SMP
Thin and Wide Node
Service Guide
SMP
Thin and Wide Node
Service Guide
SERVICE mode (from disk) ........................................... 3-4
Service mode (from network boot) .............................. 3-4
Selecting a processor node boot response ...................... 3-4
IPLing processor nodes from network device (two methods) ................................................................................. 3-5
   Method one: network boot method ..................................... 3-6
   Method two: manual (hand-conditioning) method. .............. 3-6
Updating the Ethernet hardware address .......................... 3-6
Checking errors using “errpt” ........................................ 3-6
   Using the “errpt” command. ............................................ 3-6
   Interpreting “errpt” output for “sphwlog” errors .............. 3-7
   Sample “errpt −a ...” output report ............................... 3-7
Node supervisor self-test ............................................... 3-8
Node supervisor status verification using Perspectives ......... 3-9
Base code verification .................................................... 3-9
Updating the node supervisor code .................................. 3-10
Service position procedures ......................................... 3-10
   Placing a 332 MHz SMP or POWER3 SMP Thin and Wide Node into service position .......................... 3-10
   Replacing a 332 MHz SMP or POWER3 SMP Thin and Wide Node from service position .............................. 3-11
Resetting the clock and bootlist after servicing a node ......... 3-11
Installing firmware updates on SP nodes ........................ 3-12
Draining the NVRAM .................................................... 3-12
   Physically draining the NVRAM ...................................... 3-12
   Logically draining the NVRAM ....................................... 3-12
Memory test hang problem ............................................. 3-13
   General memory information ....................................... 3-13
   Problem resolution steps .......................................... 3-13
E1xx code boot problems .............................................. 3-14
Firmware utilities ....................................................... 3-15
   Text-based System Management Services ..................... 3-15
   Display configuration ................................................. 3-16
   Multiboot ............................................................. 3-17
   Utilities ............................................................. 3-20
   Select language ..................................................... 3-28
Open firmware command prompt .................................... 3-28
Service processor menus ............................................. 3-29
   Menu inactivity ...................................................... 3-29
   How to access service processor menus locally ............... 3-29
   How to access service processor menus remotely .......... 3-29
   Service processor menu options ................................. 3-29
   Main menu ........................................................... 3-31
   Service processor setup menu ..................................... 3-32
   System power control menu ....................................... 3-33
   System information menu ......................................... 3-35
   Language selection menu ......................................... 3-38
   Call-in/call-out setup menu ....................................... 3-39
   Set system name .................................................... 3-39
   Node power-on methods .......................................... 3-39
   Service processor reboot/restart recovery ..................... 3-39
   Service processor system monitoring - surveillance .......... 3-41
   Service processor flash EPROM updates (and system firmware) ......................................................... 3-42
   Service processor error logs ..................................... 3-44
   System POST errors ............................................. 3-44
Service processor operational phases ......................... 3-44
   Pre-standby phase ................................................. 3-44
   Standby phase ...................................................... 3-45
   Bring-up phase ..................................................... 3-45
Chapter 4. FRU removals and replacements
Handling static-sensitive devices
Service procedures for 332 MHz SMP Thin and Wide Nodes
Removing a 332 MHz SMP Thin Node
Replacing a 332 MHz SMP Thin Node
Removing a 332 MHz SMP Wide Node
Replacing a 332 MHz SMP Wide Node
Removing the CPU power assembly
Replacing the CPU power assembly
Removing the I/O expansion power assembly
Replacing the I/O expansion power assembly
Removing a fan
Replacing a fan
Removing the node supervisor card
Replacing the node supervisor card
Removing a DASD
Replacing a DASD
Removing the SCSI cable
Replacing the SCSI cable
Removing the SPS MX adapter card
Replacing the SPS MX adapter card
Removing a PCI adapter card
Replacing a PCI adapter card
Removing the service processor
Replacing the service processor
Removing a memory card
Replacing a memory card
Removing a CPU card
Replacing a CPU card
Removing the Thin Node I/O planar
Replacing the Thin Node I/O planar
Removing the Thin Node system planar
Replacing the Thin Node system planar
Removing the PCI riser card assembly
Replacing the PCI riser card assembly
Removing the optional SCSI cable
Replacing the optional SCSI cable
Removing the optional SCSI card
Replacing the optional SCSI card
Removing the interposer signal cable
Replacing the interposer signal cable
Removing the interposer card
Replacing the interposer card
Removing the power/supervisor cable
Replacing the power/supervisor cable
Removing the power cable assembly
Replacing the power cable assembly
Removing the I/O expansion planar
Replacing the I/O expansion planar
Removing the I/O expansion control cable
Replacing the I/O expansion control cable
Service procedures for POWER3 SMP Thin and Wide Nodes
Removing a POWER3 SMP Thin Node
Replacing a POWER3 SMP Thin Node
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1</td>
<td>Front view of frame locations</td>
<td>2-3</td>
</tr>
<tr>
<td>2-2</td>
<td>Front view of multi-switch frame locations</td>
<td>2-4</td>
</tr>
<tr>
<td>2-3</td>
<td>Front view of 49-inch frame locations</td>
<td>2-5</td>
</tr>
<tr>
<td>2-4</td>
<td>Rear view of frame locations</td>
<td>2-6</td>
</tr>
<tr>
<td>2-5</td>
<td>332 MHz SMP Node high level component diagram</td>
<td>2-7</td>
</tr>
<tr>
<td>2-6</td>
<td>Top view of 332 MHz SMP Node</td>
<td>2-8</td>
</tr>
<tr>
<td>2-7</td>
<td>332 MHz SMP Node rear view</td>
<td>2-9</td>
</tr>
<tr>
<td>2-8</td>
<td>Top view of 332 MHz SMP Thin Processor Node</td>
<td>2-10</td>
</tr>
<tr>
<td>2-9</td>
<td>332 MHz SMP Node I/O expansion planar</td>
<td>2-11</td>
</tr>
<tr>
<td>2-10</td>
<td>332 MHz SMP Node riser card</td>
<td>2-11</td>
</tr>
<tr>
<td>2-11</td>
<td>332 MHz SMP Node I/O planar</td>
<td>2-12</td>
</tr>
<tr>
<td>2-12</td>
<td>332 MHz SMP Node system planar</td>
<td>2-12</td>
</tr>
<tr>
<td>2-13</td>
<td>332 MHz SMP Node Memory card - DIMM locations</td>
<td>2-13</td>
</tr>
<tr>
<td>2-14</td>
<td>POWER3 SMP Wide Node high level component diagram</td>
<td>2-13</td>
</tr>
<tr>
<td>2-15</td>
<td>Top view of POWER3 SMP Wide Node</td>
<td>2-14</td>
</tr>
<tr>
<td>2-16</td>
<td>POWER3 SMP Wide Node rear view</td>
<td>2-14</td>
</tr>
<tr>
<td>2-17</td>
<td>Top view of POWER3 SMP Thin Node</td>
<td>2-15</td>
</tr>
<tr>
<td>2-18</td>
<td>POWER3 SMP Wide Node interposer card</td>
<td>2-15</td>
</tr>
<tr>
<td>2-19</td>
<td>POWER3 SMP Wide Node I/O expansion planar</td>
<td>2-16</td>
</tr>
<tr>
<td>2-20</td>
<td>POWER3 SMP Thin Node I/O planar</td>
<td>2-16</td>
</tr>
<tr>
<td>2-21</td>
<td>200 MHz POWER3 SMP Node system planan</td>
<td>2-17</td>
</tr>
<tr>
<td>2-22</td>
<td>375/450 MHz POWER3 SMP Thin Node system planan</td>
<td>2-17</td>
</tr>
<tr>
<td>2-23</td>
<td>POWER3 SMP Thin Node memory card - populating DIMMs.</td>
<td>2-18</td>
</tr>
<tr>
<td>2-24</td>
<td>POWER3 SMP Thin Node memory card - DIMM locations</td>
<td>2-18</td>
</tr>
<tr>
<td>2-25</td>
<td>RS/6000 SP connector details (as seen at receiving ends, not at cable ends)</td>
<td>2-19</td>
</tr>
<tr>
<td>2-26</td>
<td>Frame cabling routing path in rear of RS/6000 SP frame — 1.93 m and 1.36 m frames</td>
<td>2-20</td>
</tr>
<tr>
<td>2-27</td>
<td>Frame cabling routing path in rear of RS/6000 SP frame — 1.25 and 2.01 m frames</td>
<td>2-20</td>
</tr>
<tr>
<td>3-1</td>
<td>332 MHz SMP and POWER3 SMP Thin and Wide Node LEDs</td>
<td>3-8</td>
</tr>
<tr>
<td>3-2</td>
<td>Multiboot menu, POWER3 SMP example</td>
<td>3-17</td>
</tr>
<tr>
<td>3-3</td>
<td>332 MHz SMP Node Utilities menu</td>
<td>3-20</td>
</tr>
<tr>
<td>3-4</td>
<td>POWER3 SMP Node Utilities menu</td>
<td>3-21</td>
</tr>
<tr>
<td>4-1</td>
<td>Handling an anti-static device</td>
<td>4-3</td>
</tr>
<tr>
<td>4-2</td>
<td>332 MHz SMP Node high level component diagram</td>
<td>4-4</td>
</tr>
<tr>
<td>4-3</td>
<td>332 MHz SMP Node (top view)</td>
<td>4-5</td>
</tr>
<tr>
<td>4-4</td>
<td>332 MHz SMP Thin and Wide Nodes</td>
<td>4-6</td>
</tr>
<tr>
<td>4-5</td>
<td>332 MHz SMP Node power assemblies</td>
<td>4-9</td>
</tr>
<tr>
<td>4-6</td>
<td>332 MHz SMP Node power assembly components</td>
<td>4-10</td>
</tr>
<tr>
<td>4-7</td>
<td>332 MHz SMP Node Thin Node components (1 of 2)</td>
<td>4-14</td>
</tr>
<tr>
<td>4-8</td>
<td>332 MHz SMP Node Thin Node components (2 of 2)</td>
<td>4-18</td>
</tr>
<tr>
<td>4-9</td>
<td>332 MHz SMP Node I/O expansion assembly components</td>
<td>4-20</td>
</tr>
<tr>
<td>4-10</td>
<td>332 MHz SMP Node I/O expansion control cable</td>
<td>4-24</td>
</tr>
<tr>
<td>4-11</td>
<td>POWER3 SMP Thin and Wide Node high level component diagram</td>
<td>4-25</td>
</tr>
<tr>
<td>4-12</td>
<td>POWER3 SMP Thin and Wide Node (top view)</td>
<td>4-26</td>
</tr>
<tr>
<td>4-13</td>
<td>POWER3 SMP Thin and Wide Nodes</td>
<td>4-27</td>
</tr>
<tr>
<td>4-14</td>
<td>POWER3 SMP Thin and Wide Node power assemblies</td>
<td>4-29</td>
</tr>
<tr>
<td>4-15</td>
<td>POWER3 SMP Thin and Wide Node power assembly components</td>
<td>4-30</td>
</tr>
<tr>
<td>4-16</td>
<td>POWER3 SMP Thin Node components (1 of 2)</td>
<td>4-34</td>
</tr>
<tr>
<td>4-17</td>
<td>POWER3 SMP Thin Node components (2 of 2)</td>
<td>4-38</td>
</tr>
<tr>
<td>4-18</td>
<td>POWER3 SMP Wide Node I/O expansion assembly components</td>
<td>4-40</td>
</tr>
<tr>
<td>4-19</td>
<td>POWER3 SMP Wide Node I/O expansion control cable</td>
<td>4-44</td>
</tr>
</tbody>
</table>
# Tables

1-1. 332 MHz SMP Node environmental conditions ........................................ 1-2
1-2. 332 MHz SMP Node supervisor diagnostics ............................................. 1-4
1-3. 332 MHz SMP Node 48-volt sensing diagnostics ....................................... 1-5
1-4. 332 MHz SMP Node service actions .......................................................... 1-6
1-5. 332 MHz SMP Thin or Wide Node control diagnostics ............................... 1-14
1-6. 332 MHz SMP Thin or Wide Node advanced diagnostics ............................ 1-17
1-7. 332 MHz SMP Thin or Wide Node reset diagnostics .................................. 1-18
1-8. 332 MHz SMP Thin or Wide Node Perspectives LCD diagnostics ............... 1-20
1-9. POWER3 SMP Thin and Wide Node environmental conditions ................... 1-28
1-10. POWER3 SMP Thin and Wide Node supervisor diagnostics ....................... 1-30
1-11. POWER3 SMP Thin and Wide Node 48-volt sensing diagnostics ................. 1-30
1-12. POWER3 SMP Thin and Wide Node service actions ................................ 1-32
1-13. POWER3 SMP Thin or Wide Node control diagnostics ............................ 1-40
1-14. POWER3 SMP Thin or Wide Node advanced diagnostics .......................... 1-43
1-15. POWER3 SMP Thin or Wide Node reset diagnostics ................................ 1-44
1-16. POWER3 SMP Thin or Wide Node Perspectives LCD diagnostics ............... 1-46
2-1. External cable routing ................................................................. 2-21
3-1. Selectable processor node boot responses .............................................. 3-5
3-2. Service processor menus and menu options ............................................ 3-29
5-1. 332 MHz Symmetric MultiProcessor (SMP) Thin and Wide Nodes ............ 5-3
5-2. 332 MHz SMP Thin Node assembly (F/C 2050) (view 1) ............................ 5-5
5-3. 332 MHz SMP Thin Node assembly (F/C 2050) (view 2) ........................... 5-7
5-4. 332 MHz SMP Thin Node assembly (F/C 2050) (view 2) ........................... 5-9
5-5. 332 MHz SMP Wide Node assembly (F/C 2051) (view 1) .......................... 5-11
5-6. 332 MHz SMP Wide Node assembly (F/C 2051) (view 2) ......................... 5-13
5-7. 332 MHz SMP Wide Node assembly (F/C 2051) (view 3) .......................... 5-15
5-8. 332 MHz SMP I/O Expansion assembly (view 1) ..................................... 5-17
5-9. 332 MHz SMP I/O Expansion assembly (view 2) ..................................... 5-19
5-10. 332 MHz SMP I/O Expansion assembly (view 3) .................................... 5-21
5-11. POWER3 Symmetric MultiProcessor (SMP) Thin and Wide Nodes ...... 5-23
5-12. POWER3 SMP Thin Node assembly (F/C 2052/2056) (view 1) ................. 5-25
5-13. POWER3 SMP Thin Node assembly (F/C 2052/2056) (view 2) ................. 5-27
5-14. POWER3 SMP Thin Node assembly (F/C 2052/2056) (view 3) ................. 5-29
5-15. POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 1) ................. 5-31
5-16. POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 2) ................. 5-33
5-17. POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 3) ................. 5-35
5-18. POWER3 SMP Wide Node I/O Expansion assembly (view 1) ..................... 5-37
5-19. POWER3 SMP Wide Node I/O Expansion assembly (view 2) ..................... 5-39
5-20. POWER3 SMP Wide Node I/O Expansion assembly (view 3) ..................... 5-41
5-21. 332 MHz SMP Thin and Wide Node DASD part numbers ......................... 5-42
5-22. 200 MHz and 375/450 MHz POWER3 SMP Thin and Wide Node DASD part numbers 5-42
5-23. Memory DIMMs/cards ............................................................................. 5-42
5-24. Memory DIMMs/cards ............................................................................. 5-43
5-25. Memory DIMMs/cards ............................................................................. 5-43
A-1. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware error codes ................................................................. A-2
A-2. Service processor error codes ................................................................. A-18
A-3. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node memory module PD bits ......................................................... A-29
A-4. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node bus SRN to FRU reference table .................................................. A-30
A-5. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node service processor checkpoints ....................................................... A-31

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A-6. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware checkpoints. A-35
Safety and environmental notices

For general information concerning safety, refer to Electrical Safety for IBM Customer Engineers, S229-8124. For a copy of the publication, contact your IBM account representative or the IBM branch office serving your locality.

Safety notices

The following is a list of all safety notices (in English only) pertaining to SP hardware maintenance tasks from this and other RS/6000 SP hardware publications. Translations of each of the safety notices into other languages are included in [RS/6000 SP: Safety Information].

- **DANGER** notices warn you of conditions or procedures that can result in death or severe personal injury.
- **CAUTION** notices warn you of conditions or procedures that can cause personal injury that is neither lethal nor extremely hazardous.

Each notice contains a reference number (SPSFXXX) which you can use to help find a specific notice in other languages.

**Danger notices**

**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. (SPSF001)

**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. (SPSF002)

**DANGER**

In the U.S., Canada, and Japan, this product has a 4-wire power cable with a 4-prong plug. Use this power cable with a correctly grounded power receptacle to prevent possible electric shock. (SPSF003)
DANGER

Before you connect the power cable of this product to ac power, verify that the power receptacle is correctly grounded and has the correct voltage. (SPSFD004)

DANGER

During an electrical storm, do not connect or disconnect any cable that has a conductive outer surface or a conductive connector. (SPSFD005)

DANGER

Switch off power and unplug the machine power cable from the power receptacle, before removing or installing any part that is connected to primary power. (SPSFD006)

DANGER

To prevent possible electrical shock during machine installation, relocation, or reconfiguration, connect the primary power cable only after connecting all electrical signal cables. (SPSFD007)

DANGER

High voltage present. Perform "Lockout safety procedures" to remove primary power to the frame. (SPSFD008)

DANGER

High voltage present. Perform "Lockout safety procedures" to remove primary power to the frame (and high-voltage transformer if present). (SPSFD009)

DANGER

High voltage present at test points. Use high voltage test probes. (SPSFD010)

DANGER

High energy present. Do not short 48V to frame or 48VRtn. Shorting will result in system outage and possible physical injury. (SPSFD011)

DANGER

If a unique power module fails, all LEDs will be off. The high voltage LED will be off even though the high voltage is still present. (SPSFD012)
DANGER

The remaining steps of the procedure contain measurements that are taken with power on. Remember that hazardous voltages are present. (SPSFD013)

DANGER

The frame main circuit breaker and the controller must not be switched on again now.

Before disconnecting the power cables from the power receptacles, ensure that the customer’s branch distribution circuit breakers (customer power source circuit breakers) are Off and tagged with DO NOT OPERATE tags, S229-0237. Refer to “Lockout safety procedures” in RS/6000 SP: System Service Guide, before proceeding. (SPSFD014)

DANGER

Before connecting ac power cables to electrical outlets, ensure that:

- The customer’s branch distribution circuit breakers (customer power source circuit breakers) are off and tagged with DO NOT OPERATE tags, S229-0237 (or national language equivalent).
- The activities in “Performing the Customer 50/60 Hz Power Receptacle Safety Check” have been performed on all customer power source outlets and cable connectors. (SPSFD015)

DANGER

Ensure that the customer’s branch distribution circuit breakers (customer power source circuit breakers) to the ac power outlets are off and tagged with DO NOT OPERATE tags, S229-0237 (or national language equivalent). (SPSFD016)

DANGER

Both the SEPBU power chassis and the PDU 48 V dc power chassis are field replaceable units (FRUs) which contain NO serviceable parts; they are labeled as such. Do not attempt to isolate or repair these components, since doing so may result in severe injury or even death. (SPSFD017)

Caution notices

CAUTION:

The weight of the PDU assembly, 48 V dc power chassis, and the SEPBU power chassis is greater than 18 Kg (40 lbs). Be careful when removing or installing. Remove all 48 V dc power supplies from the power chassis before removing or installing the power chassis. (SPSFC001)

CAUTION:

The unit weight exceeds 18 Kg (40 lbs) and requires two service personnel to lift. (SPSFC002)
CAUTION:
The covers are to be closed at all times except for service by trained service personnel. (SPSFC003)

CAUTION:
When the unit is being serviced, the covers should not be left off or opened while the machine is running unattended. (SPSFC004)

CAUTION:
Due to weight of each thin node (under 18 Kg [40 lbs]), use care when removing and replacing thin nodes above shoulder height. (SPSFC005)

CAUTION:
The wide node weight may exceed 32 Kg (70.5 lbs). (SPSFC006)

CAUTION:
Do not open more than one wide node or switch assembly drawer at a time. (SPSFC007)

CAUTION:
Make sure the stability foot and wheel chocks are installed on the frame. These are required to maintain frame balance and position during service operations. (SPSFC008)

CAUTION:
Outer edges of chassis may be sharp. Care must be taken when removing and installing chassis. (SPSFC009)

CAUTION:
The ground strip may have sharp edges. (SPSFC010)

CAUTION:
Do not remove wide nodes or switch assemblies from the mounting slides. Caution must be observed when working with mounting slides to prevent pinched fingers or accidental release of the unit. (SPSFC011)

CAUTION:
Do not remove the drawer case mounting screws at the bottom of both sides. (SPSFC012)

CAUTION:
Once the latch is released, push the drawer closed. Do not pull, as the drawer may disengage from the rails, creating a safety hazard. (SPSFC013)

CAUTION:
Due to the weight of each wide node, use care when sliding and closing wide processor nodes above shoulder height. (SPSFC014)
CAUTION:

- When moving frames into position, team members should work together. Using one person on each corner of the frame can prevent strain.
- In raised floor installations, mechanically safe moldings should be installed around floor cutouts. Extreme caution should be used when moving frames during installation or removal because of the proximity of floor cutouts to casters. (SPSFC015)

CAUTION:

When using step ladder or step stool, be sure that the work surface is level and the step ladder or step stool is in good working order. (SPSFC016)

CAUTION:

Portable ladders present a serious safety hazard if not used properly. Follow these general guidelines:
- Make sure the ladder is firm and steady, and has no defective rungs or braces.
- Work only on a level surface.
- Never use a metal ladder near electrical power lines.
- Never overreach. Instead, move the ladder.

Be as careful on a short ladder as on a 30-foot extension ladder. False security can lead to carelessness and falls which can cause painful injuries. (SPSFC017)

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. (SPSFC018)

Laser safety information

The RS/6000 SP might contain certain communication adaptors, such as ESCON or FDDI, which are fiber optic based and use lasers.

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.

Environmental notices

Product recycling and disposal

This product contains materials such as circuit boards, cables, electromagnetic compatibility gaskets, and connectors which might 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. You can find country-specific instructions at www.ibm.com/ibm/environment/products/prp.phtml.
This product might contain nickel-cadmium or lithium batteries in communication adapters. The batteries must be recycled or disposed of properly. Recycling facilities might not be available in your area. In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used sealed lead-acid, nickel-cadmium and nickel metal hydride batteries and battery packs from IBM equipment. For information on proper disposal of batteries in this product, please contact IBM at 1-800-426-4333. For information on disposal of batteries outside the United States, contact your local waste disposal or recycling facility.
About this book

This book is part of the RS/6000® SP™ hardware service library. This book applies to the following RS/6000 SP Nodes:

- 332 MHz SMP Thin or Wide Node
- POWER3 SMP Thin or Wide Nodes
  - 200 MHz POWER3 SMP Thin or Wide Node
  - 375/450 MHz Node POWER3 SMP Thin or Wide Node

Use this book to assist you in performing the following tasks:

- Identify field replaceable unit (FRU) locations
- Isolate RS/6000 SP failures using Maintenance Analysis Procedures (MAPs)
- Perform diagnostic service procedures
- Perform removal and replacement procedures
- Identify FRUs and their corresponding part numbers

If you are attempting to isolate an SP system failure, use the Maintenance Analysis Procedures (MAPs) beginning with the Start MAP in RS/6000 SP: System Service Guide (GA22-7442). For a listing of the complete RS/6000 SP hardware service library, see Related information.

Who should use this book

This book is intended for RS/6000 SP product-trained service personnel.

Related information

The following books make up the complete RS/6000 SP hardware service library:

- RS/6000 SP: Safety Information GA22-7467. Safety notices, in English and translated into other national languages, which are compiled from all the book in the library.
- RS/6000 SP: Installation and Relocation GA22-7441. Installation and relocation procedures, maintenance agreement and qualification procedures, frame and component identification information.
- RS/6000 SP: System Service Guide GA22-7442. General SP system service procedures, the system Start MAP, and MAPs and parts catalog for the frames and power subsystems. Use this book to begin a diagnostic procedure to isolate a problem to a specific major component of the SP system.
- RS/6000 SP: SP Switch Service Guide GA22-7443. Service procedures, MAPs, and parts catalog information specific to the SP Switch.
- RS/6000 SP: SP Switch2 Service Guide GA22-7444. Service procedures, MAPs, and parts catalog information specific to the SP Switch2.
- RS/6000 SP: Uniprocessor Thin and Wide Node Service Guide GA22-7445. Service procedures, MAPs, and parts catalog information specific to all uniprocessor-type nodes.
- RS/6000 SP: 604 and 604e SMP High Node Service Guide GA22-7446. Service procedures, MAPs, and parts catalog information specific to these nodes.
- RS/6000 SP: POWER3 SMP High Node Service Guide GA22-7448. Service procedures, MAPs, and parts catalog information specific to this node.

This book and other RS/6000 SP hardware and software documentation are available both on-line and, for some books, in printed form from the following sources:

• The Resource Center on the PSSP product media
• Printed and CD-ROM versions (which can be ordered from IBM)

For more information on these sources and an extensive listing of RS/6000 SP related publications, see the bibliography in [RS/6000 SP: Installation and Relocation]

### How to send your comments

Your feedback is important in helping to provide the most accurate and highest quality information. If you have any comments about this book or any other RS/6000 SP documentation:

• Send your comments by e-mail to mhvrdfs@us.ibm.com. Be sure to include the name of the book, the order number of the book, and, if applicable, the specific location of the text you are commenting on (for example, a page number or table number).

• Fill out one of the forms at the back of this book and return it by mail, by fax, or by giving it to an IBM® representative.
Summary of changes

GA22-7447-06
This edition replaces GA22-7447-05 and any update versions made to that level and makes them obsolete. Changes are limited to updating cross-book links and fixing a part number error for the I/O planar and system planar for the 450 Mhz node.

GA22-7447-05
This edition replaces GA22-7447-04 and any update versions made to that level and makes them obsolete. Changes include minor changes and corrections throughout the book.
- 375 MHz Thin and Wide Node names are changed to 375/450 MHz POWER3 SMP Thin (Wide) Node.

GA22-7447-04
This edition replaces GA22-7447-03 and any update versions made to that level and makes them obsolete. Changes include minor changes and corrections throughout the book.

GA22-7447-03
This edition replaces GA22-7447-02 and any update versions made to that level and makes them obsolete. This edition contains minor changes and corrections throughout the book.

GA22-7447-02
This edition replaces GA22-7447-01 and makes it obsolete. Changes in this book include adding cross-book links for reference links between this publication and the other RS/6000 SP hardware publications. These links assist navigating between documents, in the softcopy environment, when using the Adobe Acrobat Reader.

GA22-7447-01
This edition replaces GA22-7447-00 and makes it obsolete. Changes in this edition include:
- Added 375 MHz POWER3 SMP Thin and Wide Node information.

GA22-7447-00
First edition of the restructured RS/6000 SP hardware service library. This publication, along with the other SP service publications (see Related information on page xix), replaces The Maintenance Information Manuals Volumes 1–4 (GA22-7375, GA22-7376, GA22-7377, and GA22-7378) and makes them obsolete.
Chapter 1. Maintenance Analysis Procedures (MAPs)

This chapter provides information for identifying problems and guides you to the most likely failed Field Replaceable Unit (FRU) for the following RS/6000 SP nodes:

- "332 MHz SMP Node Thin and Wide Node MAPs"
- "POWER3 SMP Thin and Wide Node MAPs" on page 1-27

The MAPs then refer you to the FRU Removal/Replacement procedures for the corrective action.

**Attention:** Components in the frame are susceptible to damage from static discharge. Always use an ESD wristband when working inside frame covers. (See "Personal ESD requirements" on page 3-3 for more details.) Do not touch the pins or circuitry on these components.

### 332 MHz SMP Node Thin and Wide Node MAPs

- "332 MHz SMP Thin and Wide Node environment (MAP 0290)"
- "332 MHz SMP Thin and Wide Node power (MAP 0300)" on page 1-7
- "332 MHz SMP Thin and Wide Node control (MAP 0310)" on page 1-14
- "332 MHz SMP Thin and Wide Node minimum configuration (MAP 0320)" on page 1-22

### 332 MHz SMP Thin and Wide Node environment (MAP 0290)

**Note:** Refer to "Service position procedures" on page 3-10 for placing a node into the service position or for removing it from the service position.

**Step 0290-001**
You have detected an environmental problem that is affecting a processor node and "Processor node diagnostics and descriptions (MAP 0130) in RS/6000 SP: System Service Guide" directed you to this procedure.

