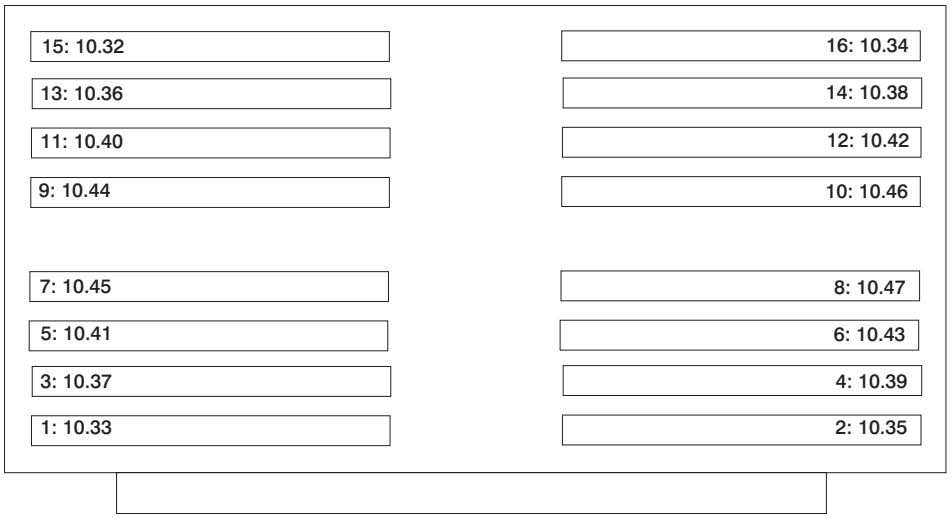
The failure history of each DIMM is retained. If a DIMM with a history of failures is brought back online by disabling Repeat Gard, it remains online if it passes testing during the boot process. However, if Repeat Gard is enabled, the DIMM is taken offline again because of its history of failures.

The physical location of a DIMM is determined by *xx.yy*, where *xx* is the riser card location (11 for riser card 1, 10 for riser card 2, and 3 for DIMMs on the processor card) followed by the DIMM location on the riser card, according to the following two illustrations.

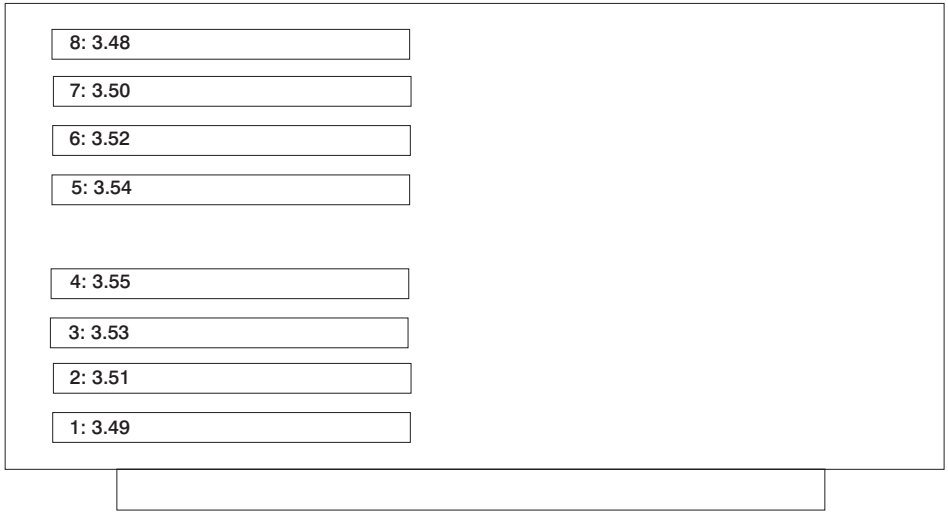
## Memory Riser Card 1 Memory DIMM Locations for Service Processor Menus




## Memory Riser Card 2 Memory DIMM Locations for Service Processor Menus



## Processor Card Memory DIMM Locations for Service Processor Menus



- **Power Control Network Utilities Menu**

  This menu allows the user to do a lamp test on the operator panels and display, or change the I/O type.

```
      POWER CONTROL NETWORK UTILITIES MENU

 1. Lamp Test for all Operator Panels

 2. Display I/O Type

 3. Change I/O Type

98. Return to Previous Menu

1>
```

  – **Lamp Test for all Operator Panels**

    Selecting this option tests the operator panel indicators. When selected, the indicators blink on and off for approximately 30 seconds.

  – **Display I/O Type**

    Nothing displays on the operator panel. After 20-30 seconds, the Power Control Network Utilities Menu redisplays on the console.

  – **Change I/O Type**

    This option is not available on this system.

## Language Selection Menu

The service processor menus and messages are available in various languages. This menu allows a language to be selected 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

 6. Svenska

98. Return to Previous Menu

99. Exit from Menus

 1>
```

**Note:** Your ASCII terminal must support the ISO-8859 character set to correctly display languages other than English.

## Call-In/Call-Out Setup Menu

This menu is used to configure a modem for the service processor to use to support the system:

```
       CALL-IN/CALL-OUT SETUP MENU

 1. Modem Configuration Menu

 2. Serial Port Selection Menu

 3. Serial Port Speed Setup Menu

 4. Telephone Number Setup Menu

 5. Call-Out Policy Setup Menu

 6. Customer Account Setup Menu

 7. Call-Out Test

98. Return to Previous Menu

99. Exit from Menus

1>
```

- **Modem Configuration Menu**, see “Modem Configuration Menu” on page 274.
- **Serial Port Selection Menu**, see “Serial Port Selection Menu” on page 275.
- **Serial Port Speed Setup Menu**, see “Serial Port Speed Setup Menu” on page 275.
- **Telephone Number Setup Menu**, see “Telephone Number Setup Menu” on page 276.
- **Call-Out Policy Setup Menu**, see “Call-Out Policy Setup Menu” on page 277.
- **Customer Account Setup Menu**, see “Customer Account Setup Menu” on page 278.
- **Call-Out Test Menu** tests the configuration after the modem is installed and configured. In order for this test to execute successfully, at least one of the following numbers must be assigned:
  - Service center telephone number
  - Customer administration center telephone number
  - Digital pager telephone number

## Modem Configuration Menu

The first two lines of the Modem Configuration Menu are status lines showing the current selections. Selections are made in the two 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 both of the serial ports with modems, make your selections one port at a time.

**Note:** Modem configuration is only supported on serial port 1 (S1) and serial port 2 (S2).

```
        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. none                  9. 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 399, and “Transfer of a Modem Session” on page 404.

## Serial Port Selection Menu

This menu allows you to enable or disable the call-in and call-out functions of each serial port in any combination.

```
       Serial Port Selection Menu

  1. Serial Port 1 Call-Out:          3. Serial Port 1 Call-In:
     Currently Disabled                  Currently Disabled

  2. Serial Port 2 Call-Out:          4. Serial Port 2 Call-In:
     Currently Disabled                  Currently Disabled

 98. Return to Previous Menu
```

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

 1>
```

A serial port speed of 9600 baud or higher is recommended. Valid serial port speeds are as follows:

| | | |
|---|---|---|
| 50 | 600 | 4800 |
| 75 | 1200 | 7200 |
| 110 | 1800 | 9600 |
| 134 | 2000 | 19200 |
| 150 | 2400 | 38000 |
| 300 | 3600 | 57600 |
| | | 115200 |

## Telephone Number Setup Menu

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

 1>
```

- **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 288 for information about using certain modems for paging.

  **Note:** At least one of the preceding three telephone numbers must be assigned in order for the call-out test to execute 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 administration 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

Callout 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

 1>
```

- **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 fail 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

 1>
```

- **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 may or may not have access. Leave these fields unassigned if your service provider does not use RETAIN.

## Service Processor Procedures in Service Mode

When the system is in service mode, the following service-processor parameters are suspended:

- Unattended start mode
- Reboot/restart policy
- Call-out
- Surveillance

When service mode is exited, the service processor parameters revert to the customer settings.

## Service Processor Functions

This section discusses some of the service processor functions in greater detail. The service processor supports the functions listed in the following table.

| | | |
|---|---|---|
| Built-in Functions | Initialization and Test | Service Processor BIST |
| | | System Chip Initialization |
| | Error Data Collection | BIST/POST errors and status |
| | | Isolation to Field Replaceable Unit (FRU) on failure |
| | Configuration | CPU Complex validation |
| | | VPD Collection |
| | System Management | Reset and Reboot on System Firmware failure |
| | | Reboot on system failure |
| Local User Function | User Interface | Local async console |
| | | Text-based menus with NLS |
| | | Operator Panel messages |
| | Power and Miscellaneous | Power On/Off |
| | | Configurable Reboot Policy |
| | Status and Data Access | VPD |
| | | Error data (SP) |
| | | Error data (system) |
| | Service Processor Setup Utilities | Passwords |
| | | Phone numbers |
| | | Language (NLS) selection |
| | | Call-In/Call-Out enable/disable |
| | | System Name |
| | | Modem Configuration |
| Remote User Functions | Call-Out (Call Home) Reporting | OS termination |
| | | Boot failure |
| | | Surveillance failure |
| | | Checkstop |
| | | Machine check |
| | | Identify system by name |
| | Call-In | Power-on through ring-indicate |
| | | Password/security check |
| | | Console mirroring |

## System Power-On Methods

This section discusses the following system power-on methods:

- Power-on switch
- Service processor menus

  Privileged users can power on the system by selecting the **System Control Power Menu** option from the main menu and then selecting the **Power-on System** option from the system power control menu. General users should select **Power-on System** on the general user menu.
- Remote power-on via ring-indicate signal

  The 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 260.

  The service processor can be enabled to recover from the loss of ac power (dc power in a dc-powered system) (see Enable/Disable Unattended Power-On Mode in the **System Control Power Menu**). When ac power (dc power in a dc-powered system) is restored, the system returns to the power state at the time ac loss (dc loss in a dc-powered system) occurred. For example, if the system was powered on when ac loss (dc loss in a dc-powered system) occurred, it reboots/restarts when power is restored. If the system was powered-off when ac loss (dc loss in a dc-powered system) 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. Refer to the AIX **shutdown -t** command for details on setting the timer.

  **Note:** If an ac power (dc power in a dc-powered system) loss is in progress when the timed power-on attempt occurs, the server is not able to power on when ac power (dc power in a dc-powered system) 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/slow boot (IPL) settings

  Using the service processor menus, you can select the IPL type, mode, and speed of your system boot.

  **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 re-initialized. 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 may otherwise be undetected.

## 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 re-initiate the boot process (reboot) if enabled to do so. The service processor can re-attempt this process according to the number of retries that has been set in the Reboot/Restart Policy Setup Menu.

## Failure During Normal System Operation

When the boot process completes and control transfers to the operating system (OS), the service processor can monitor operating system activity (see the **Set Surveillance Parameters** option in the Service Processor Setup Menu). If OS activity stops due to a hardware- or software-induced failure, the service processor can initiate a reboot/restart process based on the settings in the Service Processor Reboot/Restart Policy Setup Menu and the OS automatic restart settings (see the operating system documentation).

If you are using the AIX operating system, the menu item under SMIT for setting the restart policy is Automatically Reboot After Crash (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, then the service processor restart policy can be controlled from the service processor menus. Use the Enable Supplemental Restart Policy selection.

**Use OS-Defined restart policy** - The default setting is yes. 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 no. If set to yes, the service processor restarts the server when the operating system loses control and either:

The **Use OS-Defined restart policy** is set to no.

OR

The **Use OS-Defined restart policy** is set to yes and the operating system has no automatic restart policy.

The following table describes the relationship among the operating system and service processor restart controls:

| OS Automatic reboot/restart after crash setting | Service processor to use OS-Defined restart policy? | Service Processor Enable supplemental restart policy? | System response |
|---|---|---|---|
| None | No | No[1] | |
| None | No | Yes | Restarts |
| None | Yes[1] | No[1] | |
| None | Yes[1] | Yes | Restarts |
| False[2] | No | No[1] | |
| False[2] | No | Yes | Restarts |
| False[2] | Yes[1] | No[1] | |
| False[2] | Yes[1] | Yes | |
| True | No | No[1] | |
| True | No | Yes | Restarts |
| True | Yes[1] | No[1] | Restarts |
| True | Yes[1] | Yes | Restarts |

[1] Service processor default
[2] AIX default

## System Firmware Updates

This section provides information and instructions for updating the system firmware. You may need to perform these steps if you are installing an option or if your support representative has instructed you to update your firmware.

Always check the pSeries & RS/6000 Support Web site for the latest firmware images and update instructions. The Web address is: http://www.rs6000.ibm.com/support/micro

Downloading the firmware update image and update instructions from the Web is preferred.

If the system is running, but access to the Web is not available, see “System Firmware Update Using a Locally Available Image” on page 284.

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 285.

If the service processor programming has been corrupted, the service processor will automatically enter recovery mode when power is applied to the system. Recovery mode is described later in this section.

To check the level of firmware that is currently on the system, see “Determining the Level of Firmware on the System” on page 284.

## General Information on System Firmware Updates

All the types of system firmware 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. As noted below, the diskette images can be downloaded to any personal computer, pSeries, or RS/6000 system with Internet access. This method is the only way to acquire a set of firmware update diskettes; they cannot be created by using the service processor menus or by using AIX.

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 this Web site. Before doing a system firmware update, check the Web site for the latest code and images. Do not attempt a firmware update if you are unsure of the image you have, or of the procedure required for the update.

The images are available on the Web site in either DOS format or AIX (backup) format:

- If downloading to a PC, download the DOS image and follow the instructions. The diskettes that are created will be in AIX (backup) format.
- If downloading to a pSeries or RS/6000 system, follow the instructions to create an image on a disk drive or on diskettes.

## Determining the Level of Firmware on the System

**Note:** This information may be superseded by the information that is available on the Web site listed below. Always check the Web site for the latest images and instructions for checking the firmware level. The Web address is: http://www.rs6000.ibm.com/support/micro

The firmware level is denoted by XXYYMMDD, where XX = model designation, YY = year, MM = month, and DD = day of the release.

The firmware level can be determined by either of the following methods:

- On the AIX command line, by typing:

  ```
  lscfg -vp|grep -F .CL
  ```

  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.

## System Firmware Update Using a Locally Available Image

To update the system firmware using a locally available image, perform the following steps:

1. Log in as root user.
2. If the directory **/tmp/fwupdate** does not exist, create it by issuing the following command:

   ```
   mkdir /tmp/fwupdate
   ```
3. The firmware update file must be written 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 server, for example.

   The firmware update file can also be transferred to the target system by backing up the image onto diskette from another server and restoring it into the **/tmp/fwupdate** directory.

   After the firmware update file has been written into the **/tmp/fwupdate** directory, verify its existence by entering the following command:

   ```
   ls /tmp/fwupdate/CL*.img
   ```

   The update file will have the format CLyymmdd.img. The CL indicates that this is an update image for a system: yy is the year, mm is the month, and dd is the day of the update file.
4. After the update file has been written to the **/tmp/fwupdate** directory, enter the following commands:

```
cd /usr/lpp/diagnostics/bin

./update_flash -f /tmp/fwupdate/CLyymmdd.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 set of firmware update diskettes in backup format.

The service processor menus are available while the system is powered off. As a privileged user, from the service processor main menu, select **Service Processor Setup**, then select **Reprogram Flash EPROM Menu**. The update process requests update diskettes as needed.

## Updating System Firmware from the AIX Service Aids

**Note:** This service aid is supported only in online diagnostics.

Refer to the detailed instructions that are provided on the Web site with the latest image.

## Updating System Firmware from the AIX Command Line

Refer to the detailed instructions that are provided on the Web site with the latest image.

**Note:** The update process can take up to sixty minutes, and the system reboots itself during the update process.

## Recovery Mode

If the service processor detects that its programming has been corrupted when it is powering up to standby mode, it will enter recovery mode. In recovery mode, it will ask for the firmware update diskettes by putting eight-digit codes on the operator panel.

The eight-digit codes are as follows:

| Code | Action |
|---|---|
| A1FD 0000 | System firmware has been corrupted and must be reflashed. |
| A1FD 0001 | Insert update diskette 1. |
| A1FD 0002 | Insert update diskette 2. |
| A1FD 0003 | Insert update diskette 3. |
| A1FD 000n | Insert update diskette n. |

**Notes:**

1. If the wrong diskette is inserted at any time, or if the diskette is left in the drive after it has been read, `B1FD 001F` is displayed, indicating that the wrong diskette is in the drive.
2. If `B1FD 001A` is displayed at any time during the process, the service processor must be reset by activating the pinhole reset switch on the operator panel.

After the update process is complete, the service processor resets itself and goes through a complete reboot.

## Configuring and Deconfiguring Processors or Memory

All failures that crash the system with a machine check or check stop, even if intermittent, are reported as a diagnostic callout for service repair. To prevent the recurrence of intermittent problems and improve the availability of the system until a scheduled maintenance window, processors and memory DIMMs with a failure history are marked ″bad″ to prevent their being configured on subsequent boots.

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) during boot (as determined by the service processor).
- A processor or memory DIMM causes a machine check or check stop during run time, and the failure can be isolated specifically to that processor or memory DIMM (as determined by the processor run-time diagnostics in the service processor).
- A processor or memory DIMM reaches a threshold of recovered failures that results in a predictive callout (as determined by the processor run-time diagnostics in the service processor).

During boot time, the service processor does not configure processors or memory DIMMs that are marked ″bad.″

If a processor or memory DIMM is deconfigured, the processor or memory DIMM remains offline for subsequent reboots until it is replaced or Repeat Gard is disabled. The Repeat Gard function also allows users to manually deconfigure a processor or memory DIMM, or re-enable a previously deconfigured processor or memory DIMM. For information on configuring or deconfiguring a processor, see the Processor Configuration/Deconfiguration Menu on page 265. For information on configuring or

deconfiguring a memory DIMM, see the Memory Configuration/Deconfiguration Menu on page 266. Both of these 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 run time diagnostics (PRD) code running in the service processor. When a predefined error threshold is met, an error log entry 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 bring-up (automatic)
- Operating system run time (optional)

### 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 time period), it cycles the system power to attempt a reboot. The maximum number of retries is set from the service processor menus. If the fail condition persists, the service processor leaves the machine powered on, logs an error, and displays menus to the user. If call-out is enabled, the service processor calls to report the failure and displays the operating system surveillance failure code on the operator panel.

### Operating System Surveillance

Operating system surveillance provides the service processor with a means to detect hang conditions, as well as hardware or software failures, while the operating system is running. It also provides the operating system with a means to detect a service processor failure caused by the lack of a return heartbeat.

Operating system surveillance is not enabled by default, allowing you to run operating systems that do not support this service processor option.

You can also use the service processor menus and the AIX diagnostic service aids to enable or disable operating system surveillance.

For operating system surveillance to work correctly, you must set the following parameters:

- Surveillance enable/disable
- Surveillance interval

  The maximum time the service processor waits between heartbeats from the operating system before reporting a surveillance failure.
- Surveillance delay

  The maximum time the service processor waits for the first heartbeat from the operating system, after the operating system has been started, before reporting a surveillance failure.

Surveillance does not take effect until the next time the operating system is started after the parameters have been set.

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 within the surveillance delay period, 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 281.

If surveillance is selected from the service processor menus that 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)

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 serial port 1 (S1) or serial port 2 (S2).
2. Set up the following using the service processor menus or the 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 is supported on serial port 1 (S1) and serial port 2 (S2). When console mirroring is enabled, the service processor sends information to both 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 the other port. From this point on, the service processor only sends information to the active port and the mirror port. This capability can be enabled by local or remote users, providing local users the capability to monitor remote sessions. Console mirroring can be enabled for the current session only.

## System Configuration

The following describes the configuration for console mirroring:

- Service processor
- Modem connected to one serial port and enabled for incoming calls
- Local ASCII terminal 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 in the following scenarios:

- 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 Log

The service processor error log, an example of which follows, contains information about 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). The AIX error log has additional information and time stamps 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      word16:00000 000
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

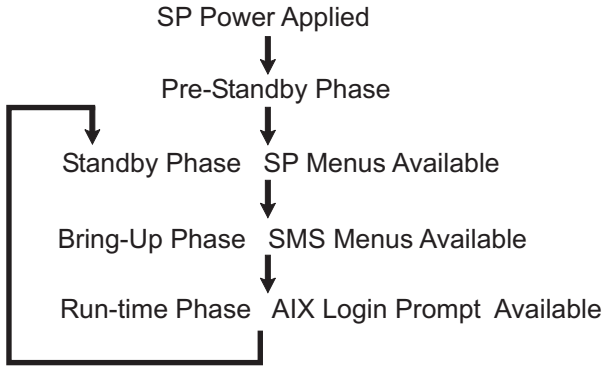
The following is an example of the LCD progress indicator log. It shows the types of entries that the log might contain, and is for example purposes only.

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..U0.2-P1-I14/E1
          0539..
          0742..U0.2-P1-I12/E1
          0539..
          0776..U0.2-P1-I10/T1
          E139
          E1FB
          E139
          E183
Press Return to continue, or 'x' to return to menu. >
          EAA1..U0.1-P1-I14
          E172..U0.1-P1
          E172..U0.1-P1-I14
          E172..U0.1-P1
          94BB
          9109
          9380
          9108
          9107
          9106
          9105
          9118
          9104
          9103
          9102
          90FD
```

## Service Processor Operational Phases

This section provides a high-level flow of the phases of the service processor.




### Pre-Standby Phase

This phase is entered when the server is first connected to a power source. This phase is exited when the power-on self-test (POST) and configuration tasks are completed.

The pre-standby phase components are:

- Service processor initialization - the service processor performs any necessary hardware and firmware initializations.
- Service processor POST - the service processor conducts power-on self-tests on its 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 a power-on command, but moves through the phase and into the bring-up phase. Access the system management services (SMS) menus or the service processor menus to reset the unattended start mode.

### Standby Phase

The standby phase can be reached in either of the following ways:

- With the 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 its menus are available. 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 ASCII console if the server is so equipped and 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 the privileged user password.

## Bring-Up Phase

This phase is entered upon power-on, and exited upon loading of the operating system.

The bring-up phase components are as follows:

- Retry request check

  The service processor checks to see if the previous boot attempt failed. If the specified number of failures is 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 a boot failure. The service processor issues an error report with the last-reported boot status and any other available error information.

- Update operator panel

  The service processor displays operator panel data on the ASCII terminal 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.

## Run-Time 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.

- Responding to system processor commands

  The service processor responds to any command issued by the system processor.

- Run-time surveillance (heartbeat monitoring)

  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 is made before placing an outgoing call.

# Chapter 8. Using System Management Services

Use the System Management Services menus to view information about your system and to perform tasks such as setting a password, changing the boot list, and setting the network parameters.

The text-based open firmware command line (the OK prompt), which is available from the System Management Services Utilities menu, allows you to configure certain adapters.

To start the System Management Services, do the following:

1. Turn on or restart the system.
2. Watch for the banner screen to appear on the console display. The banner screen will be lines of text in the form of repeated logos.
3. After the banner screen is displayed, the POST indicator words `memory`, `keyboard`, `network`, `scsi` and `speaker` appear across the bottom of the screen.

   Press the numeric 1 key after the word `keyboard` appears, and before the last word `speaker` appears.

   For more information on the POST indicator words, refer to “POST Indicators” on page 10.

**Note:** The System Management Services can also be started using the Service Processor Boot Mode Menu. See ″Boot Mode Menu″ on page 263.

After the System Management Services starts, the following Utilities screen displays:

```
Utilities

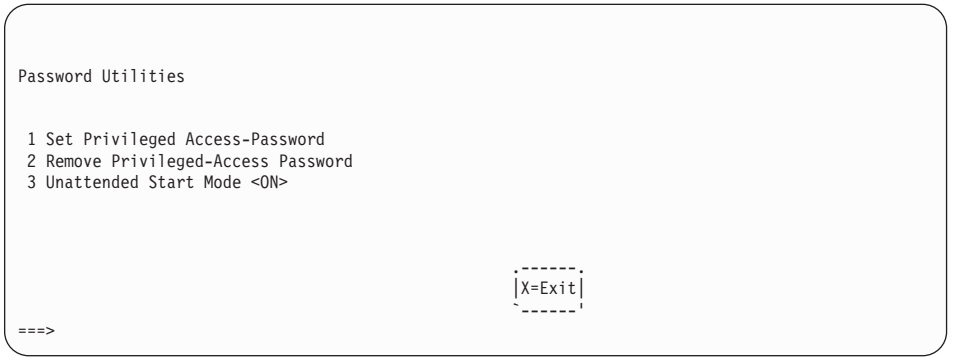
1  Password Utilities
2  Display Error Log
3  Remote Initial Program Load Setup
4  SCSI Utilities
5  Select Console
6  MultiBoot
7  Select Language
8  OK Prompt

                                                  .-------.
                                                  |X=Exit|
                                                  `-------'
===>
```

Each option on the System Management Services Utilities menu is described in this section.

## Password Utilities

Entering this selection permits access to the options shown on the following screen:




**Set Privileged-Access Password**: The privileged-access password protects against the unauthorized starting of the system programs. When this option is selected, another screen displays that allows the setting of a password.

You can set the password from either the service processor or System Management Services menus. After the password is set, both the service processor and System Management Services automatically use the same password. The password is limited to eight characters.

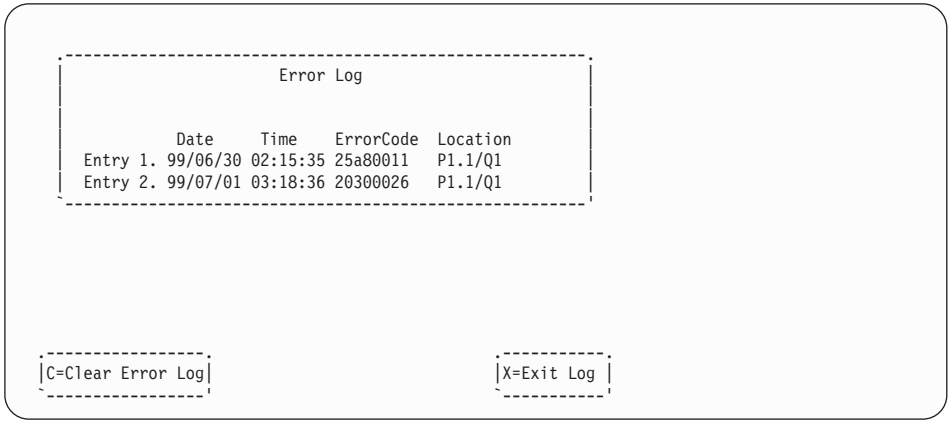
**Remove Privileged-Access Password**: If you previously had set a privileged-access password and want to remove it, select **Remove Privileged-Access Password**.

**Note:** If you *forget* your password, you must shut down the system and remove the battery for at least 30 seconds.

**Unattended Start Mode <ON>**: This selection is used to enable or 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, which is necessary on servers that require automatic power-on after a power failure. The default setting is ON.

## Display Error Log

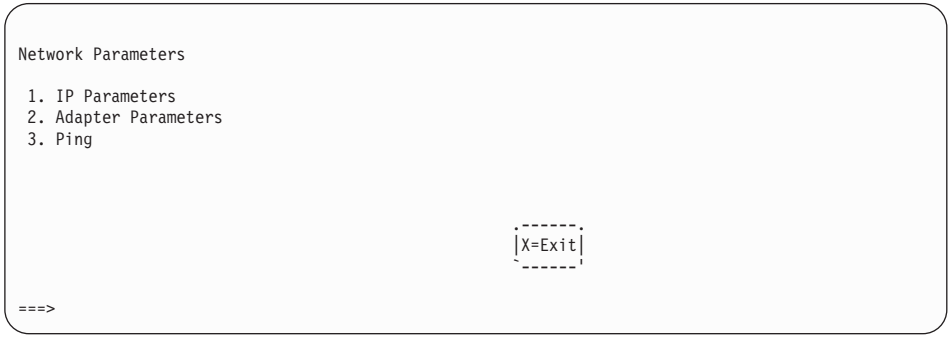
A screen similar to the following displays when you select this option. You can view or clear your system error log.




**Note:** The time stamp in this error log is Coordinated Universal Time (UCT), which is also referred to as Greenwich Mean Time (GMT). The AIX error log has more information available and time stamps with your local time.

## Remote Initial Program Load Setup

This option allows you to enable and set up the remote startup of your system. You must first specify the network parameters as shown in the following screen:




**Note:** Some applications may require that IP addresses contain leading zeroes for numbers less than 100. For example, 129.132.4.20 may need to be entered as 129.132.004.020.

## IP Parameters

Select the **IP Parameters** option from the Network Parameters menu to display a screen similar to the following:

```
IP Parameters

 1. Client IP Address    [9.3.146.162]
 2. Server IP Address    [9.3.146.171]
 3. Gateway IP Address   [0.0.0.0]
 4. Subnet Mask          [255.255.255.0]









                                                .-------.
                                                |X=Exit|
                                                `-------'
===>
```

To set an address using this menu, do the following:

1. Type the number of the selection (1, 2, 3, or 4).
2. Enter the address on the next screen.

**Attention:** If the client system and the server are on the same subnet, set the gateway IP address to [0.0.0.0].

## Adapter Parameters

Select the **Adapter Parameters** option from the Network Parameters menu to view an adapter's hardware address, as well as configure network adapters that require setup. A screen similar to the following displays when you make this selection:

```
Adapter Parameters

       Device                 Slot             Hardware Address

    1. Gigabit Ethernet    4: P1-I4/E1           0004ac7c0135
    2. token-ring          5: P1-I5/T1           0020357a9105
    3. ethernet       Integrated:P1/E1           0060949d7ac5
    4. ethernet            2: P1-I2/E1           0004ac5e692b
    5. token-ring          3: P1-I3/T1           0004ac634e38



                                                  .------.
                                                  |X=Exit|
                                                  `------'
    (PRESS ENTER AFTER MAKING A SELECTION) ===>
```

Select an adapter on this screen to display configuration menus for that adapter. If ethernet is selected, you can set parameters that control how the ethernet adapter communicates with the network. For example, the following screen shows the menu for the ethernet adapter configuration:

```
1. Data Rate [Auto]
2. Full Duplex [No]
```

## Ping

Select **Ping** from the Network Parameters menu to test a connection to a remote system unit. After selecting the ping option, you must first choose an adapter to communicate with the remote system.

```
Adapter Parameters

       Device                 Slot             Hardware Address

    1. Gigabit Ethernet    4: P1-I4/E1            0004ac7c0135
    2. token-ring          5: P1-I5/T1            0020357a9105
    3. ethernet       Integrated:P1/E1            0060949d7ac5
    4. ethernet            2: P1-I2/E1            0004ac5e692b
    5. token-ring          3: P1-I3/T1            0004ac634e38



                                                  .------.
                                                  |X=Exit|
                                                  `------'
    (PRESS ENTER AFTER MAKING A SELECTION) ===>
```

After determining which adapter to use to ping the remote system, you must provide the addresses needed to communicate with the remote system. Select the appropriate device from the Ping menu to display a screen similar to the following:

```
PING IP Address

 1. Client IP Address    [9.3.146.162]
 2. Server IP Address    [9.3.146.171]
 3. Gateway IP Address   [0.0.0.0]
 4. Subnet Mask          [0.0.0.0]



     .---------.                        .------.
     |E=Execute|                        |X=Exit|
     `---------'                        `------'

===>
```

## SCSI Utilities

SCSI Utilities allow you to set delay times for the SCSI hard disk spin-up and to set SCSI IDs for SCSI controllers installed in the system.

```
SCSI Utilities

1. Harddrive Spin Up Delay
2. Change SCSI Id


                                    .---------.
                                    | X=Exit |
                                    `---------'
===>
```

Using the Harddrive Spin Up Delay option allows you to change the spin up delay time for SCSI hard disk drives attached to your system. Spin up delay values can be entered manually, or you can use a default setting (two seconds). All values are measured in seconds.

**Attention:** Setting the value lower than the default can prevent successful booting because the system power handling capabilities might be exceeded. If the system no longer boots after setting this value, access this utility again and increase the value. It is also possible that adding disk drives can cause similar symptoms. Changing this value changes the surge current requirements on the system. As you increase the value, the surge current requirements on the system are decreased.

## Select Console

Select this option to define which display is used by the system for system management. If no console is selected, the console defaults to serial port 1.