1. Did you use a system message or an observed condition during your initial diagnosis of the environmental problem?
   - If you used a message displayed by the system for your initial diagnosis, go to "Step 0290-002".
   - If you an observed a system condition that led to your initial diagnosis, go to "Step 0290-005" on page 1-2.

**Step 0290-002**
A TTY message indicated "rc.powerfail" or when you issued the command `errpt -a | pg` the display indicated "Loss of Electric Power" associated with processor node.

1. Check the failing node’s error log by issuing `errpt -a | pg` on the affected node’s AIX® window to check for "Loss of Power" or warning messages.
2. Does the message indicate a loss of power or that the power is off?
   - If yes, go to "Step 0290-004" on page 1-2
   - If the message does not indicate that the power is off or that you have a power loss:
     a. If the message is a warning, go to "Step 0290-003"
     b. If the message is not a warning, go to "Step 0290-005" on page 1-2

**Step 0290-003**
The message you received was a warning.

1. Does the same message occur on more than one processor node?
   - If yes, notify the next level of support.
If the same message does not occur on more than one node, then no immediate service is required. At this point you can either:

- Defer the service action until a later date.
- Perform the service now by going to Step 0290-004 and treating the warning message as a “Shutdown” or “Failure” message.

**Step 0290-004**

A serious environmental condition has been detected in the processor node.

**Note:** If service action has just been completed on this processor node, check for loose cables or shorted conditions in the processor node.

Based on the text of the message, use Table 1-1 to continue service.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any power loss message</td>
<td>Go to Step 0290-005</td>
</tr>
<tr>
<td>&quot;...cooling problem...&quot; or fan problem</td>
<td>Go to &quot;Step 0290-022&quot; on page 1-6</td>
</tr>
<tr>
<td>&quot;...memory protect...&quot;</td>
<td>Go to &quot;Step 0290-025&quot; on page 1-7</td>
</tr>
</tbody>
</table>

**Step 0290-005**

You have observed a condition that indicates that a power problem exists.

1. Check the node supervisor green LED 1.
2. What is the status node supervisor LED 1?
   - If green LED 1 is On and it is not flashing, go to Step 0290-006.
   - If green LED 1 is flashing, go to Step 0290-007.
   - If green LED 1 is Off, go to 332 MHz SMP Thin and Wide Node power (MAP 0300) on page 1-7.

**Step 0290-006**

Node supervisor green LED 1 is On and it is not flashing.

1. Check the green LEDs on the power supplies.
2. Are the power supply’s LEDs lit?
   - If yes, go to Step 0290-010 on page 1-3
   - If no, go to Step 0290-007

**Step 0290-007**

Node supervisor green LED 1 is On but not flashing and the power supply LEDs are off.

Are the circuit breakers in the On position?
- If yes, go to Step 0290-008
- If no:
  1. Set the circuit breakers to the On position.
  2. Return to Step 0290-005

**Step 0290-008**

The power supply LEDs were not lit but the circuit breakers were in the On position.

1. Verify the 48 V input cables are plugged in at the rear of the node.
2. Is the 48 V power supply cable plugged properly?
   - If yes, go to Step 0290-009 on page 1-3
   - If no:
332 MHz SMP Thin and Wide Node environment (MAP 0290)

a. Properly connect the 48-volt power cables.
   **Attention:** Some 48-volt power cables have an in-line switch. Ensure the in-line switch is in the Off (O) position before connecting or disconnecting 48-volt power cables from the node.

b. Return to “Step 0290-005” on page 1-2

**Step 0290-009**
The power supply LEDs were not lit but the circuit breakers were in the On position and the 48-volt power cables were properly plugged in at the back of the node.

1. Check for 48-volts present on the power pins at the 332 MHz SMP Node end of the input cables.
   **Attention:** Some 48-volt power cables have an in-line switch. Ensure the in-line switch is in the Off (O) position before connecting or disconnecting 48-volt power cables from the node.
   - Measure the voltage between the voltage and the return pins.

2. Is there 48 volts present at the connectors?
   - If yes:
     - This indicates that there is a problem with 48-volt sensing.
     - Go to “Step 0290-016” on page 1-4
   - If no, go to “Step 0290-018” on page 1-5

**Step 0290-010**
You have a power problem but both the node supervisor LED 1 and the power supply (green LED) are on.

1. Is the CPU power supply green LED On but **not** flashing?
   - If yes, go to “Step 0290-011”
   - If no, go to “Step 0290-012”

**Step 0290-011**
The CPU power supply green LED is On but not flashing.

1. Check for airflow blockage, fan problems or other cooling problems with the node.

2. Do any of these problems exist?
   - If yes, go to “Step 0290-022” on page 1-6
   - If no:
     a. Verify that you have the correct processor node.
     b. Go to “Processor node diagnostics and descriptions (MAP 0130)” in **RS/6000 SP: System Service Guide**

**Step 0290-012**
Either LED 1 on the node supervisor or the green LED on the CPU power supply is indicating a problem.

- If this is a thin node, go to “Main power (MAP 0450)” in **RS/6000 SP: System Service Guide**
- If this is a wide node, check the green LED on the I/O power supply.
  1. If this LED is On or flashing, go to “Step 0290-013”
  2. If this LED is Off, return to “Step 0290-006” on page 1-2

**Note:** Wide nodes are composed of an I/O Expansion assembly attached to a thin node processor unit. The I/O Expansion assembly (left side) does **not** contain a supervisor card.

**Step 0290-013**
You have a wide node and the green LED on the I/O power supply is either On or flashing.

- If the green LED on the I/O power supply is **On**, go to “Processor node diagnostics and descriptions (MAP 0130)” in **RS/6000 SP: System Service Guide**
- If the green LED on the I/O power supply is **flashing**, check the yellow LEDs on the CPU and I/O power supply.
332 MHz SMP Thin and Wide Node environment (MAP 0290)

– If the yellow LEDs are Off, go to “Processor node diagnostics and descriptions (MAP 0130)” in RS/6000 SP: System Service Guide.
– If the yellow LEDs are On or flashing, go to “Step 0290-014”.

Step 0290-014
The green LED on the I/O power supply is flashing and the yellow LEDs on CPU and I/O power supply are either On or flashing.

• If the yellow LEDs are On, go to “Frame supervisor not responding (MAP 0110)” in RS/6000 SP: System Service Guide.
• If the yellow LEDs are flashing, check supervisor LEDs #3 and #4.
  – If either supervisor LEDs #3 or #4 is not flashing, go to “Processor node diagnostics and descriptions (MAP 0130)” in RS/6000 SP: System Service Guide.
  – If either supervisor LEDs #3 or #4 is flashing:
    1. Place the node into the service position.
    2. Use Table 1-2 to continue service.

Table 1-2. 332 MHz SMP Node supervisor diagnostics

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interposer connector cable</td>
<td>1. Replace cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Go to “Step 0290-015”</td>
</tr>
<tr>
<td>2</td>
<td>Interposer connector card</td>
<td>1. Replace card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Go to “Step 0290-015”</td>
</tr>
<tr>
<td>3</td>
<td>CPU or I/O power supply</td>
<td>1. Replace power assembly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Go to “Step 0290-015”</td>
</tr>
<tr>
<td>4</td>
<td>CPU I/O planar</td>
<td>1. Replace I/O planar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Go to “Step 0290-015”</td>
</tr>
<tr>
<td>5</td>
<td>All replaced</td>
<td>Call next level of support.</td>
</tr>
</tbody>
</table>

Step 0290-015
You performed a service action in Table 1-2.
1. Remove processor node from service position.
2. From the control workstation, power on the processor node.
3. Are supervisor LEDs #3 and/or #4 flashing?
   • If yes, return to Table 1-2 and replace the next highest priority component.
   • If no, go to “Step 0290-021” on page 1-6.

Step 0290-016
One of the following conditions exists:
• LED 1 on the node supervisor is On but the green LED on the power supply is Off. However, you are able to measure 48 volts between the voltage and return pins. This indicates that there is a problem with 48-volt sensing.
• The green LED on the I/O power supply is flashing and the yellow LEDs on CPU and I/O power supply are either On or flashing.
1. From the control workstation, power off the processor node.
2. Place the processor node in the service position.
3. Use Table 1-3 on page 1-5 to continue service.
Table 1-3. 332 MHz SMP Node 48-volt sensing diagnostics

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1 (1 of 6) | Service processor card         | 1. Replace card  
2. Go to "Step 0290-017"                                              |
| 2 (2 of 6) | I/O expansion control cable     | 1. Replace cable  
2. Go to "Step 0290-017"                                              |
| 3 (3 of 6) | CPU or I/O power supply         | 1. Replace power assembly.  
2. Go to "Step 0290-017"                                               |
| 4 (4 of 6) | I/O planar                      | 1. Replace planar  
2. Go to "Step 0290-017"                                               |
| 5 (5 of 6) | Power or power/supervisor cable | 1. Replace cable  
2. Go to "Step 0290-017"                                               |
| 6 (6 of 6) | All replaced                    | Call next level of support.                                            |

Step 0290-017
You performed a service action in Table 1-3.
1. Remove processor node from service position.
2. From the control workstation, power on the processor node.
3. Check the green LED on the power supply.
   • If the LED is Off or flashing, return to Table 1-3 and replace the next highest priority component.
   • If the LED is On, go to “Step 0290-021” on page 1-6.

Step 0290-018
LED 1 on the node supervisor is On but the green LED on the power supply is Off. Also, you were not able to measure 48 volts between the voltage and return pins. This indicates that there is a problem with the 48-volt supply.
1. Place the 332 MHz SMP node into the service position.
2. Replace the node supervisor card.
   • Refer to “Replacing the node supervisor card” on page 4-11
3. Take the 332 MHz SMP node out of the service position.
4. Is the green LED on the power supply Off or flashing?
   • If yes, go to "Step 0290-019”
   • If the power supply LED is On, go to “Step 0290-021” on page 1-6.

Step 0290-019
You replaced the node supervisor card but the green LED on the power supply is still Off or flashing.
1. Place the 332 MHz SMP node in service position.
2. Replace the power/supervisor cable.
   • Refer to “Replacing the power/supervisor cable” on page 4-22
3. Take the 332 MHz SMP node out of the service position.
4. Is the green LED on the power supply Off or flashing?
   • If yes, go to “Step 0290-020” on page 1-6
   • If the power supply LED is On, go to “Step 0290-021” on page 1-6.

Chapter 1. Maintenance Analysis Procedures (MAPs)  1-5
Step 0290-020
You replaced the node supervisor card and the power/supervisor cable but the green LED on the power supply is still Off or flashing.

1. Place the 332 MHz SMP node in service position.
2. Replace the front assembly FRU.
   - Refer to "Replacing the CPU power assembly" on page 4-7
3. Take the 332 MHz SMP node out of the service position.
4. Is the green LED on the power supply Off or flashing?
   - If yes, go to "Scalable Electrical Power Base Unit diagnostics (MAP 0540)" in RS/6000 SP: System Service Guide
   - If the power supply LED is On, go to "Step 0290-021"

Step 0290-021
You were able to correct the problem indicated by the LED status.

1. If necessary, remove the processor node from the service position.
2. Reconnect all cables at rear of the processor node.
3. Put circuit breakers at front of processor node in On ('1') position.

Step 0290-022
You have detected a cooling or fan problem with a node.

1. Place the processor node into the service position.
2. Use Table 1-4 to reseat or replace components.

   Table 1-4. 332 MHz SMP Node service actions
<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
</table>
   | 1 (1 of 5) | Fan 1, 2 (3, 4 if 332 MHz SMP Wide Node) | 1. Check specified fan for blockage or loose cable connection.  
   | | Note: See Figure 2-5 on page 2-7 | 2. Fix any obvious problem(s). If none are found, continue at Priority 2.  
   | | | 3. Continue at Step 0290-023 |
   | 2 (2 of 5) | Fan 1, 2 (3, 4 if 332 MHz SMP Wide Node) | 1. Replace fan and/or cooling module as described in "Service procedures for 332 MHz SMP Thin and Wide Nodes" on page 4-3.  
   | | Note: See Figure 2-5 on page 2-7 | 2. Fix any obvious problem(s).  
   | | | 3. Continue at Step 0290-023 |
   | 3 (3 of 5) | Front assembly FRU | 1. Replace assembly  
   | | | 2. Continue at Step 0290-023 |
   | 4 (4 of 5) | Power/supervisor cable | 1. Replace cable.  
   | | | 2. Continue at Step 0290-023 |
   | 5 (5 of 5) | All replaced | Call next level of support. |

Step 0290-023
You have replaced or reseated a component.

1. Remove the processor node from the service position.
2. Reconnect all cables at the rear of the processor node.
3. Put the circuit breakers at the front of processor node in the On (‘1’) position.

4. Check the error log or SRN.

5. Does the problem still exist?
   • If yes, go to “Step 0290-024”
   • If no:
     a. You have resolved the problem.
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.

**Step 0290-024**
You have replaced or reseated a component but the problem still exists.

1. Put circuit breakers at the front of the processor node in the Off (‘0’) position.

2. Reinstall the previously removed component.

3. Return to “Step 0290-022” on page 1-6 to service the next highest priority component listed in Table 1-4 on page 1-6.

**Step 0290-025**
You received a memory protection error and Table 1-1 on page 1-2 directed you to this location.

1. This fault is normally generated only when invalid memory cards are installed in the processor node.

2. Have memory parts been changed recently (since last successful IPL) in this processor node?
   • If yes, go to “Step 0290-027”
   • If no, go to “Step 0290-026”

**Step 0290-026**
You received a memory protection error but you have not changed any memory components.

1. Problem may be in the:
   • Base memory card
   • CPU card
   • I/O planar
   • Node supervisor control cable

2. Replace the listed parts, one at a time, until the problem is corrected or all components have been replaced.

3. Are you able to correct the problem?
   • If yes:
     a. You have resolved the problem.
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
   • If no, call the next level of support.

**Step 0290-027**
You changed some memory components and now you are receiving a memory protection error.

1. Check memory card and DIMM part numbers in RS/6000 pSeries: Diagnostic Information for Multiple Bus Systems (SA38-0509) and RS/6000: Adapters, Devices, and Cable Information for Multiple Bus Systems (SA38-0516) to ensure that they are compatible with the fastest Type 7025 machines.

   **Note:** Return to this procedure to continue service.

2. If necessary, call the next level of support.

**332 MHz SMP Thin and Wide Node power (MAP 0300)**

**Note:** Refer to “Service position procedures” on page 3-10 for placing nodes into the service position or for removing them from the service position.
**332 MHz SMP Thin and Wide Node power (MAP 0300)**

**Step 0300-001**
You have detected a power problem in either a 332 MHz SMP Thin or Wide Node and Processor node diagnostics and descriptions (MAP 0130) in *RS/6000 SP: System Service Guide* directed you to this procedure.

1. Ensure all power supply circuit breakers and 48-volt in-line switches for this node are in the ON (‘1’) position.
2. Is this a wide node or a thin node?
   - If this is a wide node, go to "Step 0300-002".
   - If this is a thin node, go to "Step 0300-003".

*Note:* Wide nodes are composed of an I/O Expansion assembly attached to a thin node processor unit. The I/O Expansion assembly (left side) does not contain a supervisor card.

**Step 0300-002**
You have a 332 MHz SMP Wide Node with a power problem. Make certain that the power interlock bar and tab on the I/O power assembly are engaged correctly. If they are correctly engaged, go to "Step 0300-003". Otherwise:

1. Reseat the I/O power assembly.
2. Make certain that the power interlock bar and tab are engaged correctly.
3. Have the problem symptoms changed?
   - If yes, go to "Processor node diagnostics and descriptions (MAP 0130)" in *RS/6000 SP: System Service Guide*.
   - If no, go to "Step 0300-003".

**Step 0300-003**
You have a 332 MHz SMP Thin Node with a power problem or a 332 MHz SMP Wide Node in which you have eliminated the I/O power supply as the source of the power problem.

1. Check green LED 1 on the node supervisor.
2. What is the status of node supervisor LED 1?
   - If green LED 1 is Off, go to "Step 0300-013" on page 1-10.
   - If green LED 1 is flashing, go to "Step 0300-004".
   - If green LED 1 is On and it is not flashing, you do not have a problem with the power supply.
     a. Verify that you have the proper processor node.
     b. Go to "Processor node diagnostics and descriptions (MAP 0130)" in *RS/6000 SP: System Service Guide*.

**Step 0300-004**
LED 1 (green) on the node supervisor card is flashing. this indicates that the processor node getting 48 V dc power however a problem exists in the supply.

*Attention:* Some 48-volt power cables have in-line switches. Ensure the in-line switches is in the Off (O) position before connecting or disconnecting 48-volt power cables from the node.

1. Make certain that all:
   - 48-volt power supply cables are connected.
   - Cable in-line switches are in the On position.
2. Check:
   - Node supervisor LED 3 on 332 MHz SMP Thin Nodes.
   - Node supervisor LED 3 and 4 on 332 MHz SMP Wide Nodes.
3. What is the status of the LEDs on the node supervisor card?
   - If either LED 3 or 4 is Off, go to "Step 0300-008" on page 1-9.
332 MHz SMP Thin and Wide Node power (MAP 0300)

- If the LEDs are On or flashing, go to "Step 0300-005".

**Step 0300-005**
LED 3 on a 332 MHz SMP Thin Node or LED 3 and 4 on a 332 MHz SMP Wide Node are either On or flashing. This indicates that the processor node is getting power.

1. Power On the RS/6000 logic from the control workstation using the Perspectives Node Status window.
2. Does green LED 1 light and stay lit?
   - If yes, go to "Step 0300-007".
   - If no, go to "Step 0300-006".

**Step 0300-006**
Node supervisor LED 3 and 4 (on wide nodes) indicate that the processor node is getting power but LED 1 does not stay lit.

1. Make certain that the front assembly power interlock bars and power interlock tabs are engaged properly.
2. Are the power interlock bars and tabs engaged properly?
   - If yes:
     a. This indicates that you may have an electrical short.
     b. Go to "332 MHz SMP Thin and Wide Node minimum configuration (MAP 0320)" on page 1-22
   - If no:
     a. Engage the front assembly power interlock bars and power interlock tabs.
     b. Go to "Step 0300-010" on page 1-10.

**Step 0300-007**
Node supervisor LED 3 and 4 (on wide nodes) are On or flashing and LED 1 lights and stays lit. This indicates the RS/6000 logic is getting power.

1. Does the node IPL properly?
   - If yes:
     a. No problem detected.
     b. Record reason for power-off condition.
     c. Go to "End of call MAP (MAP 0650)" in RS/6000 SP: System Service Guide
   - If no:
     a. Processor node has IPL problem.
     b. Go to "Processor node diagnostics and descriptions (MAP 0130)" in RS/6000 SP: System Service Guide

**Step 0300-008**
All 48-volt power supply cables are connected and the in-line switches are On but LED 3 on a 332 MHz SMP Thin Node or LED 3 or 4 on a 332 MHz SMP Wide Node were Off.

1. Check the yellow LED on the power supply.
2. Is the yellow LED On?
   - If yes, go to "Step 0300-009".
   - If no, go to "Step 0300-011" on page 1-10.

**Step 0300-009**
LED 3 on a 332 MHz SMP Thin Node or LED 3 or 4 on a 332 MHz SMP Wide Node were Off but the yellow LED on the power supply is On. This indicates that +48-volt power is present.

1. What is the status of the power supply’s power (green) LED?
   - If the green LED is flashing, go to "Step 0300-010" on page 1-10.
332 MHz SMP Thin and Wide Node power (MAP 0300)

- If the green LED is On and it is not flashing, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
- If the green LED is Off:
  - If this is the first time through this step:
    a. Exchange the power assembly.
    b. Return to “Step 0300-008” on page 1-9
  - If this is the second time through this step, go to “332 MHz SMP Thin and Wide Node minimum configuration (MAP 0320)” on page 1-22

Step 0300-010
LED 3 on a 332 MHz SMP Thin Node or LED 3 and 4 on a 332 MHz SMP Wide Node were Off but the yellow LED on the power supply is On and the green LED is flashing.

1. Switch the circuit breaker Off, then On.
2. Did the green LED light and the node IPL?
   - If yes, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
   - If no, go to “332 MHz SMP Thin and Wide Node environment (MAP 0290)”, “Step 0290-016” on page 1-22.

Step 0300-011
LED 3 on a 332 MHz SMP Thin Node or LED 3 and 4 on a 332 MHz SMP Wide Node were Off and the yellow LED on the power supply is also Off.

1. Make certain that the circuit breaker is On.
2. Was the circuit breaker On?
   - If yes:
     a. 48-volt power is not being supplied to the node.
     b. Go to “332 MHz SMP Thin and Wide Node environment (MAP 0290)”, “Step 0290-008” on page 1-2.
   - If the circuit breaker was not in the On position, go to “Step 0300-012”.

Step 0300-012
The yellow LED on the power supply is off and the circuit breaker is in the Off position.

1. Place the circuit breaker into the On position.
2. Does the circuit breaker switch On and stay in the On position?
   - If yes, return to “Step 0300-003” on page 1-8
   - If the circuit breaker switched On but then tripped Off:
     a. You may have a power supply problem or an electrical short.
     b. Go to “Step 0300-016” on page 1-11
   - If the circuit breaker would not switch On:
     a. Repair or replace the circuit breaker.
     b. Return to “Step 0300-008” on page 1-9

Step 0300-013
You arrived at this procedure from “Step 0300-003” on page 1-8 where you found LED 1 on the node supervisor card was off.

1. Check LED 5 (yellow) on the node supervisor card.
2. Is LED 5 Off?
   - If yes, go to “Step 0300-014” on page 1-11
   - If LED 5 is lit:
     a. This indicates that the base code loaded on the node supervisor needs to be updated.
332 MHz SMP Thin and Wide Node power (MAP 0300)

Step 0300-014
LED 5 (yellow) on the node supervisor card is off.

1. Check the green LED on the power supply.
2. Is the green LED also off?
   - If yes, go to "Step 0300-015"
   - If the green LED on the power supply is lit, go to "Step 0290-006" on page 1-2

Step 0300-015
Both LED 5 on the node supervisor card and the green LED on the power supply are off.

1. Check the circuit breakers at front of the power supplies.
   - If needed, put these circuit breakers in the On (‘1’) position.
2. Do the circuit breakers go (trip) to the Off (‘0’) position?
   - If yes, go to "Step 0300-016"
   - If no, go to "Step 0300-019" on page 1-12

Step 0300-016
The power supply circuit breaker is tripping to the Off (‘0’) position. This indicates that you have a power supply problem or an electrical short.

1. Place processor node in service position.
   - Attention: Some 48-volt power cables have in-line switches. Ensure the in-line switches is in the Off (O) position before connecting or disconnecting 48-volt power cables from the node.
2. Check the 48-volt bulk power harnesses for any obvious problems which might cause a short at the following locations:
   - The power supplies at the front of the node
   - All circuit breaker connections
   - All 48-volt bulk power connections
3. Does everything appear to be okay?
   - If yes, go to "Step 0300-017"
   - If no:
     a. Fix any obvious problems.
     b. Remove the processor node from the service position.
     c. Reconnect all cables at rear of the processor node.
     d. Return to "Step 0300-015"

Step 0300-017
You received an indication that there is either a problem with the power supply or that there is an electrical short in the system however, everything appears to be okay after a visual inspection.

1. Using a multimeter, check for an electrical short between the pins of the 48-volt input connectors (J8 at the rear of the node).
2. Did you detect an electrical short?
   - If yes, go to "Step 0300-018" on page 1-12
   - If no:
     a. Disconnect the 48-volt power cables from the SEPBU bulkhead.
     b. Using a multimeter, check for an electrical short between:
        - The pins in the 48-volt power cables.
332 MHz SMP Thin and Wide Node power (MAP 0300)

- Any pins in the node power plugs.
- If a short is detected, replace the 48-volt power cable.

c. Using a multimeter, check for an electrical short between any tabs in the circuit breakers.
   - If a short is detected, isolate it to either the cable or the circuit breaker and replace the corresponding part.

d. Remove processor node from the service position.

e. Reconnect all cables at the rear of the processor node.

f. Return to Step 0300-015 on page 1-11

Step 0300-018
You found an electrical short between the pins of the 48-volt input connectors (J8 at the rear of the node).

1. Using a multimeter, check for an electrical short between the pins of the power/supervisor connector at the rear of the front assembly.

2. Did you detect an electrical short?
   • If you **found** an electrical short:
     a. Replace the corresponding power assembly.
     b. Remove the processor node from the service position.
     c. Reconnect all cables at the rear of processor node.
     d. Return to Step 0300-015 on page 1-11
   • If you **did not** find an electrical short:
     a. Replace the power/supervisor cable in the logic part of the node.
     b. Remove the processor node from the service position.
     c. Reconnect all cables at the rear of the processor node.
     d. Return to Step 0300-015 on page 1-11

Step 0300-019
You have arrived at this procedure from either:

• Step 0300-013 on page 1-10 where you updated the base code on the node supervisor card.
• Step 0300-015 on page 1-11 where you found the green LED on the power supply was on and the circuit breakers **did not** trip to the Off position.

You now have to determine if the power problem is resolved or if additional diagnostic action is needed.

1. From control workstation or processor node, check LED 1 (green) on the node supervisor.

2. Is node supervisor LED 1 off or do you see ‘No Power to Node’ displayed on the control workstation?
   • If yes, go to Step 0300-020
   • If LED 1 is lit or you **do not** receive any power messages on the control workstation:
     a. You have resolved the problem.
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide

Step 0300-020
LED 1 on the node supervisor is off or you are receiving a ‘No Power to Node’ message on the control workstation.

1. Check any processor nodes connected to another dc power harness to see if they are powered on.
   • Make certain that the other processor nodes have their circuit breakers in the On (‘1’) position.

**Note:** 332 MHz SMP Nodes receive 48-volt power by connecting a power cable between the node and the SEPBU bulkhead following the order listed below:

| PDU-BH-P1: Processor nodes | 1, 2, 3, 4 |
| PDU-BH-P2: Processor nodes | 5, 6, 7, 8 |
| PDU-BH-P3: Processor nodes | 9, 10, 11, 12 |
2. On the other processor nodes, check the green LED 1 on the node supervisor for an On or Flashing condition.

3. Is LED 1 on any other processor node On or flashing?
   - If yes, go to "Step 0300-021"
   - If no, go to "Main power (MAP 0450)" in RS/6000 SP: System Service Guide

**Step 0300-021**
When you looked at processor nodes connected to other 48-volt power harnesses, you saw that LED 1 on the other nodes’ supervisor cards were On or flashing.

1. Check all other processor nodes on the same dc power harness as the failing processor node.
   - Look for the same symptom as the failing node - the circuit breaker is in the On position but LED 1 is not lit.

2. Is the failing processor node the only node showing this symptom?
   - If yes, go to "Step 0300-022"
   - If no:
     a. This indicates that there is a problem with the 48 V dc power distribution.
     b. Go to "Open in 48V dc distribution (MAP 0560)" in RS/6000 SP: System Service Guide

**Step 0300-022**
Only the failing processor has the symptom – the circuit breaker is in the On position but LED 1 is not lit.

1. Check the cable connections at the rear of the processor node and at the 48 V dc power distribution cable connection.

2. Is there a good connection?
   - If yes, go to "Step 0300-023"
   - If no:
     a. Fix the cable connection problem.
     b. Return to "Step 0300-019" on page 1-12

**Step 0300-023**
All 48-volt connections to the processor node are good and the circuit breaker on the failing processor node is in the On position but LED 1 is not lit.

1. Put the 48-volt input cable in-line switches in the “On” (1) position.

2. Check for 48-volts at the 332 MHz SMP Node end of the input cables.
   - Measure between the voltage and the return pins.

3. Is there 48 volts present at the connectors?
   - If yes, go to "Step 0300-025" on page 1-14
   - If no, go to "Step 0300-024"

**Step 0300-024**
You were not able to measure 48-volts across the voltage and return pins.

1. Voltage is missing at the input cables.

2. Replace the 48-volt input cables.

3. Are you able to measure 48-volts at the connector end?
   - If yes, go to "Step 0300-025" on page 1-14
   - If no, go to "Open in 48V dc distribution (MAP 0560)" in RS/6000 SP: System Service Guide
332 MHz SMP Thin and Wide Node power (MAP 0300)

Step 0300-025
You are able to measure 48-volts at the node end of the power cable.

1. Check the green LEDs on the power supply and make certain that the cooling fans are functioning.
2. Are the power supply LEDs On and the cooling fans functioning?
   - If yes, return to “Step 0300-003” on page 1-8
   - If no, go to “332 MHz SMP Thin and Wide Node environment (MAP 0290)” on page 1-2.

332 MHz SMP Thin and Wide Node control (MAP 0310)

Attention: If a 332 MHz SMP Thin or Wide Node is present in this frame, it is possible that the 48 V dc power distribution is spread across more than one power harness. Check physical connections from circuit breaker(s) to 48 V dc bulkhead connectors for actual power distribution.

Attention: The processor node(s) must be removed from active configuration before continuing. If processor node(s) is/are off, continue; otherwise, ask customers to initiate shutdown procedure and power-off processor node(s) from the control workstation, or defer maintenance until all jobs are completed. Powering off a processor node(s) in a parallel environment will cause all jobs to flush from the queue and switch initialization to rerun.

Attention: Servicing a processor node with an SP switch installed, will impact the entire switch network, unless the processor node has already been powered off (or fenced) and/or the switch data cable has been disconnected.

Note: Refer to “Service position procedures” on page 3-10 for placing processor nodes into the service position or for removing them from the service position.

Note: Refer to “Viewing Switch Partitions” in RS/6000 SP: SP Switch Service Guide or RS/6000 SP: SP Switch2 Service Guide for locating and fencing or unfencing nodes within a switch partition.

Step 0310-001
You have detected a control problem in either a 332 MHz SMP Thin or Wide Node and “Processor node diagnostics and descriptions (MAP 0130) in RS/6000 SP: System Service Guide directed you to this procedure. Use Table 1-5 to continue service.

Table 1-5. 332 MHz SMP Thin or Wide Node control diagnostics

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem with node power</td>
<td>Go to “332 MHz SMP Thin and Wide Node environment (MAP 0290)” on page 1-1</td>
</tr>
<tr>
<td>Perspectives LCD display is missing segments or remains blank</td>
<td>Go to “Step 0310-018” on page 1-19</td>
</tr>
<tr>
<td>Node will not reset</td>
<td>Go to “Step 0310-002” on page 1-15</td>
</tr>
<tr>
<td>No response from TTY console</td>
<td>• Close existing TTY window and open another.</td>
</tr>
<tr>
<td></td>
<td>• Go to “Step 0310-011” on page 1-17</td>
</tr>
<tr>
<td>Yellow or green LEDs on node will not light.</td>
<td>Go to “Step 0310-021” on page 1-21</td>
</tr>
</tbody>
</table>
Step 0310-002
A 332 MHz SMP Thin or Wide Node will not reset and Table 1-5 on page 1-14 directed you to this procedure.

1. Check with customer to make sure this processor node is not in the current active configuration.
   - If the processor node is not operational and actively working at this time, continue service.
   - If the processor node is operational and actively working, schedule a time convenient for the customer.

2. Reset the nodes from Perspectives.
   a. From the control workstation, open a Hardware Perspectives session.
   b. Select the Node Status tab.
   c. Click the power off button.
   d. From the new window, select “Reset”
   e. Click “Apply”

3. Does the node reset?
   - If yes, go to “Step 0310-003”
   - If no, go to “Step 0310-004”

Step 0310-003
You have a node that would not reset. However, you were able to reset it from Perspectives. This indicates that the node may have an intermittent problem.

1. Please record the following information:
   - Node number
   - Date and time the fault was reported
   - Type of fault reported.

2. Check the customer’s written logs and ask the customer if this fault has been previously recorded.
   - If the records indicate that this is a recurring problem, go to “Step 0310-009” on page 1-16.
   - If this is not a recurring problem, go to End of call MAP (MAP 0650) in RS/6000 SP: System Service Guide.

Step 0310-004
The processor node would not reset from Perspectives.

1. If necessary, open a Perspectives Hardware session.
   a. Select the Node Status tab.
   b. Click the power off button.
   c. From the new window, select “Shutdown”
   d. Click “Apply”
   e. After shutdown is complete, use the Node Status page to restart the node.
   f. While node restarts, check the LCDs for sequence indicating IPL.

2. Does the LCD sequence indicate successful IPL?
   - If yes, go to “Step 0310-005”
   - If no:
     a. Node supervisor card not responding to commands.
     b. Go to “Frame supervisor not responding (MAP 0110)” in RS/6000 SP: System Service Guide.

Step 0310-005
Sequencing of the node’s LCDs indicates the node was able to IPL.

1. Do LCDs eventually indicate completion of IPL sequence (i.e. blank or “uuu”)?
   - If yes, go to “Step 0310-006” on page 1-16
   - If no:
332 MHz SMP Thin and Wide Node control (MAP 0310)

a. Processor node has problem IPLing.
b. Go to “Processor node function (MAP 0140)” in RS/6000 SP: System Service Guide and refer to “Step 0140-004” of that MAP to continue service.

Step 0310-006
The LCD sequence indicates that IPL went to completion.

1. From the Perspectives Node Status window, click on the “Open TTY” button to open a TTY console.
2. From the TTY console:
   - Issue the command: `diag`
   - Select “Advanced Diagnostic Routines”
   - Select “System Verification”
   - Select “All Resources”.
3. Does this test indicate a failure?
   - If yes, go to “Step 0310-009”
   - If no, go to “Step 0310-007”

Step 0310-007
The advanced diagnostics did not indicate a failure.

1. If necessary, open a Hardware Perspectives session from the control workstation.
2. Reset the nodes from Perspectives:
   a. Select the Node Status tab.
   b. Click the power off button.
   c. From the new window, select “Reset”
   d. Click “Apply”
3. Does the processor node reset?
   - If yes, go to “Step 0310-008”
   - If no, go to “Step 0310-009”

Step 0310-008
The advanced diagnostics test passed and you were able to reset the node.

1. Was this a solid problem? (If the problem was cleared by power-on only, answer No.)
   - If yes:
     a. You have resolved the problem.
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide
   - If no:
     a. This is an intermittent problem, record the following information:
        – Node number
        – Date and time fault was reported
        – Type of fault reported
        – Action taken or component replaced
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide

Step 0310-009
You have an intermittent problem or the advanced diagnostics system verification indicated a failure or you have a problem with resetting the node. From Perspectives on the control workstation:

1. Power off the processor node.
2. Place the node into the service position.
3. Use Table 1-6 on page 1-17 to continue service:
Table 1-6. 332 MHz SMP Thin or Wide Node advanced diagnostics

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1        | Cable between frame supervisor and node supervisor card | 1. Check for proper seating and opens/shorts. If no problem is found, continue at Priority 2.  
2. Repair or replace cable as required.  
3. Go to "Step 0310-010" to verify fix. |
| 2        | Node supervisor card                           | 1. Check for proper seating and opens/shorts. If no problem is found, continue at Priority 3.  
2. Repair or replace cable as required.  
3. Go to "Step 0310-010" to verify fix. |
| 3        | I/O Planar Board                               | 1. Replace board.  
2. Go to "Step 0310-010" to verify fix. |
| 4        | All replaced                                   | Call next level of support. |

Step 0310-010
You repaired or replaced a component as directed in Table 1-6
1. Remove processor node from the service position.
2. Reconnect all cables at rear of the processor node.
3. Put the circuit breaker on the processor node into the On ('1') position.
4. Return to "Step 0310-005" on page 1-15 to continue service.

Step 0310-011
You were not able to obtain a response from a TTY session and Table 1-5 on page 1-14 directed you to this procedure.
1. From system file server, telnet into this processor node:
   telnet nodename
2. Log in as "root".
3. Have the customer check to make sure that the TTY port on the processor node is correctly defined.
   a. Check the console configuration by issuing the following command in the processor node’s window:
      smit console
      • Use the menu options to check and reconfigure the console as required.
      • If the console is not configured to use the TTY port, then the processor node will not print messages to the screen during IPL.
   b. Check the TTY configuration by issuing the following command in the processor node’s window:
      smit tty
      • Use the menu options to check and reconfigure the “s1” TTY port as required.
      • The proper TTY parameters are listed in Parallel System Support Programs for AIX: Administration Guide, SA22-7348.
4. Is the TTY port defined properly, and the console setup to use the TTY port?
   • If yes, go to "Step 0310-012"
   • If the TTY is not responding due to the customer’s system configuration:
     a. The customer must reconfigure these parameters.
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.

Step 0310-012
The TTY port is defined properly and the console is setup to use the TTY port however, the TTY session is not responding. This indicates that the problem is hardware related.
332 MHz SMP Thin and Wide Node control (MAP 0310)

1. If a console TTY window is already open, close the session.
2. Log into the node over the Ethernet:
   \texttt{telnet nodename}
3. In order to run the diagnostics on tty0, you must switch the console to tty1. Do this by entering the following command:
   \texttt{chcons /dev/tty1}
4. Use the \texttt{diag} command to run regular (not advanced) diagnostics on “tty0”.
5. Do the diagnostics pass (no problem found)?
   \begin{itemize}
     \item If yes, go to \textbf{Step 0310-015}
     \item If no, go to \textbf{Step 0310-013}
   \end{itemize}

**Step 0310-013**
The diagnostics failed after they were initiated from an Ethernet telnet session.

1. Run wrap diagnostics on S1 to node supervisor cable.
2. Do the diagnostics fail?
   \begin{itemize}
     \item If yes, go to \textbf{Step 0310-014}
     \item If no, go to \textbf{Step 0310-015}
   \end{itemize}

**Step 0310-014**
The diagnostics failed on the S1 to node supervisor cable.

1. Run wrap diagnostics on S1.
2. Do the diagnostics fail?
   \begin{itemize}
     \item If yes:
       \begin{itemize}
         \item Replace I/O planar board.
       \end{itemize}
     \item Go to \textbf{Step 0310-016} on page 1-19
     \item If no, go to \textbf{Step 0310-015}
   \end{itemize}

**Step 0310-015**
The node is properly configured but you are unable to get a response from the node through a TTY session. However, you were able to get the diagnostics to pass.

1. If needed, log into the node over the Ethernet:
   \texttt{telnet nodename}
2. Return the console to tty0. Do this by entering the following command:
   \texttt{chcons /dev/tty0}
3. From the control workstation, open a Perspectives session displaying the Node Status window.
4. Close the TTY session.
5. Have the customer remove the processor node from the active system configuration and power off the processor node.
6. Put the circuit breaker on the processor node into the Off (‘0’) position.
7. Place processor node into the service position.
8. Refer to Table 1-7 for priority of replacement or repair of components.

\textit{Table 1-7. 332 MHz SMP Thin or Wide Node reset diagnostics}

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Node supervisor card</td>
<td>1. Check for proper seating. If no problem found, continue at Priority 2.</td>
</tr>
<tr>
<td>(1 of 4)</td>
<td></td>
<td>2. Repair or replace cable as required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Go to \textbf{Step 0310-016} on page 1-19 to verify fix.</td>
</tr>
</tbody>
</table>
### Table 1-7. 332 MHz SMP Thin or Wide Node reset diagnostics (continued)

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
</table>
| 2 (2 of 4) | I/O planar | 1. Replace I/O planar.  
3. Go to [Step 0310-016](#) to verify fix. |
| 3 (3 of 4) | Cables between frame supervisor and node supervisor card | 1. Replace cable.  
2. Go to [Step 0310-016](#) to verify fix. |
| 4 (4 of 4) | All replaced | Call next level of support. |

### Step 0310-016
You have repaired or replaced a component.
1. Remove processor node from the service position.
2. Reconnect all cables at rear of the processor node.
3. As processor node completes IPL, check the TTY console window.
4. If necessary, open a Perspectives session displaying the Node Status window from the control workstation.
5. Put the processor node into the SERVICE mode.
6. Put the circuit breakers at the front of the processor node in the On (‘1’) position.
7. Do you get any data on the TTY console screen?
   - If yes, go to [Step 0310-017](#).
   - If no:
     b. Continue service at the next priority level.

### Step 0310-017
You repaired or replaced a component and you are now able to get data output from the TTY session. This indicates that the processor node IPLed in SERVICE mode.
1. From the TTY session, enter the command `diag`.
2. Select the “Advanced Diagnostic Routines”.
3. Select “System Verification”.
4. Select the “All Resources” option.
5. Does the processor node pass all diagnostic tests?
   - If yes:
     a. You have resolved the problem.
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
   - If no:
     a. Repair the problem indicated by the diagnostics.
     b. Use "Processor node diagnostics and descriptions (MAP 0130)” in RS/6000 SP: System Service Guide if necessary.

### Step 0310-018
You have a Perspectives LCD problem.
1. Have the customer remove the processor node from the active system configuration and power off the processor node.
2. Put all processor node circuit breakers into the Off (‘0’) position.
332 MHz SMP Thin and Wide Node control (MAP 0310)

3. Place the processor node into the service position.
4. Refer to Table 1-8 for priority of replacement or repair of components.

Table 1-8. 332 MHz SMP Thin or Wide Node Perspectives LCD diagnostics

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1       | Cable between frame supervisor and node supervisor card| 1. Check for proper seating. If no problem found, continue at Priority 2.  
2. Repair or replace cable as required.  
3. Go to "Step 0310-019" to verify fix. |
| 2       | Node supervisor card                            | 1. Check for proper seating. If no problem found, continue at Priority 3.  
2. Repair or replace cable as required.  
3. Go to "Step 0310-019" to verify fix. |
| 3       | I/O Planar Board                                | 1. Replace board.  
2. Go to "Step 0310-019" to verify fix. |
| 4       | All Replaced                                    | Call next level of support. |

Step 0310-019
You have repaired or replaced a component.
1. Remove the processor node from the service position.
2. Reconnect all cables at rear of the processor node.
3. From the control workstation, power on this processor node.
4. From the control workstation, make sure the LCDs for this processor node are displayed on the screen.
5. Check the LCDs for the IPL sequence.
6. Do the LCDs indicate the IPL sequence?
   • If yes, go to "Step 0310-020"  
   • If no:  
     b. Continue service at the next priority level.

Step 0310-020
You repaired or replaced a component and the LCDs now show an IPL sequence.
1. From the TTY session, enter the command diag.
2. Select the “Advanced Diagnostic Routines”.
3. Select “System Verification”.
4. Select the “All Resources” option.
5. Does the processor node pass all diagnostic tests?
   • If yes:  
     a. You have resolved the problem.  
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide  
   • If no:  
     a. Repair the problem indicated by the diagnostics.  
     b. Use “Processor node diagnostics and descriptions (MAP 0130)” in RS/6000 SP: System Service Guide if necessary.
Step 0310-021
You have observed that the yellow or green LED on the node supervisor is not functioning and Table 1-5 on page 1-14 directed you to this procedure.

1. Have the customer remove the processor node from the active system configuration and power off the processor node.
2. Put the circuit breakers on the processor node into the Off (‘0’) position.
3. Perform the “Node/Switch Supervisor Self-Test.”
   - Ignore any PASS/FAIL results you may receive.
   - Refer to “Node supervisor self-test” on page 3-8
4. Check yellow and green LEDs on the node supervisor card to see if each LED lights at some point.
5. Does each of the eight LEDs light at any time?
   - If yes, go to “Step 0310-025”
   - If no, go to “Step 0310-022”

Step 0310-022
Some of the LEDs on the node supervisor failed to light during the supervisor self-test.
1. Place processor node in service position.
2. Repeat the “Node/Switch Supervisor Self-Test.”
   - Refer to “Node supervisor self-test” on page 3-8
3. Check to see if same color LED is always Off at the front of the node and on the node supervisor card.
4. Are LEDs of the same color always Off on both displays?
   - If yes, go to “Step 0310-024”
   - If no, go to “Step 0310-023”

Step 0310-023
When you compared LEDs at the front of the node to those on the node supervisor card, LEDs of different colors were Off.
1. Replace LED display card.
2. Repeat the “Node/Switch Supervisor Self-Test.”
   - Refer to “Node supervisor self-test” on page 3-8
3. Do LEDs of the same color on both displays light at any time?
   - If yes:
     a. You have resolved the problem.
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide
   - If no, go to “Step 0310-024”

Step 0310-024
You replaced the LED display card. However, LEDs of the same color on both the front of the node and on the node supervisor card still do not light at any time.
1. Replace the node supervisor card.
2. Perform “Node/Switch Supervisor Self-Test” to verify replacement.
   - Refer to “Node supervisor self-test” on page 3-8
3. Go to “Step 0310-025”

Step 0310-025
All LEDs on the front of the node and on the node supervisor card are operating.
1. Remove the processor node from the service position.
2. Reconnect all cables at the rear of the processor node.
3. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide
332 MHz SMP Thin and Wide Node minimum configuration (MAP 0320)

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 minimum-configured system. If a failure is detected on the minimum-configured system, the remaining FRUs are exchanged one at a time until the failing one 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.

Attention: The node must be placed into Service Position prior to handling logic/power parts. The node must be removed from Service Position prior to attempting to answer “Does the node IPL?”. For removal and replacement of logic/power parts, refer to Chapter 4, “FRU removals and replacements” on page 4-1.

Attention: When you disconnect a SCSI cable from the DASD, it is possible that some of the data required to IPL the node will be unavailable. This can happen if a required file system is fully or partially on the disconnected DASD. In this case, the node will only boot to a code in the range 517-518 or 551-557; consider this a successful IPL for purposes of this MAP only.

The physical location of a node’s boot disk may be determined two ways:

1. From the control workstation issue the command splstdata -b. The information for the node in question under install_disk will be the physical location of the node’s boot disk. (for example, 10-60-00-0,0). In some cases, this command may return a virtual address rather than the physical location, such as hdisk0 or hdiskn, where n is some other disk number. The real physical location can then be obtained by cat /var/adm/SPlogs/SPconfig/xx.lscfg | grep hdiskn. Where xx is the node number and n is the disk.

2. If the node is booted, the virtual to real location disk mapping may be obtained by the command lsdev -Cc disk on the node. If possible, keep this boot disk in the configuration. Refer to Chapter 2, “Locations” on page 2-1.

Note: DASD logical volume problems can be alleviated by performing a netboot.

Step 0320-001

Physically identify the 332 MHz SMP node type:

- If you have a 332 MHz SMP Thin Node, go to “Step 0320-008” on page 1-24
- If you have a 332 MHz SMP Wide Node, go to “Step 0320-002”

Note: Wide nodes are composed of an I/O Expansion assembly attached to a thin node processor unit. The I/O Expansion assembly (left side) does not contain a supervisor card.

Step 0320-002

To determine which 332 MHz SMP Wide Node assembly is failing, you must first split the CPU assembly from the I/O Expansion assembly and IPL the “thin node” section.

1. Disconnect all 4-drop SCSI connectors from the I/O Expansion assembly DASD.
2. Remove all adapter cards from the CPU assembly.
3. Disconnect the PCI riser card cable from J6 on the CPU assembly I/O planar.
4. Disconnect the I/O Expansion control cable from J2 on the CPU assembly I/O planar.
5. Remove the screws securing the CPU assembly chassis to the I/O Expansion assembly chassis, then separate the two chassis.
6. Reinstall all CPU assembly adapter cards.
7. Does the thin node section (CPU assembly) IPL properly?
   - If yes, go to “Step 0320-003” on page 1-23
   - If no:
     a. The problem is in the thin node section.
Step 0320-003
You were able to IPL the thin node section of a 332 MHz SMP Wide Node. This indicates that the failure is likely in the I/O Expansion assembly. Use this procedure to reassemble the 332 MHz SMP Wide Node, place the I/O Expansion assembly into its minimum configuration, and continue diagnosing the problem.
1. Remove all adapters from the CPU and I/O Expansion assemblies.
2. Reinstall the I/O Expansion assembly to the CPU assembly.
3. Route the PCI riser card cable through the chassis-wall cut-outs and reconnect the cable to J6 on the CPU assembly I/O planar.
4. Route the I/O Expansion control cable through the chassis-wall cut-outs and reconnect the cable to J2 on the CPU assembly I/O planar.
5. Reinstall all CPU assembly adapter cards.
6. Reconnect all 4-drop SCSI cable connectors to their respective I/O Expansion assembly DASD.
7. Does the node IPL properly?
   a. The problem is likely in the minimum configured I/O Expansion assembly.
   b. Go to “Step 0320-004”.

Step 0320-004
With the I/O Expansion assembly in its minimum configuration, you were able to IPL the reassembled 332 MHz SMP Wide Node.
1. One at a time, reinstall and test all the I/O Expansion assembly adapter cards that you previously removed in “Step 0320-003”.
2. Does the node IPL properly?
   a. The problem is likely in the minimum configured I/O Expansion assembly.
   b. Go to “Step 0320-005”.

Step 0320-005
You reinstalled an adapter card into the I/O Expansion assembly of a 332 MHz SMP Wide Node but you were not able to IPL the node. This indicates that the card you just reinstalled has failed.
1. Replace the failing card.
2. Does the node IPL properly?
   a. Return to “Step 0320-004” and reinstall the next adapter card.
   b. If all cards have been reinstalled, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
   a. The replacement card you installed has also failed and may indicate a problem with the I/O Expansion assembly planar.
   b. Go to “Step 0320-006”.

Step 0320-006
The 332 MHz SMP Wide Node failed to IPL properly after both the reinstalled adapter card “Step 0320-004” and its replacement adapter card “Step 0320-005” were installed in the I/O Expansion assembly.
1. Replace the I/O Expansion assembly planar.
2. Does the node IPL properly?
   a. If yes, go to “Step 0320-004”.

Step 0320-006
332 MHz SMP Thin and Wide Node minimum configuration (MAP 0320)

- If no, call the next level of support.

**Step 0320-007**
You reinstalled an adapter card in the I/O Expansion assembly of a 332 MHz SMP Wide Node and you were able to IPL the node. This indicates that the reinstalled card is okay.

- Return to “Step 0320-004” on page 1-23 and reinstall the next adapter card.
- If all cards have been reinstalled, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.

**Step 0320-008**
You have a failing 332 MHz SMP Thin Node or a 332 MHz SMP Wide Node that has a problem in the thin node section and you need to place the unit into its minimum configuration. Use this procedure to place the Thin Node or thin node section into minimum configuration and then continue diagnosing the problem.

1. Remove all memory cards from the system planar.
2. Populate one memory card with DIMMs in J1 and J2 only (refer to “332 MHz SMP Thin and Wide Node locations” on page 2-7), then install that memory card in either memory slot 1 or 2.
3. Ensure that a CPU card is installed in CPU slot 1.
4. If a CPU card is installed in CPU slot 2, remove it.
5. Remove all CPU assembly adapter cards.
6. Does the node IPL properly?
   - If yes, go to “Step 0360-010” on page 1-50.
   - If no, go to “Step 0360-009” on page 1-50.

**Step 0320-009**
You have placed a 332 MHz SMP Thin Node or the thin node section of a 332 MHz SMP Wide Node into minimum configuration but the node still does not IPL properly.

1. One at a time, replace the following components and IPL the node.
   - Memory DIMMs
   - Memory card
   - CPU card
   - Service processor card
   - Boot DASD
   - SCSI cable (2- or 4-drop)
   - I/O planar
   - System planar
   - Flat ribbon power cable
2. Does the node IPL properly?
   - If yes, go to “Step 0320-010”
   - If no:
     a. Replace the next component listed in this step.
     b. If you have replaced all listed components, call next level of support.

**Step 0320-010**
You were able to properly IPL a 332 MHz SMP Thin Node or the thin node section of a 332 MHz SMP Wide Node after you placed it into minimum configuration. You must now reinstall and test the components you removed to place the node into minimum configuration.

1. One at a time, reinstall and test the components removed in “Step 0320-008”.
2. Does the node IPL properly?
   - If yes, go to “Step 0320-013” on page 1-25
   - If no, go to “Step 0320-011” on page 1-25
Step 0320-011
You reinstalled a component in a 332 MHz SMP Thin Node or the thin node section of a 332 MHz SMP Wide Node but you were not able to IPL the node. This indicates that the component you just reinstalled has failed.
1. Replace the failing component.
2. Does the node IPL properly?
   a. If yes: Return to “Step 0320-010” on page 1-24 and reinstall the next component.
   b. If all components have been reinstalled, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
   c. If no:
      a. The replacement component you installed in this slot has failed and may indicate a problem with the component’s planar.
      b. Go to “Step 0320-012”.

Step 0320-012
You arrived at this step from “Step 0320-011” because a thin node (or CPU assembly section of a wide node) failed to IPL after installation of a replacement component.
1. Replace the (system or I/O) planar to which the failing replacement component was installed.
2. Does the node IPL properly?
   a. If yes, return to “Step 0320-010” on page 1-24.
   b. If no, call the next level of support.

Step 0320-013
You reinstalled a component in a 332 MHz SMP Thin Node or the thin node section of a 332 MHz SMP Wide Node and you were able to IPL the node. This indicates that the reinstalled component is okay.
1. Return to “Step 0320-010” on page 1-24 and reinstall the next component.
2. If all components have been replaced, and this is a 332 MHz SMP Thin Node, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
3. If all components have been replaced, and this is a thin node section of a 332 MHz SMP Wide Node, go to “Step 0320-014”.

Step 0320-014
You arrived here from “Step 0320-013” because the repaired thin node section of the 332 MHz SMP Wide Node can now IPL, and the I/O expansion assembly, separated in “Step 0320-002” on page 1-22, must now be reattached and tested.
1. Remove all adapter cards from the CPU assembly.
2. Reinstall the I/O Expansion assembly to the CPU assembly.
3. Route the I/O Expansion control cable through the chassis-wall cut-outs and reconnect the cable to J2 on the CPU assembly I/O planar.
4. Route the PCI riser card cable through the chassis-wall cut-outs and reconnect the cable to J6 on the CPU assembly I/O planar.
5. Reinstall all CPU assembly adapter cards.
6. Reconnect all 4-drop SCSI cable connectors to their respective I/O Expansion assembly DASDs.
7. Does the node IPL properly?
   a. If yes, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
   b. If no, go to “Step 0320-015”.

Step 0320-015
The reassembled 332 MHz SMP Wide Node does not IPL properly. Use this procedure to place the I/O Expansion assembly into its minimum configuration and continue testing.
332 MHz SMP Thin and Wide Node minimum configuration (MAP 0320)

1. **Remove** all adapter cards from the I/O Expansion assembly.
2. Does the node IPL properly?
   - If yes, go to "Step 0320-004” on page 1-23
   - If no:
     a. The problem is likely in the minimum configured I/O Expansion assembly.
     b. Go to "Step 0320-016"

**Step 0320-016**
You have determined that the minimum configured I/O Expansion assembly of a 332 MHz SMP Wide Node is likely failing.

1. **Replace** the I/O Expansion assembly control cable.
2. Does the node IPL properly?
   - If yes, go to "Step 0320-004” on page 1-23
   - If no, go to "Step 0320-017"

**Step 0320-017**
You replaced the I/O Expansion control cable and were not able to IPL the minimum configured 332 MHz SMP Wide Node.

1. **Replace** the I/O Expansion PCI riser card.
2. Does the node IPL properly?
   - If yes, return to "Step 0320-004” on page 1-23
   - If no, go to "Step 0320-018"

**Step 0320-018**
You replaced the I/O Expansion PCI riser card and were not able to IPL the minimum configured 332 MHz SMP Wide Node.

1. **Replace** the I/O Expansion planar.
2. Does the node IPL properly?
   - If yes, return to "Step 0320-004” on page 1-23
   - If no, go to "Step 0320-019"

**Step 0320-019**
You replaced the I/O Expansion assembly planar and were not able to IPL the minimum configured 332 MHz SMP Wide Node.

1. **Replace** the I/O Expansion assembly interposer adapter **cable**.
2. Does the node IPL properly?
   - If yes, return to "Step 0320-004” on page 1-23
   - If no, go to "Step 0320-020"

**Step 0320-020**
You replaced the I/O Expansion assembly interposer adapter **cable** and were not able to IPL the minimum configured 332 MHz SMP Wide Node.

1. **Replace** the I/O Expansion assembly interposer adapter **card**.
2. Does the node IPL properly?
   - If yes, return to "Step 0320-004” on page 1-23
   - If no, go to "Step 0320-021"

**Step 0320-021**
You replaced the I/O Expansion assembly interposer adapter **card** and were not able to IPL the minimum configured 332 MHz SMP Wide Node.

1. **Replace** the I/O Expansion power assembly.
2. Does the node IPL properly?
   - If yes, return to Step 0320-004 on page 1-23
   - If no, call the next level of support.