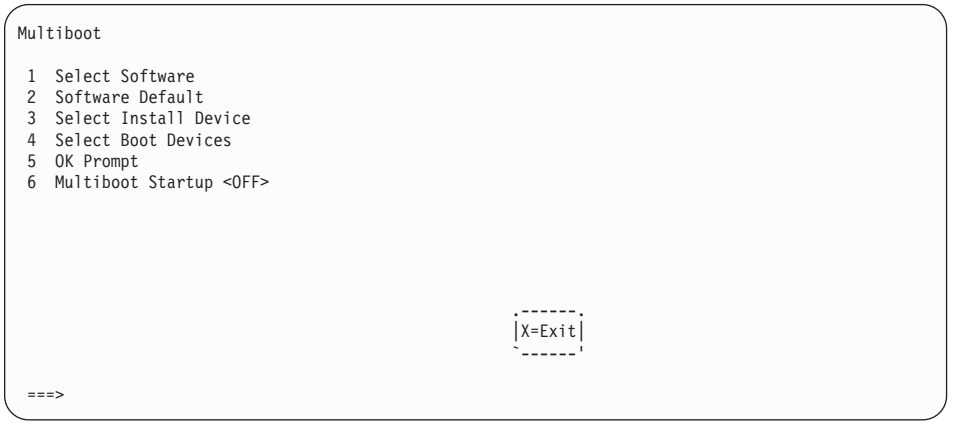
Selecting this option causes a screen similar to the one that follows to display on each console that can be used as a firmware console. Follow the instructions on the screen to select a particular console.

**Note:** The firmware console is independent from the AIX console.

```
            Press 0 to select this console
                    as the active console
```

## MultiBoot

Multiboot allows you to select a method for booting the system.




### Select Software

If this option is supported by the operating system, the names of the operating system installed are shown. This option might not be supported by all operating systems.

If you are running AIX, and you receive the following message:

```
No Operating System Installed
```

This indicates that information in nonvolatile storage could have been lost, as would happen if the battery had been removed. To re-create this value, run the **bootlist** command under AIX with the appropriate parameters. See the **bootlist** command in your AIX documentation.The AIX Documentation library is available at the following Web address: http://www-1.ibm.com/servers/aix/library/. Select **Technical Publications**. AIX documentation is also contained on the AIX Documentation CD. The documentation is made accessible by loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.

### Software Default

If this option is supported by the operating system, you can select the default operating system to start the system. This option might not be supported by all operating systems.

### Select Install Device

Produces a list of devices, such as the CD-ROM, from which the operating system may be installed. Select a device, and the system searches that device for an operating system to install.

## Select Boot Devices

Select this option to view and change the custom boot list, which is the sequence of devices read at startup time. The boot list can contain up to five devices. The following is an example of this screen.

```
Select Boot Devices

 1  Display Current Settings
 2  Restore Default Settings
 3  Configure 1st Boot Device
 4  Configure 2nd Boot Device
 5  Configure 3rd Boot Device
 6  Configure 4th Boot Device
 7  Configure 5th Boot Device


                                                  .------.
                                                  |X=Exit|
                                                  `------'

 ====>
```

### Display Current Settings

Lists the current order of devices in the boot list. The following is an example of this screen.

```
Current Boot Sequence

 1. Diskette
 2. SCSI CD-ROM  ( loc=P1/Z1-A1 )
 3. SCSI 9100 MB Harddisk  ( loc=P1/Z1-A5 )
 4. Ethernet  ( loc=P1-I4/E1 )
 5.   None




                                                  .------.
                                                  |X=Exit|
                                                  `------'

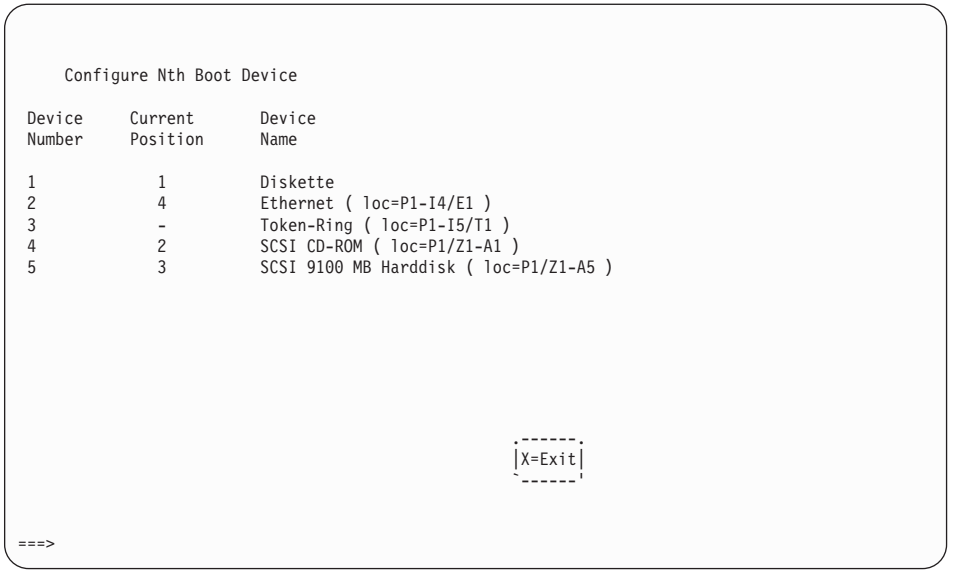
 ===>
```

### Restore Default Settings

Restores the boot list to the following default sequence:

- Primary diskette drive
- CD-ROM drive
- Tape (if installed)
- Hard disk drive
- Network device

Selecting any of the **Configure Boot Device** options displays a screen similar to the following.




## OK Prompt

Provides access to the open firmware command prompt.

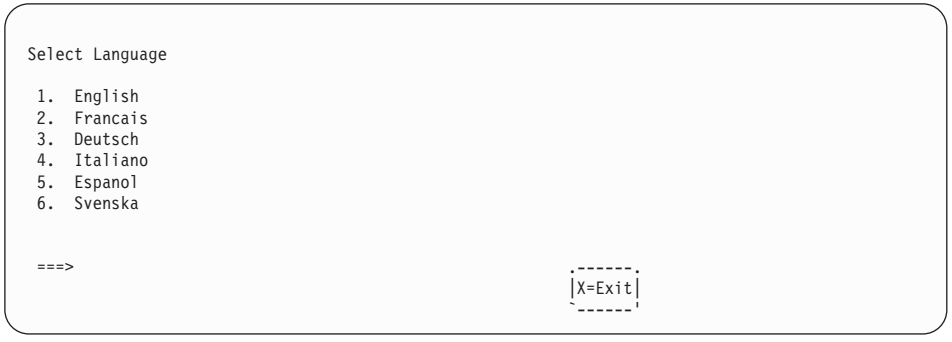
This option should only be used by service personnel to obtain additional debug information.

## Multiboot Startup <OFF>

Toggles between off and on to select whether Multiboot menu starts automatically on startup.

## Select Language

Select this option to change the language used by the System Management Services screens and the service processor menus.




**Note:** To correctly display languages other than English, your ASCII terminal must support the ISO-8859 character set.

## OK Prompt

This option provides access to the open firmware command prompt.

This option should only be used by service personnel to obtain additional debug information.

## Exiting System Management Services

After you have finished using the System Management Services, type **x** at the utilities menu to exit the System Management Services and boot your system.

# Chapter 9. Removal and Replacement Procedures

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.**

**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.**

**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.**

## Handling Static-Sensitive Devices

**Attention:** Adapters, and disk drives are sensitive to static electricity discharge. These devices are wrapped in antistatic bags, to prevent this damage.

Take the following precautions:

- If you have an antistatic wrist strap available, use it while handling the device.
- Do not remove the device from the antistatic bag until you are ready to install the device in the system unit.
- With the device still in its antistatic bag, touch it to a metal frame of the system.
- Grasp cards by the edges. Hold drives by the frame. Avoid touching the solder joints or pins.
- If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system unit at the same time.
- Handle the devices carefully in order to prevent permanent damage.

## Removal and Replacement Procedures

This is the starting point for all removal procedures in the system. Perform the following steps:

1. Find the location of the part you are replacing in “System Location Codes” on page 25.
2. Find the field replaceable unit (FRU) you are removing in this section and follow the procedures.
3. When you have completed the removal procedure, install the FRU by reversing the removal procedure unless otherwise noted.
4. After exchanging an item, refer to “MAP 0410: Repair Checkout” in the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

**Attention:** It is not always necessary to power off the system to exchange a FRU. You will be directed through a concurrent exchange, if possible.

## Covers

### Removing the Covers

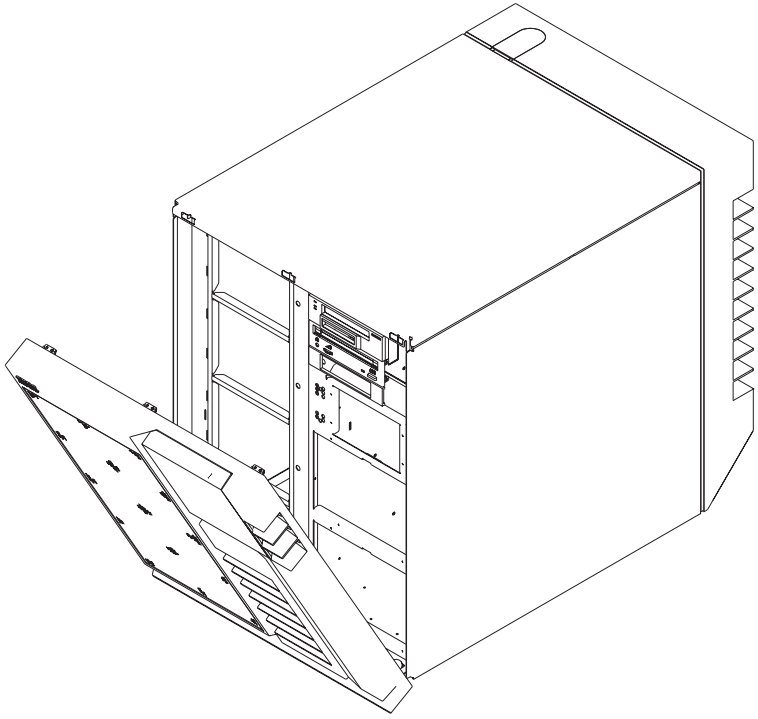
To remove the covers, perform the following steps:

1. Some procedures can be performed while the system power is on. Refer to "Hot-Pluggable Options" on page 316 to determine if the device you are installing is hot-pluggable.

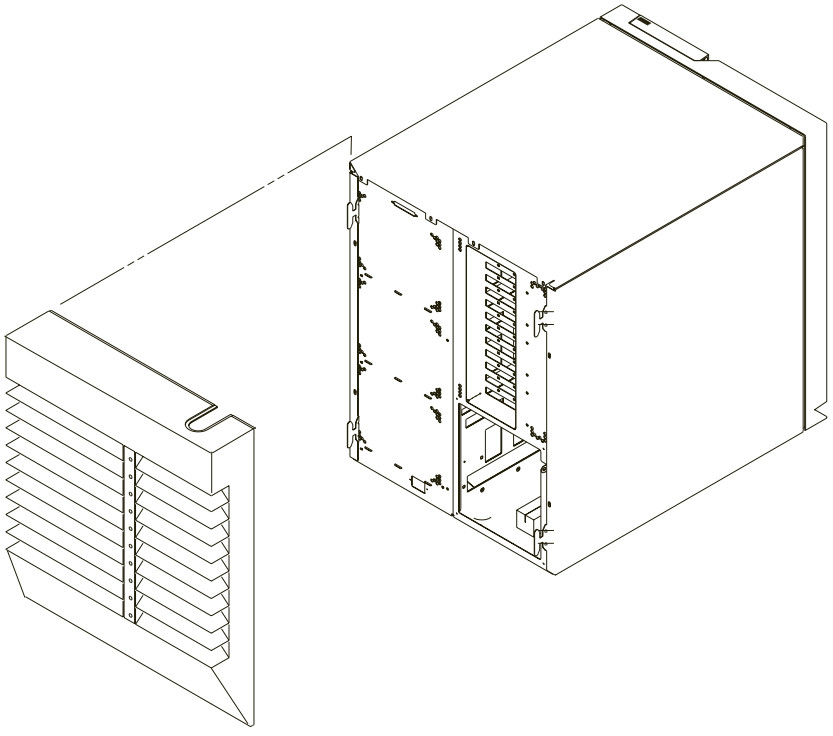
   If the option you are installing is:

   - A hot-pluggable device, proceed to the next step.
   - Not a hot-pluggable device, then shut down the system as described in "Stopping the System Unit" on page 316.

2. To remove the front cover, grasp the cover at the top and pull out the top far enough to clear the front of the system.
3. Lift up the front cover to disengage the tabs on the bottom.

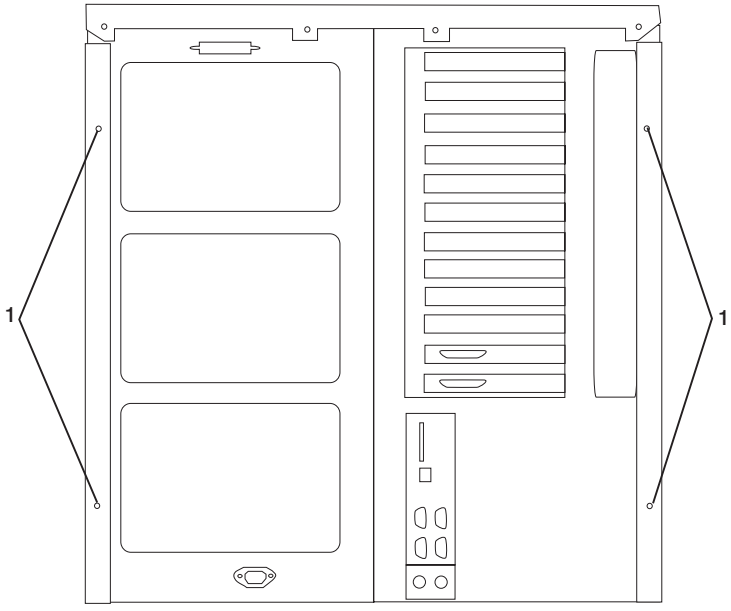


4. To remove the rear cover, lift the cover up and out.
5. Store the cover in a safe place.



6. To remove the side covers, remove the screws **(1)** that hold the side covers to the rear frame.

   **Attention:** Do not remove the right side cover unless the system is shut down and the power is disconnected from the power outlet.




7. Slide the covers to the rear and remove.

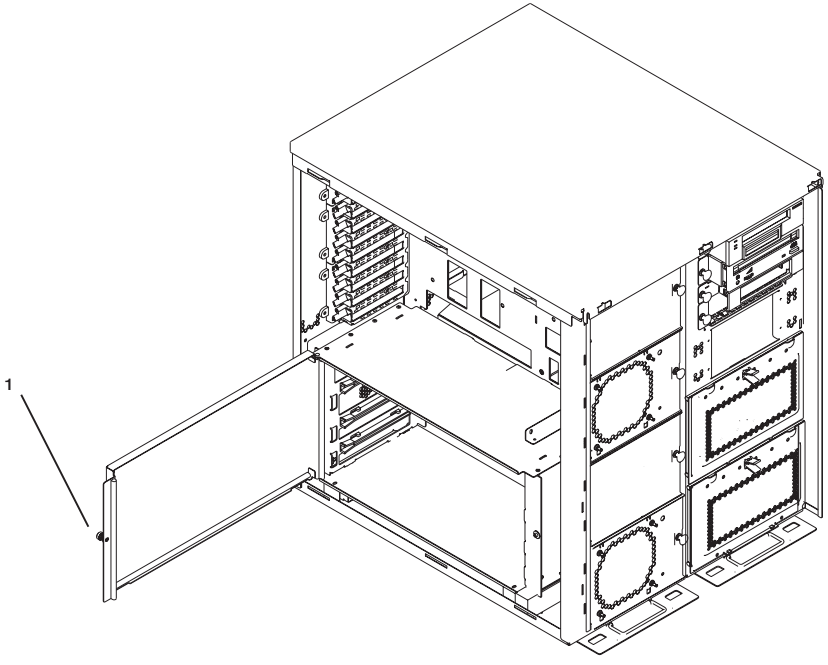
## Replacing Covers

1. To replace the side covers, do the following:
   a. Insert the tabs on the side cover into the slots on the system unit.
   b. Slide the cover toward the front of the system unit until the rear corner of the cover contacts the rear of the system unit.
   c. Secure the rear of the cover with the screws removed earlier.
2. To replace the front cover, align the tabs on the front cover with the slots of the extension on the bottom of the system unit. Push in the front cover at the top until it is secure.
3. To replace the rear cover, align the tabs on the side covers with the slots on the rear cover, and slide the cover down until it latches into place.
4. If the power cord is not plugged into the wall outlet, plug it in now.
5. If the system is not operating, press the power button on the operator panel once to start the system.

If you have installed new adapters or devices, you might need to refer to the *AIX System Management Guide: Operating System and Devices* to configure the new adapter or device. This publication is located on the *AIX Documentation* CD. Access the documentation information by loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.

## Removing Processor and Memory Riser Card Cover

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the covers as described in “Removing the Covers” on page 311.
4. Remove the knurled screw **(1)** that holds the processor and memory riser card cover and open the cover. If the cover is opened far enough, you can remove it from the frame.




## Replacing Processor and Memory Riser Card Cover

To replace the processor and memory riser card cover, perform the removal steps in the reverse order.

## Hot-Pluggable FRUs

**Note:** You do not have to power down the system to remove a hot-pluggable FRU from the system.

The following FRUs are hot-pluggable:
- Some PCI adapters
- Disk drives in bays DB1 and DB2
- Fans at the front of the system
- Power supplies if the system has three power supplies and only one needs to be removed

## Hot-Pluggable Options

**Note:** You do not have to stop the system to install a hot-pluggable option.

The following options are hot-pluggable:
- Some PCI adapters (see the *PCI Adapter Placement Reference*, order number SA38-0538)
- Hot-pluggable disk drives, also known as *hot-swap* disk drives.

## Stopping the System Unit

**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 unit, 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 section will direct you here if stopping the system is required.

1. Log in to the system as root user.
2. Stop any applications that are running on the system.
3. At a command line, type `shutdown` to stop the operating system.
4. After you shut down the operating system, set the power switches of any attached devices to Off.
5. The shutdown procedure stops the operating system, removes power from parts of the system, and puts the system into standby mode.

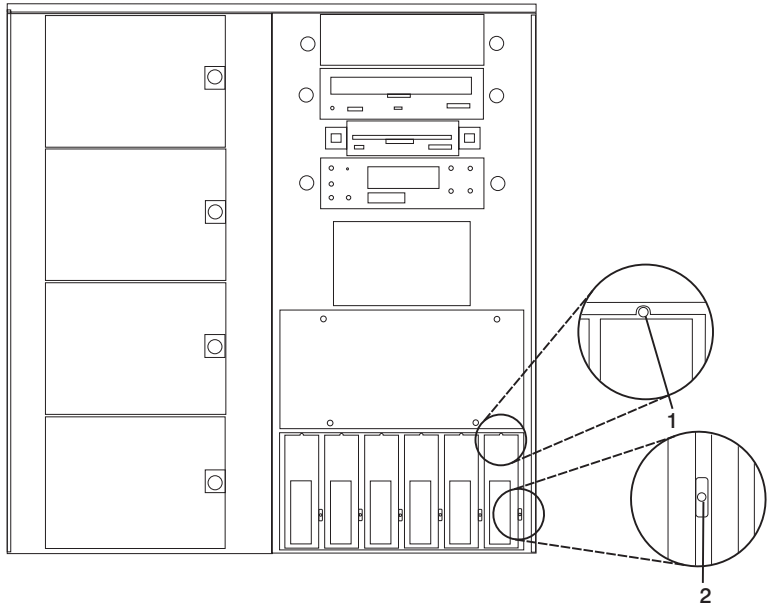
## Disk Drive Options

Your system can have up to 14 disk drives installed: 12 disk drives installed in two six-position hot-plug disk drive bays and two disk drives in a two-position bay, which is not hot-pluggable. The disk drives are mounted in special carriers that allow the disk drives to plug into the bay slots. When you install or remove disk drives, refer to the procedures in this section.

Disk drives that are installed in either of the two six-position bays are referred to as *hot-pluggable* disk drives.

The SCSI disk drive bays have light emitting diodes (LEDs) to identify the state of the disk drive slot **(1)** shown in the following diagram. The disk drive carriers also have status lights **(2)**, which are used to determine if the drive is active.

Slot LEDs and drive LEDs are visible when the front cover and the disk drive bay cover are removed.

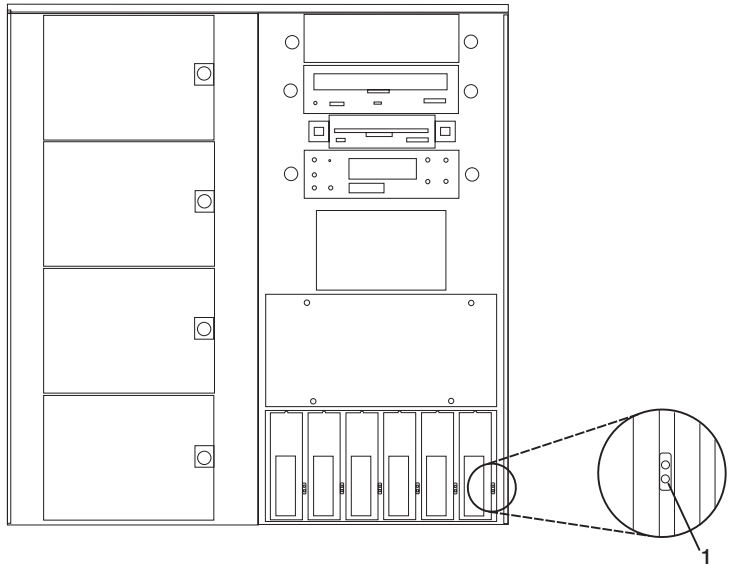


## Disk Drive Slot LED Definitions

The following table describes the possible states of the LEDs associated with each of the hot-plug disk drive slots. One LED is associated with each hot-pluggable disk drive slot.

| LED Indication | Disk Drive Slot State | Definition |
|---|---|---|
| Off | Off | Slot power is Off. It is safe to remove or replace a disk drive. |
| On (not flashing) | On | Slot power is On. |
| Flashing slowly (one flash per second) | Identify | Indicates that a slot has been identified by the software; do not remove or replace a disk drive at this time. |
| Flashing rapidly (six to eight flashes per second) | Action | Indicates slot is ready for removing or replacing a disk drive. |

SSA disk drives have light emitting diodes (LEDs) to identify the state of the disk drive **(1)** shown in the following diagram. SSA drive LEDs are visible when the front cover and the disk drive bay cover are removed.



| Status LEDs | | |
|---|---|---|
| **LED** | **Status** | **Definition** |
| Green (Top) | Flashing | Drive activity |
| | Off | Drive not spinning and no activity |
| | On Steady | Drive spinning and no activity |
| | Slow Blink | One link not active |
| Amber (Bottom) | On Steady | Service action |
| | | Concurrent maintenance |
| | | Both links are bad |
| | Slow Blink | Identify only |
| | Off | Power good |

## Preinstallation Considerations

Consider the following when replacing disk drives in the system unit:

- Use caution when you are handling all disk drives. Disk drives are more likely to be damaged during installation and service than at any other time. A fall of as little as .25 inch, bumping, or rough handling can all cause latent failures.
- Media drives are particularly sensitive to electrostatic discharge. Follow all electrostatic-handling procedures prior to handling the media drive.

## Removing Hot-Plug SCSI Disk Drives

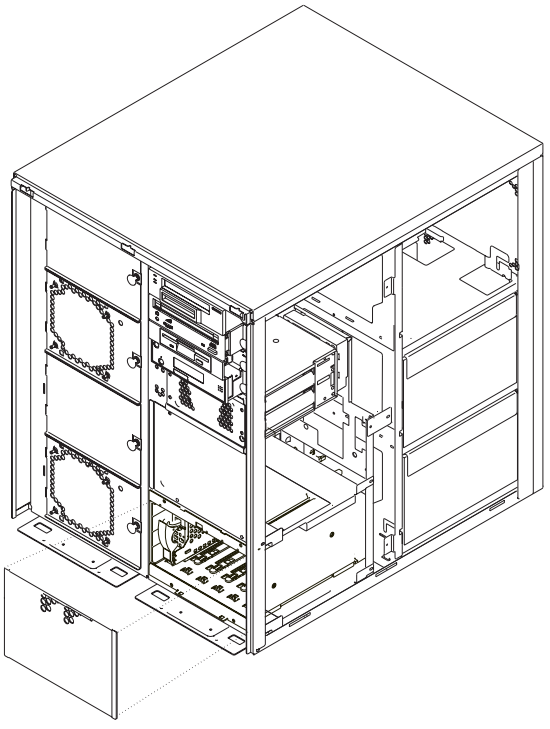
**Note:** Disk drives in the two-position drive bay cannot be removed with the power on. See “Replacing Non-Hot-Plug Drives” on page 370.

Review the information in “Disk Drive Options” on page 317 before removing a disk drive.

To remove a SCSI hot-plug disk drive, perform the following steps:

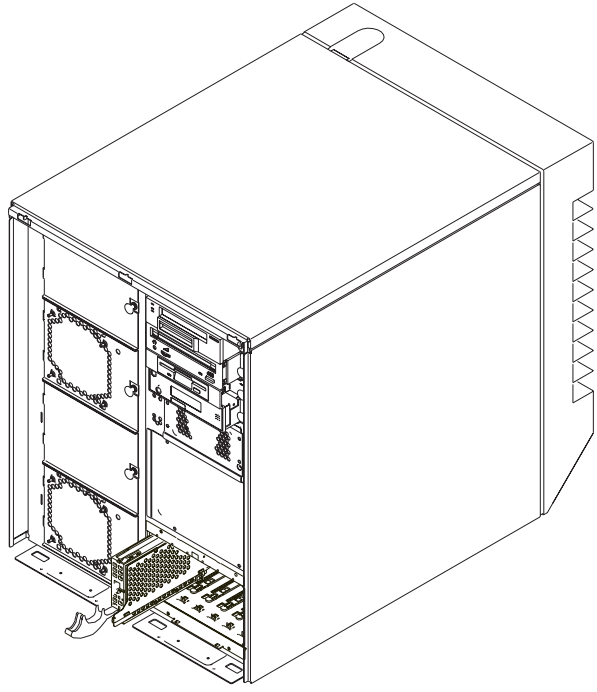
1. Back up the information from the disk drive to another drive.
2. Deconfigure the drive you are removing from the system. See “Deconfiguring SCSI Hot-Swap Disk Drives” on page 323.
3. If you have not already done so, remove the front cover as described in “Removing the Covers” on page 311.

4. Remove the disk drive bay cover from the disk drive bay.



5. Log in as root user.
6. At the command line, type `smitty`.
7. Select **System Storage Management (Physical and Logical Storage)**.
8. Select **Removable Disk Management**.
9. Select **Remove a Disk**.
10. Select the desired disk from the list on the screen and press Enter.
11. Follow the instructions on the screen to remove the drive.
12. When you are asked ″Are you sure?,″ press Enter. The power LED above the drive that you selected will remain on.

13. 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.



14. Press F10 to exit **smitty**.

## Replacing Hot-Plug SCSI Disk Drives

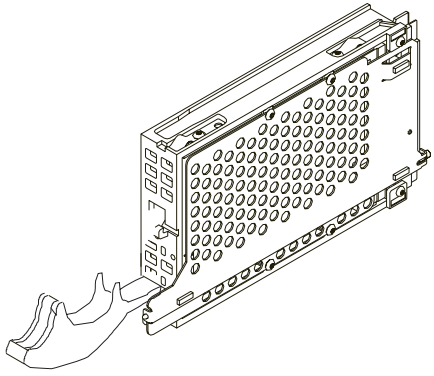
**Notes:**

1. A six-position disk drive bay is required for hot-plugging of disk drives.
2. Disk drives for the two-position drive bay cannot be installed with the power on. See “Replacing Non-Hot-Plug Drives” on page 370.

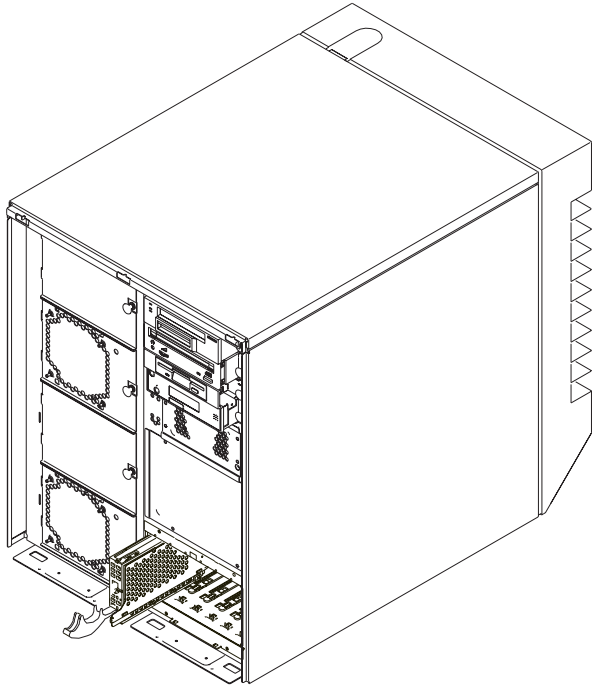
Review the information in “Disk Drive Options” on page 317 before installing a disk drive.

To replace a SCSI hot-plug disk drive, perform the following steps:

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.



3. Push the disk drive lever up and to the rear to lock the disk drive. The LED above the slot will turn on.
4. Log in as root user.
5. At the command line, type `smitty`.

6. Select **Devices**.
7. 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.
8. Press F10 to exit **smitty**.
9. Replace the front cover as described in “Replacing Covers” on page 314.

## Configuring and Deconfiguring SCSI Hot-Swap Disk Drives

If you need to configure or deconfigure a drive, use the following procedures:

### Configuring SCSI Hot-Swap Disk Drives

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **System Storage Management (Physical and Logical Storage)** and press Enter.
4. Select **Logical Volume Manager** and press Enter.
5. Select **Volume Groups** and press Enter.
6. Select **Set Characteristics of a Volume Group** and press Enter.
7. Select **Add a Physical Volume to a Volume Group**.
8. Fill in the fields for the drive you are adding to the system. Press F4 for a list of selections.

   See the *AIX System Management Guide: Operating System and Devices* to finish the drive configuration. This publication is located on the *AIX Documentation* CD. Access the documentation information by loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.
9. Press F10 to exit **smitty**.

### Deconfiguring SCSI Hot-Swap Disk Drives

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **System Storage Manager (Physical and Logical Storage)** and press Enter.
4. Select **Logical Volume Manager** and press Enter.
5. Select **Volume Groups** and press Enter.
6. Select **Set Characteristics of a Volume Group** and press Enter.
7. Select **Remove a Physical Volume from a Volume Group**.
8. Press F4 to list the available volume groups. Then select the volume group name and press Enter.
9. Press F4 to select a physical volume and follow the instructions on the screen to select the physical volume. Then press Enter.
10. Return to the procedure that directed you here.

## Removing Hot-Plug SSA Disk Drives

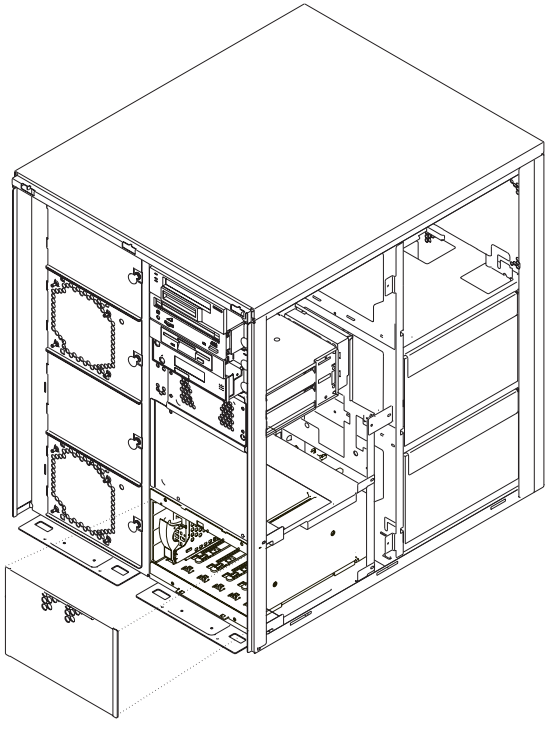
Review the information in “Disk Drive Options” on page 317 before removing a disk drive.

**Note:** SSA bays require a carrier in all six slots of each 6-pack assembly. Either an SSA drive in a carrier or a blank carrier must be in each SSA drive position. To add an SSA drive, you must first remove the blank carrier from the slot.

To remove an SSA hot-plug disk drive, perform the following steps:

1. Back up the information from the disk drive to another drive.
2. Deconfigure the drive you are removing from the system.