**POWER3 SMP Thin and Wide Node MAPs**

- “POWER3 SMP Thin and Wide Node environment (MAP 0330)”
- “POWER3 SMP Thin and Wide Node power (MAP 0340)” on page 1-33
- “POWER3 SMP Thin and Wide Node control (MAP 0350)” on page 1-40
- “POWER3 SMP Thin and Wide Node minimum configuration (MAP 0360)” on page 1-48

Use the following MAPs to isolate problems in 200 MHz POWER3 SMP Thin and Wide Nodes and 375/450 MHz POWER3 SMP Thin and Wide Nodes.

**POWER3 SMP Thin and Wide Node environment (MAP 0330)**

**Note:** Refer to “Service position procedures” on page 3-10 for placing a node into the service position or for removing it from the service position.

**Step 0330-001**
You have detected an environmental problem that is affecting a processor node and Processor node diagnostics and descriptions (MAP 0130) in RS/6000 SP: System Service Guide directed you to this procedure.

1. Did you use a system message or an observed condition during your initial diagnosis of the environmental problem?
   - If you used a message displayed by the system for your initial diagnosis, go to Step 0330-002.
   - If you an observed a system condition that led to your initial diagnosis, go to Step 0330-005 on page 1-28.

**Step 0330-002**
A TTY message indicated “rc.powerfail” or when you issued the command `errpt -a | pg` the display indicated “Loss of Electric Power” associated with processor node.

1. Check the failing node’s error log by issuing `errpt -a | pg` on the affected node’s AIX window to check for “Loss of Power” or warning messages.

2. Does the message indicate a loss of power or that the power is off?
   - If yes, go to Step 0330-004
   - If the message does not indicate that the power is off or that you have a power loss:
     a. If the message is a warning, go to Step 0330-003
     b. If the message is not a warning, go to Step 0330-005 on page 1-28

**Step 0330-003**
The message you received was a warning.

1. Does the same message occur on more than one processor node?
   - If yes, notify the next level of support.
   - If the same message does not occur on more than one node, then no immediate service is required. At this point you can either:
     - Defer the service action until a later date.
     - Perform the service now by going to Step 0330-004 and treating the warning message as a “Shutdown” or “Failure” message.

**Step 0330-004**
A serious environmental condition has been detected in the processor node.
POWER3 SMP Thin and Wide Node environment (MAP 0330)

Note: If service action has just been completed on this processor node, check for loose cables or shorted conditions in the processor node.

Based on the text of the message, use Table 1-9 to continue service.

Table 1-9. POWER3 SMP Thin and Wide Node environmental conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any power loss message</td>
<td>Go to &quot;Step 0330-005&quot;</td>
</tr>
<tr>
<td>&quot;...cooling problem...&quot; or fan problem</td>
<td>Go to &quot;Step 0330-022&quot; on page 1-32</td>
</tr>
<tr>
<td>&quot;...memory protect...&quot;</td>
<td>Go to &quot;Step 0330-025&quot; on page 1-33</td>
</tr>
</tbody>
</table>

Step 0330-005
You have observed a condition that indicates that a power problem exists.
1. Check the node supervisor green LED 1.
2. What is the status of node supervisor LED 1?
   - If green LED 1 is On and it is not flashing, go to "Step 0330-006".
   - If green LED 1 is flashing, go to "Step 0330-012" on page 1-29.
   - If green LED 1 is Off, go to "POWER3 SMP Thin and Wide Node power (MAP 0340)" on page 1-33.

Step 0330-006
Node supervisor green LED 1 is On and it is not flashing.
1. Check the green LEDs on the power supplies.
2. Are the power supply’s LEDs lit?
   - If yes, go to "Step 0330-010" on page 1-29.
   - If no, go to "Step 0330-007".

Step 0330-007
Node supervisor green LED 1 is On but not flashing and the power supply LEDs are off.

Are the circuit breakers in the On position?
- If yes, go to "Step 0330-008"
- If no:
  1. Set the circuit breakers to the On position.
  2. Return to "Step 0330-005"

Step 0330-008
The power supply LEDs were not lit but the circuit breakers were in the On position.
1. Verify the 48 V input cables are plugged in at the rear of the node.
2. Is the 48 V power supply cable plugged properly?
   - If yes, go to "Step 0330-009"
   - If no:
     a. Properly connect the 48–volt power cables.
     Attention: Some 48-volt power cables have in-line switches. Ensure the in-line switches is in the Off (O) position before connecting or disconnecting 48-volt power cables from the node.
     b. Return to "Step 0330-005"

Step 0330-009
The power supply LEDs were not lit but the circuit breakers were in the On position and the 48-volt power cables were properly plugged in at the back of the node.
1. Check for 48-volts present on the power pins at the POWER3 SMP Thin and Wide Node end of the input cables.

   **Attention:** Some 48-volt power cables have in-line switches. Ensure the in-line switches is in the Off (O) position before connecting or disconnecting 48-volt power cables from the node.
   - Measure the voltage between the voltage and the return pins.

2. Is there 48 volts present at the connectors?
   - If yes:
     - This indicates that there is a problem with 48–volt sensing.
     - Go to “Step 0330-016” on page 1-30
   - If no, go to “Step 0330-018” on page 1-31

**Step 0330-010**
You have a power problem but both the node supervisor LED 1 and the power supply (green LED) are on.

1. Is the CPU power supply green LED On but not flashing?
   - If yes, go to “Step 0330-011”
   - If no, go to “Step 0330-012”

**Step 0330-011**
The CPU power supply green LED is On but not flashing.

1. Check for airflow blockage, fan problems or other cooling problems with the node.

2. Do any of these problems exist?
   - If yes, go to “Step 0330-022” on page 1-32
   - If no:
     a. Verify that you have the correct processor node.
     b. Go to “Processor node diagnostics and descriptions (MAP 0130)” in *RS/6000 SP: System Service Guide*

**Step 0330-012**
Either LED 1 on the node supervisor or the green LED on the CPU power supply is indicating a problem.

- If this is a thin node, go to “Main power (MAP 0450)” in *RS/6000 SP: System Service Guide*
- If this is a wide node, check the green LED on the I/O power supply.

1. If this LED is On or flashing, go to “Step 0330-013”
2. If this LED is Off, return to “Step 0330-006” on page 1-28

   **Note:** Wide nodes are composed of an I/O Expansion assembly attached to a thin node processor unit. The I/O Expansion assembly (left side) does not contain a supervisor card.

**Step 0330-013**
You have a wide node and the green LED on the I/O power supply is either On or flashing.

- If the green LED on the I/O power supply is On, go to “Processor node diagnostics and descriptions (MAP 0130)” in *RS/6000 SP: System Service Guide*
- If the green LED on the I/O power supply is flashing, check the yellow LEDs on the CPU and I/O power supply.
  - If the yellow LEDs are Off, go to “Processor node diagnostics and descriptions (MAP 0130)” in *RS/6000 SP: System Service Guide*
  - If the yellow LEDs are On or flashing, go to “Step 0330-014”

**Step 0330-014**
The green LED on the I/O power supply is flashing and the yellow LEDs on CPU and I/O power supply are either On or flashing.
POWER3 SMP Thin and Wide Node environment (MAP 0330)

- If the yellow LEDs are **On**, go to “Frame supervisor not responding (MAP 0110)” in [RS/6000 SP: System Service Guide](#).
- If the yellow LEDs are **flashing**, check supervisor LEDs #3 and #4.
  - If either supervisor LEDs #3 or #4 is not flashing, go to “Processor node diagnostics and descriptions (MAP 0130)” in [RS/6000 SP: System Service Guide](#).
  - If either supervisor LEDs #3 or #4 is flashing:
    1. Place the node into the service position.
    2. Use Table 1-10 to continue service.

Table 1-10. POWER3 SMP Thin and Wide Node supervisor diagnostics

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1        | Interposer connector cable | 1. Replace cable  
|          |                          | 2. Go to “Step 0330-015”                  |
| 2        | Interposer connector card | 1. Replace card  
|          |                          | 2. Go to “Step 0330-015”                  |
| 3        | CPU or I/O power supply  | 1. Replace power assembly.  
|          |                          | 2. Go to “Step 0330-015”                  |
| 4        | CPU I/O planar           | 1. Replace I/O planar  
|          |                          | 2. Go to “Step 0330-015”                  |
| 5        | All replaced             | Call next level of support.                |

Step 0330-015

You performed a service action in Table 1-10

1. Remove processor node from service position.
2. From the control workstation, power on the processor node.
3. Are supervisor LEDs #3 and/or #4 flashing?
   - If yes, return to Table 1-10 and replace the next highest priority component.
   - If no, go to “Step 0330-021” on page 1-32

Step 0330-016

One of the following conditions exists:
- LED 1 on the node supervisor is On but the green LED on the power supply is Off. However, you are able to measure 48 volts between the voltage and return pins. This indicates that there is a problem with 48-volt sensing.
- The green LED on the I/O power supply is flashing and the yellow LEDs on CPU and I/O power supply are either On or flashing.
1. From the control workstation, power off the processor node.
2. Place the processor node in the service position.
3. Use Table 1-11 to continue service.

Table 1-11. POWER3 SMP Thin and Wide Node 48-volt sensing diagnostics

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1        | I/O expansion control cable  | 1. Replace cable  
|          |                              | 2. Go to “Step 0330-017” on page 1-31      |
Table 1-11. POWER3 SMP Thin and Wide Node 48–volt sensing diagnostics (continued)

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>CPU or I/O power supply</td>
<td>1. Replace power assembly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Go to Step 0330-017</td>
</tr>
<tr>
<td>3</td>
<td>I/O planar</td>
<td>1. Replace planar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Go to Step 0330-017</td>
</tr>
<tr>
<td>4</td>
<td>Power or power/supervisor cable</td>
<td>1. Replace cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Go to Step 0330-017</td>
</tr>
<tr>
<td>5</td>
<td>All replaced</td>
<td>Call next level of support.</td>
</tr>
</tbody>
</table>

Step 0330-017
You performed a service action in Table 1-11 on page 1-30.
1. Remove processor node from service position.
2. From the control workstation, power on the processor node.
3. Check the green LED on the power supply.
   - If the LED is Off or flashing, return to Table 1-11 on page 1-30 and replace the next highest priority component.
   - If the LED is On, go to Step 0330-021 on page 1-32.

Step 0330-018
LED 1 on the node supervisor is On but the green LED on the power supply is Off. Also, you were not able to measure 48 volts between the voltage and return pins. This indicates that there is a problem with the 48-volt supply.
1. Place the POWER3 SMP Thin or Wide Node into the service position.
2. Replace the node supervisor card.
   - Refer to Replacing the node supervisor card on page 4-31.
3. Take the POWER3 SMP Thin or Wide Node out of the service position.
4. Is the green LED on the power supply Off or flashing?
   - If yes, go to Step 0330-019.
   - If the power supply LED is On, go to Step 0330-021 on page 1-32.

Step 0330-019
You replaced the node supervisor card but the green LED on the power supply is still Off or flashing.
1. Place the POWER3 SMP Thin or Wide Node in service position.
2. Replace the power/supervisor cable.
   - Refer to Replacing the power/supervisor cable on page 4-42.
3. Take the POWER3 SMP Thin or Wide Node out of the service position.
4. Is the green LED on the power supply Off or flashing?
   - If yes, go to Step 0330-020.
   - If the power supply LED is On, go to Step 0330-021 on page 1-32.

Step 0330-020
You replaced the node supervisor card and the power/supervisor cable but the green LED on the power supply is still Off or flashing.
1. Place the POWER3 SMP Thin or Wide Node in service position.
POWER3 SMP Thin and Wide Node environment (MAP 0330)

2. Replace the front assembly FRU.
   • Refer to "Replacing the CPU power assembly" on page 4-28

3. Take the POWER3 SMP Thin or Wide Node out of the service position.

4. Is the green LED on the power supply Off or flashing?
   • If yes, go to "Scalable Electrical Power Base Unit diagnostics (MAP 0540)" in RS/6000 SP: System Service Guide
   • If the power supply LED is On, go to "Step 0330-021"

Step 0330-021
You were able to correct the problem indicated by the LED status.
1. If necessary, remove the processor node from the service position.
2. Reconnect all cables at rear of the processor node.
3. Put circuit breakers at front of processor node in On (‘1’) position.
4. Go to "End of call MAP (MAP 0650)" in RS/6000 SP: System Service Guide.

Step 0330-022
You have detected a cooling or fan problem with a node.
1. Place the processor node into the service position.
2. Use Table 1-12 to reseat or replace components.

Table 1-12. POWER3 SMP Thin and Wide Node service actions

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1 (1 of 5) | Fan 1, 2 (3, 4 if POWER3 SMP Wide Node) | 1. Check specified fan for blockage or loose cable connection.  
2. Fix any obvious problem(s). If none are found, continue at Priority 2.  
3. Continue at "Step 0330-023" |
| 2 (2 of 5) | Fan 1, 2 (3, 4 if POWER3 SMP Wide Node) | 1. Replace fan and/or cooling module as described in "Service procedures for POWER3 SMP Thin and Wide Nodes" on page 4-25.  
2. Fix any obvious problem(s).  
3. Continue at "Step 0330-023" |
| 3 (3 of 5) | Front assembly FRU | 1. Replace assembly  
2. Continue at "Step 0330-023" |
| 4 (4 of 5) | Power/supervisor cable | 1. Replace cable  
2. Continue at "Step 0330-023" |
| 5 (5 of 5) | All replaced | Call next level of support. |

Step 0330-023
You have replaced or reseated a component.
1. Remove the processor node from the service position.
2. Reconnect all cables at the rear of the processor node.
3. Put the circuit breakers at the front of processor node in the On (‘1’) position.
4. Check the error log or SRN.
5. Does the problem still exist?
   • If yes, go to "Step 0330-024" on page 1-33
POWER3 SMP Thin and Wide Node environment (MAP 0330)

- If no:
  a. You have resolved the problem.
  b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.

Step 0330-024
You have replaced or reseated a component but the problem still exists.
1. Put circuit breakers at the front of the processor node in the Off (‘0’) position.
2. Reinstall the previously removed component.
3. Return to “Step 0330-022” on page 1-32 to service the next highest priority component listed in Table 1-12 on page 1-32.

Step 0330-025
You received a memory protection error and Table 1-9 on page 1-28 directed you to this location.
1. This fault is normally generated only when invalid memory cards are installed in the processor node.
2. Have memory parts been changed recently (since last successful IPL) in this processor node?
   - If yes, go to “Step 0330-027”.
   - If no, go to “Step 0330-026”.

Step 0330-026
You received a memory protection error but you have not changed any memory components.
1. Problem may be in the:
   - Base memory card
   - CPU card
   - I/O planar
   - Node supervisor control cable
2. Replace the listed parts, one at a time, until the problem is corrected or all components have been replaced.
3. Are you able to correct the problem?
   - If yes:
     a. You have resolved the problem.
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
   - If no, call the next level of support.

Step 0330-027
You changed some memory components and now you are receiving a memory protection error.
1. Check memory card and DIMM part numbers in RS/6000 pSeries: Diagnostic Information for Multiple Bus Systems (SA38-0509) and RS/6000: Adapters, Devices, and Cable Information for Multiple Bus Systems (SA38-0516) to ensure that they are compatible with the fastest Type 7043 machines.

Note: Return to this procedure to continue service.
2. If necessary, call the next level of support.

POWER3 SMP Thin and Wide Node power (MAP 0340)

Note: Refer to “Service position procedures” on page 3-10 for placing nodes into the service position or for removing them from the service position.

Step 0340-001
You have detected a power problem in either a POWER3 SMP Thin or Wide Node and “Processor node diagnostics and descriptions (MAP 0130)” in RS/6000 SP: System Service Guide directed you to this procedure.
POWER3 SMP Thin and Wide Node power (MAP 0340)

1. Ensure all power supply circuit breakers and 48-volt in-line switches for this node are in the ON (‘1’) position.

2. Is this a wide node or a thin node?
   - If this is a wide node, go to Step 0340-002.
   - If this is a thin node, go to Step 0340-003.

   **Note:** Wide nodes are composed of an I/O Expansion assembly attached to a thin node processor unit. The I/O Expansion assembly (left side) does not contain a supervisor card.

**Step 0340-002**

You have a POWER3 SMP Wide Node with a power problem. Make certain that the I/O power assembly power interlock bar and tab are engaged correctly. If they are correctly engaged, go to Step 0340-003. Otherwise:

1. Reseat the I/O power assembly.
2. Make certain that the power interlock bar and tab are engaged correctly.
3. Have the problem symptoms changed?
   - If yes, go to Processor node diagnostics and descriptions (MAP 0130) in RS/6000 SP: System Service Guide.
   - If no, go to Step 0340-003.

**Step 0340-003**

You have a POWER3 SMP Thin Node with a power problem or a POWER3 SMP Wide Node in which you have eliminated the I/O power supply as the source of the power problem.

1. Check green LED 1 on the node supervisor.
2. What is the status of node supervisor LED 1?
   - If green LED 1 is Off, go to Step 0340-013 on page 1-36.
   - If green LED 1 is flashing, go to Step 0340-004.
   - If green LED 1 is On and it is not flashing, you do not have a problem with the power supply.
     a. Verify that you have the proper processor node.
     b. Go to Processor node diagnostics and descriptions (MAP 0130) in RS/6000 SP: System Service Guide.

**Step 0340-004**

LED 1 (green) on the node supervisor card is flashing. This indicates that the processor node getting 48 V dc power however a problem exists in the supply.

**Attention:** Some 48-volt power cables have in-line switches. Ensure the in-line switches is in the Off (O) position before connecting or disconnecting 48-volt power cables from the node.

1. Make certain that all:
   - 48-volt power supply cables are connected.
   - Cable in-line switches are in the On position.
2. Check:
   - Node supervisor LED 3 on POWER3 SMP Thin Nodes.
   - Node supervisor LED 3 and 4 on POWER3 SMP Wide Nodes.
3. What is the status of the LEDs on the node supervisor card?
   - If either LED 3 or 4 Off, go to Step 0340-008 on page 1-35.
   - If the LEDs are On or flashing, go to Step 0340-005.

**Step 0340-005**

LED 3 on a POWER3 SMP Thin Node or LED 3 and 4 on a POWER3 SMP Wide Node are either On or flashing. This indicates that the processor node is getting power.
POWER3 SMP Thin and Wide Node power (MAP 0340)

1. Power On the RS/6000 logic from the control workstation using the Perspectives Node Status window.
2. Does green LED 1 light and stay lit?
   - If yes, go to "Step 0340-007"
   - If no, go to "Step 0340-006"

**Step 0340-006**
Node supervisor LED 3 and 4 (on wide nodes) indicate that the processor node is getting power but LED 1 does not stay lit.
1. Make certain that the front assembly power interlock bars and power interlock tabs are engaged properly.
2. Are the power interlock bars and tabs engaged properly?
   - If yes:
     a. This indicates that you may have an electrical short.
     b. Go to "POWER3 SMP Thin and Wide Node minimum configuration (MAP 0360)" on page 1-48
   - If no:
     a. Engage the front assembly power interlock bars and power interlock tabs.
     b. Go to "Step 0340-010" on page 1-36

**Step 0340-007**
Node supervisor LED 3 and 4 (on wide nodes) are On or flashing and LED 1 lights and stays lit. This indicates the RS/6000 logic is getting power.
1. Does the node IPL properly?
   - If yes:
     a. No problem detected.
     b. Record reason for power-off condition.
     c. Go to "End of call MAP (MAP 0650)" in RS/6000 SP: System Service Guide
   - If no:
     a. Processor node has IPL problem.
     b. Go to "Processor node diagnostics and descriptions (MAP 0130)" in RS/6000 SP: System Service Guide

**Step 0340-008**
All 48-volt power supply cables are connected and the in-line switches are On but LED 3 on a POWER3 SMP Thin Node or LED 3 or 4 on a POWER3 SMP Wide Node were Off.
1. Check the yellow LED on the power supply.
2. Is the yellow LED On?
   - If yes, go to "Step 0340-009"
   - If no, go to "Step 0340-011" on page 1-36

**Step 0340-009**
LED 3 on a POWER3 SMP Thin Node or LED 3 or 4 on a POWER3 SMP Wide Node were Off but the yellow LED on the power supply is On. This indicates that +48-volt power is present.
1. What is the status of the power supply’s power (green) LED?
   - If the green LED is flashing, go to "Step 0340-010" on page 1-36
   - If the green LED is On and it is not flashing, go to "End of call MAP (MAP 0650)" in RS/6000 SP: System Service Guide
   - If the green LED is Off:
     a. Exchange the power assembly.
POWER3 SMP Thin and Wide Node power (MAP 0340)

b. Return to “Step 0340-008” on page 1-35.
   – If this is the second time through this step, go to “POWER3 SMP Thin and Wide Node minimum configuration (MAP 0360)” on page 1-48.

Step 0340-010
LED 3 on a POWER3 SMP Thin Node or LED 3 and 4 on a POWER3 SMP Wide Node were Off but the yellow LED on the power supply is On and the green LED is flashing.

1. Switch the circuit breaker Off, then On.
2. Did the green LED light and the node IPL?
   • If yes, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
   • If no, go to POWER3 SMP Thin and Wide Node environment (MAP 0330), “Step 0330-016” on page 1-30.

Step 0340-011
LED 3 on a POWER3 SMP Thin Node or LED 3 and 4 on a POWER3 SMP Wide Node were Off and the yellow LED on the power supply is also Off.

1. Make certain that the circuit breaker is On.
2. Was the circuit breaker On?
   • If yes:
     a. 48-volt power is not being supplied to the node.
     b. Go to POWER3 SMP Thin and Wide Node environment (MAP 0330) “Step 0330-008” on page 1-28.
   • If the circuit breaker was not in the On position, go to “Step 0340-012”.

Step 0340-012
The yellow LED on the power supply is off and the circuit breaker is in the Off position.

1. Place the circuit breaker into the On position.
2. Does the circuit breaker switch On and stay in the On position?
   • If yes, return to “Step 0340-003” on page 1-34.
   • If the circuit breaker switched On but then tripped Off:
     a. You may have a power supply problem or an electrical short.
     b. Go to “Step 0340-016” on page 1-37.
   • If the circuit breaker would not switch On:
     a. Repair or replace the circuit breaker.
     b. Return to “Step 0340-008” on page 1-35.

Step 0340-013
You arrived at this procedure from “Step 0340-003” on page 1-34 where you found LED 1 on the node supervisor card was off.

1. Check LED 5 (yellow) on the node supervisor card.
2. Is LED 5 Off?
   • If yes, go to “Step 0340-014”.
   • If LED 5 is lit:
     a. This indicates that the base code loaded on the node supervisor needs to be updated.
        – Refer to “Updating the node supervisor code” on page 3-10.
     b. Go to “Step 0340-019” on page 1-38.

Step 0340-014
LED 5 (yellow) on the node supervisor card is off.

1. Check the green LED on the power supply.
2. Is the green LED also off?
   - If yes, go to "Step 0340-015"
   - If the green LED on the power supply is lit, go to POWER3 SMP Thin and Wide Node environment (MAP 0330) "Step 0330-006" on page 1-28.

**Step 0340-015**
Both LED 5 on the node supervisor card and the green LED on the power supply are off.
1. Check the circuit breakers at front of the power supplies.
   - If needed, put these circuit breakers in the On ('1') position.
2. Do the circuit breakers go (trip) to the Off ('0') position?
   - If yes, go to "Step 0340-016"
   - If no, go to "Step 0340-019" on page 1-38.

**Step 0340-016**
The power supply circuit breaker is tripping to the Off ('0') position. This indicates that you have a power supply problem or an electrical short.
1. Place processor node in service position.
   - **Attention:** Some 48-volt power cables have in-line switches. Ensure the in-line switches is in the Off (O) position before connecting or disconnecting 48-volt power cables from the node.
2. Check the 48-volt bulk power harnesses for any obvious problems which might cause a short at the following locations:
   - The power supplies at the front of the node
   - All circuit breaker connections
   - All 48-volt bulk power connections
3. Does everything appear to be okay?
   - If yes, go to "Step 0340-017"
   - If no:
     a. Fix any obvious problems.
     b. Remove the processor node from the service position.
     c. Reconnect all cables at rear of the processor node.
     d. Return to "Step 0340-015".

**Step 0340-017**
You received an indication that there is either a problem with the power supply or that there is an electrical short in the system however, everything appears to be okay after a visual inspection.
1. Using a multimeter, check for an electrical short between the pins of the 48-volt input connectors (J8 at the rear of the node).
2. Did you detect an electrical short?
   - If yes, go to "Step 0340-018" on page 1-38
   - If no:
     a. Disconnect the 48-volt power cables from the SEPBU bulkhead.
     b. Using a multimeter, check for an electrical short between:
        - The pins in the 48-volt power cables.
        - Any pins in the node power plugs.
        - If a short is detected, replace the 48-volt power cable.
     c. Using a multimeter, check for an electrical short between any tabs in the circuit breakers.
        - If a short is detected, isolate it to either the cable or the circuit breaker and replace the corresponding part.
     d. Remove processor node from the service position.
Step 0340-018
You found an electrical short between the pins of the 48-volt input connectors (J8 at the rear of the node).
1. Using a multimeter, check for an electrical short between the pins of the power/supervisor connector at the rear of the front assembly.
2. Did you detect an electrical short?
   - If you found an electrical short:
     a. Replace the corresponding power assembly.
     b. Remove the processor node from the service position.
     c. Reconnect all cables at the rear of processor node.
     d. Return to “Step 0340-015” on page 1-37.
   - If you did not find an electrical short:
     a. Replace the power/supervisor cable in the logic part of the node.
     b. Remove the processor node from the service position.
     c. Reconnect all cables at the rear of the processor node.
     d. Return to “Step 0340-015” on page 1-37.

Step 0340-019
You have arrived at this procedure from either:
- “Step 0340-013” on page 1-36 where you updated the base code on the node supervisor card.
- “Step 0340-015” on page 1-37 where you found the green LED on the power supply was on and the circuit breakers did not trip to the Off position.

You now have to determine if the power problem is resolved or if additional diagnostic action is needed.
1. From control workstation or processor node, check LED 1 (green) on the node supervisor.
2. Is node supervisor LED 1 off or do you see ‘No Power to Node’ displayed on the control workstation?
   - If yes, go to “Step 0340-020”.
   - If LED 1 is lit or you do not receive any power messages on the control workstation:
     a. You have resolved the problem.
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.

Step 0340-020
LED 1 on the node supervisor is off or you are receiving a ‘No Power to Node’ message on the control workstation.
1. Check any processor nodes connected to another dc power harness to see if they are powered on.
   - Make certain that the other processor nodes have their circuit breakers in the On (‘1’) position.

   Note: POWER3 SMP Thin and Wide Nodes receive 48-volt power by connecting a power cable between the node and the SEPBU bulkhead following the order listed below:

   - PDU-BH-P1: Processor nodes 1, 2, 3, 4
   - PDU-BH-P2: Processor nodes 5, 6, 7, 8
   - PDU-BH-P3: Processor nodes 9, 10, 11, 12
   - PDU-BH-P4: Processor nodes 13, 14, 15, 16
   - PDU-BH-P21: First SMP Node 1
   - PDU-BH-P22: Second SMP Node 5
   - PDU-BH-P23: Third SMP Node 9
   - PDU-BH-P24: Fourth SMP Node 13

2. On the other processor nodes, check the green LED 1 on the node supervisor for an On or Flashing condition.
POWER3 SMP Thin and Wide Node power (MAP 0340)

3. Is LED 1 on any other processor node On or flashing?
   - If yes, go to “Step 0340-021”
   - If no, go to “Main power (MAP 0450)” in RS/6000 SP: System Service Guide

**Step 0340-021**
When you looked at processor nodes connected to other 48-volt power harnesses, you saw that LED 1 on the other nodes’ supervisor cards were On or flashing.

1. Check all other processor nodes on the same dc power harness as the failing processor node.
   - Look for the same symptom as the failing node - the circuit breaker is in the On position but LED 1 is not lit.
2. Is the failing processor node the only node showing this symptom?
   - If yes, go to “Step 0340-022”
   - If no:
     a. This indicates that there is a problem with the 48 V dc power distribution.
     b. Go to “Open in 48V dc distribution (MAP 0560)” in RS/6000 SP: System Service Guide

**Step 0340-022**
Only the failing processor has the symptom – the circuit breaker is in the On position but LED 1 is not lit.

1. Check the cable connections at the rear of the processor node and at the 48 V dc power distribution cable connection.
2. Is there a good connection?
   - If yes, go to “Step 0340-023”
   - If no:
     a. Fix the cable connection problem.
     b. Return to “Step 0340-019” on page 1-38

**Step 0340-023**
All 48-volt connections to the processor node are good and the circuit breaker on the failing processor node is in the On position but LED 1 is not lit.