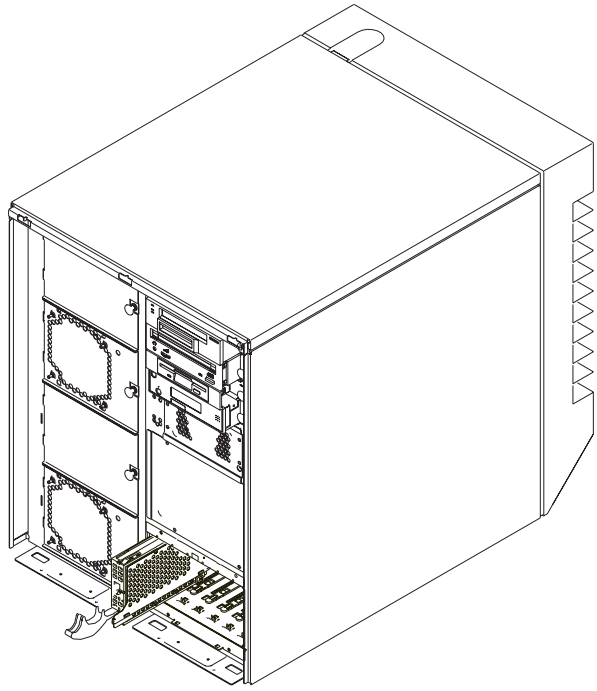
   See the *AIX System Management Guide: Operating System and Devices* to deconfigure the SSA disk drive. This publication is located on the *AIX Documentation* CD. Access the documentation information by loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.
3. If you have not already done so, remove the front cover as described in “Removing the Covers” on page 311.
4. Remove the disk drive bay cover from the disk drive bay.



5. Log in as root user.
6. At the command line, type `smitty`.
7. Select **Devices**.

8. Select **SSA Disks**.
9. Select **SSA Physical Disks**.
10. Select **Identify an SSA Physical Disk**.
11. Select the disk you want to remove from the list.

    **Note:** If the drive is missing, skip to step 18.
12. Select **Flash Disk Identification Light**. Check the disk drives to determine the one with the flashing amber LED.
13. Press F3 to return to the **SSA Physical Disks** menu.
14. Select **Remove an SSA Physical Disk**.
15. Select the desired disk from the list on the screen and press Enter.
16. Follow the instructions on the screen to remove the drive.
17. When you are asked ″Are you sure?″ answer ″Yes″ and press Enter.
18. Remove the disk drive by pulling the disk drive lever toward you until it is completely open. Then remove the disk drive.
19. Insert a blank SSA disk drive filler in the empty disk drive slot.



20. Press F10 to exit **smitty**.

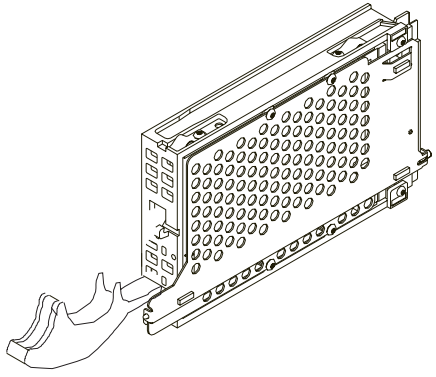
## Replacing Hot-Plug SSA Disk Drives

Review the information in “Disk Drive Options” on page 317 before installing a disk drive.

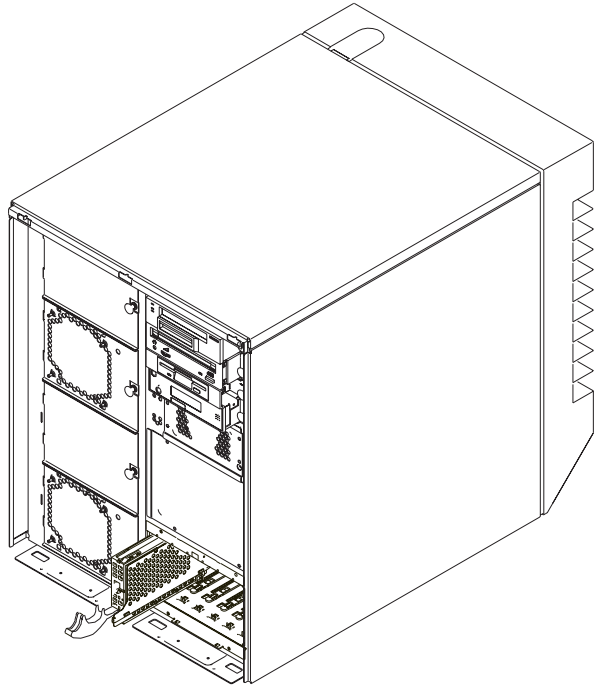
**Note:** SSA bays require a carrier in all six slots of each 6-pack assembly. Either an SSA drive in a carrier or a blank carrier must be in each SSA drive position. To add an SSA drive, you must first remove the blank carrier from the slot.

To replace an SSA hot-plug disk drive, perform the following steps:

1. Remove the disk drive from its protective packaging and open the drive latch handle.



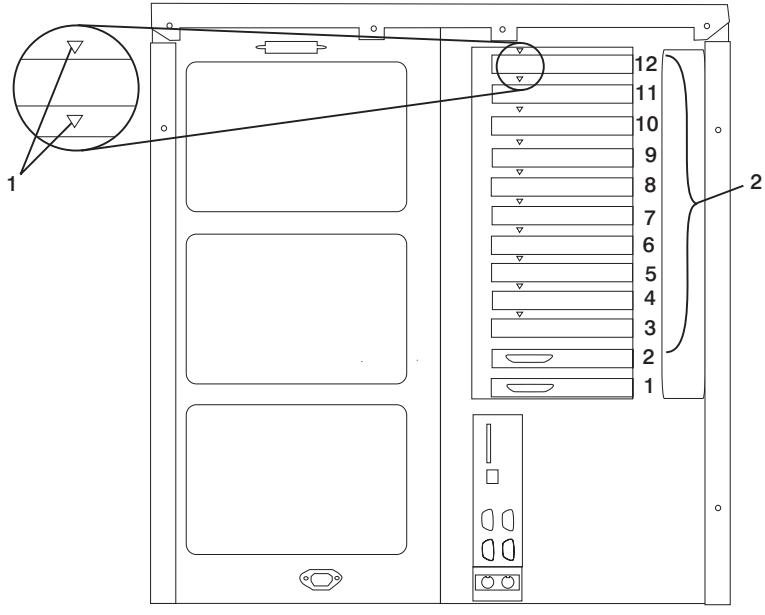
2. Install the disk drive in the drive slot. Align the disk drive with the drive slot rails, and slide the disk drive into the slot until it contacts the backplane at the rear of the drive bay.



3. Push the disk drive lever up and to the rear to lock the disk drive.
4. Log in as root user.
5. At the command line, type `smitty`.
6. Select **Devices**.
7. 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.
8. Press F10 to exit **smitty**.
9. Replace the front cover as described in “Replacing Covers” on page 314.
10. Refer to the *AIX System Management Guide: Operating System and Devices* to configure the new SSA disk drive. This publication is located on the *AIX Documentation* CD. Access the documentation information by loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.

## PCI Adapter Options

Your system has ten PCI adapter slots in which you can install adapters. When you install or remove adapters, refer to the procedures in this section. Some adapters can be installed while the system power is on. These adapters are referred to as *hot-pluggable* PCI adapters. The system has light emitting diodes (LEDs), which are visible from the rear of the system, to identify the state of a PCI slot during hot-plug procedures. One LED **(1)** is associated with each PCI slot **(2)**, as shown in the following diagram. The slot LEDs are also visible from inside the system unit when the left cover is removed.




## PCI Slot LED Definitions

The following table describes the possible states of the LEDs associated with the PCI slots. These LEDs are visible from the rear or from inside of the system unit.

| LED Indication | PCI Slot State | Definition |
|---|---|---|
| Off | Off | Slot power is off. It is safe to remove or replace an adapter. |
| On (not flashing) | On | Slot power is on. Do not remove or replace an adapter. |
| Flashing slowly (one flash per second) | Identify | Indicates slot has been identified by the software. Do not remove or replace an adapter at this time. |
| Flashing rapidly (six to eight flashes per second) | Action | Indicates slot is ready for removing or replacing an adapter. |

## Removing Adapter Cards

With this system, you can remove PCI adapters with the power on. 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.

Before you remove an adapter, determine if the PCI adapter you are installing is hot-pluggable. See the *PCI Adapter Placement Reference*, order number SA38-0538. Also, review the information in "PCI Adapter Options" on page 328.

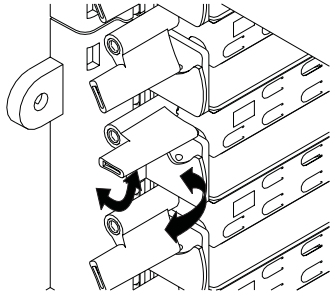
If you are removing a PCI adapter that is:

- Not hot-pluggable, continue with "Removing a Non-Hot-Pluggable PCI Adapter".
- Hot-pluggable, go to "Removing a Hot-Pluggable PCI Adapter" on page 330.

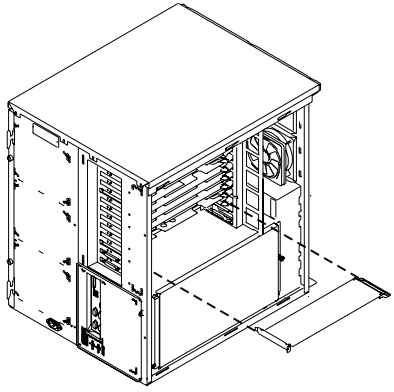
## Removing a Non-Hot-Pluggable PCI Adapter

Perform the following steps to remove a non-hot-pluggable adapter:

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 316.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the front, rear, and left covers as described in "Removing the Covers" on page 311.
4. Determine the slot from which you are removing the adapter.
5. Disconnect any cables that are connected to the adapter being removed.
6. Turn the locking latch and lift the plastic stop for the adapter. Some full-length adapter cards can be removed by rotating the blue adapter latch on the right end of the adapter divider clockwise.



7. Carefully grasp the adapter by the edges and pull it straight out from the system board. Store the adapter in a safe place.



8. If you plan to replace the adapter, go to “Replacing a Non-Hot-Pluggable PCI Adapter” on page 333.
9. If you do not plan to replace the adapter,
   a. Place a blank slot cover in the adapter slot and then lower the plastic stop over the adapter bracket. Rotate the locking latch clockwise until it clicks into the locked position.
   b. Replace the system unit covers as described in “Replacing Covers” on page 314.

## Removing a Hot-Pluggable PCI Adapter

Perform the following steps to remove a hot-pluggable adapter:

1. If you have not already done so, remove the front, rear, and left covers as described in “Removing the Covers” on page 311.
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 be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

   To verify that the adapter is in the **Defined** state, run the command `ls-dev -Cl resourcename`, (where resourcename is the logical name of the adapter).

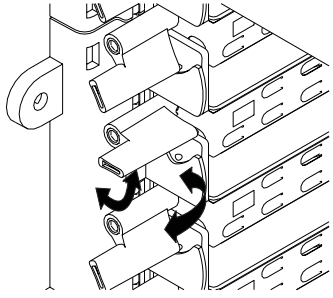
   If the device is not in the **Defined** state, contact the system administrator to have the adapter put in the **Defined** state.

   If the device cannot be put in the **Defined** state, go to Map 210-3 in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*.

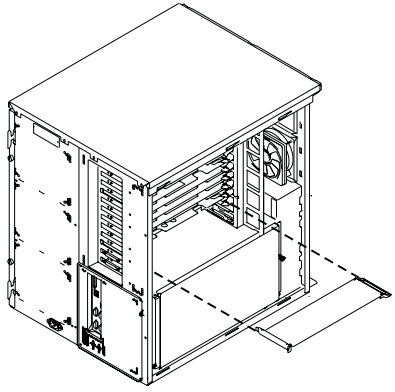
For additional information about taking an adapter offline or removing it from the system configuration, see the *AIX System Management Guide: Operating System and Devices*. This publication is located on the *AIX Documentation* CD. Access the documentation information loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.

4. Refer to "PCI Hot-Plug Manager Access" on page 336, and follow the steps in the access procedure to select **PCI Hot-Plug Manager**. Then return here to continue.
5. Select **Unconfigure a Device** and press Enter.
6. Press F4 to display the Device Names menu.
7. Select the adapter you are removing from the menu.
8. If you are replacing an adapter with an identical one, answer Yes to **Keep Definition**. If you are removing an adapter permanently, answer No to **Keep Definition**.
9. Press Enter.
10. Press F3 to return to the PCI Hot-Plug Manager.
11. Select **Replace/Remove a PCI Hot-Plug Adapter** and press Enter. The Replace/Remove a PCI Hot-Plug Adapter menu displays.

    **Note:** If a drive is listed as a missing resource, go to step 18 on page 332.
12. Move the cursor to select the adapter that you are removing and press Enter.
13. Press the Tab key until the entry field displays the desired operation, and then press the Enter key. Follow the instructions that display on the screen until you are instructed to remove the adapter.
14. When you are instructed to remove the adapter from the adapter slot, disconnect any cables that are connected to the adapter being removed.
15. Turn the locking latch and lift the plastic stop for the adapter.



16. Carefully grasp the adapter by the edges and pull it straight out from the system board. Store the adapter in a safe place.



17. Place a blank slot cover in the adapter slot and then lower the plastic stop over the adapter bracket. Rotate the locking latch clockwise until it clicks into the locked position.
18. 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.
19. Press F10 to exit the Hot-Plug Manager.
20. 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.
21. If you plan to replace the adapter, go to “Replacing a Hot-Pluggable PCI Adapter” on page 334.
22. If you do not plan to replace the adapter,
    a. Place a blank slot cover in the adapter slot, and then lower the plastic stop over the adapter bracket. Rotate the locking latch clockwise until it clicks into the locked position.
    b. Replace the system unit covers as described in “Replacing Covers” on page 314.

## Replacing Adapter Cards

**Note:** If you are installing external devices that connect to an adapter, install the devices and cables before you install the adapter.

If the adapter you are installing requires device driver software, see the documentation for the adapter and load the software before installing the adapter.

With this system, you can install PCI adapters with the power on. These adapters are referred to as *hot-pluggable* PCI adapters. Some adapters are not hot-pluggable, and power must be removed from the system before adapter installation.

Before you install an adapter, determine if the PCI adapter you are installing is hot-pluggable. See the *PCI Adapter Placement Reference*, order number SA38-0538. Also, review the information in “PCI Adapter Options” on page 328.

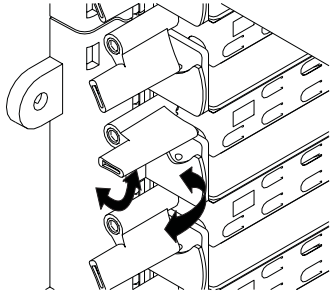
If you are installing a PCI adapter that is:

- Not hot-pluggable, continue with “Replacing a Non-Hot-Pluggable PCI Adapter”.
- Hot-pluggable, go to “Replacing a Hot-Pluggable PCI Adapter” on page 334.

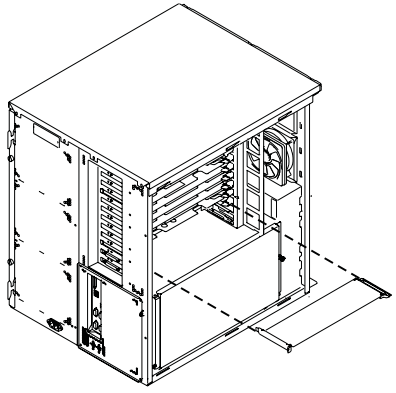
## Replacing a Non-Hot-Pluggable PCI Adapter

To replace a non-hot-pluggable PCI adapter, perform the following steps:

1. If you have not already done so, install any required device driver software as described in the documentation provided with the adapter. Then return here to continue.
2. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
3. If you have not already done so, unplug the system unit power cable from the electrical outlet.
4. If you have not already done so, remove the front, rear, and left covers as described in “Removing the Covers” on page 311.
5. See the *PCI Adapter Placement Reference*, order number SA38-0538, for adapter placement information. Then select an empty PCI slot for the adapter.
6. Turn the locking latch, lift the plastic stop, and remove the blank cover from the slot where you are installing the adapter.



7. Carefully grasp the adapter by the edges and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full-length adapter, ensure that both ends of the adapter engage the card guides.



8. Lower the plastic stop over the adapter bracket and rotate the locking latch clockwise until it clicks into the locked position.
9. Connect appropriate cables to the adapter.
10. Replace the system unit covers as described in “Replacing Covers” on page 314.

## Replacing a Hot-Pluggable PCI Adapter

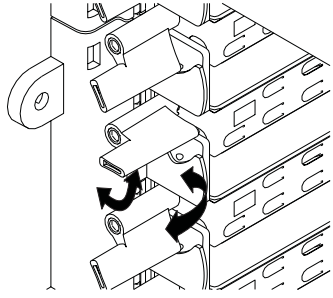
To replace a hot-pluggable PCI adapter, perform the following steps:

1. If you have not already done so, remove the front, rear, and left covers as described in “Removing the Covers” on page 311. Then return here to continue.
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.

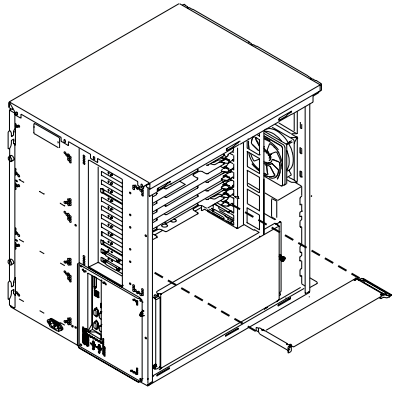
   **Note:** Removing a hot-pluggable PCI adapter requires the system administrator to take the PCI adapter offline before performing any PCI adapter hot-plug procedures. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

4. Refer to “PCI Hot-Plug Manager Access” on page 336 and follow the steps in the access procedure to select **PCI Hot-Plug Manager**. Then return here to continue.
5. Select **Unconfigure a Device** and press Enter.
6. Press F4 to display the Device Names menu.
7. Select the adapter you are removing from the menu.
8. Answer Yes to **Keep Definition**. Press Enter.
9. 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.
10. Press F3 to return to the PCI Hot-Plug Manager menu.

11. Select **Replace/Remove a PCI Hot-Plug Adapter** and press Enter. The Replace/Remove a PCI Hot-Plug Adapter menu displays.
12. Move the cursor to select the adapter that you are removing and press Enter.
13. Press the Tab key until the entry field displays the replace operation and then press the Enter key. Follow the instructions that display on the screen until you are instructed to remove the adapter.
14. When you are instructed to remove the adapter from the adapter slot, disconnect any cables that are connected to the adapter being removed
15. Turn the locking latch, and lift the plastic stop for the adapter.



16. Carefully grasp the adapter by the edges, and pull it straight out from the I/O board.
17. Replace the adapter in the adapter slot. Carefully grasp the adapter by the edges, and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full-length adapter, ensure that both ends of the adapter engage the card guides.



18. Lower the plastic stop over the adapter bracket, and rotate the locking latch clockwise until it clicks into the locked position. Some full-length cards can be supported by rotating the blue adapter latch on the right end of the adapter divider counterclockwise.
19. Connect appropriate cables and devices to the adapter.

20. 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.
21. Press the F3 key to return to the PCI Hot-Plug Manager menu.
22. 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.
23. 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 11 on page 335.
24. 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.
25. Replace the system unit covers as described in “Replacing Covers” on page 314.

## PCI Hot-Plug Manager Access

The installation instructions for hot-pluggable PCI adapters refer you to these procedures when it is appropriate to perform them.

**Note:** A PCI adapter is only hot-pluggable if the PCI adapter is supported for hot-plug applications. See the *PCI Adapter Placement Reference*, order number SA38-0538.

## Accessing Hot-Plug Management Functions

**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*. This publication is located on the *AIX Documentation* CD. Access the documentation information by loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.

Use the following procedure to access the hot-plug menus:

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **Devices**.
4. Select **PCI Hot Plug Manager** and press Enter.

**Note:** The PCI Hot-Plug Manager menu displays. See the following for descriptions of the menu options. Then return to the procedure that directed you here.

## 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 “PCI Slot LED Definitions” on page 328.

**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 a 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 use 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.

**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 a 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, perform the **Install/Configure Devices Added After IPL** option to configure the adapter.
- If you receive a warning indicating that needed device packages are not installed, the system administrator must install the specified packages before you can configure or diagnose the adapter.
- If you receive a failure message indicating a hardware error, the problem might be either the adapter or the PCI slot. Isolate the problem by retrying the operation in a different PCI slot, or trying a different adapter in the slot. If you determine that you have failing hardware, call your service representative.

## Fans and Fan Fillers

**Attention:** If you need to install the redundant power and cooling option, go to "Installing the Redundant Power and Cooling Option" on page 339.

**Note:** When you install the fan, you need to exert some force to insert the fan past the spring-loaded flap.

### Removal

**Attention:** When you remove a fan, it must be replaced within 1.5 minutes to avoid overheating the system.

1. Remove the front cover (see "Removing the Covers" on page 311).
2. Pull the knob on the fan assembly to release it from the chassis.
3. Pivot the fan assembly to the left.
4. Remove the fan assembly.

### Replacement

Replace in reverse order. The new fan will automatically power on when power is present.

## Power Supplies

**Attention:** If you need to install the redundant power and cooling option, go to "Installing the Redundant Power and Cooling Option" on page 339.

## Removal

**DANGER**

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

**Note:** If attempting a hot-swap of more than one power supply, be aware of the following:

1. Replace only one power supply at a time. Removing another power supply tells the system that only one supply is installed, which indicates insufficient air flow for system operation, causing it to shut down.
2. If the system has three power supplies and only one needs to be removed, you do not need to power off the system. If two power supplies need to be removed, you must power off the system.
3. After the first power supply has been replaced, wait until the RPM of the cooling fans slows down before attempting to replace another of the three supplies. Failure to do so will cause the system to shut down because the high RPM of the cooling fans signifies that the system recognizes that one of the three supplies is missing.

To remove a power supply, perform the following steps:

**Attention:** When you remove a power supply, it must be replaced within 1.5 minutes avoid overheating the system.

1. Remove the right side cover as described in “Removing the Covers” on page 311.
2. Grasp the handle of the power supply.
3. Pivot the handle downward.
4. With one hand supporting the power supply from the bottom, use the handle to pull out the power supply.

## Replacement

Replace in reverse order.

# Installing the Redundant Power and Cooling Option

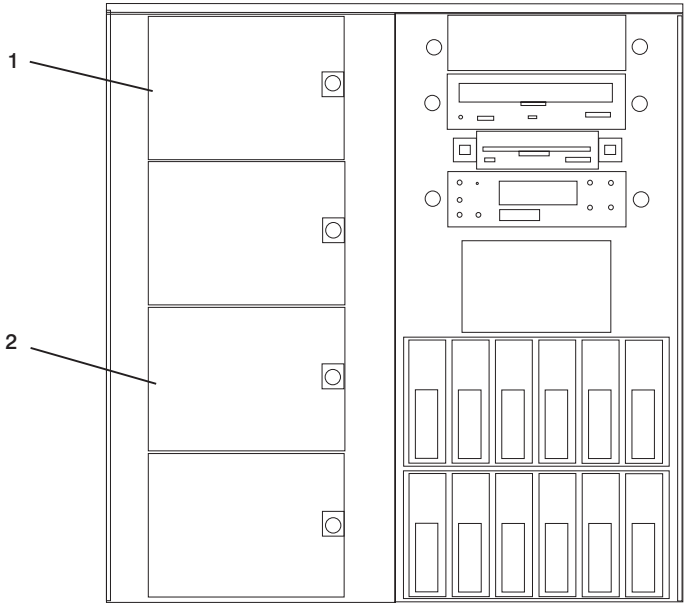
The redundant power and cooling option consists of two fans and an extra power supply in addition to the base fans and power supplies that are already installed in your system.

## Installing a Redundant Fan

Use the following procedure to install redundant fans in your system:

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.

3. If you have not already done so, remove the front, rear, and right side covers as described in “Removing the Covers” on page 311.
4. Locate the next available fan position.
5. Pull the locking knob on the fan bay blank cover and remove it by pulling it straight out from the system unit.




**1** Fan bay blank cover 4

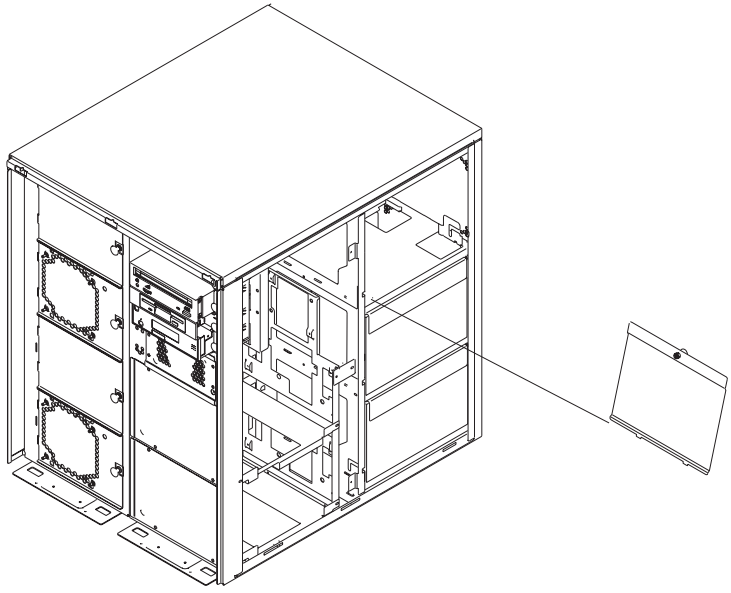
**2** Fan bay blank cover 2

6. Install the new fan by pulling the locking knob out and then inserting the tabs on the left side of the fan into the frame opening.
7. Swing the right side of the fan inward until the locking knob contacts the frame.
8. Push the locking knob until you feel it lock into position.
9. Go to “Installing a Redundant Power Supply” to install the redundant power supply.

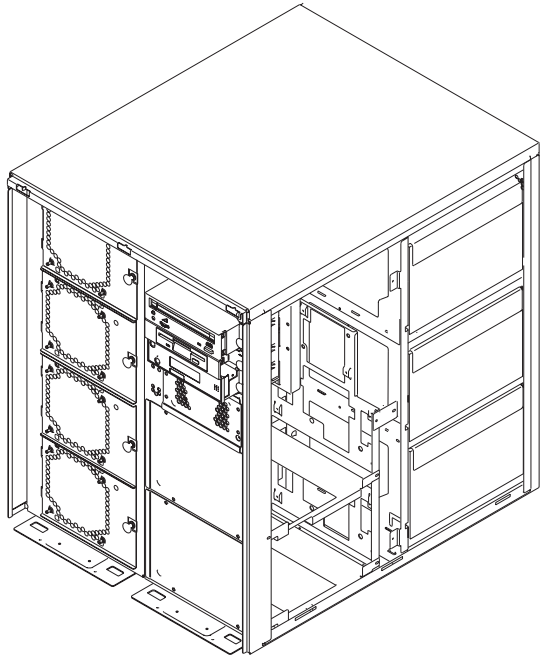
## Installing a Redundant Power Supply

**Attention:** You must remove the power supply baffle plate before you install and operate a new power supply in the top position.

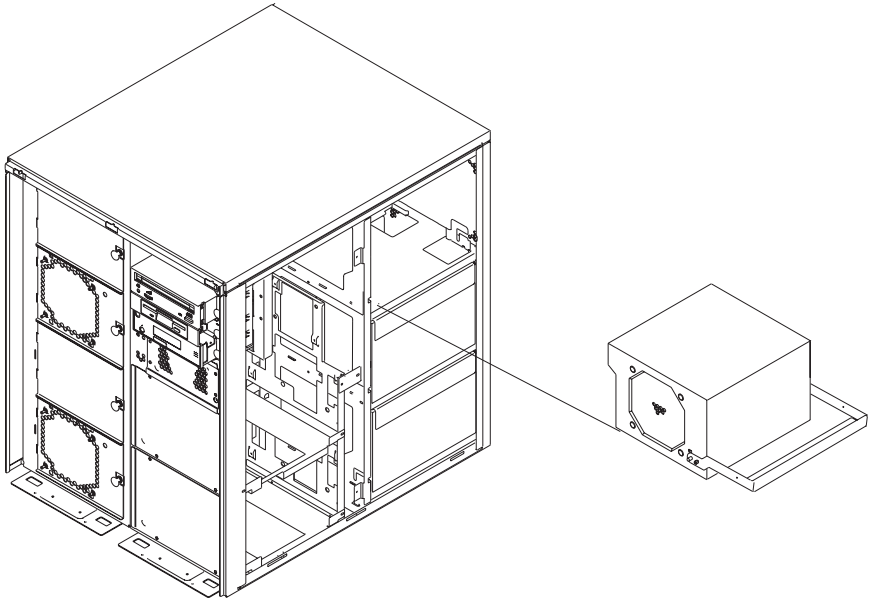
1. Remove the power supply baffle plate from the redundant power supply by pulling out the button and tilting the baffle out from the system.



   The baffle is not needed after the redundant power supply is installed.
2. Pull the locking handle on the new power supply out and down so that it is completely open.



3. Install the new power supply by sliding it into the frame until the locking handle contacts the frame.
4. Lift the locking handle and push it in at the top of the power supply until it locks the power supply into position.



5. Plug in the power cord and turn on the system. The redundant features will be recognized as the system powers up.

## Memory Riser Card and Processor Card

**Attention:** All cards are sensitive to electrostatic discharge (see “Handling Static-Sensitive Devices” on page 310).

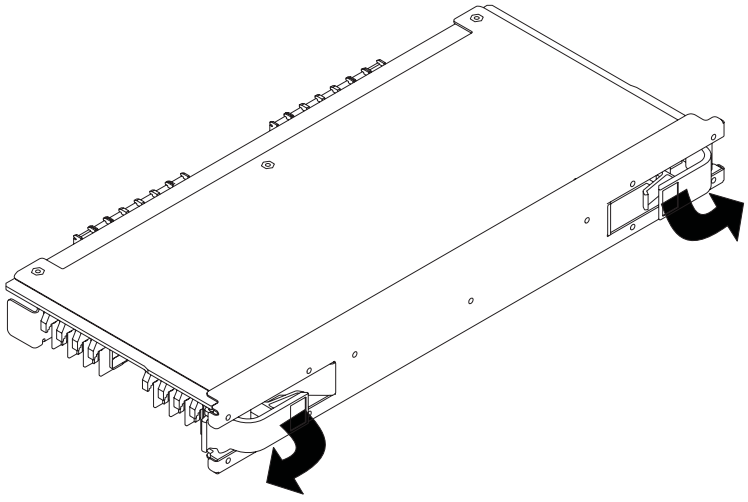
**Note:** Installing a processor card into your system unit may require updating the firmware. A diskette or CD-ROM is included with your new processor card if that is required.

## Removing a Memory Riser Card or One-Way Processor Card

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the covers as described in “Removing the Covers” on page 311.
4. Remove the processor and memory riser card cover as described in “Removing Processor and Memory Riser Card Cover” on page 315.

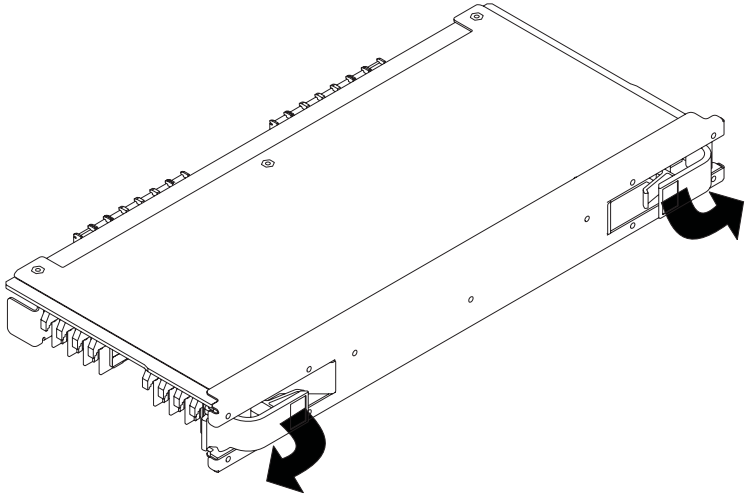
5. The card is secured in place with camming latches at each end. Open the card latches by rotating them out until the card is pulled out of the connector on the system board.

   **Attention:** To prevent damage to the card and to the card connectors, open both of the latches at the same time. You must install either a memory riser card or a blank memory card in each memory card slot. Do not operate the system if any of the memory riser card slots are empty.