1. Put the 48-volt input cable in-line switches in the “On” (1) position.
2. Check for 48-volts at the POWER3 SMP Node end of the input cables.
   - Measure between the voltage and the return pins.
3. Is there 48 volts present at the connectors?
   - If yes, go to “Step 0340-025”
   - If no, go to “Step 0340-024”

**Step 0340-024**
You were not able to measure 48-volts across the voltage and return pins.

1. Voltage is missing at the input cables.
2. Replace the 48-volt input cables.
3. Are you able to measure 48-volts at the connector end?
   - If yes, go to “Step 0340-025”
   - If no, go to “Open in 48V dc distribution (MAP 0560)” in RS/6000 SP: System Service Guide

**Step 0340-025**
You are able to measure 48-volts at the node end of the power cable.

1. Check the green LEDs on the power supply and make certain that the cooling fans are functioning.
2. Are the power supply LEDs On and the cooling fans functioning?
   - If yes, return to “Step 0340-003” on page 1-34
POWER3 SMP Thin and Wide Node power (MAP 0340)

- If no, go to POWER3 SMP Thin and Wide Node environment (MAP 0330) "Step 0330-006" on page 1-28.

POWER3 SMP Thin and Wide Node control (MAP 0350)

**Attention:** If a POWER3 SMP Thin or Wide Node is present in this frame, it is possible that the 48 V dc power distribution is spread across more than one power harness. Check physical connections from circuit breaker(s) to 48-volt bulkhead connectors for actual power distribution.

**Attention:** The processor node(s) must be removed from active configuration before continuing. If processor node(s) is/are off, continue; otherwise, ask customers to initiate shutdown procedure and power-off processor node(s) from the control workstation, or defer maintenance until all jobs are completed. Powering off a processor node(s) in a parallel environment will cause all jobs to flush from the queue and switch initialization to rerun.

**Attention:** Servicing a processor node with an SP switch installed, will impact the entire switch network, unless the processor node has already been powered off (or fenced) and/or the switch data cable has been disconnected.

**Note:** Refer to "Service position procedures" on page 3-10 for placing nodes into the service position or for removing them from the service position.

**Note:** Refer to "Viewing Switch Partitions" in RS/6000 SP: SP Switch Service Guide or RS/6000 SP: Switch2 Service Guide for locating and fencing or unfencing nodes within a switch partition.

**Step 0350-001**
You have detected a control problem in either a POWER3 SMP Thin or Wide Node and Processor node diagnostics and descriptions (MAP 0130) in RS/6000 SP: System Service Guide directed you to this procedure. Use Table 1-13 to continue service.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem with node power</td>
<td>Go to &quot;POWER3 SMP Thin and Wide Node environment (MAP 0330)&quot; on page 1-27</td>
</tr>
<tr>
<td>Perspectives LCD display is missing segments or remains blank</td>
<td>Go to &quot;Step 0350-018&quot; on page 1-45</td>
</tr>
<tr>
<td>Node will not reset</td>
<td>Go to &quot;Step 0350-002&quot;</td>
</tr>
</tbody>
</table>
| No response from TTY console                   | Close existing TTY window and open another.  
|                                                | Go to "Step 0350-011" on page 1-43 |
| Yellow or green LEDs on node will not light.   | Go to "Step 0350-021" on page 1-47 |

**Step 0350-002**
A POWER3 SMP Thin or Wide Node will not reset.
1. Check with customer to make sure this processor node is not in the current active configuration.
   - If the processor node is not operational and actively working at this time, continue service.
POWER3 SMP Thin and Wide Node control (MAP 0350)

• If the processor node is operational and actively working, schedule a time convenient for the customer.

2. Reset the nodes from Perspectives.
   a. From the control workstation, open a Hardware Perspectives session.
   b. Select the Node Status tab.
   c. Click the power off button.
   d. From the new window, select “Reset”
   e. Click “Apply”
3. Does the node reset?
   • If yes, go to “Step 0350-003”
   • If no, go to “Step 0350-004”

Step 0350-003
You have a node that would not reset. However, you were able to reset it from Perspectives. This indicates that the node may have an intermittent problem.

1. Please record the following information:
   • Node number
   • Date and time the fault was reported
   • Type of fault reported.
2. Check the customer’s written logs and ask the customer if this fault has been previously recorded.
   • If the records indicate that this is a recurring problem, go to “Step 0350-009” on page 1-42.
   • If this is not a recurring problem, go to “End of call MAP (MAP 0650) in RS/6000 SP: System Service Guide.”

Step 0350-004
The processor node would not reset from Perspectives.

1. If necessary, open a Perspectives Hardware session.
   a. Select the Node Status tab.
   b. Click the power off button.
   c. From the new window, select “Shutdown”
   d. Click “Apply”
   e. After shutdown is complete, use the Node Status page to restart the node.
   f. While node restarts, check the LCDs for sequence indicating IPL.
2. Does the LCD sequence indicate successful IPL?
   • If yes, go to “Step 0350-005”
   • If no:
     a. Node supervisor card not responding to commands.
     b. Go to “Frame supervisor not responding (MAP 0110)” in RS/6000 SP: System Service Guide.

Step 0350-005
Sequencing of the node’s LCDs indicates the node was able to IPL.

1. Do LCDs eventually indicate completion of IPL sequence (i.e. blank or “uuu”)?
   • If yes, go to “Step 0350-006” on page 1-42
   • If no:
     a. Processor node has problem IPLing.
     b. Go to “Processor node function (MAP 0140)” in RS/6000 SP: System Service Guide and refer to “Step 0140-004” of that MAP to continue service.
Step 0350-006
The LCD sequence indicates that IPL went to completion.
1. From the Perspectives Node Status window, click on the “Open TTY” button to open a TTY console.
2. From the TTY console:
   - Issue the command: diag
   - Select “Advanced Diagnostic Routines”
   - Select “System Verification”
   - Select “All Resources”.
3. Does this test indicate a failure?
   - If yes, go to Step 0350-009
   - If no, go to Step 0350-007

Step 0350-007
The advanced diagnostics did not indicate a failure.
1. If necessary, open a Hardware Perspectives session from the control workstation.
2. Reset the nodes from Perspectives.
   a. Select the Node Status tab.
   b. Click the power off button.
   c. From the new window, select “Reset”
   d. Click “Apply”
3. Does the processor node reset?
   - If yes, go to Step 0350-008
   - If no, go to Step 0350-009

Step 0350-008
The advanced diagnostics test passed and you were able to reset the node.
1. Was this a solid problem? (If the problem was cleared by power-on only, answer No.)
   - If yes:
     a. You have resolved the problem.
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide
   - If no:
     a. This is an intermittent problem, record the following information:
        – Node number
        – Date and time fault was reported
        – Type of fault reported
        – Action taken or component replaced
     b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide

Step 0350-009
You have an intermittent problem or the advanced diagnostics system verification indicated a failure or you have a problem with resetting the node. From Perspectives on the control workstation:
1. Power off the processor node.
2. Place the node into the service position.
3. Use Table 1-14 on page 1-43 to continue service:
Table 1-14. POWER3 SMP Thin or Wide Node advanced diagnostics

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1       | Cable between frame supervisor and node supervisor card | 1. Check for proper seating and opens/shorts. If no problem is found, continue at Priority 2.  
2. Repair or replace cable as required.  
3. Go to "Step 0350-010" to verify fix. |
| 2       | Node supervisor card                            | 1. Check for proper seating and opens/shorts. If no problem is found, continue at Priority 3.  
2. Repair or replace cable as required.  
3. Go to "Step 0350-010" to verify fix. |
| 3       | I/O Planar Board                                | 1. Replace board.  
2. Go to "Step 0350-010" to verify fix. |
| 4       | All replaced                                    | Call next level of support.                                            |

Step 0350-010
You repaired or replaced a component as directed in Table 1-14
1. Remove processor node from the service position.  
2. Reconnect all cables at rear of the processor node.  
3. Put the circuit breaker on the processor node into the On (‘1’) position.  
4. Return to "Step 0350-005" on page 1-41 to continue service.

Step 0350-011
You were not able to obtain a response from a TTY session.
1. From system file server, telnet into this processor node:  
   \texttt{telnet nodename}  
2. Log in as “root”.  
3. Have the customer check to make sure that the TTY port on the processor node is correctly defined.  
   a. Check the console configuration by issuing the following command in the processor node’s window:  
   \texttt{smit console}  
   • Use the menu options to check and reconfigure the console as required.  
   • If the console is not configured to use the TTY port, then the processor node will not print messages to the screen during IPL.  
   b. Check the TTY configuration by issuing the following command in the processor node’s window:  
   \texttt{smit tty}  
   • Use the menu options to check and reconfigure the “s1” TTY port as required.  
   • The proper TTY parameters are listed in Parallel System Support Programs for AIX: Administration Guide, SA22-7348.
4. Is the TTY port defined properly, and the console setup to use the TTY port?  
   • If yes, go to "Step 0350-012"  
   • If the TTY is not responding due to the customer’s system configuration:  
     a. The customer must reconfigure these parameters.  
     b. Go to “End of call MAP (MAP 0650)” in \textit{RS/6000 SP: System Service Guide}.

Step 0350-012
The TTY port is defined properly and the console is setup to use the TTY port however, the TTY session is not responding. This indicates that the problem is hardware related.
1. If a console TTY window is already open, close the session.
POWER3 SMP Thin and Wide Node control (MAP 0350)

2. Log into the node over the Ethernet:
   ```
   telnet nodename
   ```

3. In order to run the diagnostics on tty0, you must switch the console to tty1. Do this by entering the following command:
   ```
   chcons /dev/tty1
   ```

4. Use the `diag` command to run regular (not advanced) diagnostics on “tty0”.

5. Do the diagnostics pass (no problem found)?
   - If yes, go to [Step 0350-015](#)
   - If no, go to [Step 0350-013](#)

**Step 0350-013**
The diagnostics failed after they were initiated from an Ethernet telnet session.

1. Run wrap diagnostics on S1 to node supervisor cable.

2. Do the diagnostics fail?
   - If yes, go to [Step 0350-014](#)
   - If no, go to [Step 0350-015](#)

**Step 0350-014**
The diagnostics failed on the S1 to node supervisor cable.

1. Run wrap diagnostics on S1.

2. Do the diagnostics fail?
   - If yes:
     a. Replace I/O planar board.
     b. Go to [Step 0350-016](#) on page 1-45
   - If no, go to [Step 0350-015](#)

**Step 0350-015**
The node is properly configured but you are unable to get a response from the node through a TTY session. However, you were able to get the diagnostics to pass.

1. If needed, log into the node over the Ethernet:
   ```
   telnet nodename
   ```

2. Return the console to tty0. Do this by entering the following command:
   ```
   chcons /dev/tty0
   ```

3. From the control workstation, open a Perspectives session displaying the Node Status window.

4. Close the TTY session.

5. Have the customer remove the processor node from the active system configuration and power off the processor node.

6. Put the circuit breaker on the processor node into the Off (‘0’) position.

7. Place processor node into the service position.

8. Refer to Table 1-15 for priority of replacement or repair of components.

### Table 1-15. POWER3 SMP Thin or Wide Node reset diagnostics

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Node supervisor card</td>
<td>1. Check for proper seating. If no problem found, continue at Priority 2.</td>
</tr>
<tr>
<td>(1 of 4)</td>
<td></td>
<td>2. Repair or replace cable as required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Go to <a href="#">Step 0350-016</a> on page 1-45 to verify fix.</td>
</tr>
</tbody>
</table>
Table 1-15. POWER3 SMP Thin or Wide Node reset diagnostics (continued)

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2 of 4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Cables between frame supervisor and node supervisor card</td>
<td>1. Replace cable. 2. Go to [Step 0350-016] to verify fix.</td>
</tr>
<tr>
<td>(3 of 4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>All replaced</td>
<td>Call next level of support.</td>
</tr>
<tr>
<td>(4 of 4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Step 0350-016**
You have repaired or replaced a component.
1. Remove processor node from the service position.
2. Reconnect all cables at rear of the processor node.
3. As processor node completes IPL, check the TTY console window.
4. If necessary, open a Perspectives session displaying the Node Status window from the control workstation.
5. Put the processor node into the SERVICE mode.
6. Put the circuit breakers at the front of the processor node in the On (‘1’) position.
7. Do you get any data on the TTY console screen?
   a. If yes, go to [Step 0350-017]
   b. If no:
      a. Return to [Step 0350-015] on page 1-44
      b. Continue service at the next priority level.

**Step 0350-017**
You repaired or replaced a component and you are now able to get data output from the TTY session. This indicates that the processor node IPLed in SERVICE mode.
1. From the TTY session, enter the command diag.
2. Select the “Advanced Diagnostic Routines”.
3. Select “System Verification”.
4. Select the “All Resources” option.
5. Does the processor node pass all diagnostic tests?
   a. You have resolved the problem.
   b. Go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide.
   c. Repair the problem indicated by the diagnostics.
   d. Use "Processor node diagnostics and descriptions (MAP 0130)" in RS/6000 SP: System Service Guide if necessary.

**Step 0350-018**
You have a Perspectives LCD problem.
1. Have the customer remove the processor node from the active system configuration and power off the processor node.
2. Put all processor node circuit breakers into the Off (‘0’) position.
3. Place the processor node into the service position.
4. Refer to Table 1-16 for priority of replacement or repair of components.

Table 1-16. POWER3 SMP Thin or Wide Node Perspectives LCD diagnostics

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1        | Cable between frame supervisor and node supervisor card | 1. Check for proper seating. If no problem found, continue at Priority 2.  
| (1 of 4) |                                              | 2. Repair or replace cable as required.  
|          |                                              | 3. Go to [Step 0350-019](#) to verify fix.                           |
| 2        | Node supervisor card                         | 1. Check for proper seating. If no problem found, continue at Priority 3.  
| (2 of 4) |                                              | 2. Repair or replace cable as required.  
|          |                                              | 3. Go to [Step 0350-019](#) to verify fix.                           |
| 3        | I/O Planar Board                             | 1. Replace board.                                                       
| (3 of 4) |                                              | 2. Go to [Step 0350-019](#) to verify fix.                           |
| 4        | All Replaced                                 | Call next level of support.                                            |

Step 0350-019
You have repaired or replaced a component.
1. Remove the processor node from the service position.
2. Reconnect all cables at rear of the processor node.
3. From the control workstation, power on this processor node.
4. From the control workstation, make sure the LCDs for this processor node are displayed on the screen.
5. Check the LCDs for the IPL sequence.
6. Do the LCDs indicate the IPL sequence?
   • If yes, go to [Step 0350-020](#)  
   • If no:
     a. Return to [Step 0350-018](#) on page 1-45  
     b. Continue service at the next priority level.

Step 0350-020
You repaired or replaced a component and the LCDs now show an IPL sequence.
1. From the TTY session, enter the command `diag`.
2. Select the “Advanced Diagnostic Routines”.
3. Select “System Verification”.
4. Select the “All Resources” option.
5. Does the processor node pass all diagnostic tests?
   • If yes:
     a. You have resolved the problem.  
     b. Go to “End of call MAP (MAP 0650)” in [RS/6000 SP: System Service Guide](#)
   • If no:
     a. Repair the problem indicated by the diagnostics.  
     b. Use “Processor node diagnostics and descriptions (MAP 0130)” in [RS/6000 SP: System Service Guide](#) if necessary.
POWER3 SMP Thin and Wide Node control (MAP 0350)

Step 0350-021
You have observed that the yellow or green LED on the node supervisor is not functioning and Table 1-13 on page 1-40 directed you to this procedure.

1. Have the customer remove the processor node from the active system configuration and power off the processor node.
2. Put the circuit breakers on the processor node into the Off (‘0’) position.
3. Perform the "Node/Switch Supervisor Self-Test."
   - Ignore any PASS/FAIL results you may receive.
   - Refer to "Node supervisor self-test" on page 3-8
4. Check yellow and green LEDs on the node supervisor card to see if each LED lights at some point.
5. Does each of the eight LEDs light at any time?
   - If yes, go to "Step 0350-025"
   - If no, go to "Step 0350-022"

Step 0350-022
Some of the LEDs on the node supervisor failed to light during the supervisor self-test.

1. Place processor node in service position.
2. Repeat the "Node/Switch Supervisor Self-Test."
   - Refer to "Node supervisor self-test" on page 3-8
3. Check to see if same color LED is always Off at the front of the node and on the node supervisor card.
4. Are LEDs of the same color always Off on both displays?
   - If yes, go to "Step 0350-024"
   - If no, go to "Step 0350-023"

Step 0350-023
When you compared LEDs at the front of the node to those on the node supervisor card, LEDs of different colors were Off.

1. Replace LED display card.
2. Repeat the "Node/Switch Supervisor Self-Test."
   - Refer to "Node supervisor self-test" on page 3-8
3. Do LEDs of the same color on both displays light at any time?
   - If yes:
     a. You have resolved the problem.
     b. Go to "End of call MAP (MAP 0650)" in RS/6000 SP: System Service Guide
   - If no, go to "Step 0350-024"

Step 0350-024
You replaced the LED display card. However, LEDs of the same color on both the front of the node and on the node supervisor card still do not light at any time.

1. Replace the node supervisor card.
2. Perform "Node/Switch Supervisor Self-Test" to verify replacement.
   - Refer to "Node supervisor self-test" on page 3-8
3. Go to "Step 0350-025"

Step 0350-025
All LEDs on the front of the node and on the node supervisor card are operating.

1. Remove the processor node from the service position.
2. Reconnect all cables at the rear of the processor node.
3. Go to "End of call MAP (MAP 0650)" in RS/6000 SP: System Service Guide.
POWER3 SMP Thin and Wide Node minimum configuration (MAP 0360)

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 minimum-configured system. If a failure is detected on the minimum-configured system, the remaining FRUs are exchanged one at a time until the failing one 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.

Attention: The node must be placed into Service Position prior to handling logic/power parts. The node must be removed from Service Position prior to attempting to answer "Does the node IPL?". For removal and replacement of logic/power parts, refer to Chapter 4, “FRU removals and replacements” on page 4-1.

Attention: When you disconnect a SCSI cable from the DASD, it is possible that some of the data required to IPL the node will be unavailable. This can happen if a required file system is fully or partially on the disconnected DASD. In this case, the node will only boot to a code in the range 517-518 or 551-557; consider this a successful IPL for purposes of this MAP only.

The physical location of a node’s boot disk may be determined two ways:

1. From the control workstation issue the command splstdata -b. The information for the node in question under install_disk will be the physical location of the node’s boot disk. (for example, 10-60-00-0,0). In some cases, this command may return a virtual address rather than the physical location, such as hdisk0 or hdiskn, where n is some other disk number. The real physical location can then be obtained by cat /var/adm/SPlogs/SPconfig/xx.lscfg | grep hdiskn. Where xx is the node number and n is the disk.

2. If the node is booted, the virtual to real location disk mapping may be obtained by the command lsdev -Cc disk on the node. If possible, keep this boot disk in the configuration. Refer Chapter 2, “Locations” on page 2-1.

Step 0360-001
Physically identify the POWER3 SMP node type:

- If you have a POWER3 SMP Thin Node, go to “Step 0360-008” on page 1-50.
- If you have a POWER3 SMP Wide Node, go to “Step 0360-002”

Note: Wide nodes are composed of an I/O Expansion assembly attached to a thin node processor unit. The I/O Expansion assembly (left side) does not contain a supervisor card.

Step 0360-002
To determine which POWER3 SMP Wide Node assembly is failing, split the CPU assembly from the I/O Expansion assembly and IPL the "thin node" section.

1. Disconnect all 4-drop SCSI cable connectors from the I/O Expansion assembly DASD.
2. Remove all adapter cards from the CPU assembly.
3. Remove the nuts securing the CPU assembly adapter card guide and remove the guide.
4. Disconnect the I/O Expansion control cable from J2 on the CPU assembly I/O planar.
5. Remove the screws securing the CPU assembly chassis to the I/O Expansion assembly chassis, then separate the two chassis.
6. Reinstall the CPU assembly adapter card guide.
7. Reinstall all CPU assembly adapter cards.
8. Does the thin node section (CPU assembly) IPL properly?
   - If yes, go to “Step 0360-003” on page 1-49
   - If no:
     a. The problem is in the thin node section.
     b. Go to “Step 0360-008” on page 1-50
Step 0360-003
You were able to IPL the thin node section of a POWER3 SMP Wide Node. This indicates that the failure is likely in the I/O Expansion assembly. Use this procedure to reassemble the POWER3 SMP Wide Node, place the I/O Expansion assembly into its minimum configuration, and continue diagnosing the problem.
1. Remove all adapters from the CPU and I/O Expansion assemblies.
2. Remove the nuts securing the CPU assembly adapter card guide and remove the guide.
3. Reinstall the I/O Expansion assembly to the CPU assembly.
4. Route the I/O Expansion assembly control cable through the chassis-wall cut-outs and reconnect the cable to J2 on the CPU assembly I/O planar.
5. Reinstall the CPU assembly adapter card guide.
6. Reinstall all CPU assembly adapter cards.
7. Reconnect all 4-drop SCSI cable connectors to their respective I/O Expansion assembly DASD.
8. Does the node IPL properly?
   a. If yes, go to “Step 0360-004”
   b. If no:
      a. The problem is likely in the minimum configured I/O Expansion assembly.
      b. Go to “Step 0360-016” on page 1-52

Step 0360-004
With the I/O Expansion assembly in its minimum configuration, you were able to IPL the reassembled POWER3 SMP Wide Node.
1. One at a time, reinstall and test all the I/O Expansion assembly adapter cards that you previously removed in “Step 0360-003”
2. Does the node IPL properly?
   a. If yes, go to “Step 0360-007” on page 1-50
   b. If no, go to “Step 0360-005”

Step 0360-005
You reinstalled an adapter card into the I/O Expansion assembly of a POWER3 SMP Wide Node but you were not able to IPL the node. This indicates that the card you just reinstalled has failed.
1. Replace the failing card.
2. Does the node IPL properly?
   a. If yes:
      a. Return to “Step 0360-004” and reinstall the next adapter card.
      b. If all cards have been reinstalled, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide
   b. If no:
      a. The replacement card you installed has also failed and may indicate a problem with the I/O Expansion planar.
      b. Go to “Step 0360-006”

Step 0360-006
The POWER3 SMP Wide Node failed to IPL properly after both the reinstalled adapter card (“Step 0360-004”) and its replacement adapter card (“Step 0360-005”) were installed in the I/O Expansion assembly.
• Replace the I/O Expansion assembly planar.
• Does the node IPL properly?
  a. If yes, go to “Step 0360-004”
  b. If no, call the next level of support.
POWER3 SMP Thin and Wide Node minimum configuration (MAP 0360)

Step 0360-007
You reinstalled an adapter card into the I/O Expansion assembly of a POWER3 SMP Wide Node and you were able to IPL the node. This indicates that the reinstalled card is okay.

- Return to "Step 0360-004" on page 1-49 and reinstall the next card.
- If all adapter cards have been reinstalled, go to "End of call MAP (MAP 0650)" in RS/6000 SP: System Service Guide.

Step 0360-008
You have a failing POWER3 SMP Thin Node or a POWER3 SMP Wide Node that has a problem in the thin node section and you need to place the unit into its minimum configuration. Use this procedure to place the Thin Node or thin node section into minimum configuration and then continue diagnosing the problem.

1. Remove all memory cards from the system planar.
2. Populate one memory card with DIMMs (refer to Figure 2-23 on page 2-18), then install that memory card in memory slot 1.
3. Ensure that a CPU card is installed in CPU slot 1.
4. If a CPU card is installed in CPU slot 2, remove it.
5. Remove all CPU assembly adapter cards.
6. Does the node IPL properly?
   - If yes, go to "Step 0360-010".
   - If no, go to "Step 0360-009".

Step 0360-009
You have placed a POWER3 SMP Thin Node or the thin node section of a POWER3 SMP Wide Node into minimum configuration but the node still does not IPL properly.

1. One at a time, replace the following components and IPL the node.
   - Memory DIMMs
   - Memory card
   - CPU card
   - Boot DASD
   - SCSI cable (2- or 4-drop)
   - I/O planar
   - System planar
   - Flat ribbon power cable
2. Does the node IPL properly?
   - If yes, go to "Step 0360-010".
   - If no:
     a. Replace the next component listed in this step.
     b. If you have replaced all listed components, call next level of support.

Step 0360-010
You were able to properly IPL a POWER3 SMP Thin Node or the thin node section of a POWER3 SMP Wide Node after you placed it into minimum configuration. You must now reinstall and test the components you removed to place the node into minimum configuration.

1. One at a time, reinstall and test the components removed in "Step 0360-008".
2. Does the node IPL properly?
   - If yes, go to "Step 0360-013" on page 1-51.
   - If no, go to "Step 0360-011" on page 1-51.
Step 0360-011
You reinstalled a component in a POWER3 SMP Thin Node or the thin node section of a POWER3 SMP Wide Node but you were not able to IPL the node. This indicates that the component you just reinstalled has failed.
1. Replace the failing component.
2. Does the node IPL properly?
   • If yes:
     a. Return to “Step 0360-010” on page 1-50 and reinstall the next component.
     b. If all components have been reinstalled, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide
   • If no:
     a. The replacement component you installed failed and may indicate a problem with the component’s planar.
     b. Go to “Step 0360-012”

Step 0360-012
You arrived at this step from “Step 0360-011” because a POWER3 SMP Thin Node or the thin node section of a POWER3 SMP Wide Node failed to IPL after installation of a replacement component.
1. Replace the (system or I/O) planar to which the failing replacement component was installed.
2. Does the node IPL properly?
   • If yes, go to “Step 0360-013”
   • If no, call the next level of support.

Step 0360-013
You reinstalled a component in a POWER3 SMP Thin Node or the thin node section of a POWER3 SMP Wide Node and you were able to IPL the node. This indicates that the reinstalled component is okay.
1. Return to “Step 0360-010” on page 1-50 and reinstall the next component.
2. If all components have been replaced, and this is a POWER3 SMP Thin Node, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide
3. If all components have been replaced, and this is a thin node section from a POWER3 SMP Wide Node, go to “Step 0360-014”

Step 0360-014
You arrived here from “Step 0360-013” because the repaired thin node section of the POWER3 SMP Wide Node can now IPL and the I/O Expansion section (separated in “Step 0360-002” on page 1-48) must now be reattached and tested.
1. Remove all adapter cards from the CPU assembly.
2. Remove the nuts securing the CPU assembly adapter card guide, and remove the guide.
3. Reinstall the I/O Expansion assembly to the CPU assembly.
4. Route the I/O Expansion control cable through the chassis-wall cut-outs and reconnect the cable to J2 on the CPU I/O planar.
5. Reinstall the CPU assembly adapter card guide.
6. Reinstall all CPU assembly adapter cards.
7. Reconnect all 4-drop SCSI cable connectors to their respective I/O Expansion assembly DASDs.
8. Does the node IPL properly?
   • If yes, go to “End of call MAP (MAP 0650)” in RS/6000 SP: System Service Guide
   • If no, go to “Step 0360-015”

Step 0360-015
The reassembled POWER3 SMP Wide Node does not IPL properly. Use this procedure to place the I/O Expansion assembly into its minimum configuration and continue testing.
1. Remove all adapter cards from the I/O Expansion assembly.

2. Does the node IPL properly?
   - If yes, go to "Step 0360-004" on page 1-49
   - If no:
     a. The problem is likely in the minimum configured I/O Expansion assembly.
     b. Go to "Step 0360-016"

**Step 0360-016**
You have determined that the minimum configured I/O Expansion assembly of a POWER3 SMP Wide Node is likely failing.

1. Replace the I/O Expansion control cable.

2. Does the node IPL properly?
   - If yes, go to "Step 0360-004" on page 1-49
   - If no, go to "Step 0360-017"

**Step 0360-017**
You have replaced the I/O Expansion control cable and were not able to IPL the minimum configured POWER3 SMP Wide Node.

1. Replace the I/O Expansion planar.

2. Does the node IPL properly?
   - If yes, return to "Step 0360-004" on page 1-49
   - If no, go to "Step 0360-018"

**Step 0360-018**
You replaced the I/O Expansion assembly planar but you were not able to IPL the reassembled POWER3 SMP Wide Node.

1. Replace the I/O Expansion assembly interposer adapter cable.

2. Does the node IPL properly?
   - If yes, go to "Step 0360-004" on page 1-49
   - If no, go to "Step 0360-019"

**Step 0360-019**
You replaced the I/O Expansion assembly interposer adapter cable but you were not able to IPL the reassembled POWER3 SMP Wide Node.

1. Replace the I/O Expansion assembly interposer adapter card.

2. Does the node IPL properly?
   - If yes, go to "Step 0360-004" on page 1-49
   - If no, go to "Step 0360-020"

**Step 0360-020**
You replaced the I/O Expansion assembly interposer adapter card but you were not able to IPL the reassembled POWER3 SMP Wide Node.

1. Replace the I/O Expansion power assembly.

2. Does the node IPL properly?
   - If yes, go to "Step 0360-004" on page 1-49
   - If no, call the next level of support.
Chapter 2. Locations

Naming standard for RS/6000 SP components

Format structure

Example of format structure

Frame (WWW)

Major assembly (XXX)

Sub-assembly (YY)

Connection location (ZZZZ)

Examples for using complete levels of nomenclature

Location diagrams of the RS/6000 SP components

Front and rear views of RS/6000 SP frame

Frame locations

Frame (FRA)

332 MHz SMP Thin and Wide Node locations

POWER3 SMP Thin and Wide Node locations

POWER3 SMP Thin Node memory card - DIMM configuration

Connector details

Cable routing

This section provides location information for the RS/6000 SP frames and the following nodes:

- 332 MHz Symmetric MultiProcessor (SMP) Thin and Wide Node
- 200 MHz POWER3 SMP Thin and Wide Node
- 375/450 MHz POWER3 SMP Thin and Wide Node

Naming standard for RS/6000 SP components

The purpose of this section is to define a naming standard for all components in the RS/6000 SP system. This standard provides a consistent, logical naming convention system necessary for documentation including details, assembly drawings, schematics, manufacturing documents, service documents, and customer publications.

Format structure

The RS/6000 SP system is structured in a modular fashion with different levels of assembly which can be independently described. These levels are:

1. System level
2. Frame level
3. Major assembly level (e.g. processor node).
4. Sub-Assembly level (e.g. cards, fan assembly).

The format structure is used to individually identify any connection location at any level in the assembly. The main use of this format is to describe connector, cabling, and schematic locations shown in tables and diagrams throughout this manual.

Example of format structure

Format: FRAME(WWW) - MAJOR ASSEMBLY(XXX) - SUBASSEMBLY(YY) - CONNECTOR NUMBER (ZZZZ)

Frame (WWW)

- 1st character is the frame type:
  - E for RS/6000 SP frame
  - L for logical RS/6000 SP frame (used for models 30X and 40X)
  - S for multi-switch frame
- C for control workstation
- Z for another frame such as a server
- 2nd and 3rd characters are the frame number:
  - 00 for any/all frames (designates location inside any/all frames)
  - 01 - 99 for frames 1-99 (specific to that frame)

Notes:
1. E01 designates RS/6000 SP physical frame 1
2. L00 designates any/all RS/6000 SP logical frames
3. S00 designates any/all RS/6000 SP multi-switch frames
4. For locations inside a frame, the Frame (WWW) and/or Major Assembly (XXX) strings may be omitted, making the format YY-ZZZ.

Major assembly (XXX)
- 1st character is the major assembly type (all three characters if the assembly occurs only once in a frame):
  - N for processor node assembly
  - S for switch assembly
  - PDU for power distribution unit assembly
  - ADC for ac/dc Converter assembly
  - FRA for frame
- 2nd and 3rd characters are the major assembly number:
  - 00 for any/all major assemblies (designates location inside any/all major assemblies)
  - 01 - 99 for major assembly 1-99 (specific to that major assembly)

Sub-assembly (YY)
1st and 2nd characters are the assembly designation inside the major assembly. (This string may be omitted in some cases.)

Refer to the lists of two-character designations associated with each major assembly throughout this chapter.

Example: SC denotes a switch card.

Connection location (ZZZZ)
- 1st character is the connection type:
  - P for plug (cable side)
  - J for jack (card/component side)
  - G for chassis ground connection
- 2nd, 3rd, and 4th characters are number identifiers. Leading zeroes may be omitted.

Example: P102 is plug 102

Examples for using complete levels of nomenclature
To describe the jack 23 on the switch assembly bulkhead in the second RS/6000 SP frame in a four-frame configuration, designate as:
E02-S01-BH-J23

To describe plug 1 on the power card of the any switch assembly of any RS/6000 SP frame in any size system configuration, designate as:
E00-S00-PC-P1 or just PC-P1
Location diagrams of the RS/6000 SP components

See Figure 2-1, Figure 2-2 on page 2-4, and Figure 2-4 on page 2-6, in the pages that follow, for views of the RS/6000 SP frame locations. Refer to the diagrams included in this section for specific views and cabling of the main component sections in the RS/6000 SP frame.

Front and rear views of RS/6000 SP frame

Figure 2-1 shows a front view of the RS/6000 SP frame locations. “Frame (FRA)” on page 2-6 describes the assembly designations for the RS/6000 SP frame.

Figure 2-1. Front view of frame locations. See notes below.

Figure notes:
1. Wide processor nodes take up an entire shelf position (two thin processor node slots). They are identified by the odd numbered position.
2. In a F/C 2030/1 frame, switch assemblies take up an entire shelf partition. (They are identified by the even-numbered position.)
3. Processor node slots are numbered up to N16.

4. A High node or SMP High node takes up 2 shelf positions (slots). It is identified by the least odd number position of the occupied slots.

5. Frames equipped with the SP Redundant Power Supply must have four power modules (books) installed in the SEPBU.

Figure 2-2 shows a front view of the RS/6000 SP multi-switch frame.

Figure 2-3 on page 2-5 shows a front view of the Model 3AX (49-inch) frame.
Figure 2-3. Front view of 49-inch frame locations. See notes below.

**Figure notes:**

1. Wide processor nodes take up an entire shelf position (two thin processor node slots). They are identified by the odd numbered position.
2. In a F/C 2030/1 frame, switch assemblies take up an entire shelf partition. (They are identified by the even-numbered position.)
3. Processor node slots are numbered up to N8.
4. The single-phase SEPBU power unit must have a power module in position “D” (right-most slot). For N+1 operation, a power module may be installed in position “C” (next to slot “D”).
5. There are no skirts on the 49-inch frame.
6. A High node or SMP High node takes up 2 shelf positions (slots). It is identified by the least odd number position of the occupied slots.
7. The switch assembly is not available in the 1.4 m frame.

**Figure 2-4 on page 2-6** shows a rear view of the RS/6000 SP frame locations.
Frame locations

Figure 2-1 on page 2-3 shows a front view of the RS/6000 SP frame locations, with numbered processor nodes, and the three phase SEPBU.

Frame (FRA)
This list shows the designations specifically for the RS/6000 SP frame:

G1: Right-hand rear ground
G2: Left-hand rear ground
G3: PDU ac ground
G4: PDU dc ground
G5: Input cable ground

Note: See notes under Figure 2-1 on page 2-3 for processor node/switch assembly numbering.
G6: Front door ground
G7: Rear door ground
G8: Ground
SW: Power-on switch
LD: LED card
FC: Front cover
RC: Rear cover

Example: E01-FRA-G1

332 MHz SMP Thin and Wide Node locations

Figure 2-5 shows a high level component diagram of a RS/6000 SP 332 MHz SMP processor node and Figure 2-6 on page 2-8 shows a top view.

Figure 2-5. 332 MHz SMP Node high level component diagram
Figure 2-6. Top view of 332 MHz SMP Node
Figure 2-7. 332 MHz SMP Node rear view
Figure 2-8. Top view of 332 MHz SMP Thin Processor Node
Figure 2-9. 332 MHz SMP Node I/O expansion planar

Figure 2-10. 332 MHz SMP Node riser card
To I/O Planar

Memory Card Connector #2 (J13)
Memory Card Connector #1 (J12)
Processor Card Connector #1 (J8, J9)
Processor Card Connector #2 (J5, J6)

System Planar

Figure 2-11. 332 MHz SMP Node I/O planar

Figure 2-12. 332 MHz SMP Node system planar

J5, J6  Processor card connector #2 (Processor - Slot 2)
J8, J9  Processor card connector #1 (Processor - Slot 1, Base Card)
J12    Memory card connector #1 (Memory - Slot 1)
J13    Memory card connector #2 (Memory - Slot 2)

Note: To IPL successfully, a processor card must be installed in processor slot 1.
POWER3 SMP Thin and Wide Node locations

This section shows location information for 200 MHz and 375/450 MHz POWER3 SMP Thin and Wide Nodes.

**Figure 2-14** shows a high level component diagram of a RS/6000 SP POWER3 SMP Wide Node and **Figure 2-15 on page 2-14** shows a top view.
**Figure 2-15. Top view of POWER3 SMP Wide Node**

**Figure 2-16. POWER3 SMP Wide Node rear view**
Figure 2-17. Top view of POWER3 SMP Thin Node

Figure 2-18. POWER3 SMP Wide Node interposer card
Figure 2-19. POWER3 SMP Wide Node I/O expansion planar

Figure 2-20. POWER3 SMP Thin Node I/O planar
POWER3 SMP Thin Node memory card - DIMM configuration

**General DIMM configuration rules:**
1. Two memory cards are always shipped per node, even if no DIMMs are installed on the card.
2. DIMMs must be populated in horizontal pairs.
3. DIMM pairs must be homogeneous (128 MB with 128 MB; 256 MB with 256 MB; and 512 MB with 512 MB).
4. If 512 MB DIMMs are used, they must occupy slots 3 and 4 of the Card 1 (375/450 MHz POWER3 SMP Nodes only).
5. Populate any 128 MB DIMMs next.
6. Populate any 256 MB DIMMs next.
7. Populate any remaining 512 MB DIMMs (375/450 MHz POWER3 SMP Nodes only).

**128 MB DIMM rules:**
1. Populate 128 MB DIMMs from the bottom to the top of the Card 1.
2. Populate remaining 128 MB DIMMs from the bottom to the top of the Card 2.
256 MB DIMM rules:
1. Populate 256 MB DIMMs from the top to the bottom of the Card 2.
2. Populate remaining 256 MB DIMMs from the top to the bottom of the Card 1.

512 MB DIMM rules (375/450 MHz POWER3 SMP Nodes only):
1. Populate 512 MB DIMMs in slots 3 and 4 in Card 1.
2. Populate remaining 512 MB DIMMs starting in either, the bottom of Card 1 or after the last 128 MB DIMM. Continue populating the 512 MB DIMMs to the top of Card 1 and from the bottom to the top of Card 2.

Connector details
Figure 2-25 on page 2-19 shows RS/6000 SP component connector details.
Cable routing

Figure 2-26 on page 2-20 and Figure 2-27 on page 2-20 show back views of the RS/6000 SP frame, showing the horizontal and vertical paths of cable routing from connector-to-connector, with the depth amplified on the drawing.

Figure 2-25. RS/6000 SP connector details (as seen at receiving ends, not at cable ends)
Note: For a multi-switch frame (F/C 2030/1), refer to Figure 2-26.

Table 2-1 on page 2-21 shows external cable routing in a RS/6000 SP frame populated with 16 processor nodes. (Refer to "Cable routing" on page 2-19 to see the routing paths.)
Table 2-1. External cable routing

<table>
<thead>
<tr>
<th>Slot Number (Node)</th>
<th>Cable Budget (millimeters (inches))</th>
<th>Frame Entrance (New Style)</th>
<th>Frame Entrance (Old Style)</th>
<th>Vertical Routing (Old Style)</th>
<th>Horizontal Routing (Old Style)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1800 (71)</td>
<td>E3</td>
<td>E1</td>
<td>V4</td>
<td>H3</td>
</tr>
<tr>
<td>2</td>
<td>1500 (59)</td>
<td>E3</td>
<td>E1</td>
<td>V4</td>
<td>H3</td>
</tr>
<tr>
<td>3</td>
<td>1680 (66)</td>
<td>E3</td>
<td>E2</td>
<td>V5</td>
<td>H4</td>
</tr>
<tr>
<td>4</td>
<td>1980 (78)</td>
<td>E3</td>
<td>E2</td>
<td>V5</td>
<td>H4</td>
</tr>
<tr>
<td>5</td>
<td>2160 (85)</td>
<td>E3</td>
<td>E1</td>
<td>V3</td>
<td>H5</td>
</tr>
<tr>
<td>6</td>
<td>1850 (73)</td>
<td>E3</td>
<td>E1</td>
<td>V3</td>
<td>H5</td>
</tr>
<tr>
<td>7</td>
<td>2030 (80)</td>
<td>E3</td>
<td>E2</td>
<td>V6</td>
<td>H6</td>
</tr>
<tr>
<td>8</td>
<td>2340 (92)</td>
<td>E3</td>
<td>E2</td>
<td>V6</td>
<td>H6</td>
</tr>
<tr>
<td>9</td>
<td>2510 (99)</td>
<td>E3</td>
<td>E1</td>
<td>V2</td>
<td>H7</td>
</tr>
<tr>
<td>10</td>
<td>2210 (87)</td>
<td>E3</td>
<td>E1</td>
<td>V2</td>
<td>H7</td>
</tr>
<tr>
<td>11</td>
<td>2390 (94)</td>
<td>E3</td>
<td>E2</td>
<td>V7</td>
<td>H8</td>
</tr>
<tr>
<td>12</td>
<td>2690 (106)</td>
<td>E3</td>
<td>E2</td>
<td>V7</td>
<td>H8</td>
</tr>
<tr>
<td>13</td>
<td>2870 (113)</td>
<td>E3</td>
<td>E1</td>
<td>V1</td>
<td>H9</td>
</tr>
<tr>
<td>14</td>
<td>2570 (101)</td>
<td>E3</td>
<td>E1</td>
<td>V1</td>
<td>H9</td>
</tr>
<tr>
<td>15</td>
<td>2740 (108)</td>
<td>E3</td>
<td>E2</td>
<td>V8</td>
<td>H10</td>
</tr>
<tr>
<td>16</td>
<td>3050 (120)</td>
<td>E3</td>
<td>E2</td>
<td>V8</td>
<td>H10</td>
</tr>
</tbody>
</table>
Chapter 3. Service procedures

Personal ESD requirements .......................................................... 3-3
Running diagnostics in a processor node ........................................... 3-3
  NORMAL mode (concurrent diagnostics) ........................................ 3-3
  SERVICE mode (from disk) .......................................................... 3-4
  Service mode (from network boot) ............................................... 3-4
Selecting a processor node boot response ....................................... 3-4
IPLing processor nodes from network device (two methods) .................. 3-5
  Method one: network boot method .............................................. 3-6
  Method two: manual (hand-conditioning) method ............................ 3-6
Updating the Ethernet hardware address ......................................... 3-6
Checking errors using “errpt” ....................................................... 3-6
  Using the “errpt” command ..................................................... 3-6
  Interpreting “errpt” output for “sphwlog” errors ............................ 3-7
  Sample “errpt −a ...” output report .......................................... 3-7
Node supervisor self-test ............................................................. 3-8
Node supervisor status verification using Perspectives ....................... 3-9
Base code verification ..................................................................... 3-9
Updating the node supervisor code ............................................... 3-10
Service position procedures .......................................................... 3-10
  Placing a 332 MHz SMP or POWER3 SMP Thin and Wide Node into service position ..... 3-10
  Replacing a 332 MHz SMP or POWER3 SMP Thin and Wide Node from service position .... 3-11
Resettting the clock and bootlist after servicing a node ....................... 3-11
Installing firmware updates on SP nodes ......................................... 3-12
Draining the NVRAM ..................................................................... 3-12
  Physically draining the NVRAM .................................................. 3-12
  Logically draining the NVRAM .................................................... 3-12
Memory test hang problem ............................................................. 3-13
  General memory information ..................................................... 3-13
  Problem resolution steps .......................................................... 3-13
E1xx code boot problems ............................................................... 3-14
Firmware utilities .......................................................................... 3-15
  Text-based System Management Services ..................................... 3-15
  Display configuration ............................................................... 3-16
  Multiboot ................................................................................. 3-17
    Select Software ....................................................................... 3-18
    Software Default ..................................................................... 3-18
    Select Install Devices ............................................................. 3-18
    Select Boot Devices ............................................................... 3-18
    OK Prompt ............................................................................ 3-19
    Multiboot Startup .................................................................... 3-20
Utilities ....................................................................................... 3-20
  Set Passwords and Unattended Start Mode ................................... 3-22
  Utilities option 2 ....................................................................... 3-22
  Display Error Log ..................................................................... 3-22
  Remote Initial Program Load Setup ............................................. 3-23
  Change SCSI Id ....................................................................... 3-27
  Update System Firmware ........................................................... 3-27
  Update Service Processor Firmware ............................................ 3-28
  Select Console ......................................................................... 3-28
  Select language ........................................................................ 3-28
Open firmware command prompt ....................................................... 3-28
Service processor menus ............................................................... 3-29
  Menu inactivity ........................................................................ 3-29

© Copyright IBM Corp. 1999, 2002 3-1
How to access service processor menus locally ........................................... 3-29
How to access service processor menus remotely ........................................... 3-29
Service processor menu options ............................................................... 3-29
Main menu ............................................................................................... 3-31
Service processor setup menu .................................................................... 3-32
Passwords .................................................................................................. 3-32
Change privileged access password ............................................................ 3-32
Change general access password ................................................................. 3-32
Enable/disable console mirroring ............................................................... 3-32
Start talk mode ......................................................................................... 3-32
OS Surveillance setup menu ........................................................................ 3-32
Reset service processor .............................................................................. 3-33
Reprogram service processor flash EPROM ............................................... 3-33
Serial port snoop setup menu ...................................................................... 3-33
System power control menu ....................................................................... 3-33
Enable/disable unattended start mode ......................................................... 3-33
Ring indicate power-on menu ...................................................................... 3-33
Reboot/restart policy setup menu ............................................................... 3-33
Power-on system ....................................................................................... 3-34
Power-off system ...................................................................................... 3-34
Enable/disable fast system boot ................................................................... 3-34
Boot mode menu ........................................................................................ 3-34
System information menu ........................................................................... 3-35
Read VPD .................................................................................................. 3-35
Read VPD image from last system boot ....................................................... 3-35
Read progress indicator from last system boot ......................................... 3-35
Read service processor error logs ............................................................... 3-36
Read system POST errors ........................................................................... 3-36
Read NVRAM ............................................................................................. 3-36
Read service processor configuration ......................................................... 3-36
View system environmental conditions ....................................................... 3-36
Processor configuration/deconfiguration menu .......................................... 3-36
Memory configuration/deconfiguration menu .............................................. 3-37
Enable/disable CPU Repeat Guard .............................................................. 3-38
Enable/disable Memory Repeat Guard ......................................................... 3-38
Language selection menu ........................................................................... 3-38
Call-in/call-out setup menu ........................................................................ 3-39
Set system name ......................................................................................... 3-39
Node power-on methods ............................................................................ 3-39
Service processor reboot/restart recovery ................................................... 3-39
Failure during boot process ........................................................................ 3-39
Failure during normal system operation ...................................................... 3-39
Service processor reboot/restart policy controls ......................................... 3-40
Use OS-defined restart policy? .................................................................... 3-40
Enable supplemental restart policy? ............................................................. 3-40
Service processor system monitoring - surveillance .................................. 3-41
System firmware surveillance ...................................................................... 3-41
Operating system surveillance .................................................................... 3-41
Service processor flash EPROM updates (and system firmware) ............... 3-42
Firmware updates ....................................................................................... 3-42
Checking current firmware levels ............................................................... 3-42
Service processor error logs ...................................................................... 3-44
System POST errors .................................................................................. 3-44
Service processor operational phases .......................................................... 3-44
Pre-standby phase ...................................................................................... 3-44
Standby phase. ........................................................................................... 3-45
Personal ESD requirements

The processor uses FRUs that are known to be sensitive to electrostatic discharge (ESD). To prevent ESD damage to FRUs or to prevent system failures, observe the following procedures:

- Keep the FRU in its original static-dissipative shipping container until the FRU is ready to be installed in the system. Move the static-dissipative container near the location where the FRU is to be installed (within ESD wrist strap distance). If the FRU must be put down for any reason, first place it in its static-dissipative container or place it on the static-dissipative mat.

- Open only the covers that are necessary to complete the task. Any time a cover is open the service representative and all people in the area must be ESD-safe. If power is switched on, or if removing or exchanging any FRU, always use the ESD kit (part 93F2649).
  1. Put on the ESD wrist strap.
  2. Attach the ESD cable to the wrist strap.
  3. Attach the ESD mat to the wrist strap, if required.
  4. Attach the insulated clip to the ESD cable.
  5. Attach the insulated clip to the frame holes labeled ESD. If the frame holes are not available, use a grounding point on the frame.

Running diagnostics in a processor node

Use the following procedures for processor nodes that can be IPLed in NORMAL or SERVICE mode.

**Note:** If resource is not available, you must use “SERVICE mode (from disk)” on page 3-4 or “Service mode (from network boot)” on page 3-4 to test the device.

NORMAL mode (concurrent diagnostics)

Use the following procedure for processor nodes that have already been IPLed in NORMAL mode.

**Note:** If the processor node has a root password, that password is required to perform Step 2 below.

Running diagnostics from SERVICE modes does not require a root password.

1. Open a TTY console or telnet session to this processor node.

   **TTY console:**
   a. From the Hardware Perspectives screen, select the processor node
   b. Click “Actions” on the tool bar
   c. Click on the “Open TTY” button

   **Telnet session:**
   a. From the control workstation, find an available AIX window
   b. Click on the AIX window, then type “telnet nodename” and press ENTER

2. Log on as root. Ask the customer to supply or type the password, if required

3. Type “export TERM=aixterm” and press ENTER

4. Type “diag” and press ENTER

5. Press ENTER to continue

6. To run advanced diagnostics against a device/system, follow these procedures:
   a. Select “Advanced Diagnostic Routines” option, then press ENTER
   b. Select “System Verification” option, then press ENTER
   c. Select the device from the system, then press ENTER

7. Return to the MAP you came from.
SERVICE mode (from disk)

Use the following procedure for processor nodes that can be IPLed in SERVICE mode or booted using a “maintenance” image.

**Note:** If node is currently in use (IPLed in NORMAL mode), ask the customer to remove it from the active configuration before continuing.

1. Open a TTY console on the control workstation using the Perspectives display:
   a. Select the applicable “Node Number” in the correct frame
   b. Select “Notebook”
   c. Select “Node Status”
2. Boot from local disk:
   a. Reboot the node (power the node off, wait briefly, then power the node on)
   b. Immediately after the words “memory” and “keyboard” are displayed, press and hold the 6 key (for a few seconds) on the TTY console
   c. Enter any requested passwords
   d. When the diagnostic menu appears, it might ask you to set the terminal type. If so, select “Initialize Terminal” option, and define the terminal type as “LFT”.

Service mode (from network boot)

**Note:** Use this method for AIX 4.1.3 or higher along with PSSP 2.1 and higher.

The following procedure describes how to perform a verification test of most devices on one or more processor nodes. Some Micro Channel® adapters are not supported.

This procedure should be performed from a window on the control workstation.

1. From the Hardware Perspectives screen, select the processor node
2. If booting from Ethernet LAN (“diag” image), make sure that the processor node has been set up to boot using a “diag” image. See “Selecting a processor node boot response”

   **Note:** The command should be:

   ```
   spbootins -r diag frame# slot# 1
   ```

3. Make sure the TTY console is closed
4. From the Hardware Perspectives window:
   a. Make sure that no processor nodes are selected, then click on the processor node(s) which you are going to verify
   b. Click on “Network Boot” button
   c. Click on “Apply” button
5. A diagnostic menu appears when the processor node has completed IPL
6. When you have completed diagnostics, you can power off the processor node
7. After completion, you can set the boot response for the processor node(s) to an appropriate value. Refer to “Selecting a processor node boot response” for more information.

   **Note:** The command should be:

   ```
   spbootins -r disk frame# slot# 1
   ```

Selecting a processor node boot response

The following procedure describes how to select the boot response for a single processor node.

**Note:** The menus in this section and the output text shown are based on the “English” option selection on the System Management Services Language menu (“Select language” on page 3-28).

1. Determine the physical frame number (frame#) and slot number (slot#) of the processor node you want to change by entering:

   ```
   splstdata -n
   ```
2. Check the current boot response for this processor node boot by entering:
   splsdata -b

   For this processor node, check for a response field with a value from the table below; make note of
   this value, so you can return the processor node to this original value.

3. If the response field is “disk”, check the install_disk field to determine which disk it will IPL from.

4. Determine which boot response (response) you need to use:

   Table 3-1. Selectable processor node boot responses

<table>
<thead>
<tr>
<th>response</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>disk</td>
<td>Configures the processor node to boot from its local disk.</td>
</tr>
<tr>
<td>install</td>
<td>Configures the processor node to: boot over the Ethernet LAN, install AIX on the local disk, customize the processor node, then reboot from its target disk. <strong>Note:</strong> Ensure that the target disk is functioning.</td>
</tr>
<tr>
<td>customize</td>
<td>Configures the processor node to update node-specific information on its local disk, i.e. IP addresses.</td>
</tr>
<tr>
<td>maintenance</td>
<td>Configures the processor node to boot over the Ethernet LAN in maintenance mode. A maintenance menu is then displayed from which the user can select further actions.</td>
</tr>
</tbody>
</table>
   | diag (see note) | Configures the processor node to boot over Ethernet LAN in diagnostics mode. A diagnostics menu is then displayed from which the user can select further actions:  
   - Diagnostic Routines  
   - Service Aids  
   - Advanced Diagnostic Routines |

   **Note:** Supported only with AIX 4.1.3 or higher and PSSP 2.1 or higher.

5. From an available window on the control workstation, enter the following command, filling in the
   variables (in italics) with the appropriate values:
   ```
   spbootins -r response frame# slot# 1
   ```

6. Make sure that the TTY is closed before performing the network boot.

7. If selecting a response of “install”, “customize”, “diag”, or “maintenance”: From the “Global Controls”
   panel on the control workstation, click on the “Net Boot” button, click on this processor node, then click
   on the “Do Command” button.

8. If selecting a response of “disk”: From the system monitor, power off/on processor node.

9. The processor node should now boot using the selected boot response.

   **Note:** Remember to set the response field back to the original value from Step 2 once you have
   completed service. To do so, enter the following command, where response is the original value:
   ```
   spbootins -r response frame# slot# 1
   ```

   You can check the current response value by repeating step 2.

Examples of spbootins command:

- To configure frame# 2, slot# 2 to boot in diagnostics mode:
  ```
  spbootins -r diag 2 2 1
  ```
- To configure frame# 1, slot# 4 to boot from its local disk:
  ```
  spbootins -r disk 1 4 1
  ```

**IPLing processor nodes from network device (two methods)**

Perform one of the following procedures to make a processor node IPL from network:
Method one: network boot method
1. From the SP Perspectives Launch Pad, select “Hardware Perspectives”
2. Click on the processor node (or nodes) you are going to boot from a network
3. Click on “Actions” button on the tool bar
4. Verify the nodes selected, then click on the “Apply” button
5. IPL from network device begins

**Note:** If Packets Received always shows “00000”, there is a network or configuration problem.

Method two: manual (hand-conditioning) method
1. If applicable, have customer shutdown the processor node (or nodes)
2. From the SP Perspectives Launch Pad, select “Hardware Perspectives”
3. Click on the processor nodes you are going to network boot
4. On the System Management Services Menu:
   a. Enter 2 to select Multiboot
   b. Enter 4 to select Boot Devices
   c. Enter 3 to select 1st Boot Device.

**Note:** For menu display format and other information, see “Service processor menus” on page 3-29

---

### Updating the Ethernet hardware address

Perform the following steps to update the Ethernet hardware address:
1. If necessary, have customer shut down and power off the processor node.
2. Close the console TTY window (if opened).
3. Delete node entry from /etc/bootptab.info file on the control workstation. (Do this if the file exists and the node entry in the file exists.)
4. Use the `sphrdwrad` command to obtain the new Ethernet hardware address:
   a. Determine `frame#` and `slot#` of this processor node.
   b. Issue the following command from the control workstation:
      ```
      sphrdwrad frame# slot# 1
      ```
5. Copy the collected address into /etc/bootptab.info
6. If the node was powered down, power it back on.

---

### Checking errors using “errpt”

The following section describes how to use the `errpt` command to access error log information and how to interpret the information in the error log.

### Using the “errpt” command

**Note:** You can also use `smit errpt`.

- **errpt –?**
  
  Will return a list of various parameters with descriptions.