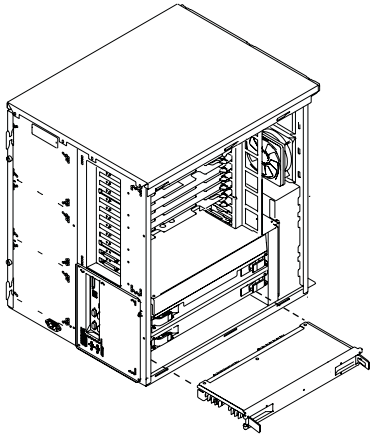


## Installing a Memory Riser Card or a One-Way Processor Card

1. Open the camming latches.



2. Place the card onto the card guide rails. The memory DIMMs, if present, should face downward.



3. Push the card into the system unit until you feel it stop. The card should be far enough into the system unit so that the camming latches engage.
4. Close the camming latches to secure the card into the connector.

   **Attention:** To prevent damage to the card and to the card connectors, close both camming latches at the same time.
5. Replace the processor and memory riser card cover as described in “Replacing Processor and Memory Riser Card Cover” on page 315.
6. Replace the system unit covers as described in “Replacing Covers” on page 314.

## Memory and Processor Card CEC Assembly

### Removal

1. Remove the memory and processor cards, as described in “Memory Riser Card and Processor Card” on page 342.
2. Remove the eight screws that hold the CEC (central electronics complex) assembly in the system.
3. Pull the CEC assembly out of the system.

### Replacement

Replace in reverse order.

## System Memory Options

Two slots are available for memory riser cards. Each riser card had 16 sockets. See “System Board” on page 15, which illustrates the positions of the memory riser cards in the system.

Four sizes of DIMMs are available: 128 MB, 256 MB, 512 MB, and 1 GB. Certain 32 MB DIMMs from older RS/6000 systems can also be used when upgrading system memory.

Each of the empty memory riser card slots must have a memory filler card installed.

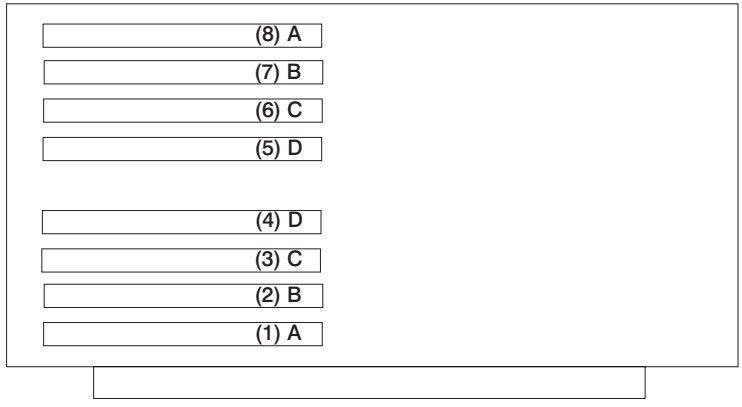
To upgrade your system memory, you can:

- Install additional DIMMs
- Install an additional populated memory riser card
- Replace existing DIMMs with DIMMs of a larger size

## Memory Placement with a One-Way Processor Card

Systems that contain a processor card that has a single processor, also known as a *one-way processor card*, can have memory DIMMs installed on the processor card, or on a memory riser card if available.

- The minimum memory is one pair of DIMMs in slots 1 and 8. This is labeled pair A in the following figure:

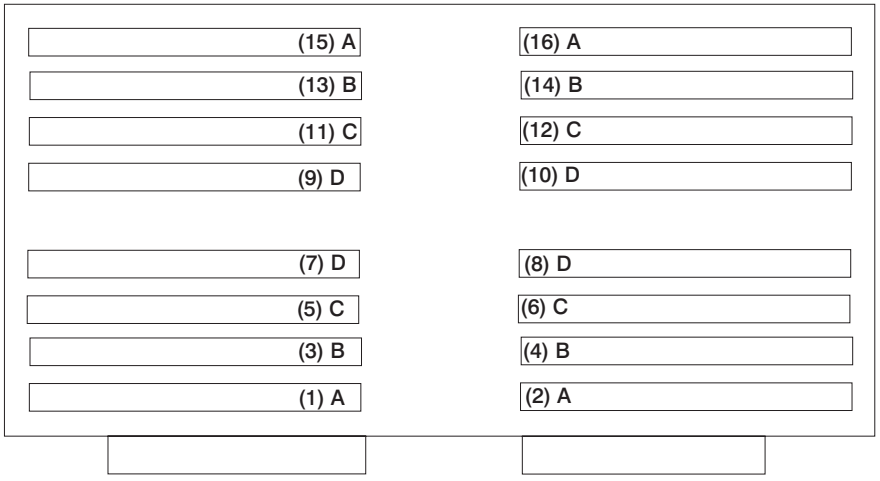



- The maximum memory is four DIMM pairs in slots 1 through 8. These are pairs A, B, C, and D. DIMM pairs must be installed in order, beginning with pair A and then progressing to B, C, and D.
- To increase memory on a one-way processor card, add more DIMM pairs or replace the DIMM pairs with pairs of a larger size.
- If a memory riser card is installed in the system with a one-way processor card:
  - Memory DIMMs must be moved from the one-way processor card to the memory riser card.
  - The memory riser card must then have a minimum of four DIMMs. (See “Memory Placement for a Memory Riser Card” on page 346.)

## Memory Placement for a Memory Riser Card

Memory riser cards can be populated with up to four *quads*. Each quad is a group of four DIMMs; the quads are labeled A, B, C, and D. The following rules apply to DIMM placement on a memory riser card:

- Each memory quad must contain four DIMMs of equal memory size.
- Quad memory size may be mixed on a memory riser card.
- The minimum memory is four DIMMs installed in quad A, as shown in the following figure:



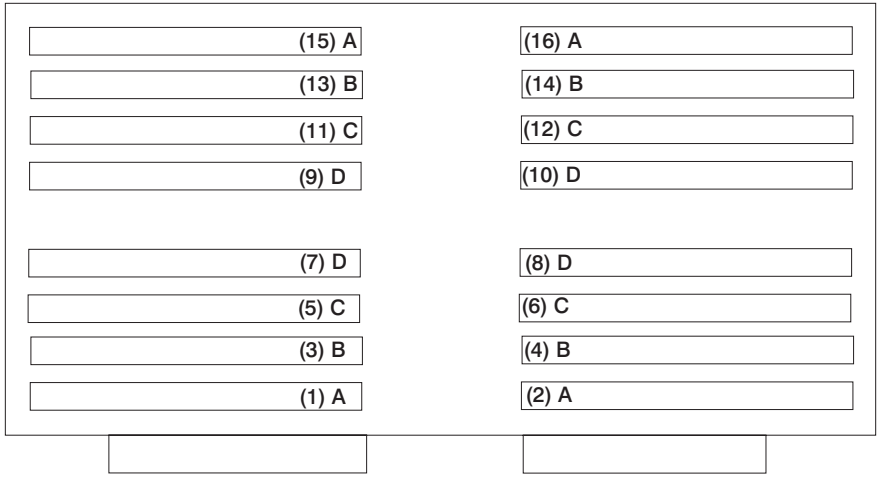

- To increase memory, add more quads to a memory riser card or replace the DIMMs in a quad with DIMMs of a larger size.
- Populate the memory riser card starting with quad A and continuing with quads B, C, and D as shown above.

# Memory DIMMs

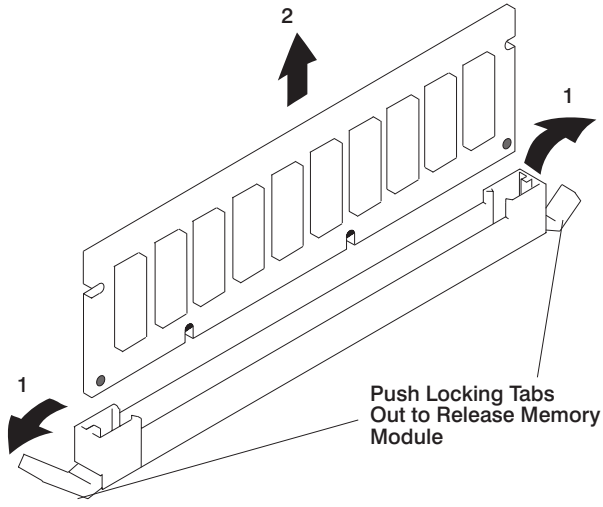
## Removing Memory DIMMs

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the covers as described in “Removing the Covers” on page 311.
4. If you have not already done so, remove the processor and memory riser card cover as described in “Removing Processor and Memory Riser Card Cover” on page 315.
5. If you have not already done so, remove the memory riser card as described in “Removing a Memory Riser Card or One-Way Processor Card” on page 342.

6. Locate the memory DIMM connectors and determine which DIMMs you want to remove.




7. Remove the memory DIMMs by pushing the locking tabs out on the memory connectors.

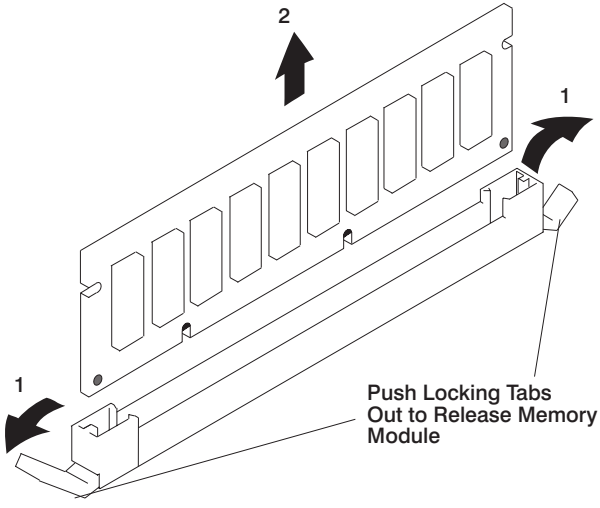



8. Install blank DIMM covers in the memory connector.
9. Install the memory riser card in the system unit. See “Installing a Memory Riser Card or a One-Way Processor Card” on page 343 for more information.
10. Replace the processor and memory riser card cover as described in “Replacing Processor and Memory Riser Card Cover” on page 315.
11. Replace the system unit covers as described in “Replacing Covers” on page 314.

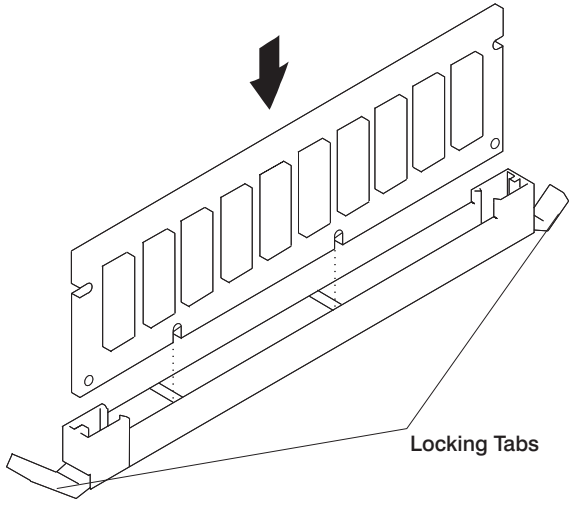
## Replacement

**Note:** If your system has a one-way processor card installed, the memory may be installed on this card. Remove the processor card to upgrade the memory. See “Removing a Memory Riser Card or One-Way Processor Card” on page 342.

1. With one hand, touch any metal surface of the chassis to minimize static electrical charges, and then pick up the memory DIMM.
2. Locate the memory DIMM connector on the card, and remove the dummy memory DIMM from the connector by pushing the tabs out on the memory connector.




3. Insert the memory DIMM by firmly pressing the DIMM into the connector. Secure the DIMM into position with the locking tabs on each end of the connector.




4. Install the memory riser card in the system unit. See “Installing a Memory Riser Card or a One-Way Processor Card” on page 343 for more information.

5. Replace the processor and memory riser card cover as described in “Replacing Processor and Memory Riser Card Cover” on page 315.
6. Replace the system unit covers as described in “Replacing Covers” on page 314.

## Processor Card

### Removal

**Attention:** All cards are sensitive to electrostatic discharge (see “Handling Static-Sensitive Devices” on page 310).

**Note:** Installing a processor card into your system unit may require updating the firmware. A diskette is included with your new processor card if that is required.

1. Power off the system (see “Powering Off and Powering On the System” on page 9).
2. Disconnect the ac power cord.
3. Remove the left side cover (see “Removing the Covers” on page 311).
4. Remove the door to the CEC.
   a. Remove the knurled screw at the right to unlock the door.
   b. Pivot the door to the left to remove it.
5. Compress the tabs on each side of the processor unit to unlock the unit.
6. Pivot the tabs outward to disconnect the processor unit from its connector.
7. Pull the processor unit straight out of the CEC.

### Replacement

Replace in reverse order.

**Note:** If you replace a 1-way processor unit with a 2-way, 4-way, or 6-way processor unit, be sure to remove any memory DIMMs from the 1-way unit and transfer them to a memory riser card.

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## Battery

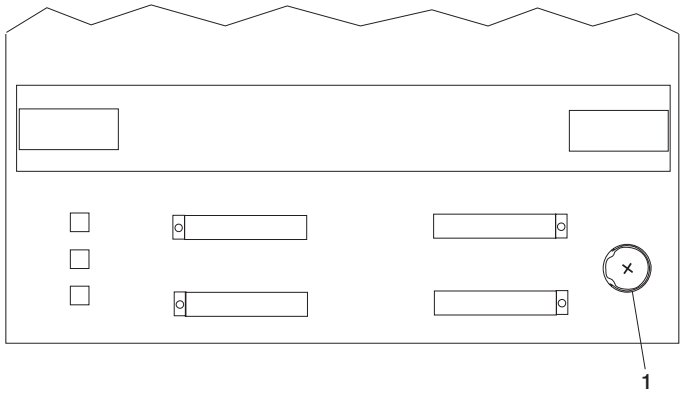
**CAUTION:**
**A lithium battery can cause fire, explosion, or a severe burn. Do not recharge, disassemble, heat above 100 degrees C (212 degrees F), solder directly to the cell, incinerate, or expose cell contents to water. Keep away from children. Replace only with the part number specified for your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

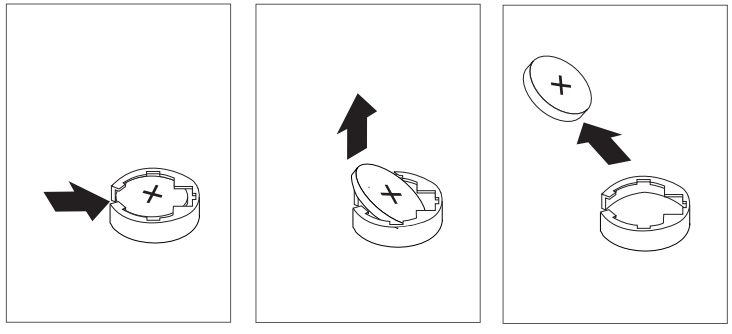
**Dispose of the battery according to local regulations.**

## Removal

1. Shut down the system. See “Stopping the System Unit” on page 316.
2. Unplug the power cord from the wall outlet.
3. If you have not already done so, remove the covers as described in “Removing the Covers” on page 311.
4. Remove the processor and memory card cover as described in “Removing Processor and Memory Riser Card Cover” on page 315.
5. Remove both memory riser cards or blank memory cards. See “Removing a Memory Riser Card or One-Way Processor Card” on page 342.
6. Locate the battery **(1)** on the system board.



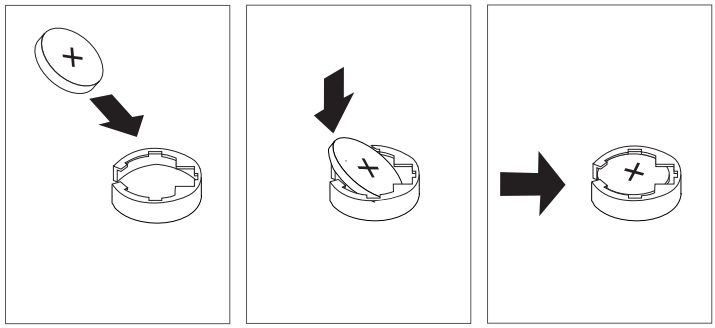

7. Pry the battery out of its mount using your fingernail or small blunt object. After the top of the battery has cleared the mount, pull it up and out of the system unit.



## Replacement

1. Ensure that the battery polarity is correct. With the positive side of the battery facing out, insert the battery between the front and rear battery mounts and gently push it

down into the socket.



**Note:** Be sure to reset the time and date and other system options that might have been lost when the battery was removed.

If you are running AIX, you might have to run the **bootlist** command from AIX while you are logged in as root user. This action restores the customized boot list. In addition, the IP parameters might also have to be re-entered.

2. Install the memory riser cards or blank memory cards removed earlier. See “Removing a Memory Riser Card or One-Way Processor Card” on page 342.
3. Replace the processor and memory card cover.
4. Replace the covers as described in “Replacing Covers” on page 314.

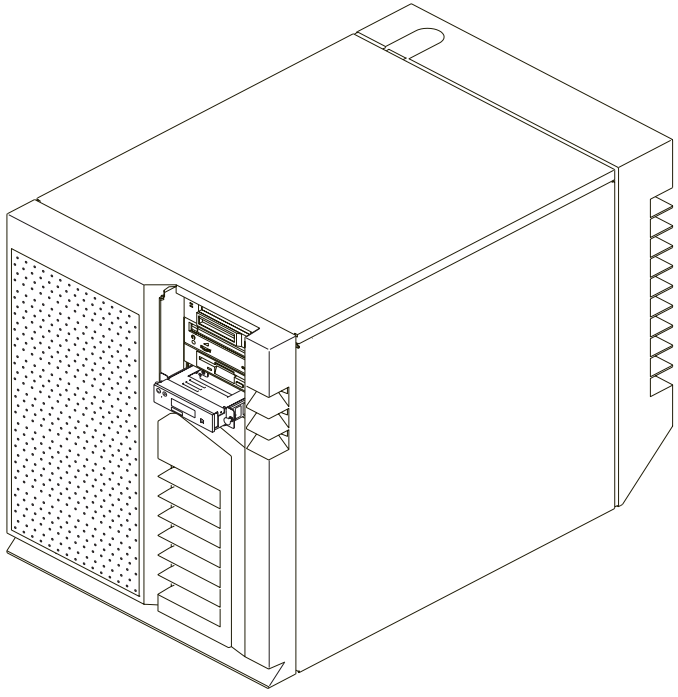
## Operator Panel

### Removal

**Attention:** The operator panel card is sensitive to electrostatic discharge (see “Handling Static-Sensitive Devices” on page 310).

**Attention:** If the operator panel cable is disconnected, settings for passwords, date and time, and service processor call-in functions will be lost. These settings can be reset after the cable is replaced.

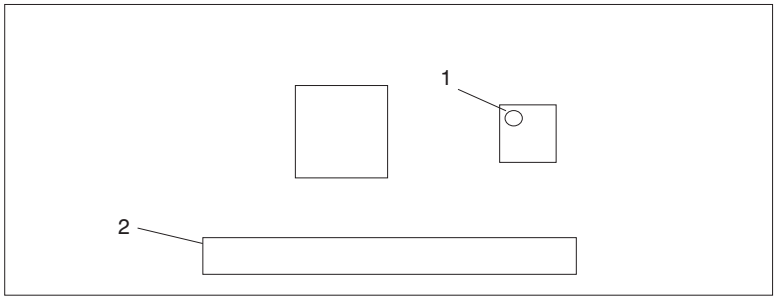
1. Power off the system (see “Powering Off the System” on page 9).
2. Disconnect the ac power cord.
3. Remove the media panel cover to access the operator panel (see “Covers” on page 311).



4. Pull the knobs on each side of the operator panel to unlock it.
5. Pull the operator panel outward from the system.
6. Loosen the thumbscrews that hold the cable restraint plate to the operator panel.
7. Slide the cable restraint plate to the back of the operator panel.
8. Disconnect the operator panel cables.
9. Remove the operator panel.

### Replacement

1. Remove the VPD module from the old operator panel and insert it in the new operator panel. Make sure you insert the module in the same position as it was in the old panel.




**1** VPD Module

**2** Cable Connector

2. Replace in reverse order.

## Operator Panel Cable

### Removal

**Attention:** If the operator panel cable is disconnected, settings for passwords, date and time, and service processor call-in functions will be lost. These settings can be reset after the cable is replaced.

1. Power off the system (see “Powering Off and Powering On the System” on page 9).
2. Disconnect the ac power cord from the system.
3. Remove the front cover to access the operator panel (see “Removing the Covers” on page 311).
4. Pull the knobs on each side of the operator panel to unlock it.
5. Pull the operator panel outward from the system.
6. Loosen the thumbscrews that hold the cable restraint plate to the operator panel.
7. Slide the restraint plate to the back of the operator panel.
8. Disconnect the cable from the back of the operator panel.
9. Disconnect the cable from the system board

### Replacement

1. Replace the operator panel cable by reversing the steps in the removal procedure.
2. Power on the system (see “Powering Off and Powering On the System” on page 9).

## PCI Adapter Dividers

### Removal

1. Remove all PCI adapters (see “Removing Adapter Cards” on page 329).
2. Gently twist down the flexible tab on the right end of the divider.
3. Pivot the divider out and toward the left until it is out.

### Replacement

Replace in reverse order.

## System Board Assembly

### Removal

**Note:** Make a note of the locations of parts you remove during this procedure so that you can reinstall them in the correct positions.

1. Power off the system (see “Powering Off and Powering On the System” on page 9).
2. Disconnect the ac power cord.
3. Remove the system covers (see “Removing the Covers” on page 311).

On the right side of the system:

4. Remove the power supplies (see “Power Supplies” on page 338).
5. Label and disconnect the cables from the right side of the system board assembly, including the SCSI cable connector from the left side.

On the left side of the system:

6. Remove the processor unit assembly (see “Processor Card” on page 349).
7. Mark the locations and remove the memory riser cards and memory fillers, if present (see “Memory Riser Card and Processor Card” on page 342).
8. Mark the locations and disconnect the cables at the rear of the system.
9. Mark the locations and remove the adapter cards (see “Removing Adapter Cards” on page 329).
10. Remove the PCI card dividers (see “PCI Adapter Dividers”).
11. Remove the fans and fan fillers (see “Fans and Fan Fillers” on page 338).
12. Mark the locations and remove the internal SCSI and SES cables.
13. Adjust the airflow control duct so that you can fit a screwdriver through the front of the system to remove the screws that mount the bottom of the PCI card support to the CEC unit.
14. Remove the screws that mount the top of the PCI card support to the system.
15. Remove the PCI card support assembly.

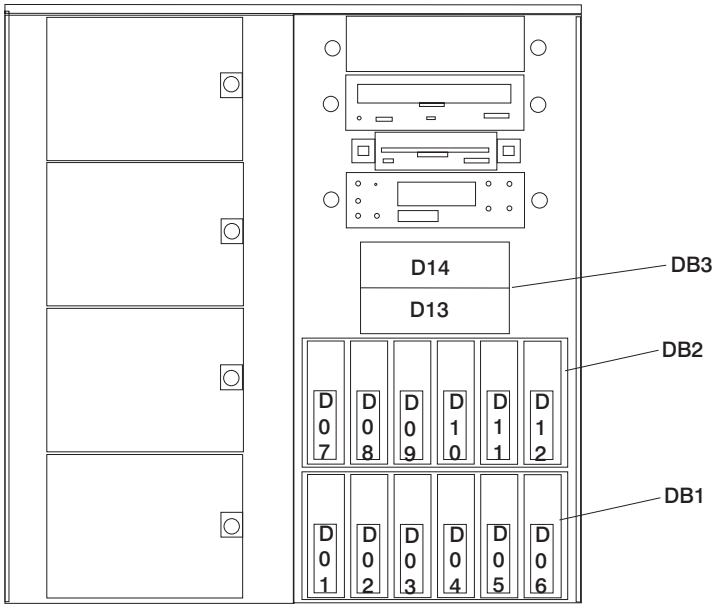
16. Mark the locations and disconnect the following cables from the backplane assembly:
    - Fan cable
    - Parallel cable assembly
    - Debug cable assembly
17. Remove the CEC assembly (see “Memory and Processor Card CEC Assembly” on page 344).
18. Remove the cable plate assembly from the rear of the system (14 total screws).
19. Remove the two screws from the bottom left of the system board assembly, that ground it to the chassis.
20. Remove the eight screws that mount the system board assembly to the chassis and remove the system board.
21. Remove the screws that mount the insulator to the back of the system board assembly and remove the insulator. Save the screws and insulator for replacement.

### Replacement

1. Replace in reverse order.
2. Check fimware level by checking the version on the title of the service processor main menu. If the firmware level is not at the correct level, proceed as follows:
    - Reprogram all system EPROMs using the service processor setup menu.
    - Select **Reprogram Flash EPROM Menu** option (7).
3. The service processor settings have been set to default values. These settings must be restored if not previously set to default values.
    - Manually reset all settings.
    - If the service processor settings had previously been saved, you can restore the settings by using the procedure in “Saving and Restoring Service Processor Settings” on page 252.

## Internal Disk Drive Bays

The system has positions for three disk drive bays, which are available for installing additional disk drives. Because many configurations are possible for each system, this procedure instructs you how to install the disk drive bay hardware and then refers you to cabling diagrams when appropriate for the type of bay you are installing. The following diagram shows the system with the front cover removed and with the disk drive bays identified.



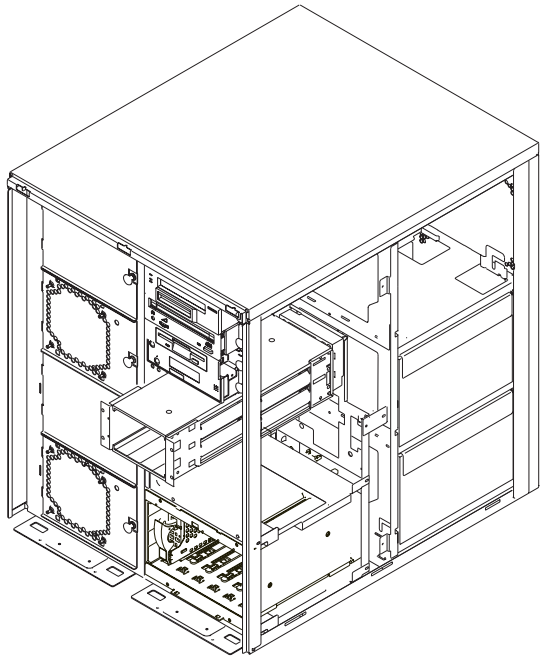

If you are installing:

- A two-position SCSI disk drive bay, continue with “Removing a Two-Position SCSI Disk Drive Bay”.
- A six-position SCSI (SES) or SSA hot plug disk drive bay, go to “Removing Six-Position SCSI (SES) or SSA Disk Drive Bays” on page 358.

## Removing a Two-Position SCSI Disk Drive Bay

To remove a two-position SCSI disk drive bay, use the following procedure:

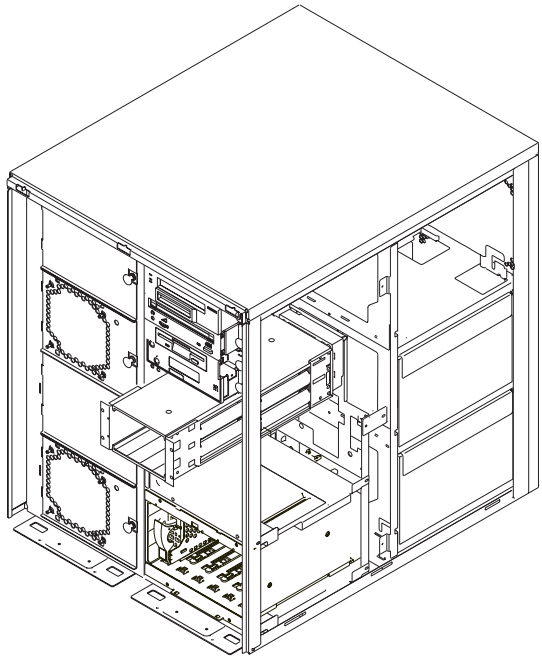
1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
2. If you have not already done so, remove the front and right side covers as described in “Removing the Covers” on page 311.
3. Remove the drives from the two-position disk drive bay, as described in “Removing a Disk Drive from the Two-Position Disk Drive Bay” on page 371.
4. Remove the screws holding the two-position disk drive bay in the system.
5. Label and disconnect the SCSI cable connectors from the backplane.
6. Slide the disk drive bay cage out of the system as shown in the following diagram.



## Replacing a Two-Position SCSI Disk Drive Bay

To replace a two-position SCSI disk drive bay, use the following procedure:

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
2. If you have not already done so, remove the front and right side covers as described in “Removing the Covers” on page 311.
3. Remove the cover from the two-position disk drive bay.
4. Slide the disk drive bay cage into the system as shown in the following diagram.



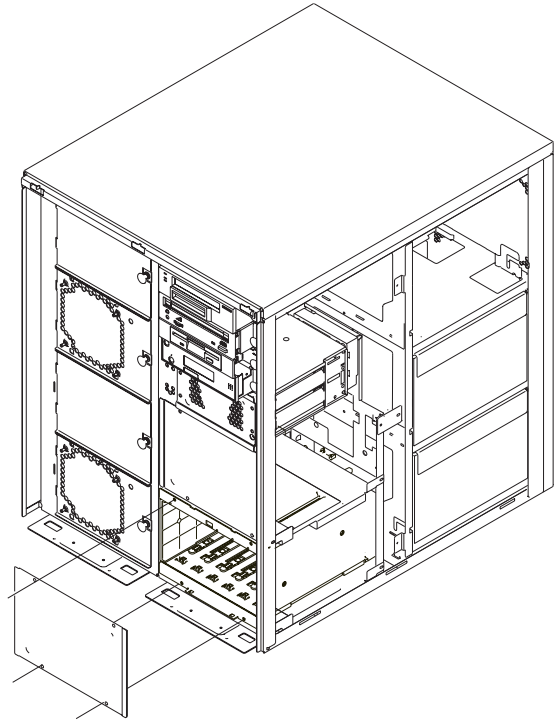
5. Connect the SCSI cable connectors to the backplane. See “SCSI and SSA Cabling Configurations” on page 366 for cable routing.
6. Install the screws to hold the two-position cage in place.
7. Replace the system unit covers as described in “Replacing Covers” on page 314.
8. Turn on the power.

## Removing Six-Position SCSI (SES) or SSA Disk Drive Bays

**Note:** SSA bays require a carrier in all six slots of each 6-pack assembly. Either an SSA drive in a carrier or a blank carrier must be in each SSA drive position. To add an SSA drive, you must first remove the blank carrier from the slot.

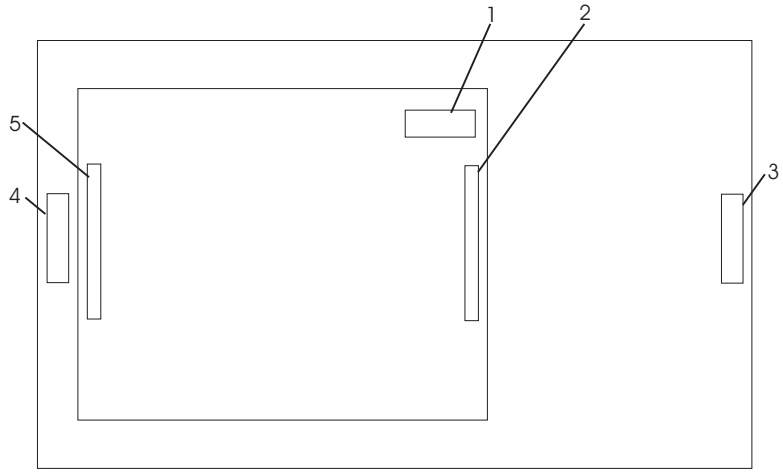
1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.

3. If you have not already done so, remove the covers, as described in “Removing the Covers” on page 311.



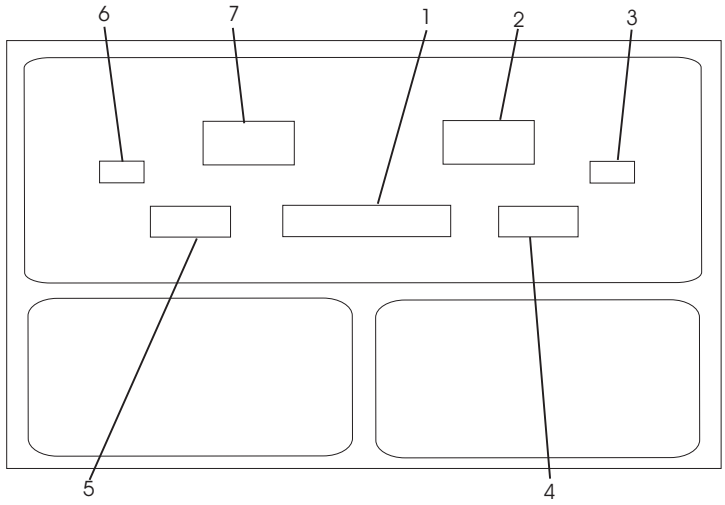
4. Remove the disk drives from the disk drive cage. Refer to “Removing Hot-Plug SCSI Disk Drives” on page 319.
5. Remove a power supply to get access to the backside of the SCSI or SSA backplanes to remove signal and power cables. Refer to “Power Supplies” on page 338.
6. Disconnect the power cables from the top rear of the backplane. Then disconnect the signal cables from the backplane.

### SCSI (SES) Drive Bay Cables




| | | | |
|---|---|---|---|
| 1 | $I^2C$ Connector | 4 | Power Connector |
| 2 | SCSI Connector | 5 | SCSI Connector |
| 3 | Power Connector | | |

**SSA Drive Bay Cables**



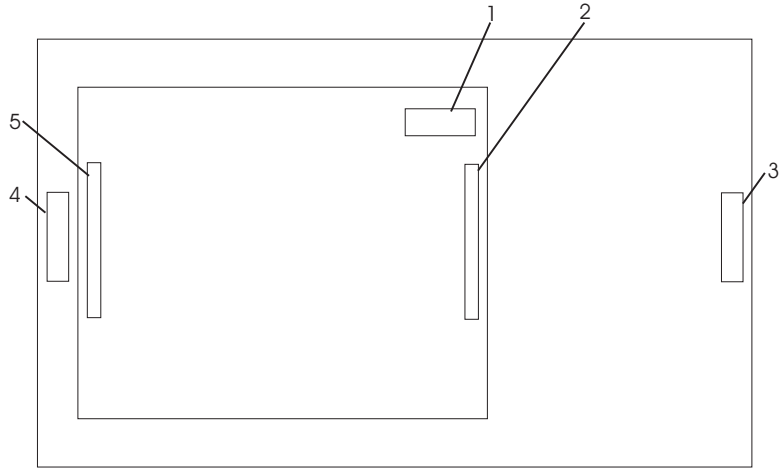

| | | | |
|---|---|---|---|
| 1 | $I^2C$ Connector | 5 | SSA Connector |
| 2 | Power Connector | 6 | SSA Connector |
| 3 | Power Connector | 7 | Power Connector |
| 4 | SSA Connector | | |

7. Remove the six screws that hold the disk drive cage in the system unit. There are four screws in the front of the unit and two inside the back (one at the upper left, one at the lower right). Use the long nut driver provided with the disk drive cage to remove the screws.
8. Slide the disk drive cage all the way out of the system unit.

## Replacing Six-Position SCSI (SES) or SSA Disk Drive Bays

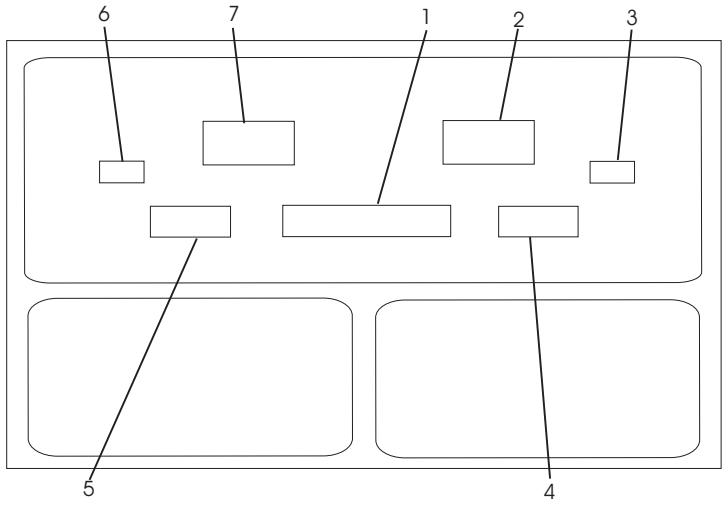
1. If you are installing a second disk drive bay, and an adapter to connect the disk drive bay to the system, install the adapter first. Refer to “Replacing Adapter Cards” on page 332.
2. Locate the new disk drive bay cage and connect the power cables to the top rear of the backplane. Then connect the signal cables to the backplane.

**SCSI (SES) Drive Bay Cables**



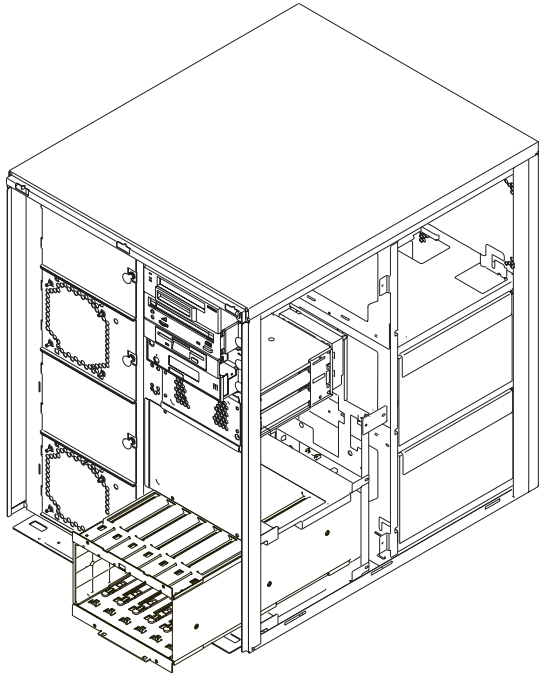

| | | | |
|---|---|---|---|
| 1 | $I^2C$ Connector | 4 | Power Connector |
| 2 | SCSI Connector | 5 | SCSI Connector |
| 3 | Power Connector | | |

**SSA Drive Bay Cables**

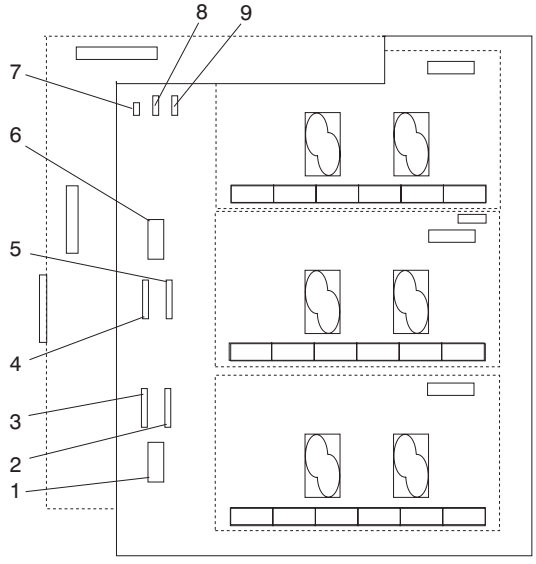



| | | | |
|---|---|---|---|
| 1 | $I^2C$ Connector | 5 | SSA Connector |
| 2 | Power Connector | 6 | SSA Connector |
| 3 | Power Connector | 7 | Power Connector |
| 4 | SSA Connector | | |

3. Position the cables so they can be guided through the holes in the rear of the system unit bay, and slide the disk drive cage halfway into the system unit.



4. Connect the power cables to the power connectors, which are located on the system board behind the enclosure. The following diagram shows the right side of the system with the cover removed.




**1** I2C to DASD Bay 1 (DB1)
**2** Power 2 to DASD Bay 1 (DB1)
**3** Power 1 to DASD Bay 1 (DB1)
**4** Power 1 to DASD Bay 2 (DB2)
**5** Power 2 to DASD Bay 2 (DB2)
**6** I2C to DASD Bay 2 (DB2)
**7** Power to diskette drive
**8** Power to DASD 2-pack or media device
**9** Power to DASD 2-pack or media device

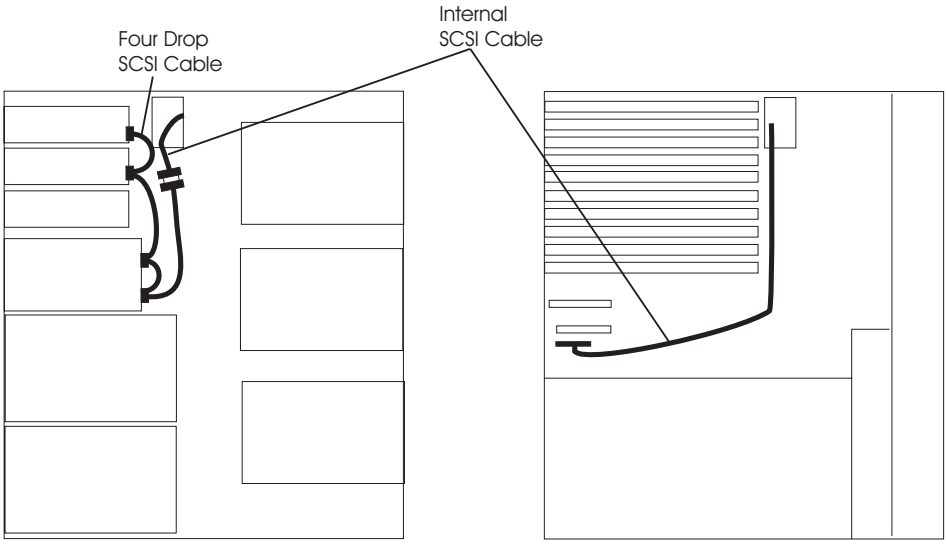
5. Connect the signal cables. Refer to “SCSI and SSA Cabling Configurations” on page 366, and follow the cabling diagram for your system configuration.
6. Slide the disk drive cage all the way into the system unit until it contacts the front frame.
7. Install six screws to hold the disk drive cage in the system unit. There are four screws in the front of the unit and two inside the back (one at the upper left, one at the lower right). Use the long nut driver provided with the disk drive cage to install the screws.
8. Install the disk drives in the disk drive cage you just installed. Refer to “Replacing Hot-Plug SCSI Disk Drives” on page 321.
9. Replace the covers as described in “Replacing Covers” on page 314.

## SCSI and SSA Cabling Configurations

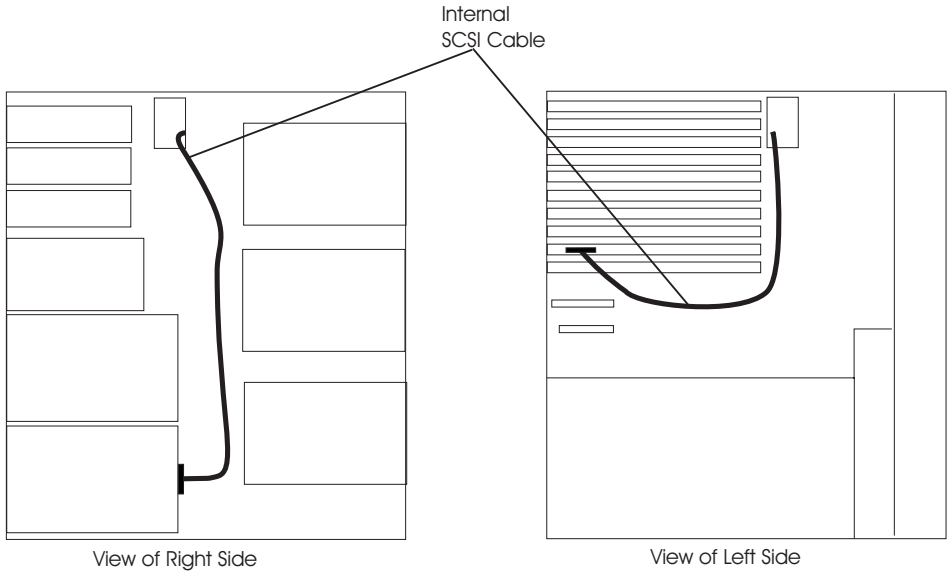
The diagrams in this section show the cabling for many of the configurations available on this system. Locate the diagram here that most closely matches your system's drive configuration, and connect your cables to match the diagram.

**Note:** The two six-position SCSI disk drive bays must be connected to separate SCSI buses.

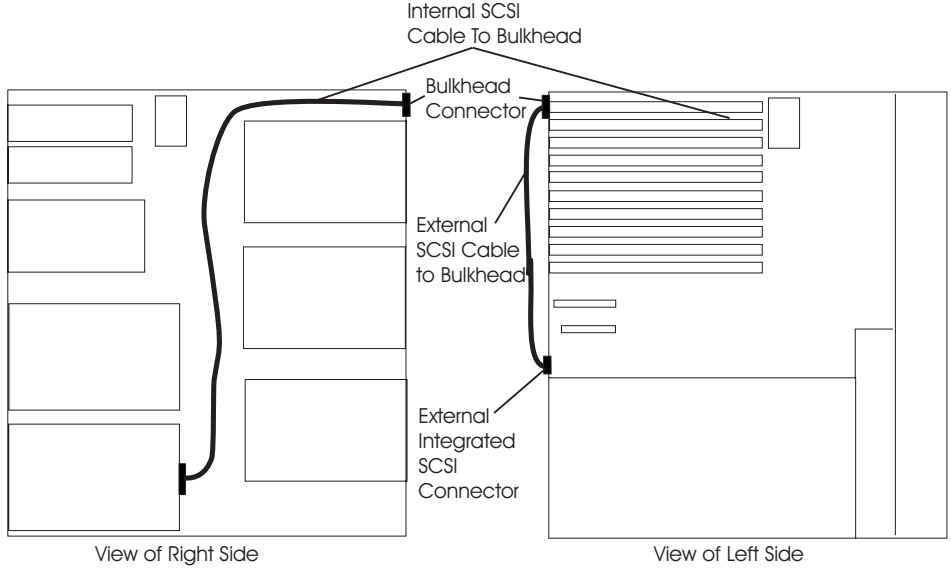
## Two-Position SCSI Disk Drive Bay Cabling



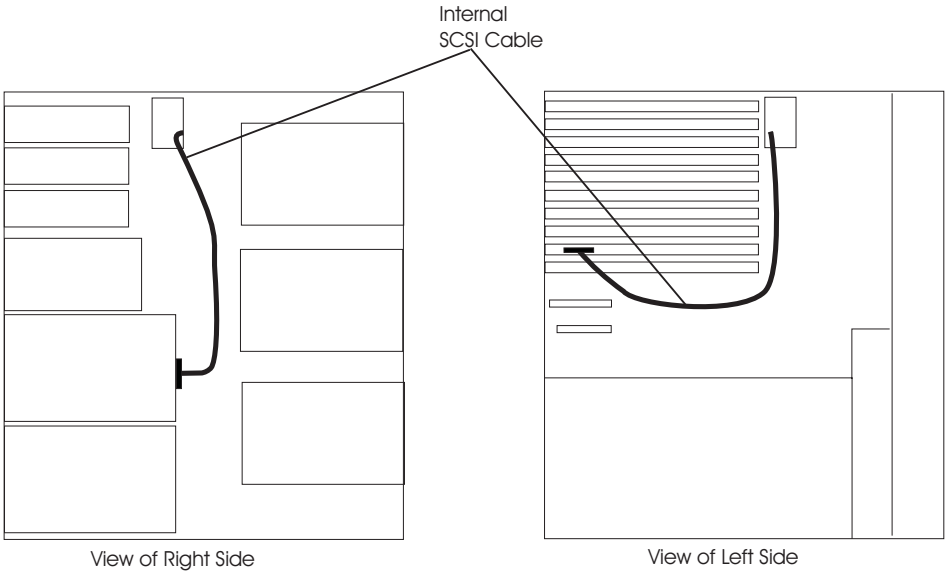
## First Six-Position SCSI Disk Drive Bay Cabling



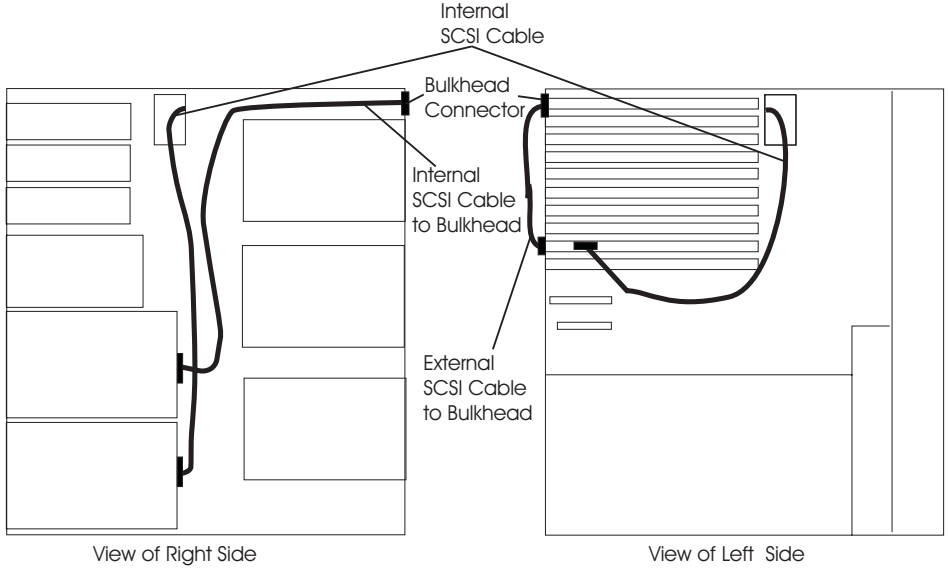

OR



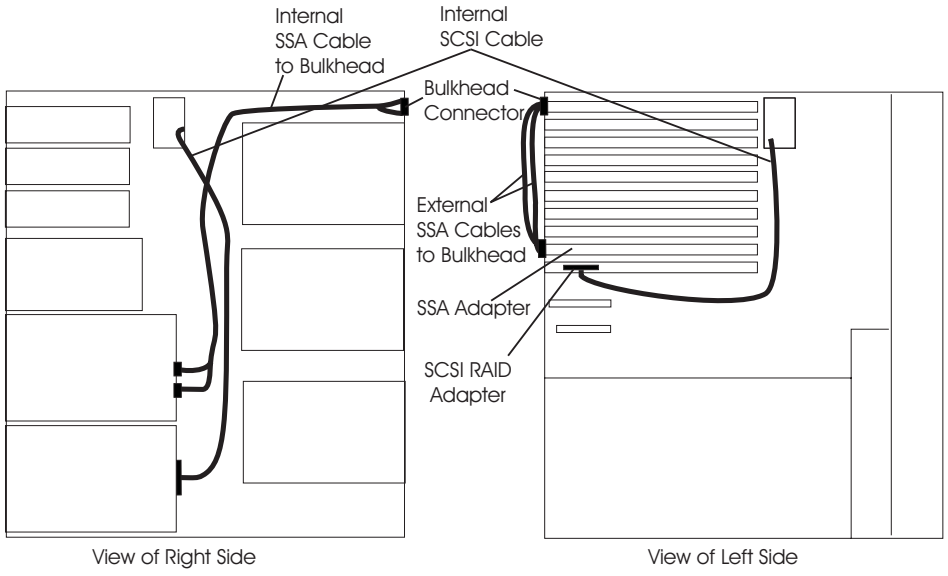
## Second Six-Position SCSI Disk Drive Bay Cabling



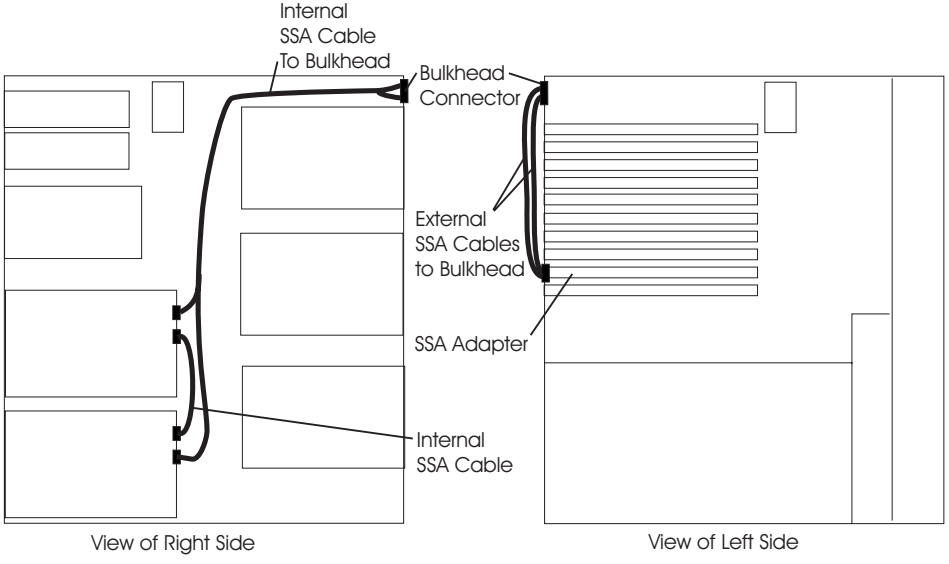

## Two Six-Position SCSI RAID Bays Connected to a Single RAID Adapter



## One Six-Position SCSI RAID Bay and One Six-Position SSA Bay




## Two Six-Position SSA Bays Connected to the Same SSA Loop



## Replacing Non-Hot-Plug Drives

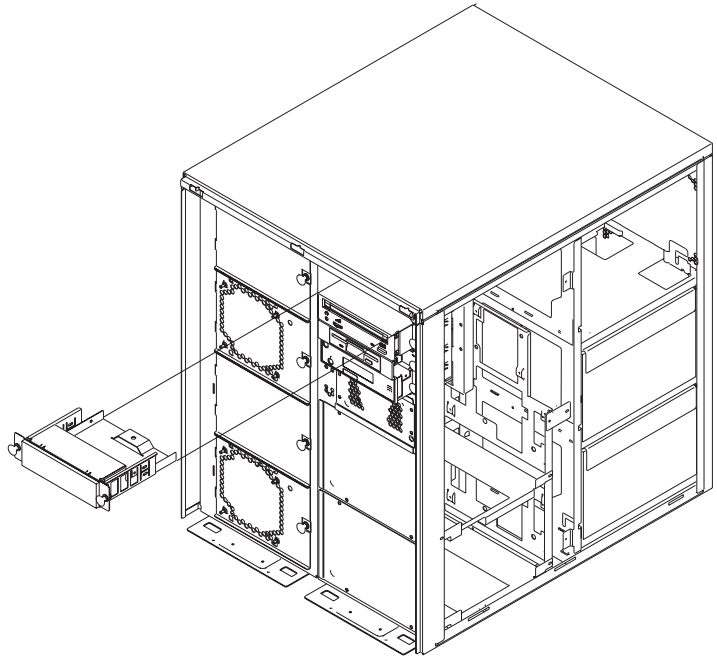
This section helps you replace non-hot-plug media drives in the optional media position of the system or disk drives in the two-position SCSI disk drive bay.

## Removing a Media Drive from the Optional Media Position



**CAUTION:**
**A class 1 laser is contained in the device. Do not attempt to operate the drive while it is disassembled. Do not attempt to open the covers of the drive as it is not serviceable and is replaced as a unit.**

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the front and right covers as described in “Removing the Covers” on page 311.
4. Pull the locking knob on the media bay bracket and remove the blank by pulling it straight out from the system unit.

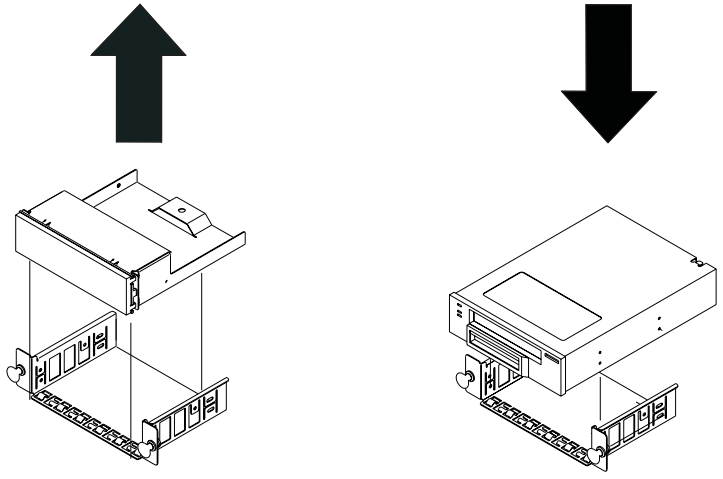


5. Label the cables at the rear of the drive and disconnect them from the drive.

## Replacing a Media Drive in the Optional Media Position

Perform the following steps to remove either the blank cover or the old drive from the bracket and install the new drive onto the bracket.

1. Remove the three screws from the blank cover bracket.
2. Separate the blank cover or drive from the bracket.
3. Install the new drive into the bracket as shown in the following diagram. To secure the drive, use the three media media bay screws.



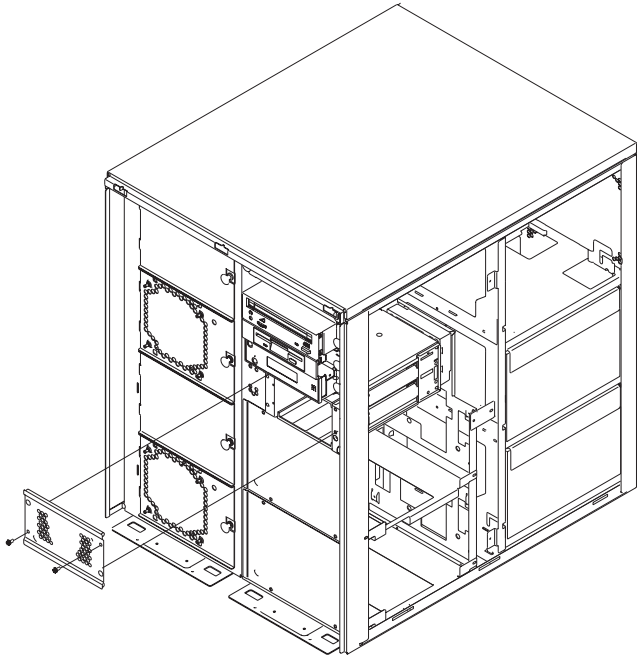
4. Set the SCSI address jumpers at the rear of the drive to SCSI address 0. Refer to the documentation provided with your drive for details on setting the SCSI address.
5. Look into the media bay and locate the two cables used to attach the drive to the system unit.
6. Connect the cables from the system to the rear of the drive.
7. Ensure that the locking knobs are pulled to the out position. Install the drive in the system unit by sliding it into the optional media bay until the locking knobs contact the frame of the system unit.
8. Push each locking knob until you feel it lock into position.
9. Replace the system unit covers as described in “Replacing Covers” on page 314.

## Removing a Disk Drive from the Two-Position Disk Drive Bay

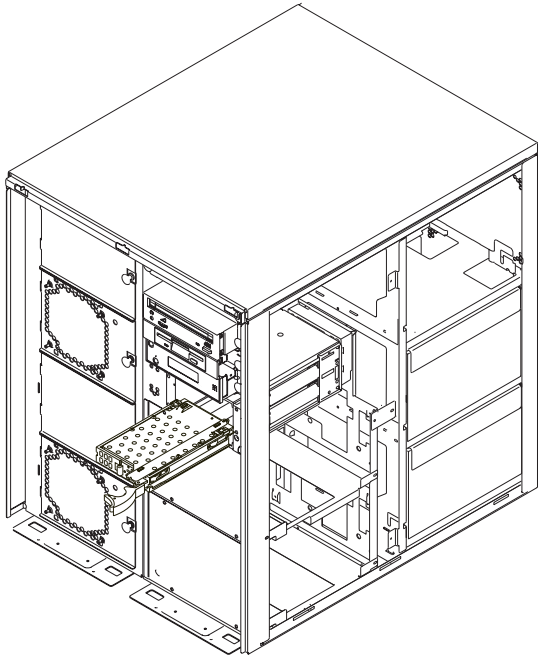
The section helps you remove non-hot-plug drives from the two-position SCSI disk drive bay.

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the front cover as described in “Removing the Covers” on page 311.

4. Remove the screws that hold the cover onto the two-position SCSI drive bay and remove the cover.



5. Remove the disk drive by pulling the disk drive lever toward you until it is completely open. Then pull the drive out of the slot.

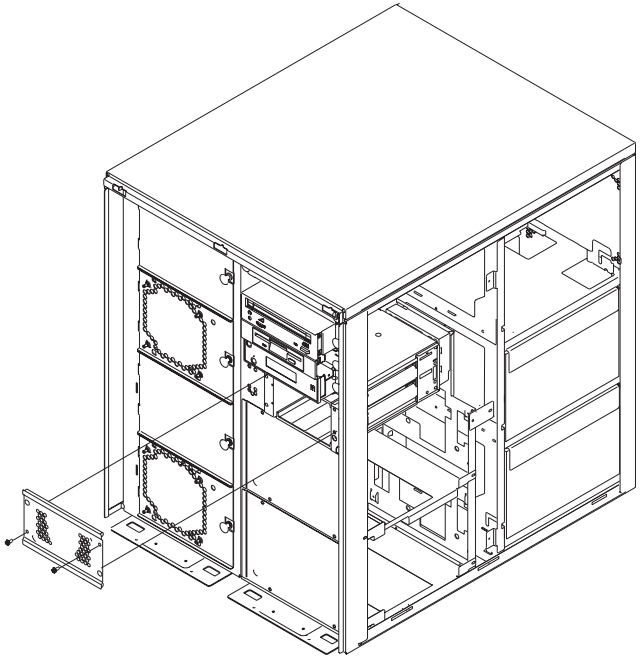


## Replacing a Disk Drive in the Two-Position Disk Drive Bay

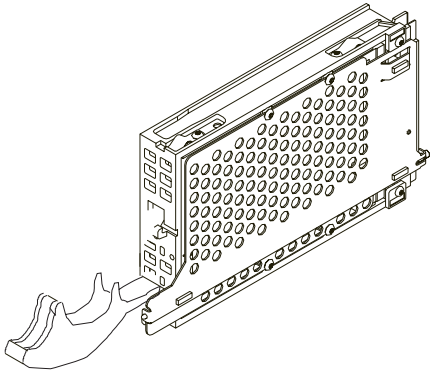
The section helps you install non hot-plug drives in the two-position SCSI disk drive bay.

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 316.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the front and right covers as described in “Removing the Covers” on page 311.

4. Remove the screws that hold the cover onto the two-position SCSI drive bay and remove the cover.

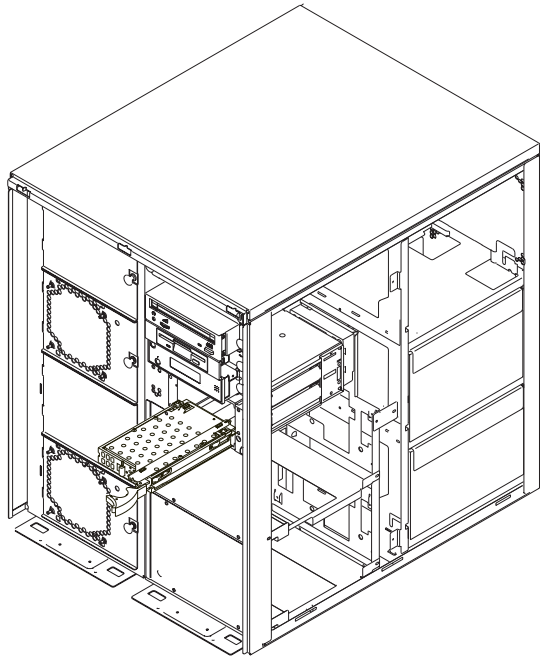


5. Remove the disk drive from its protective packaging and open the drive latch handle.



6. Set the SCSI address jumpers at the rear of the drive to the correct address. Refer to the documentation provided with your drive for details on setting the SCSI address.

7. Slide the disk drive into the bay as shown in the following diagram.

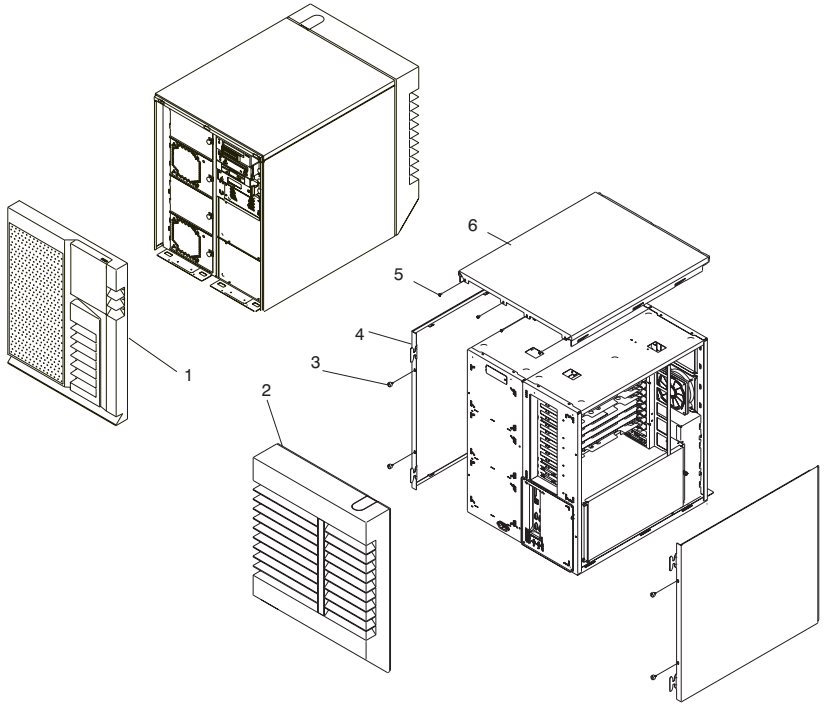


8. Replace the two-position SCSI disk drive bay cover.
9. Replace the system unit covers as described in “Replacing Covers” on page 314.