- **errpt –a –N sphwlog | pg**
  
  Shows detailed list of RS/6000 SP-specific hardware errors.

- **errpt –a –N sphwlog –T PERM | pg**
  
  Shows detailed list of RS/6000 SP-specific hardware failures requiring service action (for example, shutdown condition)

- **errpt –a –N sphwlog –T TEMP | pg**
  
  Shows detailed list of RS/6000 SP-specific hardware warnings.
Interpreting “errpt” output for “sphwlog” errors

The following describes how to read various relevant sections of the results of an “errpt −a ...” command. For an example, refer to [Sample “errpt −a ...” output report](#).

### Date/Time
Date and time that event was logged.

### Node Id
Workstation where the information was logged; not processor node.

### Type
Indicates status/priority of the error. For hardware errors:
- **PERM (Permanent)**—Used to indicate higher priority errors where service is required (for example, shutdown condition or frame supervisor not responding)
- **TEMP (Temporary)**—Used to indicate lower priority errors, where a momentary or minimal impact condition has occurred; maintenance could be deferred (for example, warning condition)
- **UNKN (Unknown)**—Used for informational messages (for example, node has been powered off)
- **PEND (Pending)**—Used to indicate conditions expected to impact system availability soon.

### Resource Name
“sphwlog” refers to items logged for RS/6000 SP-specific errors.

### Error Description/Probable Causes/Failure Causes/Recommended Actions
Use this section for quick reference; however, Maintenance Analysis Procedures (MAPs), Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1 should be used to perform full service action since they provide more detailed analysis and procedures.

### Diagnostic Explanation
To interpret, look for the following key items:
1. “Condition cleared” (end of line)—indicates error condition no longer present. Error has been fixed or has cleared on its own; check for intermittent conditions.
2. Severity:
   - “Failure”—indicates higher priority problem, (for example, shutdown)
   - “Warning”—indicates lower priority problem.
3. Component:
   - “Frame #:0”—indicates error concerns frame #.
   - “Node #:” — indicates error concerns frame #, node in slot address #, respectively.
   - “Switch #:” — indicates error concerns frame #, switch in slot address #, respectively.
4. Variable—refers to specific variable on which condition was detected (for example, “nodefail1”).
5. Error message—specific message indicating the problem that was detected (for example, “Supervisor not responding for slot.”). This message is used by the MAPs to help isolate and service this error.

### Sample “errpt −a ...” output report

```
ERROR LABEL: SPMON_EMSG101
ERROR ID: A1843F1E

Date/Time: Wed Sep 14 13:29:38
Sequence Number: 9217
Machine Id: 000016691C00
Node Id: workstn3
Class: H
Type: PERM
Resource Name: sphwlog
Resource Class: NONE
Resource Type: NONE
Location: NONE

Error Description
UNABLE TO COMMUNICATE WITH REMOTE NODE

Probable Causes
```

Chapter 3. Service procedures   3-7
Node supervisor self-test

The following procedures will help you perform self-test on the node or switch supervisor cards. Upon completion of this test, return to the procedure that sent you here.

If this is a 332 MHz SMP or POWER3 SMP Thin or Wide Node:
1. Disconnect the node supervisor cable from the rear of the node.
2. Locate LED 5. See Figure 3-1.

<table>
<thead>
<tr>
<th>I/O Expansion Asm Status (On = Good)</th>
<th>4</th>
<th>8</th>
<th>Not Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Asm Status (On = Good)</td>
<td>3</td>
<td>7</td>
<td>Not Used</td>
</tr>
<tr>
<td>I/O Expansion Asm Installed (On = Yes)</td>
<td>2</td>
<td>6</td>
<td>Not Used</td>
</tr>
<tr>
<td>Node Power Status (On = OK)</td>
<td>1</td>
<td>5</td>
<td>Environment Status or Base Code Active (On = Problem)</td>
</tr>
</tbody>
</table>

Figure 3-1. 332 MHz SMP and POWER3 SMP Thin and Wide Node LEDs

3. Reconnect the node supervisor cable at the rear of the node.
4. Check the green and yellow LEDs on the node supervisor card.
   This self-test should indicate one of the following conditions for the processor node:
---

**Self-test Conditions**

**Pass sequence**
- a. All 8 LEDs will be on for 10 seconds
- b. LED 5 will flash node address
- c. All 8 LEDs will be on for 1 second

**Fail conditions**
- Green and Yellow LEDs never light
- LED 5 flashes wrong address

**Base Code**
- a. All 8 LEDs will be on for 10 seconds
- b. LED 1 will flash node address
- c. LED 5 is On

---

**Node supervisor status verification using Perspectives**

From the Hardware Perspectives window:
1. The Hardware Perspective should open with a node pane displayed. If it does not, or if you would like to open an additional node pane:
   - a. Click the “Add Pane” icon on the tool bar
      - The Add Pane dialog box opens
   - b. From the “Pane Type” pull down, select “Nodes”
   - c. Select your choice of adding the pane to the current window or to a new window
   - d. If desired, enter a new pane title
   - e. Click “OK” to open the pane and close the dialog box
2. In the Node pane, click the icon of the node you want to verify
3. Click the “Notebook” icon on the tool bar
   - When the Notebook window opens, make certain that the “Node Status” tab is selected
4. The “Node failure:” attribute displays the status of the node supervisor
   - “No” displayed in a green box indicates that the node supervisor has not failed and the supervisor is responding
   - “Yes” displayed in a red box indicates that the node supervisor has failed and it is not responding

**Note:** Clicking “Help” in the Notebook window’s lower right corner displays attribute descriptions.

---

**Base code verification**

Perform the following procedure to check for supervisor conditions that require action.
1. From the control workstation window, enter:
   ```
   smitty supervisor
   ```
2. The following menu is displayed:
   ```
   > Check For Supervisors That Require Action (Single Message Issued)
   > List Status of Supervisors (Report Form)
   > List Status of Supervisors (Matrix Form)
   > List Supervisors That Require Action (Report Form)
   > List Supervisors That Require Action (Matrix Form)
   > Update *ALL* Supervisors That Require Action (Use Most Current Level)
   > Update Selectable Supervisors That Require Action (Use Most Current Level)
   ```

Select the second option, “List Status of Supervisors (Report Form)”

---
3. A frame, similar to the following example, is displayed:

<table>
<thead>
<tr>
<th>Frame</th>
<th>Slot</th>
<th>Supervisor</th>
<th>Media</th>
<th>Installed</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>State</td>
<td>Version</td>
<td>Version</td>
<td>Action</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Active</td>
<td>u_10.3c.0706</td>
<td>u_10.3c.0709</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>u_10.3c.0707</td>
<td>u_10.3c.0709</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Active</td>
<td>u_10.36.0700</td>
<td>u_10.36.0703</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>u_10.36.0701</td>
<td>u_10.36.0703</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>Active</td>
<td>u_10.3e.0700</td>
<td>u_10.3e.0703</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>u_10.3e.0701</td>
<td>u_10.3e.0703</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>17</td>
<td>Active</td>
<td>u_80.09.0609</td>
<td>u_80.09.060b</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>u_80.09.060b</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Updating the node supervisor code**

1. If they are not already on, turn the node's circuit breakers to the On ('1') position.
2. Enter:
   ```
   smitty supervisor
   ```
3. Select "List Supervisors That Require Action"
4. Note the frame number and slot number
5. Press PF3 (Cancel).
6. Select "Update Selectable Supervisors That Require Action"
7. Enter the frame number and slot numbers to be updated.

   **Note:** This will take at least 12 minutes to complete.

8. Perform "Resetting the clock and bootlist after servicing a node" on page 3-11 before returning to the procedure that directed you here.

**Service position procedures**

**Note:** When preparing to place processor node(s) and/or switch assembly(s) into service position, ensure that the customer has removed the processor node(s) and/or switch assembly(s) from the active configuration.

**Placing a 332 MHz SMP or POWER3 SMP Thin and Wide Node into service position**

1. Ensure the node has been shutdown and powered off before continuing.
2. Set the power supply circuit breakers in the Off ('0') position.
3. Set the 48 V dc power distribution cable in-line switches in the Off ('0') position.
4. Remove the 48 V dc power distribution cables from the rear of the processor node.
5. Remove the supervisor cable from the rear of the processor node.
6. Record the location and remove all other cables from the rear of the processor node.
7. Remove the node front cover panel by loosening the 4 screws.
8. If necessary, unplug the 4-drop DASD cable from the I/O expansion assembly.
9. Remove the retaining screw at the front of the power assemblies and retain for later use.
10. Pull the power interlock bars forward and down to unlatch and remove the power assemblies.
11. Remove the retaining screws at the rear of the node and retain for later use.
12. Remove the logic portion of the node assembly by sliding it out the front of the frame.
13. Place the assembly on an electrostatic-safe mat to continue service.
Replacing a 332 MHz SMP or POWER3 SMP Thin and Wide Node from service position

1. Install the logic portion of the node assembly by sliding it in the front of the frame.
2. Secure the rear of the node using the retaining screws previously removed from the rear of the node.
3. Install and latch the power assemblies by lifting and pushing forward on the power interlock bars. Ensure the power interlock tabs are engaged by pushing in on the tabs.
4. Secure the front of the power assemblies using the retaining screws previously removed from the power assemblies.
5. If necessary, plug the 4-drop DASD cable in the I/O expansion assembly.
6. Install the node front cover panel and tighten the 4 screws.
7. Install the supervisor cable in the rear of the processor node.
8. Install the 48 V dc power distribution cables in the rear of the processor node.
9. Install all other cables that were removed from the rear of the processor node.
10. Set the 48 V dc power distribution cable in-line switches in the On (‘1’) position.
11. Set the power supply circuit breakers in the On (‘1’) position.

Resetting the clock and bootlist after servicing a node

When servicing a node, the node becomes disconnected from its power source for a period of time. Since nodes normally do not have a real battery, the NVRAM will lose its memory when disconnected from power for about 10 minutes (sometimes less). This will cause the date to be reset to January 1, 1970, and the bootlist to be cleared. This can cause some problems with booting.

It is **highly recommended** to reset the clock and bootlist before booting the node. This is done as follows:

1. Before powering down the node to be serviced, display the current bootlist:
   a. Run diagnostics (diag)
   b. Choose the “Service Aids” panel
   c. Choose the “Display/Alter Bootlist” panel
   d. Choose “Normal Mode”
   e. Choose “Display Current Bootlist”

   This will display the current bootlist.

2. Power down the node, service it, and hook it back into the frame.

3. On the control workstation, run `spbootins` to set the node to boot in maintenance mode. For example, if it is node 12 of frame 2, enter:
   ```
   spbootins -r maintenance 2 12 1
   ```

4. On the control workstation, netboot the node:
   a. From the SP Perspectives Launch Pad, select “Hardware Perspectives”
   b. Click on the processor node (or nodes) you are going to boot from a network
   c. Click on “Actions” button on the tool bar
   d. Verify the nodes selected, then click on the “Apply” button
   e. IPL from network device begins

   **Note:** If Packets Received always shows “00000”, there is a network or configuration problem.

5. When this boots, a console window will pop up on your display. Follow the prompts:
   a. “Start Maintenance Mode for System Recovery”
   b. “Access a Root Volume Group”
   c. “Continue”
   d. Choose correct disk from the list
   e. Access this volume group and start a shell

6. In the maintenance shell, set the date command. For example, to set the date to August 3, 1995, do “date 0803123095”

7. In the maintenance shell, set the boot list:
   a. Run diagnostics (diag)
   b. Choose the “Service Aids” panel
c. Choose the “Display/Alter Bootlist” panel
d. Choose “Normal Mode”
e. Choose “Alter Current Bootlist”
f. Set the bootlist the way it was before the node was serviced

8. Close the console window
9. On the control workstation, set the node to boot from disk. For example:
   `spbootins -r disk 2 12 1`
10. On the control workstation, use Perspectives to power off the node and then power it back on.

   The node will now boot from the device that you specified in step 7 with the correct time.

---

**Installing firmware updates on SP nodes**

System and service processor firmware updates are available in the CORE database on Lotus® Notes™. Refer to the section “9076 - Microcode Node”. If necessary, contact your local Lotus support to obtain access to the database. The firmware updates resident in the CORE database contain firmware installation instructions appropriate for the node.

---

**Draining the NVRAM**

Use one of the following procedures to drain the NVRAM, depending on the node type.

- Physically drain the NVRAM on 332 MHz SMP or 200 and 375/450 MHz POWER3 SMP Thin and Wide Nodes
- Logically drain the NVRAM on 200 and 375/450 MHz POWER3 SMP Thin and Wide Nodes.

**Physically draining the NVRAM**

Use the following procedure to physically drain the NVRAM on 332 MHz SMP or 200 and 375/450 MHz POWER3 SMP Nodes (for example, when an E1DC firmware checkpoint occurs).

1. Refer to “Removing the CPU power assembly” on page 4-28 to power down the node and remove the CPU assembly.
2. Locate the applicable jumper:
   - **332 MHz SMP Nodes**
     - J15 (see Figure 2-11 on page 2-12)
   - **200 and 375/450 MHz POWER3 SMP Nodes**
     - J14 (see Figure 2-20 on page 2-16)
3. Move the jumper from position 2/3 to position 1/2.
4. Wait several minutes, then return the jumper to position 2/3.
5. Refer to “Replacing the CPU power assembly” on page 4-28 to replace the CPU assembly and power up the node.

**Logically draining the NVRAM**

Use the following procedure to logically drain the NVRAM on POWER3 SMP Thin and Wide Nodes (for example, when an E1DC firmware checkpoint occurs).

1. On the System Management Services menu, go to the OK prompt (option 8 on the Main Menu).
2. Type:
   `dev /nvram, wipe-nvram`
3. When you receive an “ok” response, either:
   - Physically power-off the node:
     a. Set the 48 V dc power distribution cable in-line switches in the Off (‘0’) position to power-off the node.
     b. Wait 30 seconds.
     c. Set the 48 V dc power distribution cable in-line switches in the On (‘1’) position to power-on the node.
• Or, logically power-off the node:
  a. Logically power-off the node, then go to the Service Processor menus.
  b. On the MAIN MENU, select option 1 “Service Processor Setup Menu”.
  c. On the SERVICE PROCESSOR SETUP MENU, select option 6 “Reset Service Processor”
  d. The message “WARNING: SP RESET WILL EXIT MENUS!”, is displayed. Enter y to continue.
  e. Observe the LCD change from E075 to E021. The LCD remains at E021 for up to 1 minute and then changes to “OK”.
  f. Logically power-on the node.

Memory test hang problem

General memory information
Memory cards can be installed in either slot (or both) on the system planar, there is no requirement that one be installed before the other.

It is perfectly acceptable for there to be 2 partially populated memory cards, the first one does not have to be fully populated before memory on the 2nd memory card is usable.

Memory card memory modules, on the other hand, must be installed in matched (size and speed) pairs. Refer to Chapter 4, “FRU removals and replacements” on page 4-1 for instructions on module removal and installation; however, do not replace the covers as directed while troubleshooting this problem. A single memory module pair may be installed in module slots 1 and 2 (not slots 1 and 3). A second memory module pair could be installed in module slots 5 and 6 (slots 3 and 4 do not have to be populated first). Along these same lines, there is no requirement that memory module slots 1 and 2 be populated before another slot pair.

Problem resolution steps
This section attempts to trouble shoot a problem during the memory testing where the system hangs before an error code can be displayed on the LCD display.
1. Power down the system.
2. Remove and reinstall any installed memory card(s), power the system up. If the system no longer stops at an E3xx code, re-seating the memory card(s) has corrected the problem.
3. Attempt to isolate the problem to a specific memory card.
   a. If there is only one memory card installed, tag the card as suspect bad and skip to step 4
   b. Remove one of the two memory cards, tag the card as suspect bad and Power the system up. If the system no longer stops at an E3xx code, skip to step 3d
   c. Power down the system, remove the installed memory card and install the memory card removed in step 3b. Move the suspect bad tag from the installed memory card to the one just removed, and power the system up. If the system stops at an E3xx code, move the suspect bad tag and skip to step 7 on page 3-14, if the system does not stop at an E3xx code, skip to step 4
   d. Power down the system, remove the installed memory card and install the memory card removed in step 3b (tagged as suspect bad). Power the system up. If the system stops at an E3xx code again, skip to step 4
   e. Remove the suspect bad tag, reinstall the second memory card and power the system up. If the system no longer stops at an E3xx code, re-seating the memory cards (again) has corrected the problem. If the system stops at an E3xx code again, skip to step 7 on page 3-14
4. Attempt to isolate the problem to a specific memory module pair on the memory card tagged as suspect bad:
   a. Power the system down.
   b. Remove all installed memory modules from the suspect bad Memory card except one pair. Record the original positions of any memory modules removed so that when instructed to reinstall them they can be installed in their original position.
   c. Power the system up.
d. If the system no longer stops at an E3xx code, skip to step 4g.

e. Replace the memory module pair left installed in step 4b on page 3-13 and tag the removed memory module pair as suspect bad.

f. Power the system up. If the system stops at an E3xx code, skip to step 6.

g. Power down the system.

h. If there are more memory module pairs to be reinstalled on the suspect bad memory card, install another memory module pair in their original positions on the memory card, and continue with step 4i.

If there are no more memory module pairs to be reinstalled, you either have a suspect bad memory module pair or simply reseating the memory modules on the memory card has corrected the problem. If you have a suspect bad memory module pair, continue with step 5.

i. Power the system up.

j. If the system does not stop at an E3xx code, continue at step 4g.

k. If the system has stopped at an E3xx code again, replace the memory module pair that was just reinstalled and tag the removed memory module pair as suspect bad.

l. Power the system up. If the system again stops at an E3xx code, continue with step 6. If the system does not stop at an E3xx code, continue with step 4g.

5. Determine which of the suspect bad memory modules is defective (may be both).

For each of the 2 memory modules tagged as suspect bad:

a. Power the system down. Removing the currently installed memory module first, reinstall one of the 2 suspect bad memory modules in its original position.

b. Power the system up. If the system again stops at an E3xx code, the memory module tagged suspect bad just installed is defective, replace it with the memory module removed in step 5a. If the system did not stop at an E3xx code, remove the suspect bad tag from the memory module just installed - it is not defective.

6. Replace the memory card.

7. Replace the system planar.

8. Replace the processor card(s).

---

### E1xx code boot problems

Depending on the boot device, a checkpoint may be displayed on the LCD display for an extended period of time while the boot image is retrieved from the device. This is particularly true for Tape and Network boot attempts. If the checkpoint is displayed for an extended time there may be a problem loading the boot image from the device.

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

1. Restart the system and get to the Firmware SMS menu. In the multi-boot menu check:
   - Is the intended boot device correctly specified in the boot sequence?
   - For network boot attempts:
     - Are the IP parameters correct?
     - Attempt to “Ping” the target node using the SMS “Ping” utility.

2. If the checkpoint E105 or E15B is displayed for an extended time, there may be a problem with the integrity of the boot image.
   - Try to boot and run stand-alone diagnostics against the system, particularly against the intended boot device. If the diagnostics are successful, it may be necessary to perform an operating system specific recovery process, or reinstall the operating system.

3. If attempting to boot from a Hard disk:
   a. Verify proper SCSI bus termination.
   b. Replace SCSI cable.
   c. It is possible that another attached SCSI device is causing the problem.
Disconnect any other SCSI devices attached to the same controller as the one the boot device is attached to and retry the boot operation. If this is successful, one of the devices removed is causing the problem, reattach devices one by one and retry the boot operation until the problem recurs and replace the device that caused the problem.

d. It is possible that another installed adapter is causing the problem.
   Remove all installed adapters except the one the boot device is attached to, try to boot the stand-alone diagnostics from an Ethernet adapter, using network boot, and run the diagnostics against the system.
   If this is successful, reinstall adapters (and attached devices as applicable) that were removed, one at a time, and run the stand-alone diagnostics against the system.

e. Replace SCSI adapter (if drive is attached to a card rather than the I/O planar).

f. Replace SCSI terminator (for isolation purposes).

g. Replace SCSI drive.

h. Replace I/O planar.

4. If attempting to boot from a Network controller:
   a. Power Off then On and retry the boot operation.
   b. Verify the network connection (network could be down).
   c. Verify that IP parameters are correct.
   d. Try to “Ping” the target node.
   e. Have network administrator verify the node configuration for this client.
   f. Replace network cable.
   g. Replace network adapter (unless trying to boot using the Ethernet controller on the I/O planar).
   h. It is possible that another installed adapter is causing the problem.
      Remove all installed adapters except the one you are trying to boot, and try to boot the online diagnostics from the hard disk drive. If this is successful, run the diagnostics against the system, particularly against the target network boot controller/adapter.
      If this is successful, reinstall adapters (and attached devices as applicable) that were removed, one at a time, and run the diagnostics against the system. If the diagnostics fails, replace the last installed FRU.

i. Replace I/O planar (if not replaced in previous step).

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 the applicable node minimum configuration MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1.

Firmware utilities

The firmware utilities make it possible for you to view information about your computer and to perform such tasks as setting passwords and changing device configurations.

Text-based System Management Services

The text-based Open Firmware command line allows you to configure some adapters, and the System Management Services makes it possible for you to view information about your processor node and to perform such tasks as setting passwords and changing device configurations.

To start the text-based System Management Services, press 1 on the open TTY window, when the words “memory” and “keyboard” appear during startup.

After the text-based System Management Services starts, the following screen appears.
After you have finished using the text-based System Management Services, enter x (exit) to boot your system.

**Display configuration**

This option (option 1 on the System Management Services menu) provides information about the setup of your computer. A screen similar to the following is displayed.

```
RS/6000 Firmware
Version SPH99294
(c) Copyright IBM Corp. 1997 All rights reserved.

System Management Services
1  Display Configuration
2  Multiboot
3  Utilities
4  Select Language

X=Exit

===>
```
Multiboot

The Multiboot Menu is option 2 on the System Management Services menu. A screen similar to the following is displayed.

RS/6000 Firmware
Version SP99294
(c) Copyright IBM Corp. 1997 All rights reserved.

Multiboot Menu:
1 Select Software
2 Software Default
3 Select Install Device
4 Select Boot Devices
5 OK Prompt
6 Multiboot Startup <OFF>

Figure 3-2. Multiboot menu, POWER3 SMP example
Select Software
This option, if supported by the operating system, shows the names of the operating system installed. This option may not be supported by all operating systems.

In the case of AIX this is a supported option. If you receive a message saying that:

No Operating System Installed

this would mean that information in non-volatile storage could have been lost, as would happen if the battery had been removed. In order to recreate this value issue the bootlist command under AIX with the appropriate parameters as to the location of the operating system in a particular Hard disk. Please see the explanation of the bootlist command in your AIX documentation.

Software Default
This option, if supported by the operating system, lets you select the default operating system to start the system. This option may not be supported by all operating systems.

Select Install Devices
This option produces a list of devices, for example the CDROM, where the operating system is installed from. You select one of the devices and the system searches the device for an operating system to install, and if supported by the operating system in that device, the name of the operating system displays.

Select Boot Devices
This selection enables you to view and change the custom boot list, which is the sequence of devices read at startup time. A screen similar to the following is displayed.

RS/6000 Firmware
Version SPH99294
(c) Copyright IBM Corp. 1997 All rights reserved.
---

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

Selecting the Display Current Settings option lists the current order of devices in the boot list. The following screen shows an example of this display. For Ethernet boot, go Select Install Devices in the Multiboot menu and select Ethernet as a boot device.
Selecting any of the Configure Boot Device options displays a screen similar to the following:

Configure 1st Boot Device

<table>
<thead>
<tr>
<th>Device Current Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>

===>2

**OK Prompt**

This option provides access to the Open Firmware command prompt. The Open Firmware command prompt is used for debug purposes, and device driver development. Information about the commands are available in the IEEE Standard 1275.
**Multiboot Startup**
This option toggles between OFF and ON and selects if the Multiboot menu invokes automatically on startup or not. This option should be kept in the OFF state.

**Utilities**
The Utilities screen (option 3 on the System Management Services menu) enables you to select from the following system management tools. Depending on the node type, a screen similar to one of the following is displayed.

```
RS/6000 Firmware
Version SPH99294
(c) Copyright IBM Corp. 1997 All rights reserved.

Utilities
1 Set Passwords and Unattended Start Mode
2 Test Memory
3 Display Error Log
4 Remote Initial Program Load Setup
5 Change SCSI Id
6 Update System Firmware
7 Update Service Processor Firmware
8 Select Console
```

Figure 3-3. 332 MHz SMP Node Utilities menu
Utilities

1. Set Passwords and Unattended Start Mode
2. SCSI Spin Up
3. Display Error Log
4. Remote Initial Program Load Setup
5. Change SCSI Id
6. Update System Firmware
7. Update Service Processor Firmware
8. Select Console

Figure 3-4. POWER3 SMP Node Utilities menu

See the following for option descriptions:

- "Set Passwords and Unattended Start Mode" on page 3-22
- "Utilities option 2" on page 3-22
- "Display Error Log" on page 3-22
- "Remote Initial Program Load Setup" on page 3-23
- "Change SCSI Id" on page 3-27
- "Update System Firmware" on page 3-27
- "Update Service Processor Firmware" on page 3-28
- "Select Console" on page 3-28
Set Passwords and Unattended Start Mode
This selection provides the following options:

Password Utilities
1 Set Power On Password
2 Remove Power On Password
3 Unattended Start Mode
4 Set Privileged-Access Password
5 Remove Privileged-Access Password

Set Power On Password: Set a power-on password to protect stored information. Use any combination of up to eight characters (A–Z, a–z, and 0–9) for your password. The password you type is not displayed. Press Enter when you are finished; you are required to type the password again for verification.

Remove Power On Password: If you previously set a power-on password and want to remove it, select this option.

Note: If you forget the power-on password, contact your service representative.
A password can be set only after the system is powered off and then powered on.

Unattended start mode: This option is not supported on SMP Thin and Wide Nodes.

Set Privileged-Access Password: The privileged-access password protects against the unauthorized start of system programs. This password can only be eight characters long.

Remove Privileged-Access Password: If you previously set a privileged-access password and want to remove it, select this option.

Note: If you forget the power-on password, contact your service representative.

Utilities option 2
This option varies, depending on the node type.

Display Error Log
A screen similar to the following is displayed when you select this option. Here, you can view or clear your computer’s error log.
Remote Initial Program Load Setup
This option allows you to enable and set up the remote startup capability of your computer. First, you are asked to specify the network parameters.

---
<table>
<thead>
<tr>
<th>Error Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
</tr>
<tr>
<td>Entry 1.</td>
</tr>
<tr>
<td>Entry 2.</td>
</tr>
</tbody>
</table>

[C=Clear Error Log] [X=Exit]
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 123.132.004.020.

Selecting the IP Parameters option displays the following screen.
Select the Adapter Parameters option to view an adapter’s hardware address as well as configure network adapters that require setup.

Selecting option 1 displays the following Ethernet configuration menu:

RS/6000 Firmware
Version SPH99294
(c) Copyright IBM Corp. 1997 All rights reserved.

Device Slot Hardware Address
1. ethernet Integrated 08005aba9604

(PRESS ENTER AFTER MAKING SELECTION) ===>

Selecting option 1 displays the following Ethernet configuration menu:

RS/6000 Firmware
Version SPH99294
(c) Copyright IBM Corp. 1997 All rights reserved.

IBM 10/100 Ethernet TP PCI Adapter

1. Data Rate [Auto]
2. Full Duplex [Auto]
Selecting the Full Duplex option allows you to change how the Ethernet adapter communicates with the network:

```
FULL DUPLEX
1. Yes
2. No
3. Auto
```

Ping, the last option available from the Network Parameters menu, allows you to test a connection to a remote processor node. After selecting the Ping option, you must choose which adapter communicates with the remote system.

RS/6000 Firmware
Version SPH99294
(c) Copyright IBM Corp. 1997 All rights reserved.

Device Slot Hardware Address
1. ethernet Integrated 006094e949e6

(PRESS ENTER AFTER MAKING SELECTION) ====>
After choosing which adapter to use to ping the remote system, you must provide the addresses needed to communicate with the remote system.

### Change SCSI Id
This option allows you to view and change the addresses of the SCSI controllers attached to your computer.

### Update System Firmware
This option allows you to update your system firmware. The firmware update image must already be present on the hard drive in order to perform this procedure.

---

**Firmware recovery**

If a troubleshooting procedure has indicated that the firmware information in your processor node has been corrupted, then you must perform a firmware recovery.