# Chapter 10. Parts Information

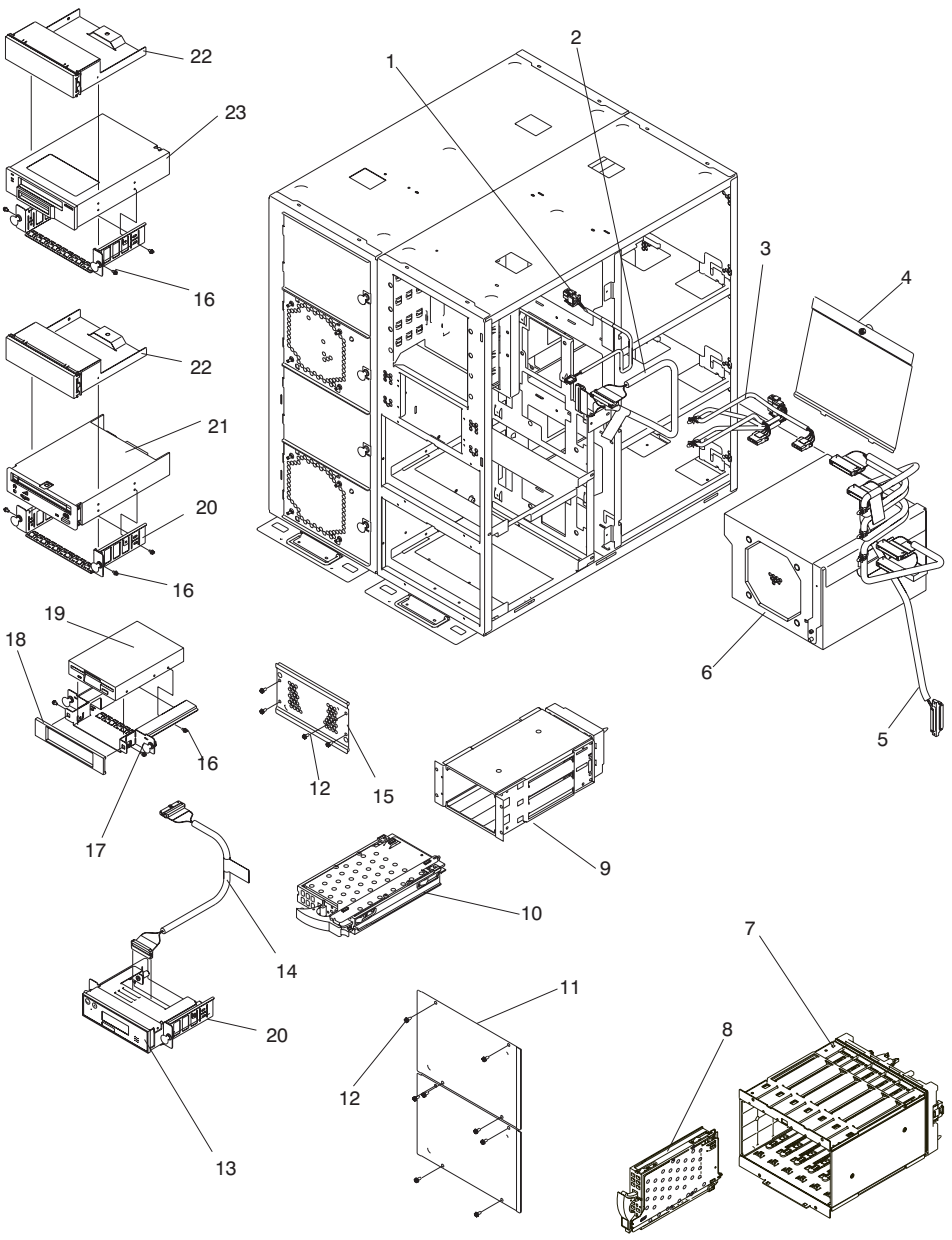
This chapter contains parts information for the Models F80, 6F0, and 6F1.

## Covers




| Index | FRU Part Number | Units Per Assy | Description |
|---|---|---|---|
| 1 | 24L1656 | 1 | Front Cover RS/6000 |
| 1 | 21P5432 | 1 | Front Cover pSeries |
| 2 | 24L1666 | 1 | Rear Cover RS/6000 |
| 2 | 21P5435 | 1 | Rear Cover pSeries |
| 3 | 24L1946 | 4 | Thumbscrew, Side Cover Mounting |
| 4 | 24L1632 | 2 | Side Cover |
| 5 | 72G2878 | 4 | Screw, Top Cover Mounting |
| 6 | 24L1631 | 1 | Top Cover |

## Right Side

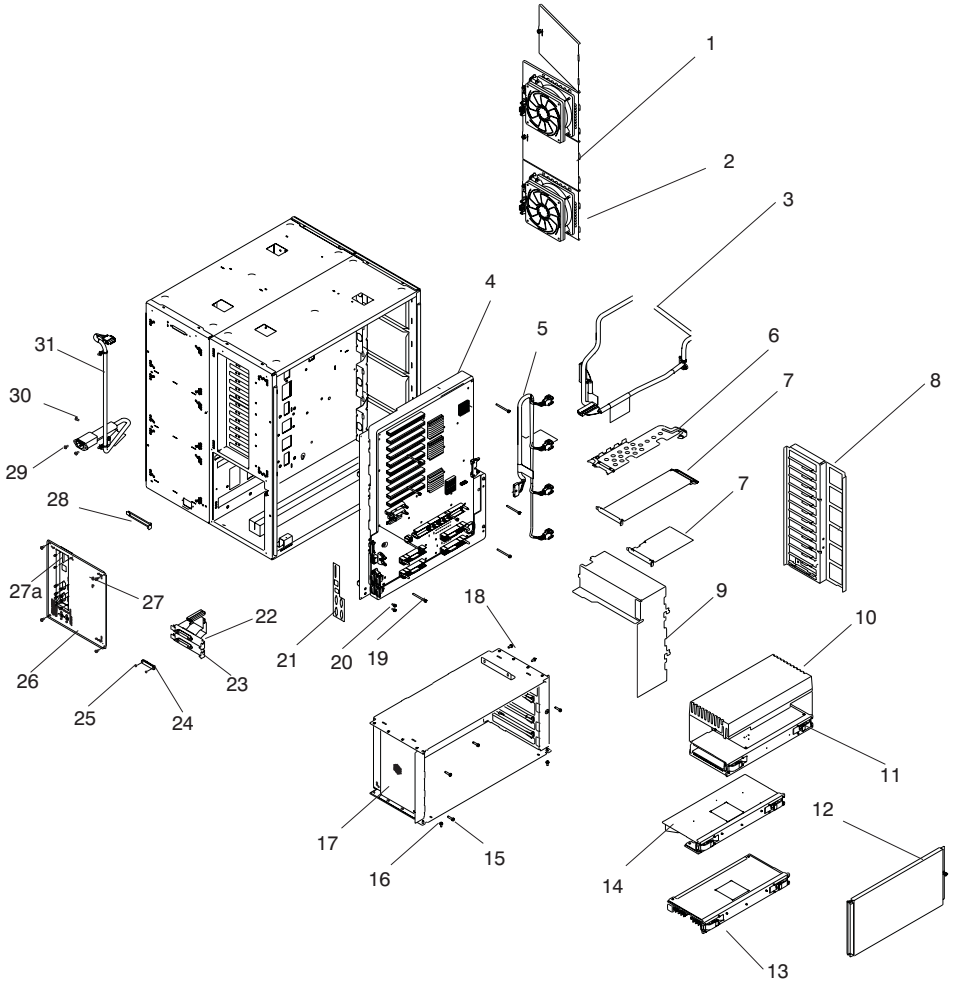


| Index | FRU Part Number | Units Per Assy | Description |
|---|---|---|---|
| 1 | 23L2922 | 1 | Cable, Diskette Power |
| 2 | 24L1771 | 1 | Cable, Diskette |
| 3 | 04N4267 | 1 | Cable, Media Power |
| 4 | 24L1723 | 0-1 | Baffle, Power Supply |
| 5 | 04N4265 | 1 | SCSI Cable from I/O Board to Media, 4 drop |
| | 00P2358 | 1 | Cable, Media SCSI - 8 inch |
| | 04N2271 | 1 | SCSI Cable, 6 Pack Drive Bay to Bulkhead |
| | 76H0524 | 1 | SCSI Cable, External VHDCI to Bulkhead |
| | 08L7908 | 1 | SSA Cable, Bulkhead to Backplane |
| | 56F0346 | 1 | M3.5 Screw |
| | 24L1695 | 1 | Connector Cover |
| | 93H4339 | 1 | SSA Cable, Backplane to Bulkhead |
| | 93H4340 | 1 | SSA Cable, Bulkhead to External SSA |
| | 93H4341 | 1 | SSA Cable, Backplane to Backplane |
| | 40H6328 | 1 | 9-25 pin Serial Port Converter Cable |
| | 08L0034 | 2 | Standoff |
| | 2596293 | 1 | Cable Clamp |
| 6 | 21P6417 | 2-3 | Power Supply |
| 7 | 04N5589 | 0-2 | SCSI DASD 6-Pack (SES) |
| | 04N4270 | 0-2 | SSA DASD 6-Pack |
| | 24L1827 | 1 | Shield |
| 8 | 03N3301 | 0-14 | 9.1 GB SCSI DASD Drive (7200 RPM) |
| | 00P1517 | 0-14 | 9.1 GB SCSI DASD Drive (10K RPM) |
| | 03N4139 | 0-12 | 9.1 GB SSA DASD Drive (10K RPM) |
| | 23L8107 | 0-4 | SSA Filler Card for SSA Backplane |
| | 03N3302 | 0-14 | 18.2 GB SCSI DASD Drive (7200 RPM) |
| | 00P1520 | 0-14 | 18.2 GB SCSI DASD Drive (10K RPM) |
| | 09P0620 | 0-12 | 18.2 GB SSA DASD Drive (10K RPM) |
| | 00P1519 | 0-14 | 36.4 GB SCSI DASD Drive (10K RPM) |
| 9 | 04N4555 | 1 | SCSI DASD 2-Pack |
| | 04N2920 | 1 | SCSI 2-Pack Cable |
| | 04N3392 | 2 | Screws |
| 10 | See 8 Above | 0-2 | SCSI DASD Drive |
| 11 | 24L1729 | 0-2 | DASD Filler Plate |
| | 04N2920 | 2 | Power Cable |
| | 04N4308 | 1 | Nut Driver |
| | 21P4725 | 1 | Cage |
| 12 | 75G2878 | 0-8 | Screws |
| 13 | 24L1593 | 1 | Operator Panel Assembly |
| 14 | 04N6113 | 1 | Operator Panel Cable |
| 20 | 24L1726 | 1 | Media Device Mounting Tray |
| 15 | 23L3138 | 0-1 | SCSI 2-Pack Filler Plate |
| 12 | 75G2878 | 4 | Screws |
| 16 | 33G3907 | 2 or 4 | Screws (per Media Assembly) |
| 17 | 24L1727 | 1 | Diskette Drive Mounting Tray |
| 18 | 24L1725 | 1 | Diskette Bezel |

| Index | FRU Part Number | Units Per Assy | Description |
|---|---|---|---|
| 19 | See Note | 1 | Diskette Drive |
| 16 | 33G3907 | 2 or 4 | Screws (per Media Assembly) |
| 20 | 24L1726 | 1 | Media Device Mounting Tray |
| 21 | See Note | 1 | CD ROM |
| 21 | 97H7611 | 1 | CD ROM Bezel (Black) |
| 22 | 97H9137 | 1 | Media Filler |
| 23 | See Note | 0-1 | Media Device (Optional) |
| | 04N5968 | 0-1 | White DVD Bezel (Optional) |
| | 59H4118 | 0-1 | 4 mm Tape Bezel (Optional) |
| | 94H0136 | 0-1 | 8 mm Tape Bezel (Optional) |
| 16 | 33G3907 | 2 or 4 | Screws (per Media Assembly) |
| 22 | 97H9137 | 1 | Media Filler |

**Note:** See *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, for part numbers.

## Left Side


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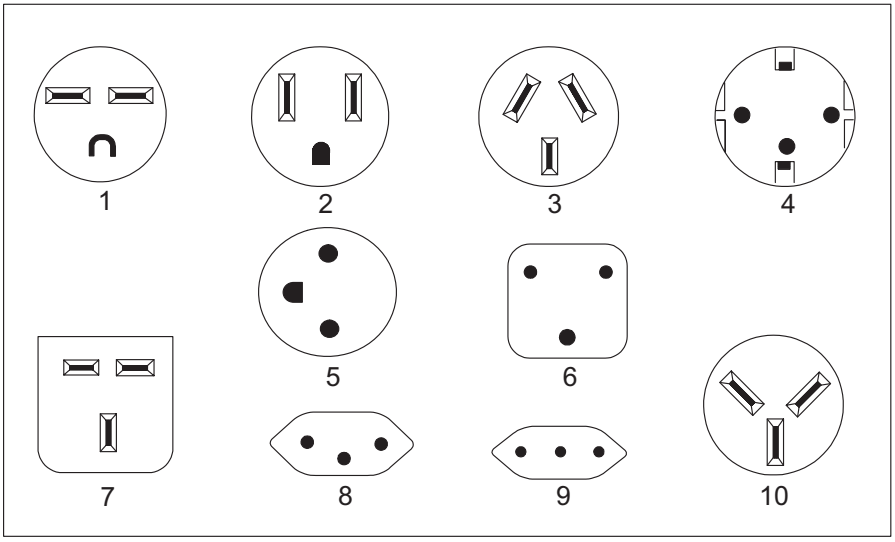
| Index | FRU Part Number | CCIN Number | Units Per Assembly | Description |
|---|---|---|---|---|
| 1 | 24L1738 | | 0-2 | Fan Filler |
| 2 | 24L1730 | | 2-4 | Fan Assembly |
| 3 | 04N2273 | | 0-2 | Point to point SCSI Cable Assembly, SCSI adapter to 6-pack |
| 4 | 09P1175 | | 1 | System Board Assembly |
| | 24L1831 | | 1 | Insulator, System Board Assembly |
| | 16G8095 | | 1 | I/O Board Battery |
| | 24L1761 | | 1 | JTAG Cable from SCSI/SSA Backplane to PDB |
| 5 | 04N5743 | | 1 | Fan Signal Cable Assembly |
| 6 | 44L0041 | | 10 | PCI Card Divider |
| 7 | See Note | | 0-10 | PCI Adapter Card |
| 8 | 24L1649 | | 1 | PCI Card Guide Bracket |
| 9 | 24L1737 | | 1 | Airflow Control Duct |
| 10 | 04N2934 | | 1 | 1-Way/2-Way Processor Airflow Filler |
| 11 | 04N4765 | 24A1 | 1 | 1-Way 450 MHz Processor Unit |
| | 04N5353 | 25BB | 1 | 1-Way 600 MHz Processor Unit |
| | 53P2023 | 25CB | 1 | 1-Way 750 MHz Processor Unit |
| | 21P4751 | 24A2 | 1 | 2-Way 450 MHz Processor Unit |
| | 23L7785 | 25BD | 1 | 2-Way 600 MHz Processor Unit |
| | 53P1514 | 25EB | 1 | 2-Way 750 MHz Processor Unit |
| | 21P4760 | 24A3 | 1 | 4-Way 450 MHz Processor Unit |
| | 23L7794 | 25BE | 1 | 4-Way 600 MHz Processor Unit |
| | 53P1301 | 25EA | 1 | 4-Way 750 MHz Processor Unit |
| | 21P4774 | 24A4 | 1 | 6-Way 500 MHz Processor Unit |
| | 23L7799 | 25BF | 1 | 6-Way 668 MHz Processor Unit |
| | 53P1334 | 25F2 | 1 | 6-Way 750 MHz Processor Unit |
| 12 | 24L1605 | | 1 | CEC EMC Cover |
| 13 | 04N4808 | 288D | 0-2 | Memory Riser Unit |
| | 07L7729 | | 0-32 | 32 MB Memory DIMM |
| | 93H4702 | | 0-32 | 128 MB Memory DIMM |
| | 09P0466 | | 0-32 | 128 MB Memory DIMM |
| | 07L9030 | | 0-32 | 256 MB Memory DIMM |
| | 10L5417 | | 0-32 | 512 MB Memory DIMM F/C 4131 (Cannot be mixed with F/C 4100) |
| | 07L9758 | | 0-32 | 512 MB Memory DIMM F/C 4100 (Cannot be mixed with F/C 4131) |
| | 09P0335 | | 0-32 | 1 GB Memory DIMM |
| | 44H8167 | | 0-32 | Memory DIMM filler |
| 14 | 23L8127 | 263D | 0-2 | Memory Filler Card |
| 15 | 1622678 | | 6 | CEC Mounting Screws |
| 16 | 75G2878 | | 2 | CEC Mounting Screws |

| Index | FRU Part Number | CCIN Number | Units Per Assembly | Description |
|---|---|---|---|---|
| 17 | 24L1546 | | 1 | CEC Cage |
| 18 | 75G2878 | | 4 | PCI Guide Assembly Mounting Screws |
| 19 | 24L1829 | | 8 | System Board Assembly Mounting Screws |
| 20 | 45H2536 | | 4 | System Board Assembly Grounding Screws |
| 21 | 24L1646 | | 8 | System Board Assembly Mounting Screws |
| 19 | 24L1829 | | 8 | System Board Assembly Mounting Screws |
| 20 | 45H2536 | | 4 | System Board Assembly Grounding Screws |
| 21 | 24L1646 | | 1 | Gasket, EMC Shield |
| 22 | 04N2923 | | 1 | Cable Assembly, Debug |
| 23 | 24L1769 | | 1 | Cable Assembly, Parallel Port |
| 24 | 04N2922 | | 1 | Cover, Debug Port |
| 25 | 56F0346 | | 1 | Debug Port Cover Mounting Screws |
| 26 | 04N3087 | | 1 | Cable Plate Assembly |
| 26a | 76H0518 | | 1 | SCSI Cable, VHDCI Mini - 68 pin to 68 pin 0.3 meter (see “System Board” on page 15) |
| 27 | 75G2878 | | 4 | Cable Plate Assembly Mounting Screws |
| 27a | 07L7411 | | 1 | External SCSI cable standoff |
| 28 | 03K8992 | | 0-10 | I/O Filler Bracket |
| 29 | 75G2878 | | 2 | Power Cable Assembly Mounting Screws |
| 30 | 75G2878 | | 1 | Power Cable Assembly Grounding Screws |
| 31 | 23L8082 | | 1 | Power Cable Assembly |

**Note:** See *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, for part numbers.

## Accessories

## Power Cords




| Index | Part Number | Country/Region |
|---|---|---|
| 1 | 1838574 | Bahamas, Barbados, Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Philippines, Taiwan, Thailand, Trinidad Tobago, U.S.A., Venezuela |
| 2 | 6952301 | Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Puerto Rico, Saudi Arabia, Suriname, Trinidad, Taiwan, U.S.A. (except Chicago), Venezuela |
| 2 | 86G7648 | Chicago |
| 3 | 13F9940 | Argentina, Australia, New Zealand, Paraguay, Columbia, Uruguay |
| 4 | 13F9979 | Abu Dhabi, Austria, Belgium, Bulgaria, Botswana, Egypt, Finland, France, Germany, Greece, Iceland, Indonesia, Korea (South), Lebanon, Luxembourg, China (Macau S.A.R.), Netherlands, Norway, Portugal, Saudi Arabia, Spain, Sudan, Sweden, Turkey, Yugoslavia |
| 5 | 13F9997 | Denmark |

| Index | Part Number | Country/Region |
|---|---|---|
| 6 | 14F0015 | Bangladesh, Burma, Pakistan, South Africa, Sri Lanka |
| 7 | 14F0033 | Bahrain, Bermuda, Brunei, Channel Islands, Cyprus, Ghana, China (Hong Kong S.A.R.), India, Iraq, Ireland, Jordan, Kenya, Kuwait, Malawi, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Arab Emirates (Dubai), United Kingdom, Zambia |
| 8 | 14F0051 | Liechtenstein, Switzerland |
| 9 | 14F0069 | Chile, Ethiopia, Italy |
| 10 | 14F0087 | Israel |

## Keyboards and Mouse (White)




| Index | FRU Part Number | Units Per Assy | Description |
|---|---|---|---|
| 1 | 93H8120 | 1 | Keyboard, 101 United States English (ID 103P) |
| | 93H8121 | 1 | Keyboard, 102 Canada French (ID 058) |
| | 93H8122 | 1 | Keyboard, 102 Canada French (ID 445) |
| | 93H8123 | 1 | Keyboard, 102 Spanish (ID 171) |
| | 93H8124 | 1 | Keyboard, 104 Brazil Portuguese (ID 275) |
| | 93H8125 | 1 | Keyboard, 102 Arabic (ID 238) |
| | 93H8126 | 1 | Keyboard, 102 Belgium French (ID 120) |
| | 93H8127 | 1 | Keyboard, 102 Belgium (ID 120) |
| | 93H8128 | 1 | Keyboard, 102 Bulgarian (ID 442) |
| | 93H8129 | 1 | Keyboard, 102 Czech (ID 243) |
| | 93H8130 | 1 | Keyboard, 102 Danish (ID 159) |
| | 93H8131 | 1 | Keyboard, 102 Dutch (ID 143) |
| | 93H8132 | 1 | Keyboard, 102 French (ID 189) |
| | 93H8133 | 1 | Keyboard, 102 German (ID 129) |
| | 93H8134 | 1 | Keyboard, 102 Greek (ID 319) |
| | 93H8135 | 1 | Keyboard, 101 Hebrew (ID 212) |
| | 93H8136 | 1 | Keyboard, 102 Hungarian (ID 208) |
| | 93H8137 | 1 | Keyboard, 102 Iceland (ID 197) |
| | 93H8138 | 1 | Keyboard, 102 Italy (ID 142) |
| | 93H8139 | 1 | Keyboard, 102 Norwegian (ID 155) |
| | 93H8140 | 1 | Keyboard, 102 Polish (ID 214) |
| | 93H8141 | 1 | Keyboard, 102 Portuguese (ID 163) |
| | 93H8142 | 1 | Keyboard, 102 Romanian (ID 446) |
| | 93H8143 | 1 | Keyboard, 101 Russian (ID 443) |
| | 93H8144 | 1 | Keyboard, 102 Serbian (ID 118) |
| | 93H8145 | 1 | Keyboard, 102 Slovak (ID 245) |
| | 93H8146 | 1 | Keyboard, 102 Spanish (ID 172) |
| | 93H8147 | 1 | Keyboard, 102 Sweden/Finland (ID 153) |
| | 93H8148 | 1 | Keyboard, 105 Swiss F/G (ID 150) |
| | 93H8149 | 1 | Keyboard, 102 Turkish (ID 179) |
| | 93H8150 | 1 | Keyboard, 102 Turkish (ID 440) |
| | 93H8151 | 1 | Keyboard, 102 UK English (ID 166) |
| | 93H8152 | 1 | Keyboard, 102 Latvia (ID 234) |
| | 93H8153 | 1 | Keyboard, US English ISO9995 (ID 103P) |

| Index | FRU Part Number | Units Per Assy | Description |
|---|---|---|---|
| | 93H8154 | 1 | Keyboard, 106 Japan (ID 194) |
| | 93H8155 | 1 | Keyboard, 101 Chinese/US (ID 467) |
| | 93H8156 | 1 | Keyboard, 103 Korea (ID 413) |
| | 93H8157 | 1 | Keyboard, 101 Thailand (ID 191) |
| 2 | 76H5084 | 1 | Three Button Mouse |

## Keyboards and Mouse (Black)




| Index | FRU Part Number | Units Per Assy | Description |
|---|---|---|---|
| 1 | 07L9446 | 1 | Keyboard, 101 United States English (ID 103P) |
| | 07L9447 | 1 | Keyboard, 102 Canada French (ID 058) |
| | 07L9448 | 1 | Keyboard, 102 Canada French (ID 445) |
| | 07L9449 | 1 | Keyboard, 102 Spanish (ID 171) |
| | 07L9450 | 1 | Keyboard, 104 Brazil Portuguese (ID 275) |
| | 07L9451 | 1 | Keyboard, 102 Arabic (ID 238) |
| | 07L9452 | 1 | Keyboard |
| | 07L9453 | 1 | Keyboard, 102 Belgium (ID 120) |
| | 07L9454 | 1 | Keyboard, 102 Bulgarian (ID 442) |
| | 07L9455 | 1 | Keyboard, 102 Czech (ID 243) |
| | 07L9456 | 1 | Keyboard, 102 Danish (ID 159) |
| | 07L9457 | 1 | Keyboard, 102 Dutch (ID 143) |
| | 07L9458 | 1 | Keyboard, 102 French (ID 189) |
| | 07L9459 | 1 | Keyboard, 102 German (ID 129) |
| | 07L9460 | 1 | Keyboard, 102 Greek (ID 319) |
| | 07L9461 | 1 | Keyboard, 101 Hebrew (ID 212) |
| | 07L9462 | 1 | Keyboard, 102 Hungarian (ID 208) |
| | 07L9463 | 1 | Keyboard, 102 Iceland (ID 197) |
| | 07L9464 | 1 | Keyboard, 102 Italy (ID 142) |
| | 07L9465 | 1 | Keyboard, 102 Norwegian (ID 155) |
| | 07L9466 | 1 | Keyboard, 102 Polish (ID 214) |
| | 07L9467 | 1 | Keyboard, 102 Portuguese (ID 163) |
| | 07L9468 | 1 | Keyboard, 102 Romanian (ID 446) |
| | 07L9469 | 1 | Keyboard, 101 Russian (ID 443) |
| | 07L9470 | 1 | Keyboard, 102 Serbian (ID 118) |
| | 07L9471 | 1 | Keyboard, 102 Slovak (ID 245) |
| | 07L9472 | 1 | Keyboard, 102 Spanish (ID 172) |
| | 07L9473 | 1 | Keyboard, 102 Sweden/Finland (ID 153) |
| | 07L9474 | 1 | Keyboard, 105 Swiss F/G (ID 150) |
| | 07L9475 | 1 | Keyboard, 102 Turkish (ID 179) |
| | 07L9476 | 1 | Keyboard, 102 Turkish (ID 440) |
| | 07L9477 | 1 | Keyboard, 102 UK English (ID 166) |
| | 07L9478 | 1 | Keyboard, 102 Latvia (ID 234) |
| | 07L9479 | 1 | Keyboard, US English ISO9995 (ID 103P) |

| Index | FRU Part Number | Units Per Assy | Description |
|---|---|---|---|
| | 07L9480 | 1 | Keyboard, 106 Japan (ID 194) |
| | 07L9481 | 1 | Keyboard, 101 Chinese/US (ID 467) |
| | 07L9482 | 1 | Keyboard, 103 Korea (ID 413) |
| | 07L9483 | 1 | Keyboard, 101 Thailand (ID 191) |
| | 08L0904 | 1 | Keyboard, Belgian France |
| | 08L0905 | 1 | Keyboard, Belgian UK |
| | 08L0906 | 1 | Keyboard, Danish |
| | 08L0908 | 1 | Keyboard, French |
| | 08L0909 | 1 | Keyboard, German |
| | 08L0911 | 1 | Keyboard, Italian |
| | 08L0912 | 1 | Keyboard, Norwegian |
| | 08L0914 | 1 | Keyboard, Spanish |
| | 08L0915 | 1 | Keyboard, Swedish |
| | 08L0916 | 1 | Keyboard, Swiss |
| 2 | 08L0362 | 1 | Three Button Mouse (Black) |

# Appendix A. Environmental Notices

## Product Recycling and Disposal

This unit contains materials such as circuit boards, cables, electromagnetic compatibility gaskets and connectors which may contain lead and copper/beryllium alloys that require special handling and disposal at end of life. Before this unit is disposed of, these materials must be removed and recycled or discarded according to applicable regulations. IBM offers product-return programs in several countries. For country specific instructions refer to the following web site:
http://www.ibm.com/ibm/environment/products/prp.phtml

**This product may contain a sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries, contact your local waste disposal facility.**

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

## Environmental Design

The environmental efforts that have gone into the design of this system signify IBM's commitment to improve the quality of its products and processes. Some of these accomplishments include the elimination of the use of Class 1 ozone-depleting chemicals in the manufacturing process and reductions in manufacturing wastes. For more information, contact an IBM account representative.

## Acoustical Noise Emissions

The equivalent continuous A-weighted sound pressure level at workstations (emission sound pressure level at the 1-meter bystander positions) does not exceed 70 dB(A).

Der Geräuschpegel der Einheit ist kleiner oder gleich 70 db(A).

## Declared Acoustical Noise Emissions

- Non-Redundant:
  - 2 Way/4 Way:
    **Operating** 6.1 Bels
    **Idle** 5.9 Bels
- Redundant:
  - 6 Way:
    **Operating** 6.8 Bels

| | |
|---|---|
| **Idle** | 6.6 Bels |

# Appendix B. Notices

This information was developed for products and services offered in the U.S.A.

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

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

Information concerning products made by other than the manufacturer was obtained from the suppliers of those products, their published announcements, or other publicly available sources. The manufacturer has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to products made by other than the manufacturer. Questions on the capabilities of products made by other than the manufacturer should be addressed to the suppliers of those products.

# Appendix C. Service Processor Setup and Test

For your convenience, an example of a basic service processor setup checklist is included here. Your setup may include more or fewer of the available features, so you can adjust this checklist for your own application so that it is helpful to you.

## Service Processor Setup Checklist

1. Unplug the power cord from the server.
2. Attach a local terminal for this setup procedure.
3. Plug in the system and power on the local terminal.

   **Attention:** Make sure that system power remains off.
4. Start the service processor menus. See Chapter 7, “Using the Service Processor” on page 251.
5. Set the system name. See “Privileged User Menus” on page 254.
6. Enable surveillance. See “Service Processor Functions” on page 279.
7. Configure Call-In/Call-Out. See “Call-In/Call-Out Setup Menu” on page 273.
8. Exit the service processor menus.
9. Unplug the power cord from the system.
10. Attach modems (if needed). See “Accessing the Service Processor Menus Remotely” on page 252.
11. Plug in the system.

    **Attention:** Make sure that the system power remains off.
12. Test both of the following:
    - Call-In, see “Testing Call-In” on page 396
    - Call-Out, see “Testing Call-Out” on page 396
13. Use the “Save or Restore Hardware Management Policies,” in the “Introduction to Tasks and Service Aids” section of the *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* to back up the service processor settings.

    **Note:** This step is strongly recommended to protect the usefulness of the service processor and the availability of the server.

Your service processor is now ready for use.

## Testing the Setup

This section contains sample testing procedures to help ensure that your setup is working.

These tests include communicating with the 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 397.

The server should be powered off as a result of the “Service Processor Setup Checklist” on page 395.

## Testing Call-In

1. At your remote terminal, 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 (refer to “Transfer of a Modem Session” on page 404 for more information). This may take several minutes. When the login prompt displays, you have successfully called the service processor.
5. Type `logout` to disconnect from the operating system. The message `No Carrier` displays on your remote terminal.
6. Call your 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` 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 (on page 276) and customer voice (on page 276). 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. Your computer is trying to page you.

If this test is successful, call-out is working correctly.

Return to the “Telephone Number Setup Menu” on page 276 to enter the actual telephone numbers your server will use for reporting problems.

## Serial Port Configuration

To configure the serial port on an AIX system, run the following from an AIX console:

1. Log in as `root` user.
2. To determine if you have any serial ports already configured, type:

   ```
   lsdev -Cc tty
   ```

   If no serial ports are configured, none are listed. If you want to configure serial ports that are not listed, continue with the remaining steps.
3. Identify the serial port(s) with the modem(s).
4. Type `smit tty`
5. Select **add tty**
6. Select **RS232**
7. Select **Baud rate 9600** or higher.
8. Select **login enable** and set the flow control to RTS.
9. Commit the selections and set up any other needed serial ports.
10. Exit SMIT.

# Appendix D. Modem Configurations

The service processor is designed to place little demand on an attached modem, thereby increasing the setup and connection success rates.

## Sample Modem Configuration Files

This appendix contains information about several sample modem configuration files that either work directly with your modem or provide a good starting point for a custom setup.

The sample modem configuration files are located in your service processor firmware in the **/usr/share/modems** subdirectory (if your 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 on page 401.

   **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 403 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 on page 401.

   **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 on page 401.

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 402 for more information. Go to step 7 on page 401.

   If No, go to step 6.

6. Does your modem respond to:

   - AT&F reset command

     or

   - AT&F*n* reset commands, where *n* can be 0, 1, and so on?

If AT&F, configuration file **modem_f.cfg** is recommended.
If AT&F*n*, configuration file **modem_f0.cfg** or **modem_f1.cfg** is recommended, depending on which provides the hardware flow control profile.

7. You have completed selection of the configuration file.

   If your modem configuration selection is not available in the Service Processor Modem Configuration Menu, you must access it through the Configure Remote Maintenance Policy Service Aid.

   If you find it necessary to adjust any of these configuration files, use the manual provided with your modem to accomplish that task. It is recommended you select settings that enable hardware flow control and respond to DTR.

   **Note:** Some older modems do not respond to the **X0** or **&R1** commands. Edit out these commands from the modem configuration file if yours is such a modem. See your modem manual for more information.

Some modems, such as the IBM 7857-017, are not designed for the paging function. Although they can be used for paging, they return an error message when they do not get the expected response from another modem. Therefore, even though the paging was successful, the error message causes the service processor to retry, continuing to place pager calls for the number of retries specified in the Call-Out Policy Setup Menu. These retries result in redundant pages.

## Examples for Using the Generic Sample Modem Configuration Files

The following table contains information to help you determine which modem configuration file to use with various modems.

| Modem | Setup Z | Setup Z0 (Rare) | Setup F | Setup F0 | Setup F1 |
|---|---|---|---|---|---|
| AT&T DataPort 2001 (Ring interrupt only on first ring) | | | | X | |
| Bocamodem 1440E | | | X | | |
| Hayes Smart Modem 300 | X | | | | |
| IBM 5841 | X | | | | |
| IBM 5843 | X | | | | |
| IBM 7851 | | | | X | |
| IBM 7852-10 | | | | X | |
| IBM 7855 | | | | | X |
| USRobotics 36.6K Sportster | | | | | X |
| Zoom V.32 | | | X | | |

## Customizing the Modem Configuration Files

You can create your own modem configuration files or modify the samples provided. After you customize your modem configuration files, you *must* access them through the Configure Remote Maintenance Policy Service Aid rather than from the service processor menus.

**Note:** If you have already set up your serial ports, line speeds, authorizations, and telephone numbers from the service processor menus, use the service aid to specify your customized modem configuration files.

If you have not already set up your serial ports, line speeds, authorizations, and telephone numbers from the service processor menus, use the service aids to set them while you specify your customized modem configuration files.

To disable Auto-Reliable Mode testing of the remote modem, use the sample modem configuration file **/usr/share/modems/modem_f.cfg** as a model that you can modify, as follows:

1. Find the necessary command in your modem manual.
2. Copy the **/usr/share/modems/modem_f.cfg** file to a new file with a different name (for example, **modem_fx.cfg**).
3. In the new file (**modem_fx.cfg**), change the line `Send "ATE0T\r"` to `Send "ATcccE0T\r"` where ccc is the added command as specified in your modem manual, as follows:

   Change the third line of each of the following stanzas:
   - `condout`

- `condin`
- `ripo`

4. Save the changes.

## IBM 7852-400 DIP Switch Settings

If you are using a 7852-400 modem to enable service processor communications, for proper operation, the dual inline package (DIP) switches must be set according to the following table:

| Switch | Position | Function |
|---|---|---|
| 1 | Up | Force DTR |
| 2 | Up | Flow Control &E4 |
| 3 | Down | Result Codes Enabled |
| 4 | Down | Modem Emulation Disabled |
| 5 | Up | Auto Answer Enabled |
| 6 | Up | Maximum Throughput Enabled |
| 7 | Up | RTS Normal Functions |
| 8 | Down | Enable Command Mode |
| 9 | Down | Remote Digital Loopback Test Enabled |
| 10 | Up | Dial-Up Line Enabled |
| 11 | *Up | AT Responses Enabled (Extended Responses Disabled) |
| 12 | *Down | Asynchronous Operation |
| 13 | Up | 28.8KB Line Speed |
| 14 | Up | |
| 15 | Up | CD and DSR Normal Functions |
| 16 | Up | 2-Wire Leased Line Enabled |

* Only switches 11 and 12 are changed from the factory default settings.

## Xon/Xoff Modems

Some early modems assume software flow control (Xon/Xoff) between the computer and the modem. Modems with this design send extra characters during and after the transmitted data. The service processor cannot accept these extra characters. If your configuration includes such a modem, your functional results may be unpredictable.

The sample modem configuration files included in this appendix do not support these modems, so custom configuration files are necessary. Anchor Automation 2400E is an example of such a modem.

If you experience unexplainable performance problems that may be due to Xon/Xoff characters, it is recommended that you upgrade your modem.

## Ring Detection

Most modems produce an interrupt request each time they detect a ring signal. Some modems generate an interrupt only on the first ring signal that they receive. AT&T DataPort 2001 is an example of such a modem.

The service processor uses the ring interrupt request to count the number of rings when Ring Indicate Power-On (RIPO) is enabled. If your modem produces an interrupt on only the first ring, set Ring Indicate Power-On to start on the first ring. Otherwise, you can choose to start Ring Indicate Power-On on any ring count.

### Terminal Emulators

The service processor is compatible with simple ASCII terminals, and therefore compatible with most emulators. When a remote session is handed off from the service processor to the operating system, agreement between terminal emulators becomes important.

The server's operating system will have some built-in terminal emulators. You may also have a commercially available terminal emulation. It is important that the local and host computers select the same or compatible terminal emulators so that the key assignments and responses match, ensuring successful communications and control.

For best formatting, choose line wrap in your terminal emulator setup.

### Recovery Procedures

Situations such as line noises and power surges can sometimes cause your modem to enter an undefined state. When it is being used for dial-in, dial-out or ring indicate power-on, your modem is initialized each time one of these actions is expected. If one of these environmental conditions occur after your modem has been initialized, it might be necessary to recover your modem to a known state.

If your modem communicates correctly with remote users, it is probably in control. It may be wise to occasionally change some of the functional settings and then change them back, just for the sense of security that the modem is communicating, and to ensure it has been initialized recently.

If your system is particularly difficult to access physically, another strategy is to protect it with an Uninterruptible Power Source (UPS) and a phone-line surge protector.

In case recovery becomes necessary, shut down your system using established procedures. Disconnect the power cable and press the power button to drain capacitance while power is disconnected. Disconnect and reconnect modem power, and then reconnect system power to completely reinitialize your system.

## Transfer of a Modem Session

Because many modem command variations exist, the sample modem configuration files located at the end of this appendix have been written to capture the largest number of workable modem settings.

The modem command **&Dn** (where *n* is a number) generally sets the modem response to the Data Terminal Ready (DTR) signal from the server's serial port. The desired response is that the modem will hold a connection while DTR is enabled, and drop the connection when DTR is released. Using this mechanism, the server hangs up on a connection under normal conditions.

Consult your modem manual for its specific response scheme for the **&Dn** command.

Two strategies are available for dealing with the modem's response to DTR:

- Recovery
- Prevention

Before you use one of these strategies, determine if your server's modem is set up correctly to respond to DTR.

With the remote terminal connected to serial port 1 and defined as the Primary Console Device, there are two tests you can perform:

1. Will the modem drop the connection after the `System initialization complete` message displays at the remote terminal?

   If Yes, the modem is set up correctly.

   If No, try another **&Dn** setting for your server's modem. See your modem manual for this information. The **&Dn** command appears in three places each in three of the sample modem configuration files, as follows:

2. Will the server's modem disconnect when the power drops? You can make this observation at the remote terminal by commanding your server to shut down and power off. (Use the AIX command **shutdown -F**.) Watch for the message `NO CARRIER` on your remote terminal.

   If Yes, this is the correct response. The modem is set up correctly.

   If No, try another **&Dn** setting for your server's modem. See your model manual for this information. The **&Dn** command appears in three places each in three of the sample modem configuration files. Only the following sample modem configuration files contain the **&Dn** command (in three places each):
   - modem_f.cfg
   - modem_f0.cfg
   - modem_f1.cfg

   If you are using modem_z.cfg or modem_z0.cfg, you cannot control DTR response. If your remote terminal does not disconnect after logging off, you must command the remote terminal emulator to hang up. This then breaks the connection.

## Recovery Strategy

The recovery strategy consists of making two calls to establish a remote session. This solution is the easiest to implement and allows more freedom for configuring your server's serial ports.

To set up a remote terminal session, dial into the service processor and start the system. After the operating system is loaded and initialized, the connection will be dropped. At this point, call the server back and the operating system will answer and offer you the login prompt.

## Prevention Strategy

The disconnect is caused by the operating system when it initializes the Primary Console. The tests listed in “Transfer of a Modem Session” on page 404 are conducted with the remote terminal selected as the primary console to manifest the modem’s response to DTR transitions.

- If a local ASCII terminal or a graphics console is to be a permanent part of your server, then make one of them the primary console. Your remote terminal will no longer experience the connection loss.
- If a local console is not a permanent part of your server, you can still assign either the unused graphics console or the unused serial port as the primary console. This gives you the desired seamless connection at your remote terminal.
- If you choose to use the unused serial port as the primary console, some initialization traffic will be sent to any serial device attached to that port. As a result, that serial device’s connection and function could be affected. These impacts may make that port unattractive for devices other than a temporary local ASCII terminal.

## Modem Configuration Sample Files

### Sample File modem_m0.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP: modem_m0
#
# FUNCTIONS: Modem configuration file specifically for IBM 7852-400
#  modem with Auto-Reliable feature.  This feature must be turned off
#  for Catcher calls.  This example uses the AT&F reset command to
#  choose the factory defaults.
#
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#
#
# The modem has configuration switches.  They should be set to the
# factory default settings, except switches 11 and 12.  These must be
# to UP ("AT" responses) and DOWN (Asynchronous operation), respectively.

ICDelay 1
DefaultTO 10
CallDelay 120
#
#  %N  Call-Out phone number    %R   Return phone number
#
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "AT&F&E2E0T\r"                 # Reset to factory defaults
                                                # Reliable mode
                                                # Echo off
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT&E12&E14\r"                 # Disable pacing
                                                # Disable data compression
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            send "AT&SF1&S0S9=1\r"              # DSR independent of CD
                                                # Force DSR on.
                                                # CD respond time=100ms
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            send "ATV0S0=0\r"                   # Numeric response code
                                                # Auto-Answer off
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.
                                                # Expect a connection response.
            expect "33\r" or "31\r" or "28\r" or "26\r" or "24\r" or "21\r" or
"19\r" or "13\r" or "12\r" or "1\r" busy "7\r"
            timeout 60
            done

retry:      send "A/"                           # Repeat the previous command.
                                                # Expect a connection response.
            expect "33\r" or "31\r" or "28\r" or "26\r" or "24\r" or "21\r" or
"19\r" or "13\r" or "12\r" or "1\r" busy "7\r"
            timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
```

```
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "AT&F&E2E0T\r"                 # Reset to factory defaults.
                                                # Reliable mode
                                                # Echo off
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT&E12&E14\r"                 # Disable pacing
                                                # Disable data compression
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful
            send "AT&SF1&S0S9=1\r"              # DSR independent of CD.
                                                # Force DSR on.
                                                # CD respond time=100ms
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            send "ATV0S0=2\r"                   # Numberic response code
                                                # Answer on 2nd ring
            expect "0\r" timeout 2              # Confirm commands successful.
            done

waitcall:   ignore "2\r" timeout 1              # Ignore first ring.
            expect "2\r" timeout 10             # Pickup 2nd ring or timeout
                                                # Expect a connection response.
            expect "33\r" or "31\r" or "28\r" or "26\r" or "24\r" or "21\r" or
"19\r" or "13\r" or "12\r" or "1\r" busy "7\r"
            timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number
            expect "0\r" timeout 60             # Confirm successful command.
            delay 2                             # Wait before hanging up.
            send "ATH0\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "AT&F&E2E0T\r"                 # Reset to factory defaults.
                                                # Reliable mode
                                                # Echo off
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT&E12&E14\r"                 # Disable pacing
                                                # Disable data compression
            expect "0\r" or "OK\r\n" timeout 2  # Confirm successful command.
            send "AT&SF1&S0S9=1\r"              # DSR independent of CD.
                                                # Force DSR on.
                                                # CD respond time=100ms
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            send "ATV0S0=0\r"                   # Numeric response code
                                                # Auto Answer OFF
            expect "0\r" timeout 2              # Confirm commands successful.
            done                                #

error:                                          # Handle unexpected modem
                                                # responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

## Sample File modem_m1.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP modem_m1
#
# FUNCTIONS: Modem configuration file specifically for IBM 7857-017 modem with
#  Auto-Reliable feature.  This feature must be turned off for Catcher calls.
#  This example uses the AT&F reset command to choose the factory defaults.
#
#  To allow dial commands for digital pagers, it is necessary to reduce
#  the number of characters in the dial command.  Each comma (delay) has
#  been set to 6 seconds (S8=6) for that reason.
#
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#

ICDelay 1
DefaultTO 10
CallDelay 120
#
#  %N  Call-Out phone number    %R   Return phone number
#
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "AT&F*E0E0\r"                  # Reset to factory defaults.
                                                # *E0=data compression disabled
                                                # E0=echo disabled
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT#F0*Q2S8=6\r"               # Trellis modulation disabled
                                                # Retrain with adaptive rate
                                                # Set ,=6second
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful
            send "ATV0X0S0=0\r"                 # Numeric response code
                                                # AT compatible messages
                                                # Auto-Answer disabled
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.
            expect "1\r" busy "7\r" timeout 60  # Expect a connection response.
            done

retry:      send "A/"                           # Repeat the previous command.
            expect "1\r" busy "7\r" timeout 60  # Expect a connection response.
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0\r"                       # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "AT&F*E0E0\r"                  # Reset to factory defaults.
```

```
                                        # *E0=data compression disabled
                                        # E0=echo disabled
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT#F0*Q2\r"           # Trellis modulation disabled
                                        # Retrain with adaptive rate
            expect "0\r" or "OK\r\n" timeout 2  # Confirm commands successful
            send "ATV0X0S0=2\r"         # Numeric response code
                                        # AT compatible messages
                                        # Answer on 2nd ring
            expect "0\r" timeout 2      # Confirm commands successful.
            done

waitcall:   ignore "2\r" timeout 1      # Ignore first ring.
            expect "2\r" timeout 10     # Pick up second ring
                                        #  or timeout.
                                        # Expect a connection response.
            expect "1\r" timeout 60
            done

page:       send "ATD%N,%R\r"           # %N = pager call center number
                                        # commas=6sec wait time to
                                        #   enter paging number.
                                        # %R = return number
            expect "0\r" or "3\r" timeout 30    # Confirm successful command.
            delay 2                     # Wait before hanging up.
            send "+++"                  # Assure command mode.
            delay 2                     # Allow mode switching delay.
            send "ATH0\r"               # Hang up.
            expect "0\r" timeout 2      # Confirm successful command.
            done

ripo:       send "AT&F*E0E0\r"          # Reset to factory defaults.
                                        # *E0=data compression disabled
                                        # E0=echo disabled
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "AT#F0*Q2\r"           # Trellis modulation disabled
                                        # Retrain with adaptive rate
            expect "0\r" or "OK\r\n" timeout 2  # Confirm successful command.
            send "ATV0X0S0=0\r"         # Numeric response code
                                        # AT compatible messages
                                        # Auto-Answer disabled
            expect "0\r" timeout 2      # Confirm commands successful.
            done                        #

error:                                  # Handle unexpected modem
                                        #  responses.
            expect "8\r" or "7\r" or "4\r" or "3\r"
            delay 2
            done
```

## Sample File modem_z.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP Z
#
# FUNCTIONS: Modem configuration file for many early Hayes* compatible modems.
#  This example uses the ATZ reset command to choose the factory defaults.
#  This setup will work for many modems, but it is required for early vintage
#  modems which respond to neither the ATZ0 reset command nor the extended (&)
#  commands.  Refer to your modem manual.
#
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#
#
# If the modem has configuration switches, they should be set to the
# factory default settings.

ICDelay 1
DefaultTO 10
CallDelay 120
#  AT  Attention Code             ,   Inserts delay in dialing commands
#  Z   Reset to factory defaults Q0   Turn on responses
#  E0  Turn echo off             Q1   Turn off responses
#  V0  Use numeric responses     S0=0 Automatic answer inhibit
# +++  Escape to command mode    S0=2 Answer on second ring
#  H0  Hang-up                   T =  Tone mode.  When used as T\r, it is a
#                                     no op to maintain program synchronization
#                                     when modem may/will echo the commands.
#
#  %N  Call-Out phone number    %P   Paging phone number
#  %S  Modem speed (available to users)
#
# Following are common responses from a wide range of modems:
# 16, 15, 12, 10, 5 and 1 are connection responses.  Add others as required.
# 7=busy; 6=no dial tone; 4=error; 3=no carrier; 2=ring; 0=OK
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "ATZQ0T\r"                    # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                     # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0T\r"                   #  Limit response codes.
            expect "0\r" timeout 2             # Confirm commands successful.
            send "ATS0=0\r"                    # Set AutoAnswer OFF
            expect "0\r" timeout 2             # Confirm command successful.
            done

connect:    send "ATDT%N\r"                    # Tone dialing command.
                                               # %N from Call Home setup.

                                               # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

retry:      send "A/"                          # Repeat the previous command.

                                               # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
```

```
 timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "ATZQ0T\r"                     # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0T\r"                    #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=2\r"                     # Set AutoAnswer ON
            expect "0\r" timeout 2              # Confirm command successful.
            done

waitcall: ignore "2\r" timeout 1                # Ignore first ring.
          expect "2\r" timeout 10               # Pick up second ring
                                                #  or timeout.
                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r"
 timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number

                                                # Confirm successful command.
            expect "0\r" timeout 60
            delay 2                             # Wait before hanging up.
            send "ATH0T\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "ATZQ0T\r"                     # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0T\r"                    #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            done                                # RI Power On enabled.

error:                                          # Handle unexpected modem
                                                #  responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

## Sample File modem_z0.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP Z0
#
# FUNCTIONS: Modem configuration file for some early Hayes* compatible modems.
#  This example uses the ATZ0 reset command to choose the factory defaults.
#  This setup is recommended for modems that will respond to the ATZ0 command
#  and which do not respond to the extended (&) commands.  Refer to your modem
#  manual.
#
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#
#
# If the modem has configuration switches, they should be set to the
# factory default settings.

ICDelay 1
DefaultTO 10
CallDelay 120
#  AT  Attention Code            ,   Inserts delay in dialing commands
#  Z0  Reset. Restore Profile 0 Q0   Turn on responses
#  E0  Turn echo off            Q1   Turn off responses
#  V0  Use numeric responses    S0=0 Automatic answer inhibit
# +++  Escape to command mode   S0=2 Answer on second ring
#  H0  Hang-up                  X0=0 Limit modem response codes
#                               T =  Tone mode.  When used as T\r, it is a
#                                    no op to maintain program synchronization
#                                    when modem may/will echo the commands.
#
#  %N  Call-Out phone number    %P   Paging phone number
#  %S  Modem speed (available to users)
#
# Following are common responses from a wide range of modems:
# 16, 15, 12, 10, 5 and 1 are connection responses.  Add others as required.
# 7=busy; 6=no dial tone; 4=error; 3=no carrier; 2=ring; 0=OK
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "ATZ0Q0T\r"                    # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

retry:      send "A/"                           # Repeat the previous command.

                                                # Expect a connection response.
```

```
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "ATZ0Q0T\r"                    # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=2\r"                     # Set AutoAnswer ON
            expect "0\r" timeout 2              # Confirm command successful.
            done

waitcall: ignore "2\r" timeout 1                # Ignore first ring.
          expect "2\r" timeout 10               # Pick up second ring
                                                #  or timeout.
                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r"
 timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number

                                                # Confirm successful command.
            expect "0\r" timeout 60
            delay 2                             # Wait before hanging up.
            send "ATH0T\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "ATZ0Q0T\r"                    # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            done                                # RI Power On enabled.

error:                                          # Handle unexpected modem
                                                #  responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

## Sample File modem_f.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP F
#
# FUNCTIONS: Modem configuration file for many recent Hayes* compatible modems.
#  This example uses the AT&F reset command to choose the factory defaults.
#  This set up is preferred for modems with extended (&) commands.  For early
#  vintage modems, setup Z or Z0 is recommended.  If your modem responds to
#  the extended (&) commands and to factory default choices (&Fn), setup file
#  F0 or F1 is recommended.
#
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#
#
# If the modem has configuration switches, they should be set to the
# factory default settings.

ICDelay 1
DefaultTO 10
CallDelay 120
#  AT  Attention Code            ,   Inserts delay in dialing commands
#  &F  Reset to default profile Q0   Turn on responses
#  E0  Turn echo off            Q1   Turn off responses
#  V0  Use numeric responses    S0=0 Automatic answer inhibit
# +++  Escape to command mode   S0=2 Answer on second ring
#  H0  Hang-up                  X0=0 Limit modem response codes
#                               T =  Tone mode.  When used as T\r, it is a
#                                    no op to maintain program synchronization
#                                    when modem may/will echo the commands.
#
# &C1  Detect CD                &D2  Respond to DTR (often the default)
#
#  %N  Call-Out phone number    %P   Paging phone number
#  %S  Modem speed (available to users)
#
# Following are common responses from a wide range of modems:
# 16, 15, 12, 10, 5 and 1 are connection responses.  Add others as required.
# 7=busy; 6=no dial tone; 4=error; 3=no carrier; 2=ring; 0=OK
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "AT&FQ0T\r"                    # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2\r"                   # Detect carrier and DTR.
            expect "0\r" timeout 2              # Confirm command successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
```

```
            done

retry:      send "A/"                           # Repeat the previous command.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "AT&FQ0T\r"                    # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=2\r"                     # Set AutoAnswer ON
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2\r"                   # Detect carrier and DTR.
            expect "0\r" timeout 2              # Confirm command successful.
            done

waitcall: ignore "2\r" timeout 1                # Ignore first ring.
          expect "2\r" timeout 10               # Pick up second ring
                                                #  or timeout.
                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r"
 timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number

                                                # Confirm successful command.
            expect "0\r" timeout 60
            delay 2                             # Wait before hanging up.
            send "ATH0T\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "AT&FQ0T\r"                    # Reset to factory defaults.
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2\r"                   # Detect carrier and DTR.
            expect "0\r" timeout 2              # Confirm command successful.
            done                                # RI Power On enabled.

error:                                          # Handle unexpected modem
```

```
                                        #  responses.
expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
delay 2
done
```

## Sample File modem_f0.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP F0
#
# FUNCTIONS: Modem configuration file for many recent Hayes* compatible modems.
#  This example uses the AT&F0 reset command to choose the factory defaults.
#  This set up is preferred for modems with extended (&) commands.  For early
#  vintage modems, setup Z or Z0 is recommended.  If your modem responds to
#  the extended (&) commands and to factory default choices (&Fn), but doesn't
#  work properly with this setup file, setup F1 is recommended.
#
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#
#
# If the modem has configuration switches, they should be set to the
# factory default settings.

ICDelay 1
DefaultTO 10
CallDelay 120
#  AT  Attention Code             ,   Inserts delay in dialing commands
# &F0  Reset. Restore profile 0 Q0   Turn on responses
#  E0  Turn echo off            Q1   Turn off responses
#  V0  Use numeric responses    S0=0 Automatic answer inhibit
# +++  Escape to command mode   S0=2 Answer on second ring
#  H0  Hang-up                  X0=0 Limit modem response codes
#                               T =  Tone mode.  When used as T\r, it is a
#                                    no op to maintain program synchronization
#                                    when modem may/will echo the commands.
#
# &C1  Detect CD                &D2  Respond to DTR (often the default)
# &R1  Ignore RTS (CTS)
#
#  %N  Call-Out phone number    %P   Paging phone number
#  %S  Modem speed (available to users)
#
# Following are common responses from a wide range of modems:
# 16, 15, 12, 10, 5 and 1 are connection responses.  Add others as required.
# 7=busy; 6=no dial tone; 4=error; 3=no carrier; 2=ring; 0=OK
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "AT&F0Q0T\r"                   # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.

                                                # Expect a connection response.
```

```
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

retry:      send "A/"                           # Repeat the previous command.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "AT&F0Q0T\r"                   # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=2\r"                     # Set AutoAnswer ON
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
            done

waitcall: ignore "2\r" timeout 1                # Ignore first ring.
          expect "2\r" timeout 10               # Pick up second ring
                                                #  or timeout.
                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r"
 timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number

                                                # Confirm successful command.
            expect "0\r" timeout 60
            delay 2                             # Wait before hanging up.
            send "ATH0T\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "AT&F0Q0T\r"                   # Reset modem. Select profile 0
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
```

```
            done                                # RI Power On enabled.

error:                                          # Handle unexpected modem
                                                #  responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

## Sample File modem_f1.cfg

```
#
# COMPONENT_NAME: (ESPSETUP) ENTRY SERVICE PROCESSOR SETUP F1
#
# FUNCTIONS: Modem configuration file for many recent Hayes* compatible modems.
#  This example uses the AT&F1 reset command to choose the factory defaults.
#  This set up is for modems with extended (&) commands and which do not work
#  properly with setup F0.  For early vintage modems, setup Z or Z0 is
#  recommended.
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#
#
# If the modem has configuration switches, they should be set to the
# factory default settings.

ICDelay 1
DefaultTO 10
CallDelay 120
#  AT  Attention Code             ,   Inserts delay in dialing commands
# &F1  Reset. Restore profile 1 Q0   Turn on responses
#  E0  Turn echo off            Q1   Turn off responses
#  V0  Use numeric responses    S0=0 Automatic answer inhibit
# +++  Escape to command mode   S0=2 Answer on second ring
#  H0  Hang-up                  X0=0 Limit modem response codes
#                               T =  Tone mode.  When used as T\r, it is a
#                                    no op to maintain program synchronization
#                                    when modem may/will echo the commands.
#
# &C1  Detect CD                &D2  Respond to DTR (often the default)
# &R1  Ignore RTS (CTS)
#
#  %N  Call-Out phone number    %P   Paging phone number
#  %S  Modem speed (available to users)
#
# Following are common responses from a wide range of modems:
# 16, 15, 12, 10, 5 and 1 are connection responses.  Add others as required.
# 7=busy; 6=no dial tone; 4=error; 3=no carrier; 2=ring; 0=OK
#
# PROGRAMMING NOTE: No blanks between double quote marks (").

condout:    send "AT&F1Q0T\r"                   # Reset modem. Select profile 1
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
            done

connect:    send "ATDT%N\r"                     # Tone dialing command.
                                                # %N from Call Home setup.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
```

```
 timeout 60
            done

retry:      send "A/"                           # Repeat the previous command.

                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r" busy "7\r"
 timeout 60
            done

disconnect:
            delay 2                             # Separate from previous data.
            send "+++"                          # Assure command mode.
            delay 2                             # Allow mode switching delay.
            send "ATH0T\r"                      # Set modem switch-hook down
                                                #  (i.e., hang up).
            ignore "0\r" or "OK\r" timeout 2    # Ignore modem response.
            send "ATE0Q1\r"                     # Initialize modem: Echo OFF,
                                                #  Disable responses.
            ignore "0\r" timeout 1
            done

condin:     send "AT&F1Q0T\r"                   # Reset modem. Select profile 1
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=2\r"                     # Set AutoAnswer ON
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
            done

waitcall: ignore "2\r" timeout 1                # Ignore first ring.
          expect "2\r" timeout 10               # Pick up second ring
                                                #  or timeout.
                                                # Expect a connection response.
 expect "16\r" or "15\r" or "14\r" or "12\r" or "10\r" or "5\r" or "1\r"
 timeout 60
            done

page:       send "ATDT%N,,,,%R;\r"              # %N = pager call center number
                                                # Add enough commas to wait for
                                                #  time to enter paging number.
                                                # %R = paging number

                                                # Confirm successful command.
            expect "0\r" timeout 60
            delay 2                             # Wait before hanging up.
            send "ATH0T\r"                       # Hang up.
            expect "0\r" timeout 2              # Confirm successful command.
            done

ripo:       send "AT&F1Q0T\r"                   # Reset modem. Select profile 1
            ignore "0\r" or "OK\r\n" timeout 2  # Ignore modem response.
            send "ATE0T\r"                      # Initialize modem: Echo OFF,
            expect "0\r" or "OK\r\n" timeout 2  #  Enable responses (Numeric),
            send "ATQ0V0X0T\r"                  #  Limit response codes.
            expect "0\r" timeout 2              # Confirm commands successful.
            send "ATS0=0\r"                     # Set AutoAnswer OFF
            expect "0\r" timeout 2              # Confirm command successful.
            send "AT&C1&D2&R1\r"                # Detect carrier and DTR,
                                                #  Ignore RTS.
            expect "0\r" timeout 2              # Confirm command successful.
            done                                # RI Power On enabled.
```

```
error:                                          # Handle unexpected modem
                                                #  responses.
            expect "8\r" or "7\r" or "6\r" or "4\r" or "3\r"
            delay 2
            done
```

# Appendix E. SSA Problem Determination Procedures

Problem determination procedures are provided by power-on self-tests (POSTs), service request numbers (SRNs), and maintenance analysis procedures (MAPs). Some of these procedures use the system service aids that are described in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.

## Disk Drive Module Power-On Self-Tests (POSTs)

**Attention:** Disk drive modules are fragile and must be handled with care. Follow all ESD-sensitive parts procedures when handling disk drive modules. For ESD information, see “Handling Static-Sensitive Devices” on page 310.

The disk drive module POSTs start each time the module is turned on or when a **Send Diagnostic** command is received from the SSA adapter. The POSTs verify that the disk drive module is working correctly. The POSTs also help verify a repair after a FRU has been exchanged.

There are two power-on self-tests: POST-1 and POST-2.

- POST-1 runs immediately after the ‘power-on reset’ line goes inactive, and before the disk drive module motor starts. The following are tested by POST-1:
  - Microprocessor
  - ROM
  - Safety circuits

  If POST-1 completes successfully, POST-2 is enabled.

  If POST-1 fails, the disk drive module check light stays on, and the disk drive module is not configured into the SSA network.
- POST-2 runs after the disk drive module motor has started. The following are tested by POST-2:
  - Motor control
  - Servo control
  - Read and write on the diagnostic cylinder (repeated for all heads)
  - Error checking and correction (ECC)

  If POST-2 completes successfully, the disk drive module is ready for use by the using system.

## Adapter Power-On Self-Tests (POSTs)

Power-on self-tests (POSTs) reside in the SSA adapter. These tests ensure that the adapter does not run the functional code until the hardware that uses the code has been tested. The hardware consists of only the adapter card and any memory DIMMs and fast-write cache modules that are attached to the adapter. Some POST failures cause the adapter to become unavailable to the system. Other POST failures allow the

adapter to be available, although some function may not be enabled. The particular tests that are run are related to the type of SSA adapter being used. If a POST fails and prevents the adapter from becoming available, an error is logged that indicates which FRUs must be exchanged for new FRUs.

# Appendix F. SSA Software and Microcode Errors

This appendix provides an explanation of serial storage architecture (SSA) software, service request numbers (SRNs), and microcode errors.

## Service Request Numbers (SRNs)

Service request numbers (SRNs) are generated for the SSA hot-swap disk drive by the system error-log analysis, system configuration code, diagnostics, and customer problem-determination procedures. SRNs help you to identify the cause of a problem, the failing field-replaceable units (FRUs), and the service actions that might be needed to solve the problem.

If you get an SRN that is not defined in the following table, see *Advanced SerialRAID Adapters User's Guide and Maintenance Information*, order number SA33-3285.

SSA documentation is available online. To access the online books, visit the following Web site:

`http://xenon.ssd.hursley.ibm.com/extweb/docs`

### SRN Table

Table 12 on page 429 lists the SRNs and describes the actions you should perform. The table columns are as follows:

| | |
|---|---|
| **SRN** | Service reference number |
| **FRU List** | FRU or FRUs that might be causing the problem (see also "FRU Names and Abbreviations Used in the SRN Table" on page 428) |
| **%** | Probability (by percentage) that the FRU is causing the problem |
| **Problem** | Description of the problem and the action you must take |

### Using the SRN Table

**Important:** You should have been sent here from SSA Maintenance Analysis Procedures (MAPs) or *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509. Do not start problem determination from the SRN table; always go to "SSA Maintenance Analysis Procedures (MAPs)" on page 75 first.

1. Locate the SRN in the table. If you cannot find the SRN, there is a problem with the diagnostics, the microcode, or the documentation. Call your support center for assistance.
2. Read carefully the "Action" you must perform for the problem. *Do not exchange FRUs unless you are instructed to do so*.
3. Normally exchange only one FRU at a time, starting from the top of the FRU list for that SRN. Always use instructions given in the page reference when exchanging FRUs. After each FRU is exchanged, go to ″MAP 410: Repair Checkout″ in *RS/6000 and @server pSeries Diagnostic Information for Multiple Bus Systems* to verify the repair.

## Software and Microcode Errors

Some SRNs indicate that a problem might have been caused by a software error or by a microcode error. If you have one of these SRNs, perform the following actions:

1. Make a note of the contents of the error log for the device that has the problem.
2. Go to the using system service aids and select **Display Vital Product Data** to display the VPD of the failing system. Make a note of the VPD for all the SSA adapters and disk drive modules.
3. Report the problem to your support center. The center can tell you whether you have a known problem and can, if necessary, provide you with a correction for the software or microcode.

## FRU Names and Abbreviations Used in the SRN Table

FRU names used in the table are as follows:

| FRU Name in Table | Definition |
|---|---|
| **6-pack assembly** | The disk drive modules, blank disk drive modules, and internal SSA cables, are connected to the 6-pack assembly. |
| **Blank Disk drive module** | This module must be installed in a slot that does not contain a disk drive module. This completes the SSA loop through the system unit. |
| **Disk drive module** | A disk drive assembly to a carrier that plugs into the 6-pack assembly in the system unit. |
| **External SSA cable** | A cable that connects the bulkhead to the SSA adapter or to an SSA subsystem. |
| **Internal SSA cable** | A cable that attaches the 6-pack assembly to the SSA adapter card. |
| **SSA adapter card** | The SSA adapter card, which is located in the using system. |

Abbreviations used in the table are as follows:

| Abbreviation in Table | Definition |
|---|---|
| **DMA** | Direct memory access |
| **FRU** | Field-replaceable unit |
| **IOCC** | Input/output channel controller |
| **PAA** | P = adapter port number<br>AA = SSA address |
| **POS** | Programmable option select (POS registers) |
| **POST** | Power-on self-test |

*Table 12. Service Request Numbers*

| SRN | FRU List | % | Problem |
|---|---|---|---|
| 10101 | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.) | 100 | **Description:** Disk drive motor stopped. The disk drive module is bad.<br>**Action:** If this SRN was received by one disk drive module only, then exchange that disk drive module. |
| 10112 | None | – | **Description:** Format degraded. A format operation has been ended before it has completed.<br>**Action:** Use the Format service aid to format the disk drive module. |
| 1*xxxx* | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.) | 100 | **Description:** Disk drive module error.<br>**Action:** Exchange the FRU for a new FRU.<br>**Note:** In this SRN, an *x* represents a digit from 0 to F. |
| 20PAA | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**SSA adapter card** (See the installation guide and the service guide for the using system.)<br>**External SSA Cables**<br>**6-pack assembly** (See "Removing Six-Position SCSI (SES) or SSA Disk Drive Bays" on page 358.)<br>**Internal SSA Cable** | 45<br>45<br>6<br>2<br>2 | **Description:** An open SSA link has been detected.<br>**Action:** Run the Link Verification Service Aid to isolate the failure. If the SSA service aids are not available:<br>• When the failing device is an SSA hot-swap disk drive, go to "SSA Maintenance Analysis Procedures (MAPs)" on page 75.<br>• When the failing device is not an SSA hot-swap disk drive, go to the service information for that device. |
| 21PAA to 29PAA | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**SSA adapter card** (See the installation guide and the service guide for the using system.)<br>**External SSA Cables**<br>**6-pack assembly** (See "Removing Six-Position SCSI (SES) or SSA Disk Drive Bays" on page 358.)<br>**Internal SSA Cable** | 45<br>45<br>6<br>2<br>2 | **Description:** An SSA threshold-exceeded-link error has been detected.<br>**Action:** Run the Link Verification Service Aid to isolate the failure. If the SSA service aids are not available:<br>• When the failing device is an SSA hot-swap disk drive, go to "SSA Maintenance Analysis Procedures (MAPs)" on page 75.<br>• When the failing device is not an SSA hot-swap disk drive, go to the service information for that device. |
| 2A002 | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**SSA adapter card** (See the installation guide and the service guide for the using system.) | 50<br>50 | **Description:** Async code 02 has been received. A software error has probably occurred.<br>**Action:** Go to "Software and Microcode Errors" on page 428 before exchanging any FRUs. |
| 2A003 | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**SSA adapter card** (See the installation guide and the service guide for the using system.) | 50<br>50 | **Description:** Async code 03 has been received. A software error has probably occurred.<br>**Action:** Go to "Software and Microcode Errors" on page 428 before exchanging any FRUs. |

*Table 12. Service Request Numbers (continued)*

| SRN | FRU List | % | Problem |
|---|---|---|---|
| 2A004 | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**SSA adapter card** (See the installation guide and the service guide for the using system.) | 50<br>50 | **Description:** Async code 04 has been received. A software error has probably occurred.<br>**Action:** Go to "Software and Microcode Errors" on page 428 before exchanging any FRUs. |
| 2A005 | **6-pack assembly** (See "Removing Six-Position SCSI (SES) or SSA Disk Drive Bays" on page 358.) | – | **Description:** Async code 05 has been received. This code indicates that a disk drive module has detected a loss of power.<br>**Action:** Use the Link Verification Service Aid to determine if any devices are missing from the SSA link.<br>• If a device is missing, go to "SSA Maintenance Analysis Procedures (MAPs)" on page 75 to isolate the problem.<br>• If no device is missing, the problem might have been caused by a temporary, or partial, loss of power to the SSA hot-swap disk drive. |
| 2A006 | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**6-pack assembly** (See "Removing Six-Position SCSI (SES) or SSA Disk Drive Bays" on page 358.) | 70<br>30 | **Description:** Async code 06 has been received. This code indicates that a disk drive module has detected the loss of one of its power inputs.<br>**Action:**<br>• If the failing device is an SSA hot-swap disk drive, go to "SSA Maintenance Analysis Procedures (MAPs)" on page 75, exchange the disk drive module.<br>• If the failing device is not an SSA hot-swap disk drive, go to the service information for that device. |
| 2A106 | **6-pack assembly** (See "Removing Six-Position SCSI (SES) or SSA Disk Drive Bays" on page 358.) | 100 | **Description:** Async code 06 has been received. This code indicates that multiple disk drive modules have detected the loss of one of their power inputs.<br>**Action:**<br>• If the failing devices are SSA hot-swap disk drives, exchange the 6-pack assembly.<br>• If the failing devices are not SSA hot-swap disk drives, go to the service information for those devices. |

*Table 12. Service Request Numbers (continued)*

| SRN | FRU List | % | Problem |
|---|---|---|---|
| 2A206 | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.) | 100 | **Description:** A disk drive module has detected that one of its SSA links has failed the POSTs.<br>**Action:**<br>1. Use the Link Verification Service Aid to determine where the SSA link is broken.<br>2. Run diagnostics in the system verification mode to the two disk drive modules that are nearest to, and on each side of, the place where the link is broken. The diagnostics show which disk drive module detected the problem. |
| 2FFFF | None | – | **Description:** An async code that is not valid has been received.<br>**Action:** Go to "Software and Microcode Errors" on page 428. |
| 300C0 | **6-pack assembly** (See "Removing Six-Position SCSI (SES) or SSA Disk Drive Bays" on page 358.) | 100 | **Description:** A disk drive module has detected the loss of one of its power inputs.<br>**Action:**<br>• If the failing device is an SSA hot-swap disk drive, exchange the 6-pack assembly.<br>• If the failing device is not an SSA hot-swap disk drive, go to the service information for that device. |
| 301C0 | **6-pack assembly** (See "Removing Six-Position SCSI (SES) or SSA Disk Drive Bays" on page 358.) | 100 | **Description:** Multiple disk drive modules have detected the loss of one of their power inputs.<br>**Action:**<br>• If the failing devices are SSA hot-swap disk drives, exchange the 6-pack assembly.<br>• If the failing devices are not SSA hot-swap disk drives, go to the service information for those devices. |
| 303FE | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.) | 100 | **Description:** A disk drive microcode error has been detected.<br>**Action:** Go to "Software and Microcode Errors" on page 428 before exchanging any FRUs. |
| 303FF | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.) | 100 | **Description:** A SCSI status that is not valid has been received.<br>**Action:** Go to "Software and Microcode Errors" on page 428 before exchanging any FRUs. |
| 33PAA | **External SSA cables**<br>**Internal SSA connections**<br>**Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**SSA adapter card** (See "Replacing Adapter Cards" on page 332.) | 30<br>30<br>30<br><br>10 | **Description:** Excessive link reconfigurations have been detected.<br>**Action:** Go to "MAP 2323: SSA hot-swap disk drive Intermittent Link Verification" on page 80 before exchanging any FRUs. |

*Table 12. Service Request Numbers (continued)*

| SRN | FRU List | % | Problem |
|---|---|---|---|
| 34000 | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**External SSA cables**<br>**Internal SSA connections**<br>**SSA adapter card** (See "Replacing Adapter Cards" on page 332.) | 90<br><br><br><br>5<br>5 | **Description:** The adapter cannot initialize a device. This problem might be badly affecting the SSA loop. If the device is part of a RAID array, you may not be able to list this disk drive using the RAID facilities.<br>**Action:** Replace the FRU with a new FRU. |
| 40000 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** The SSA adapter card has failed.<br>**Action:** Exchange the FRU for a new FRU. |
| 40016 through 42540 | | | **Action:** Go to *Advanced SerialRAID Adapters User's Guide and Maintenance Information*, order number SA33-3285. |
| 43PAA | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**SSA adapter card** (See the installation guide and the service guide for the using system.) | 90<br><br><br>10 | **Description:** An SSA device on the link is preventing the completion of the link configuration.<br>**Action:** If the SSA service aids are available, run the Link Verification Service Aid to determine which device is preventing configuration. (That device is the one beyond the last-configured device on an open SSA link.)<br><br>Run **Set Service Mode** on the failed pdisk. Attempt to configure the failing device. If device cannot be configured, replace the failing FRU. |
| 44PAA | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.) | 100 | **Description:** A disk drive module has failed.<br>**Action:** If the SSA service aids are available, run the Link Verification Service Aid to find the failing disk drive module.<br><br>Run **Set Service Mode** on the failed pdisk.<br><br>Before you exchange the failing disk drive module, run diagnostics in the system verification mode to the module to determine the cause of the problem. Replace the indicated failing FRU. |
| 45PAA | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**External SSA Cables**<br>**6-pack assembly** (See "Removing Six-Position SCSI (SES) or SSA Disk Drive Bays" on page 358.) | 40<br><br>40<br>20 | **Description:** The SSA adapter has detected an open SSA link. This problem is caused either by a disk drive module that is failing, or by a disk drive module that has been switched off from another using system on the same SSA link. (That using system has itself been switched off.)<br>**Action:** If the SSA service aids are available, run the Link Verification Service Aid to determine which device is preventing configuration. (That device is the one beyond the last-configured device on an open SSA link.) Attempt to configure the failing device. If device cannot be configured, replace the failing FRU. |

*Table 12. Service Request Numbers (continued)*

| SRN | FRU List | % | Problem |
|---|---|---|---|
| 46000 through 47500 | | | **Action:** Go to *Advanced SerialRAID Adapters User's Guide and Maintenance Information*, order number SA33-3285. |
| 48000 | None | – | **Description:** The SSA adapter has detected a link configuration resource that is not valid.<br>**Action:** See "SSA Loop Configurations That Are Not Valid" on page 436. |
| 48500 through 4BPAA | | | **Action:** Go to *Advanced SerialRAID Adapters User's Guide and Maintenance Information*, order number SA33-3285. |
| 50000 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** The SSA adapter failed to respond to the device driver.<br>**Action:** Exchange the FRU for a new FRU. |
| 50001 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** A data parity error has occurred.<br>**Action:** Exchange the FRU for a new FRU. |
| 50002 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** An SSA adapter direct memory access (DMA) error has occurred.<br>**Action:** Exchange the FRU for a new FRU. |
| 50004 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** A channel check has occurred.<br>**Action:** Exchange the FRU for a new FRU. |
| 50005 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** A software error has occurred.<br>**Action:** Go to "Software and Microcode Errors" on page 428 before exchanging the FRU. |
| 50006 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** A channel check has occurred.<br>**Action:** Exchange the FRU for a new FRU. |
| 50007 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** The input/output channel controller (IOCC) detected an internal error.<br>**Action:** Exchange the FRU for a new FRU. |
| 50008 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** Unable to read or write the POS registers.<br>**Action:** Exchange the FRU for a new FRU. |
| 50010 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** An SSA adapter or device drive protocol error has occurred.<br>**Action:** Go to "Software and Microcode Errors" on page 428 before exchanging the FRU. |
| 50012 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** The SSA adapter microcode is in a suspended state.<br>**Action:** Run diagnostics in System Verification mode to the SSA adapter.<br>• If the diagnostics fail, exchange the FRU for a new FRU.<br>• If the diagnostics do not fail, go to "Software and Microcode Errors" on page 428 before exchanging the FRU. |

*Table 12. Service Request Numbers (continued)*

| SRN | FRU List | % | Problem |
|---|---|---|---|
| 50100 | None | – | **Description:** An attempt was made to log an error against a pdisk that is not available to the using system.<br>**Action:** This problem has occurred for one of the following reasons:<br>• A user has deleted a pdisk from the system configuration. In such an instance, the hdisk that is related to the pdisk continues to operate normally. If the disk drive module tries to log an error, however, this SRN (50100) is produced. Enter the **cfgmgr** command to return the pdisk to the system configuration.<br>• A disk drive module has tried to log an error during system configuration. To find the failing disk drive module, run diagnostics to the disk drive modules that are connected to this SSA adapter. |
| 50200 through 504xx | | | **Action:** Go to *Advanced SerialRAID Adapters User's Guide and Maintenance Information*, order number SA33-3285. |
| 60000 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** The SSA adapter is missing from the expected configuration.<br>**Action:** Verify that the SSA adapter card is installed in the expected slot of the using system.<br>• If it is in the expected slot, exchange the FRU for a new FRU.<br>• If it is not in the expected slot, enter the **diag -a** command, and answer the questions that are displayed. |
| 60200 | **Disk drive module** (See "Removing Hot-Plug SSA Disk Drives" on page 324.)<br>**6-pack assembly** (See "Removing Six-Position SCSI (SES) or SSA Disk Drive Bays" on page 358.) | 98<br>2 | **Description:** The 7133 or other SSA enclosure or the SSA 6-pack assembly cannot be turned on.<br>**Action:**<br>1. Make sure that power is applied to the 7133 or other SSA enclosure or that the power cables are properly connected to the SSA 6-pack assembly.<br>2. Make sure that the Diagnostics questions were answered correctly before replacing any of the items in the FRU list. Questions about the 7133 subsystem power and check light should have been answered as ″No″ when an SSA 6-pack assembly is installed in the system.<br>3. Replace the disk drive module.<br>4. If the problem remains, replace the SSA 6-pack assembly. |

*Table 12. Service Request Numbers (continued)*

| SRN | FRU List | % | Problem |
|---|---|---|---|
| 60210 | **Disk drive module** (See “Removing Hot-Plug SSA Disk Drives” on page 324.) | 100 | **Description:** The disk drive module failed the diagnostic test.<br>**Action:** Exchange the FRU for a new FRU. |
| 60240 | **Disk drive module** (See “Removing Hot-Plug SSA Disk Drives” on page 324.)<br>**6-pack assembly** (See “Removing Six-Position SCSI (SES) or SSA Disk Drive Bays” on page 358.) | 98<br>2 | **Description:** A configuration problem has occurred. A device cannot be configured, for some unknown reason.<br>**Action:**<br>1. Replace the disk drive module. If more than one DASD is suspect, replace it with its amber check light either blinking or steady.<br>2. If the problem remains, replace the 6-pack assembly. |
| 7*xxxx* | **Disk drive module** (See “Removing Hot-Plug SSA Disk Drives” on page 324.)<br>**6-pack assembly** (See “Removing Six-Position SCSI (SES) or SSA Disk Drive Bays” on page 358.) | 80<br>20 | **Description:** A Service Processor module is missing from the expected configuration of the SSA loop.<br>**Action:** Replace the FRUs one at a time. Go to ″MAP 410: Repair Checkout″ in to verify each repair. |
| D0000 | **Disk drive module** (See “Removing Hot-Plug SSA Disk Drives” on page 324.) | 100 | **Description:** The using system cannot configure the disk drive module. This is probably a software problem.<br>**Action:**<br>1. Try again to configure the disk drive module.<br>2. If the problem remains, go to “Software and Microcode Errors” on page 428 before exchanging the FRU. |
| D0100 | **Disk drive module** (See “Removing Hot-Plug SSA Disk Drives” on page 324.) | 100 | **Description:** Unable to clear a disk drive module reservation.<br>**Action:** Exchange the FRU for a new FRU. |
| D0101 | **Disk drive module** (See “Removing Hot-Plug SSA Disk Drives” on page 324.) | 100 | **Description:** The disk drive module has been reserved since the diagnostics started. The disk drive module is in use.<br>**Action:** Release the disk drive module, and run the diagnostics again. |
| D0200 | **Disk drive module** (See “Removing Hot-Plug SSA Disk Drives” on page 324.) | 100 | **Description:** The disk drive module timed out while the diagnostics were running.<br>**Action:** Rerun the diagnostics. If the problem remains, exchange the FRU for a new FRU. |
| D0300 | **Disk drive module** (See “Removing Hot-Plug SSA Disk Drives” on page 324.) | 100 | **Description:** The disk drive module failed the diagnostic test. **Action:** Exchange the FRU for a new FRU. |
| D0400 | **Disk drive module** (See “Removing Hot-Plug SSA Disk Drives” on page 324.) | 100 | **Description:** The disk drive module is not ready while the diagnostics are running.<br>**Action:** Rerun the diagnostics. If the problem remains, exchange the FRU for a new FRU. |

*Table 12. Service Request Numbers (continued)*

| SRN | FRU List | % | Problem |
|---|---|---|---|
| D0450 | None | – | **Description:** A format operation is in progress. The format operation that was started on this disk drive module has not yet finished. A format operation can take up to 30 minutes to run.<br>**Action:** Wait for the format operation to finish before you run the diagnostics again. You can observe the progress of the format operation by running the format service aid again on this disk drive module. |
| D0460 | None | – | **Description:** A format operation has been degraded. The format operation that was started on this disk drive module did not finish. Possibly, the disk drive module was switched off while the format operation was running.<br>**Action:** Run the format service aid to format this disk drive module. |
| D4000 | **SSA adapter card** (See the installation and service guide for the using the system.) | 100 | **Description:** The diagnostics cannot configure the SSA adapter.<br>**Action:** Exchange the FRU for a new FRU. |
| D4100 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** The diagnostics cannot open the SSA adapter.<br>**Action:** Exchange the FRU for a new FRU. |
| D4300 | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** The diagnostics have detected an SSA adapter POST failure.<br>**Action:** Exchange the FRU for a new FRU. |
| D44xx | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** The diagnostics have detected that the SSA adapter has corrupted the microcode, but cannot download a new version of the microcode.<br>**Action:** Exchange the FRU for a new FRU.<br>**Note:** In this SRN, an x represents a digit 0 through F. |
| DFFFF | **SSA adapter card** (See the installation guide and the service guide for the using system.) | 100 | **Description:** A command or parameter that has been sent or received is not valid. This problem is caused either by the SSA adapter or by an error in the microcode.<br>**Action:** Go to “Software and Microcode Errors” on page 428 before exchanging the FRU. |
| D6PAA through SSA03 | | | **Action:** Go to *Advanced SerialRAID Adapters User’s Guide and Maintenance Information*, order number SA33-3285. |

## SSA Loop Configurations That Are Not Valid

**Note:** This section is related to SRN 48000.

SRN 48000 shows that the SSA loop contains more devices or adapters than are allowed. The following condition exists: the loop contains more than 48 devices.

If the SRN occurred when either you or the customer switched on the using system:

1. Switch off the using system.
2. Review the configuration that you are trying to make, and determine why that configuration is not valid.
3. Review “Rules for SSA Loops” on page 440.
4. Correct your configuration by reconfiguring the SSA cables or by removing the excess devices or adapters from the loop.
5. Switch on the using system.

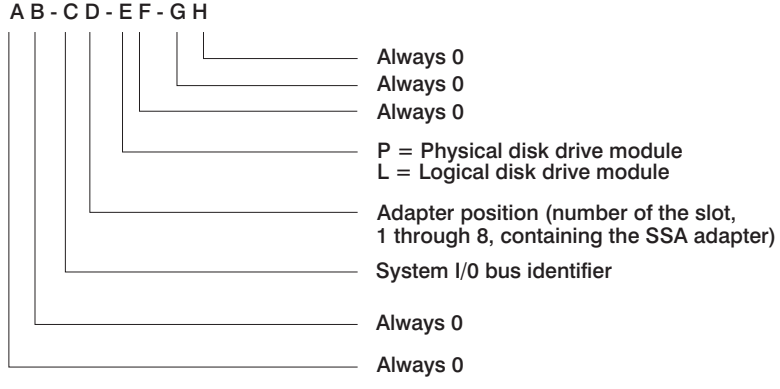
If the SRN occurred because additional devices or adapters were added to a working SSA loop:

1. Remove the additional devices or adapters that are causing the problem, and put the loop back into its original, working configuration.

   **Note:** You must perform step 1 to enable the configuration code to reset itself from the effects of the error.
2. Review “Rules for SSA Loops” on page 440.
3. Review the configuration that you are trying to make, and determine why that configuration is not valid.
4. Correct your system to a valid configuration.

## SSA Location Code Format

Location codes identify the locations of adapters and devices in the using system and their attached subsystems and devices. These codes are displayed when the diagnostic programs isolate a problem. For information about the location codes that are used by the using system, see the operator guide for the using system.




The location code shows only the position of the SSA adapter in the using system and the type of device that is attached. Use a service aid to find the location of the device

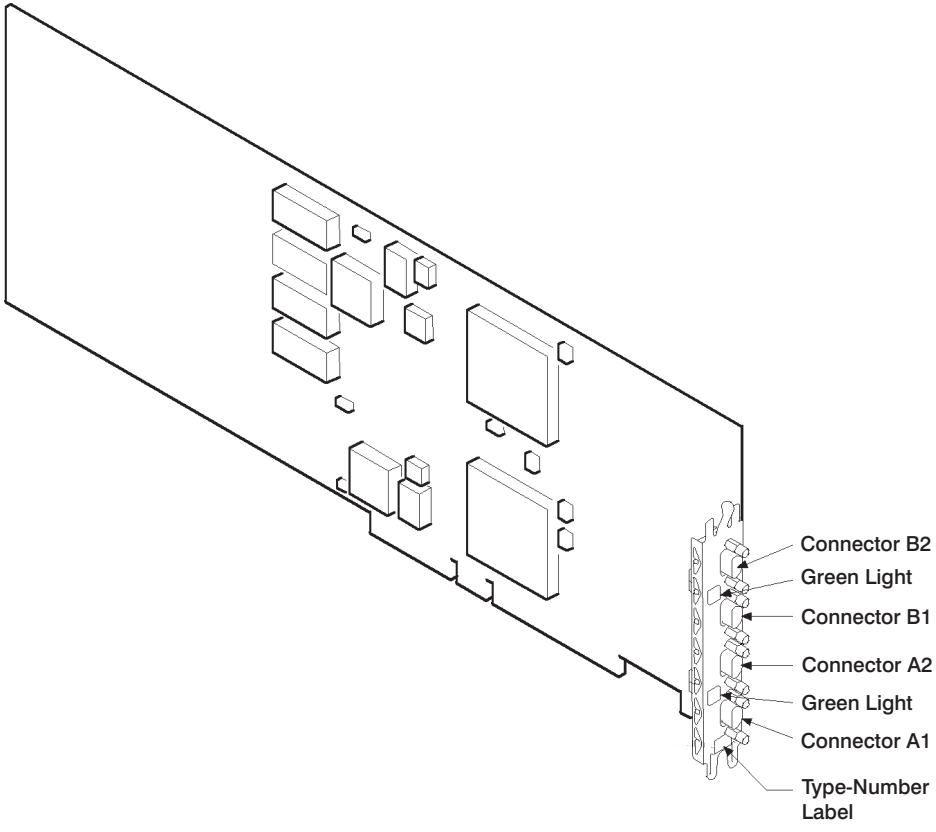
(disk drive module). For more information, see ″Using the Service Aids″ in *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User's Guide*

## SSA Loops and Links

The disk drive modules of the system unit are connected through two SSA links to an SSA adapter that is located in the using system. The disk drive modules, SSA links, and SSA adapter are configured in loops. Each loop provides a data path that starts at one connector of the SSA adapter and passes through a link (SSA cable) to the disk drive modules. The path continues through the disk drive modules, then returns through another link to a second connector on the SSA adapter.

## The SSA Adapter

The system unit can be attached to an SSA adapter. The adapter card has four SSA connectors that are arranged in two pairs. Connectors A1 and A2 are one pair; connectors B1 and B2 are the other pair.




The SSA links must be configured as loops. The loop is connected to the internal connectors at the SSA adapter card. These connectors *must* be a valid pair (that is, A1

and A2, or B1 and B2); otherwise, the disk drive modules on the loop are not fully configured, and the diagnostics fail. Operations to all the disk drive modules on a particular loop can continue if that loop breaks at any one point.

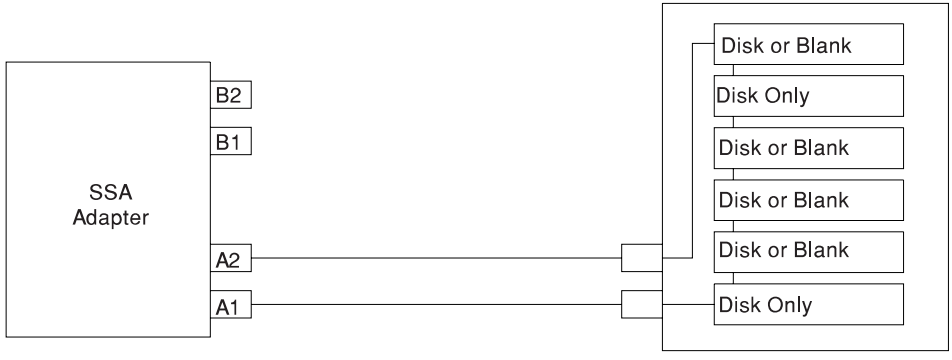
Each pair of connectors has a green light that indicates the operational status of its related loop:

| Status of Light | Meaning |
|---|---|
| Off | Both SSA connectors are inactive. If disk drive modules are connected to these connectors, either those modules are failing, or their SSA links have not been enabled. |
| Permanently on | Both SSA links are active (normal operating condition). |
| Slow flash | Only one SSA link is active. |

## Disk Drive Module Strings

In the system unit, the disk drive modules are arranged in a string of two to six disk drive modules. This string has its own two SSA connectors. This string is connected through an internal SSA cable to a pair of connectors on the SSA adapter to make an SSA loop. (The SSA cables provide the SSA links.)

The following diagram shows the relationships between the SSA connectors and the disk drive module string in a system unit.




## Pdisks, Hdisks, and Disk Drive Module Identification

The *physical disk drives* (**pdisks**) in an SSA subsystem can be configured as logical units (LUNs). A LUN is also known as an **hdisk**, and can consist of one or more physical disk drives. An hdisk in an SSA subsystem might, therefore, consist of one pdisk or several pdisks.

The configuration software also allocates an identification (hdisk and pdisk number) to each disk drive module during the configuration of the SSA link. The disk drive modules do not have fixed physical addresses.

The configuration software first recognizes the disk drive module by the machine-readable serial number that is written on the disk. Then, it assigns an

identification that is related to the position of the disk drive-module in the SSA string. After configuration, the disk drive module always has the same identification. It can be moved to any position on the SSA link, but can always be found by the software.

Service actions are always related to physical disk drives. For this reason, errors that occur on SSA disk drives are always logged against the physical disk drive (pdisk).

The numeric identifier of pdisks, hdisks, and disk drive module slots of the system unit are not related to each other. For example, pdisk1 is not necessarily installed in slot 1 of the six-pack.

The disk drive module serial number, on the label on the front of the carrier, is also displayed by the service aids. It is the last eight digits of the drive's IEEE SSA unique ID, which is stored on the drive's electronics card.

## Rules for SSA Loops

The following are rules for SSA loops:

- The SSA loop must be connected to the internal pair of connectors on the SSA adapter.
- Only one pair of adapter connectors can be connected to a particular SSA loop.
- A maximum of 18 disk drive modules can be connected in a particular SSA loop.
- A maximum of three dummy disk drive modules can be connected next to each other in a particular SSA loop.

## Loops and Data Paths

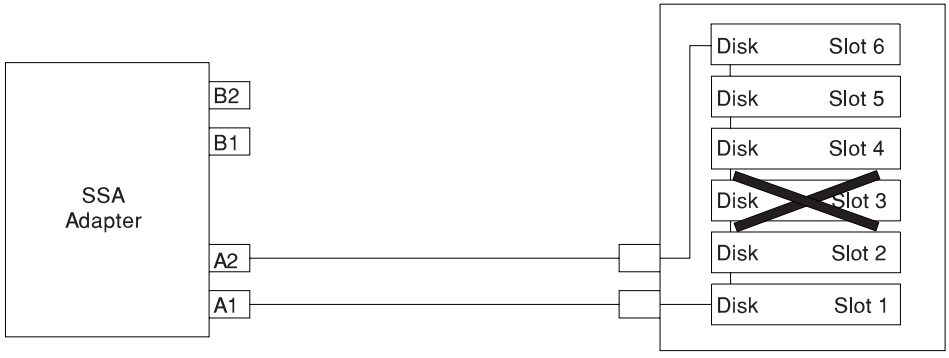
All devices that are attached to an SSA adapter card are connected through SSA links. The SSA links are configured as loops. Data and commands to a particular device pass through all other devices on the link between the adapter and the target device.

Data can travel in either direction around a loop. The adapter can, therefore, access the disk drive modules through two data paths. The using system cannot detect which data path is being used.

If a disk drive module fails or is turned off, the loop is broken and one of the data paths to a particular module is no longer available. The disk drive modules on the loop continue to work, but an error is reported to the using system.

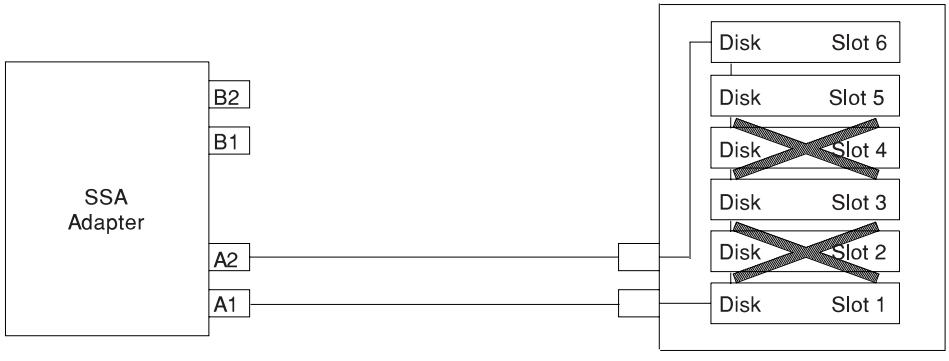
The following diagram shows that the disk drive module in slot 3 has failed. The disk drive modules in slots 1 and 2 can communicate with the using system only through connector A1 of the SSA adapter. The disk drive modules in slots 4, 5, and 6 can

communicate only through connector A2 of the SSA adapter.




If two or more disk drive modules are turned off, fail, or are removed from the loop, some modules might become isolated from the SSA adapter.

The following diagram shows that the disk drive modules in slots 2 and 4 have failed. The disk drive module in slot 1 can communicate with the using system only through connector A1 of the SSA adapter. The disk drive module in slots 5 and 6 can communicate with the using system only through connector A2 of the SSA adapter. The disk drive module in slot 3 is isolated from the SSA adapter.



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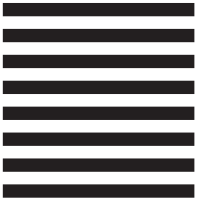


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