To perform a firmware recovery, do the following:
1. Make sure the firmware image (*.img) is present on the hard drive in a known directory.
2. Make sure the processor node power is turned off.
3. Turn the processor node power on.
4. When the keyboard indicator appears, press the 1 key on the system console ASCII terminal.
5. When the System Management Services appear, choose Utilities and perform a System Firmware Update.
6. Follow the on-screen instructions, specifying the directory and file name of the firmware image file.
Update Service Processor Firmware
This menu option will not operate on this node because no diskette is available. If you need to update the SP Flash EPROM, use the procedure in “Service processor flash EPROM updates (and system firmware)” on page 3-42.

Select Console
Selecting this option allows you to define which display is used by the system for system management.

If no console is selected within two minutes, the console defaults to Serial Port 2.

Select language
This option (option 4 on the System Management Services menu) allows you to change the language used by the text-based System Management Services screens. A screen similar to the following is displayed.

```
RS/6000 Firmware
Version SPH99294
(c) Copyright IBM Corp. 1997 All rights reserved.
---------------------------------------------------------------
Select Language

  1 English
  2 Francais
  3 Deutsch
  4 Italiano
  5 Espanol
  6 Svenska

[ ]=[X=Exit]
```  

Note: Your ASCII terminal must support the ISO-8859 character set in order to properly display languages other than English.

Open firmware command prompt
To enter the Open Firmware command line, you must press the F8 key or number 8 key after the keyboard icon appears during startup.

If you have pressed the F8 key or number 8 key, the Open Firmware command line (an "OK" prompt) appears after the initialization and power-on self test (POST) are complete.

The OK Prompt provides access to the Open Firmware command prompt. The Open Firmware command prompt is used for debug purposes, and device driver development. Information about the commands that are available in the IEEE Standard 1275.
The Open Firmware command line is used to set up adapters that are not configurable with the System Management Services. Your adapter documentation directs you to use this option if it is needed.

To exit from the Open Firmware command enter `reset-all` or power the system down and reboot.

To start the text-based System Management Services instead of the Open Firmware command line, press `press 1` on the console when the keyboard text symbol appears during startup.

**Service processor menus**

The service processor menus enable you to configure service processor options and to enable and disable functions.

Service processor menus are available using an open TTY window from the control workstation when the node is logically powered off and the service processor is operating with standby power. Service processor menus are also available when node power is on and the service processor has detected a node problem (such as loss of surveillance).

During the first power up (i.e. node circuit breaker is powered on), service processor menus are not available for 45 seconds while the service processor is running self-tests and initializing the node. If the node logically powers down, service processor menus become available after 15 seconds.

**Menu inactivity**

To prevent loss of control in unstable power environments, the service processor leaves the menu mode after 5 minutes of inactivity. Menus may be resumed by pressing any key on the terminal, local or remote.

**How to access service processor menus locally**

Service processor menus may be accessed locally on the control workstation by pressing a key from an open TTY window from Perspectives on the control workstation.

**Note:** The node power cables must be attached with in-line switches in the On position and the node power must be logically Off.

**How to access service processor menus remotely**

This function is not supported on SMP Thin and Wide Nodes.

**Service processor menu options**

*Table 3-2. Service processor menus and menu options. An "X" in a column shows the menu or option is applicable to the node type shown in the heading of that column*

<table>
<thead>
<tr>
<th>Menu and menu options</th>
<th>332 MHz SMP</th>
<th>200 MHz POWER3 SMP</th>
<th>375/450 MHz POWER3 SMP</th>
<th>Reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Menu</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-31</td>
</tr>
<tr>
<td>1. Service Processor Setup Menu</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-32</td>
</tr>
<tr>
<td>1. Change Privileged Access Password</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-32</td>
</tr>
<tr>
<td>2. Change General Access Password</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-32</td>
</tr>
<tr>
<td>3. Enable/Disable Console Mirroring</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-32</td>
</tr>
<tr>
<td>4. Start Talk Mode</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-32</td>
</tr>
<tr>
<td>5. OS Surveillance Setup Menu</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-32</td>
</tr>
</tbody>
</table>
Table 3-2. Service processor menus and menu options (continued). An "X" in a column shows the menu or option is applicable to the node type shown in the heading of that column.

<table>
<thead>
<tr>
<th>Menu and menu options</th>
<th>332 MHz SMP</th>
<th>200 MHz POWER3 SMP</th>
<th>375/450 MHz POWER3 SMP</th>
<th>Reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Reset Service Processor</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-33</td>
</tr>
<tr>
<td>7. Reprogram Service Processor Flash EPROM</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-33</td>
</tr>
<tr>
<td>8. Serial Port Snoop Setup Menu</td>
<td>X</td>
<td>X</td>
<td></td>
<td>3-33</td>
</tr>
<tr>
<td>98. Return to Previous Menu</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>99. Exit from Menus</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. System Power Control Menu

<table>
<thead>
<tr>
<th>Menu and menu options</th>
<th>332 MHz SMP</th>
<th>200 MHz POWER3 SMP</th>
<th>375/450 MHz POWER3 SMP</th>
<th>Reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Enable/Disable Unattended Start Mode</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-33</td>
</tr>
<tr>
<td>2. Ring Indicate Power-On Menu</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-33</td>
</tr>
<tr>
<td>3. Reboot/Restart Policy Setup Menu</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-33</td>
</tr>
<tr>
<td>4. Power-On System</td>
<td>X</td>
<td>X</td>
<td></td>
<td>3-34</td>
</tr>
<tr>
<td>5. Power-Off System</td>
<td>X</td>
<td>X</td>
<td></td>
<td>3-34</td>
</tr>
<tr>
<td>6. Enable/Disable Fast System Boot</td>
<td>X</td>
<td>X</td>
<td></td>
<td>3-34</td>
</tr>
<tr>
<td>7. Boot Mode Menu</td>
<td>X</td>
<td></td>
<td></td>
<td>3-34</td>
</tr>
<tr>
<td>98. Return to Previous Menu</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>99. Exit from Menus</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. System Information Menu

<table>
<thead>
<tr>
<th>Menu and menu options</th>
<th>332 MHz SMP</th>
<th>200 MHz POWER3 SMP</th>
<th>375/450 MHz POWER3 SMP</th>
<th>Reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Read VPD</td>
<td>X</td>
<td></td>
<td></td>
<td>3-35</td>
</tr>
<tr>
<td>1. Read VPD Image from Last System Boot</td>
<td>X</td>
<td></td>
<td></td>
<td>3-35</td>
</tr>
<tr>
<td>2. Read Progress Indicators from Last System Boot</td>
<td>X</td>
<td></td>
<td></td>
<td>3-35</td>
</tr>
<tr>
<td>3. Read Service Processor Error Logs</td>
<td>X</td>
<td></td>
<td></td>
<td>3-35</td>
</tr>
<tr>
<td>4. Read System POST Errors</td>
<td>X</td>
<td></td>
<td></td>
<td>3-36</td>
</tr>
<tr>
<td>5. Read System POST Errors</td>
<td>X</td>
<td></td>
<td></td>
<td>3-36</td>
</tr>
<tr>
<td>6. Read NVRAM</td>
<td>X</td>
<td></td>
<td></td>
<td>3-36</td>
</tr>
<tr>
<td>7. View System Environmental Conditions</td>
<td>X</td>
<td></td>
<td></td>
<td>3-36</td>
</tr>
<tr>
<td>8. Processor Configuration/Deconfiguration Menu</td>
<td>X</td>
<td></td>
<td></td>
<td>3-36</td>
</tr>
<tr>
<td>9. Memory Configuration/Deconfiguration Menu</td>
<td>X</td>
<td></td>
<td></td>
<td>3-37</td>
</tr>
<tr>
<td>10. Enable/Disable CPU Repeat Guard</td>
<td>X</td>
<td></td>
<td></td>
<td>3-38</td>
</tr>
<tr>
<td>11. Enable/Disable MEM Repeat Guard</td>
<td>X</td>
<td></td>
<td></td>
<td>3-38</td>
</tr>
<tr>
<td>98. Return to Previous Menu</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>99. Exit from Menus</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Language Selection Menu

<table>
<thead>
<tr>
<th>Menu and menu options</th>
<th>332 MHz SMP</th>
<th>200 MHz POWER3 SMP</th>
<th>375/450 MHz POWER3 SMP</th>
<th>Reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Call-In/Call-Out Setup Menu</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-38</td>
</tr>
</tbody>
</table>

5. Call-In/Call-Out Setup Menu

<table>
<thead>
<tr>
<th>Menu and menu options</th>
<th>332 MHz SMP</th>
<th>200 MHz POWER3 SMP</th>
<th>375/450 MHz POWER3 SMP</th>
<th>Reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td>X X X</td>
<td></td>
<td></td>
<td></td>
<td>3-39</td>
</tr>
</tbody>
</table>
Table 3-2. Service processor menus and menu options (continued). An "X" in a column shows the menu or option is applicable to the node type shown in the heading of that column.

<table>
<thead>
<tr>
<th>Menu and menu options</th>
<th>332 MHz SMP</th>
<th>200 MHz POWER3 SMP</th>
<th>375/450 MHz POWER3 SMP</th>
<th>Reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Modem Configuration Menu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Serial Port Selection Menu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Serial Port Speed Setup Menu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Telephone Number Setup Menu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Call-Out Policy Setup Menu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Customer Account Setup Menu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Call-Out Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Ring Indicate Power-On Menu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>98. Return to Previous Menu</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>99. Exit from Menus</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>6. Set System Name</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3-39</td>
</tr>
</tbody>
</table>

Main menu
At the top of the Main Menu is a listing containing:

- Your Service Processor’s current firmware version
- The firmware copyright notice
- The System Name given to your node during setup (if set).

The following screens show example node information as it appears for the specific nodes.

332 MHz SMP Nodes:

```
Service Processor Firmware
Firmware level: wc990831
Copyright 1998, IBM Corporation
SVLAB1N05
```

200 MHz POWER3 SMP Thin and Wide Nodes:

```
Service Processor Firmware
SP Level: px990712
EPROM: 19981019
FLASH: 19990712
Copyright 1998, IBM Corporation
```

375/450 MHz POWER3 SMP Thin and Wide Nodes:

```
Service Processor Firmware
Firmware level: sh991112
Copyright 1998, IBM Corporation
```

You need the firmware version for reference when you either update or repair the functions of your service processor.

Chapter 3. Service procedures 3-31
The System Name, an optional field, is the name your node 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 node. The System Name is set from the Main Menu using option 6.

**Service processor setup menu**

**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 8 alphanumeric characters. You can enter longer passwords, but the entries are truncated to include only the first 8 characters. Passwords can be set from the service processor menu or from the SMS menus. Passwords have different names in the service processor and SMS menus.

The following illustrates what you can access with the Privileged Access Password and the General Access Password.

<table>
<thead>
<tr>
<th>Privileged Access Password</th>
<th>General Access Password</th>
<th>Resulting Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None</td>
<td>Main Menu displayed</td>
</tr>
<tr>
<td>None</td>
<td>Set</td>
<td>Main Menu displayed</td>
</tr>
<tr>
<td>Set</td>
<td>None</td>
<td>User’s with password see the Main Menu Others users see the General User Menu</td>
</tr>
<tr>
<td>Set</td>
<td>Set</td>
<td>Users see menus associated with the entered password</td>
</tr>
</tbody>
</table>

**Change privileged access password**
Set or change the Privileged Access Password. It provides the user with the capability to access all service processor functions. This password is usually used by the system administrator or root user.

**Change general access password**
Set or change the General Access Password. It provides limited access to service processor menus, and is usually available to all users who are allowed to power-on the node.

**Enable/disable console mirroring**
This option is not supported on SMP Thin and Wide Nodes.

**Start talk mode**
This option is not supported on SMP Thin and Wide Nodes.

**OS Surveillance setup menu**
This option may be used to setup operating system surveillance.

**Surveillance**
May be set to Enable or Disable.

**Surveillance time interval**
May be set to any number from 1 to 255.

**Surveillance delay**
May be set to any number from 0 to 255.
Refer to "Service processor system monitoring - surveillance" on page 3-41 for more information about surveillance.

**Reset service processor**
Allows the user to reinitialize the service processor.

**Reprogram service processor flash EPROM**
This option is not supported on SMP Thin and Wide Nodes.

This menu option will not operate on this node because no diskette drive is available. If you need to update system firmware, use the procedure in "Service processor flash EPROM updates (and system firmware)" on page 3-42.

**Serial port snoop setup menu**
This option is available for 375/450 MHz POWER3 SMP Thin and Wide Nodes only.

**System reset string**
Use this option to enter the system reset string, which resets the machine when it is detected on the node’s tty console. Set to Assigned or Unassigned.

**Snoop serial port**
Use this option to select the Serial Port to Snoop.

*Note:* Only Serial Port 1 (node s1term/tty) is supported.
Serial Port Snooping allows the user to configure the serial port 1 as a 'catch-all' reset device. Once properly configured, at any point after the system unit is booted to AIX, whenever the reset string is typed on the console, the system unit uses the service processor reboot policy to restart. This action causes an EPOW (Early Power Off Warning) to be logged, and an AIX dump to be created if the machine is at an AIX prompt, with AIX in such a state that it can respond. If AIX cannot respond, the EPOW record is created, rather than the AIX dump. Pressing Enter after the reset string is not required, so the string should not be common or trivial. A mixed-case string is recommended.

**System power control menu**

**Enable/disable unattended start mode**
This option is not supported on SMP Thin and Wide Nodes.

**Ring indicate power-on menu**
Ring indicate power-on is an alternate method of dialing in, without establishing a service processor session. If the system is powered off and ring indicate power-on is enabled, the node is powered on at the predetermined number of rings. If the node is already on, no action is taken. In either case, the telephone call is not answered. The caller receives no feedback that the node powered-on.

**Ring indicate power-on**
Set to Enabled or Disabled

**Number of rings**
Set to any number greater than zero.

**Reboot/restart policy setup menu**

**Number of reboot attempts**
If the node fails to successfully complete the boot process, it attempts to reboot the number of times specified. Entry values equal to or greater than 0 are valid. Only successive failed reboots attempts count, not reboots that occur after a restart attempt. At restart, the counter is set to 0.

**Use OS-defined restart policy**
Lets the service processor react or not react the same 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 may 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 systems automatic restarts. Option values are Yes or No, 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:
1. The Use OS-Defined restart policy is set to No or
2. 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 3-39

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 item is valuable if the number of these events becomes excessive, signalling a bigger problem. Available values for this option are Enabled or Disabled.

Power-on system
Note: This option is not supported on the 332 MHz SMP Thin and Wide Nodes.
Lets you power-on the system immediately. For other power-on methods see “Node power-on methods” on page 3-39

Power-off system
Note: This option is not supported on the 332 MHz SMP Thin and Wide Nodes.
Allows the user to power-off the node following a surveillance failure.

Enable/disable fast system boot
Note: This option is not supported on the 332 MHz SMP Thin and Wide Nodes.
Allows the user to power-off the node following a surveillance failure.
Available values for this option are Enabled or Disabled.
In fast boot mode, there are two actions that will explicitly change the mode back to slow boot: 1) All checkstop conditions and 2) The user manually changing mode using the menu.
Clearing NVRAM also returns the mode to slow boot mode. Slow boot remains in effect until the system boots AIX successfully one time, then automatically changes to fast boot.

Boot mode menu
The Boot Mode Menu allows users to configure the system to automatically start a specific function on the next boot-up. This configuration applies to the next boot only and are reset to the default state of being disabled following a successful boot attempt.

Boot to SMS menu
Selecting this option causes the system to automatically enter the System Management Services menu during the boot process. Enabling this option is equivalent to pressing “1” on the open TTY window while the system initialization indicators are appearing on screen (see “Text-based System Management Services” on page 3-15).

Service mode boot from saved list
This option causes system to boot from disk using the Maintenance Image (see “SERVICE mode (from disk)” on page 3-4). Enabling this option is equivalent to pressing “5” on the open TTY window while the system initialization indicators are appearing on screen.
Note: The device to boot from can be changed using SMS menu (see “Multiboot” on page 3-17).

Service mode boot from default list
This option causes a Service Mode boot using the default boot list hard-coded into system firmware. The default list is set as follows:
1. Disk Drive
2. Network Adapter
   • Token-Ring
   • Ethernet

Enabling this option is equivalent to pressing “6” on the open TTY window while the system initialization indicators are appearing on screen.

Note: This option should only be used if booting using Saved List fails.

Boot to open firmware prompt
When selected, the system will automatically enter Open Firmware prompt (also called he OK prompt). Enabling this option is equivalent to pressing “8” on the open TTY window while the system initialization indicators are appearing on screen (see “OK Prompt” on page 3-19).

If more than one option is enabled, the system will only act on the option corresponding to the smallest menu number. For example, if option 4 and 2 were enabled, the system would only look at option 2: Service Mode Boot from Saved List. After a boot attempt, all enabled options are disabled. In effect, the system throws away any menu options that are enabled after the option with the highest priority (the option with the smallest menu number) is executed.

The user can also override the choices in the boot mode menu while the system initialization indicators are appearing on screen. For example, if the user had enabled the system to enter the SMS menus (option 1) but hit the 8 key while the system initialization indicators are appearing on screen, the system would enter the Open Firmware prompt and disregard the settings in the Boot Mode Menu.

Note: The system initialization indicators are shown after the first time “RS/6000” is displayed on the TTY screen during system boot. You may select a boot mode from the TTY keyboard quickly after the words “MEMORY” and then “KEYBOARD” appear. You will also know when the initialization indicators are displayed by watching the operator panel or LCD display for the code E1F1.

System information menu

Read VPD
Displays manufacturer’s vital product data, such as serial numbers, part numbers.

Read VPD image from last system boot
Displays the VPD information that was in effect after the last system boot. This information will usually be identical with the results from the menu selection “Read VPD,” but in the case of configuration updates or certain faults, this historical comparison can be useful to System Administrators and service personnel.

Read progress indicator from last system boot
Displays the boot progress indicators (check points), up to a maximum of 80, from the last system boot. This historical information may be useful to help diagnose system faults.

Read service processor error logs
Displays error conditions detected by the Service Processor.

The time stamp in this error log is Coordinated Universal Time, also known as Greenwich Mean Time (GMT). AIX error logs have more information available and are able to time stamp with local time.
Read system POST errors
Selecting this item lets you review the results of the POST (Power-On Self Test). The node may be able to start in the presence of POST errors if there is sufficient working system resources. If POST errors occur during startup, this error log when used with the diagnostics helps to isolate faults.

Read NVRAM
Displays Non-Volatile Random Access Memory (NVRAM) content.

Read service processor configuration
Displays the processor configurations.

View system environmental conditions
The service processor reads all environmental sensors and reports the results to the user. This option is most useful when surveillance fails, as it allows the user to determine the environmental conditions that may be related to the failure.

The content of the system environmental conditions menu varies depending on the node examined and the level of service processor firmware installed.

Processor configuration/deconfiguration menu
Use this option only in conjunction with support center instruction.

Use this option to view and modify processor configuration. The following is an example of the Processor Configuration/Deconfiguration Menu:

<table>
<thead>
<tr>
<th>Processor number</th>
<th>Configuration/Deconfiguration Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Configured by system (0x0)</td>
</tr>
<tr>
<td>1</td>
<td>Configured by system (0x0)</td>
</tr>
<tr>
<td>2</td>
<td>Configured by System (0x0)</td>
</tr>
<tr>
<td>3</td>
<td>Configured by system (0x0)</td>
</tr>
<tr>
<td>98</td>
<td>Return to Previous Menu</td>
</tr>
</tbody>
</table>

To change the configuration, select the processor number 1>

You can manually configure or deconfigure any processor, regardless of failure status, through this service processor menu. The configuration process takes place during the system power-up. Therefore, the configuration displayed in STANDBY mode reflects the configuration during the last boot.

To view the current configuration, access the service processor menu after the system starts. When you select a processor, its state toggles between configured and deconfigured. Processors that are not present are not listed. A processor can be in any of the following four states:

- **Configured by system**: The processor is present, and has not exceeded the number of failure threshold. It is configured by the system and is available.
- **Deconfigured by system**: The processor is present, but has exceeded the number of failure threshold. It is deconfigured by the system and is currently unavailable
- **Manually configured**: The processor is present and available. It is configured by the user through the service processor menus.
- **Manually deconfigured**: The processor is present, but unavailable. It has been deconfigured by the user through the service processor menus.

Menu values are listed according to processor number. The values that pertain to the specific node types are:
0. Configured by system (0x0)
   200 and 375/450 MHz POWER3 SMP Thin and Wide Nodes

1. Configured by system (0x0)
   375/450 MHz POWER3 SMP Thin and Wide Nodes

2. Configured by system (0x0)
   200 and 375/450 MHz POWER3 SMP Thin and Wide Nodes

3. Configured by system (0x0)
   375/450 MHz POWER3 SMP Thin and Wide Nodes

Memory configuration/deconfiguration menu
Use this option only in conjunction with support center instruction.

Use this option to view and modify memory configuration. The following is an example of the Memory Configuration/Deconfiguration Menu:

<table>
<thead>
<tr>
<th>DIMM's on memory card number 0:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. Configured by system (0x0)</td>
</tr>
<tr>
<td>1. Configured by system (0x0)</td>
</tr>
<tr>
<td>2. Configured by system (0x0)</td>
</tr>
<tr>
<td>3. Configured by system (0x0)</td>
</tr>
<tr>
<td>4. Configured by system (0x0)</td>
</tr>
<tr>
<td>5. Configured by system (0x0)</td>
</tr>
<tr>
<td>6. Configured by system (0x0)</td>
</tr>
<tr>
<td>7. Configured by system (0x0)</td>
</tr>
<tr>
<td>8. Configured by system (0x0)</td>
</tr>
<tr>
<td>9. Configured by system (0x0)</td>
</tr>
<tr>
<td>10. Configured by system (0x0)</td>
</tr>
<tr>
<td>11. Configured by system (0x0)</td>
</tr>
<tr>
<td>12. Configured by system (0x0)</td>
</tr>
<tr>
<td>13. Configured by system (0x0)</td>
</tr>
<tr>
<td>14. Configured by system (0x0)</td>
</tr>
<tr>
<td>15. Configured by system (0x0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIMM's on memory card number 1:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. Configured by system (0x0)</td>
</tr>
<tr>
<td>1. Configured by system (0x0)</td>
</tr>
<tr>
<td>2. Configured by system (0x0)</td>
</tr>
<tr>
<td>3. Configured by system (0x0)</td>
</tr>
<tr>
<td>4. Configured by system (0x0)</td>
</tr>
<tr>
<td>5. Configured by system (0x0)</td>
</tr>
<tr>
<td>6. Configured by system (0x0)</td>
</tr>
<tr>
<td>7. Configured by system (0x0)</td>
</tr>
<tr>
<td>8. Configured by system (0x0)</td>
</tr>
<tr>
<td>9. Configured by system (0x0)</td>
</tr>
<tr>
<td>10. Configured by system (0x0)</td>
</tr>
<tr>
<td>11. Configured by system (0x0)</td>
</tr>
<tr>
<td>12. Configured by system (0x0)</td>
</tr>
<tr>
<td>13. Configured by system (0x0)</td>
</tr>
<tr>
<td>14. Configured by system (0x0)</td>
</tr>
<tr>
<td>15. Configured by system (0x0)</td>
</tr>
</tbody>
</table>

Enter card number and DIMM number separated by a space

Note: Maximum memory is shown. Actual memory installed in a system is displayed on the menu.

The user can manually configure or deconfigure any memory DIMM (Dual Inline Memory Module) regardless of failure status, through this service processor menu. The configuration process takes place during the system power-up. Therefore, the configuration displayed in STANDBY mode reflects the configuration during the last boot.

To view the current configuration, access the service processor menu after the system starts. When you select a memory DIMM, its state will toggle between configured and deconfigured. Memory DIMMs that are not present are not listed. A memory DIMM can be in any of the following four states:

- **Configured by system**: The memory DIMM is present, and has not exceeded the number of failure threshold. It is configured by the system and is available.
- **Deconfigured by system**: The memory DIMM is present, but has exceeded the number of failure threshold. It is deconfigured by the system and is currently unavailable.
- **Manually configured**: The memory DIMM is present and available. It is configured by the user through the service processor menus.
- **Manually deconfigured**: The memory DIMM is present, but unavailable. It has been deconfigured by the user through the service processor menus.
Enable/disable CPU Repeat Guard
The following information pertains to 375/450 MHz POWER3 SMP Thin and Wide Nodes only.

CPU boot time deconfiguration is a function implemented in the service processor firmware for removing a CPU from the system configuration at boot time. The objective is to minimize system failures or data integrity exposure due to faulty CPU hardware. The hardware resources to be removed are the ones that experience the following failures:
- A boot-time test failure
- Run-time recoverable errors over threshold prior to the current boot phase
- Run-time unrecoverable errors prior to the current boot phase

This function utilizes firmware Power-On Self Test (POST) to discover and isolate CPU hardware failures during boot time. It also utilizes the hardware detection logic in the processor to capture run-time recoverable and unrecoverable errors indications. The firmware uses the error signatures in the hardware to analyze and isolate the error to a specific processor.

The deconfigured CPU remains offline for subsequent reboots until the faulty processor card is replaced.

The function provides the option for the user to manually deconfigure or re-enable a previously deconfigured processor via the Service Processor menu. The user can also enable or disable this function via the Service Processor menu.

Enable/disable Memory Repeat Guard
The following information pertains to 375/450 MHz POWER3 SMP Thin and Wide Nodes only.

Memory boot time deconfiguration is a function implemented in the service processor firmware for removing a memory segment or DIMM from the system configuration at boot time. The objective is to minimize system failures or data integrity exposure due to faulty memory hardware. The hardware resources to be removed are the ones that experience the following failures:
- A boot-time test failure
- Run-time recoverable errors over threshold prior to the current boot phase
- Run-time unrecoverable errors prior to the current boot phase

This function utilizes firmware Power-On Self Test (POST) to discover and isolate memory hardware failures during boot time. It also utilizes the hardware detection logic in the processor to capture run-time recoverable and unrecoverable error indications. The firmware uses the error signatures in the hardware to analyze and isolate the error to a specific memory segment or DIMM.

The deconfigured memory segment or DIMM remains offline for subsequent reboots until the faulty memory hardware is replaced.

The function provides the option for the user to manually deconfigure or re-enable a previously deconfigured memory segment or DIMM via the Service Processor menu. The user can also enable or disable this function via the Service Processor menu.

Language selection menu

Note: Your ASCII terminal must support the ISO-8859 character set in order to properly display languages other than English.

This menu allows selecting languages into which service processor and system firmware menus and messages are displayed.

Available language options include:
1. English
2. Francais
3. Deutsh
4. Italiano
5. Espanol
6. Svenska

Call-in/call-out setup menu
All functions specific to this menu are not supported on SMP Thin and Wide Nodes.

Set system name
A name given to the node to which the service processor menus are currently being used. The name appears near the top of the main menu.

Node power-on methods
- Power-on from control workstation (CWS), refer to Parallel System Support Programs for AIX: Administration Guide, SA22-7348.
- Service Processor Menu power-on request – not supported on SMP Thin and Wide Nodes.
- Unattended start mode – not supported on this node.
- Timed power-on - refer to the shutdown -t command on nodes using AIX.
  Working in conjunction with AIX, the Service Processor in your node can operate a timer, much like the wake-up timer on your clock radio. You can set the timer so that your node powers on at a certain time after shutting down. The timer is battery operated, so power interruptions occurring while the node is off do not affect its accuracy. Refer to the shutdown -t command of AIX for details on setting the timer.
  Because of the potential for power loss, the Timed Power-On function of AIX can only be assured when Unattended Power-On Mode is enabled. If a Timed Power-On event occurs during a power loss, and if Unattended Power-On Mode is enabled, the system starts when power is restored.
  If Unattended Start Mode is disabled (the default), the system power state remains off when power is restored, regardless of the power state of the system when power loss occurred.
- Ring Indicate Power-On
  Enabling ring indicate power-on disables remote call-in. If ring indicate power-on is enabled, the node will power on at a predetermined number of rings. If the node is already on, no action is taken. In either case, the telephone call is not answered. The caller receives no feedback that the node powered on.
- Follow-up to a Failed Boot Attempt
  The service processor will initiate a power-on sequence upon detection of a failed boot attempt.

Service processor reboot/restart recovery
Reboot describes bringing the system hardware back up from scratch, 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 reinitialized. Restart must follow a successful reboot.

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 (via surveillance). If progress stops, the service processor can reinitiate the boot process (reboot) if enabled to do so. Service processor can re-attempt this process according to an entry on 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 Service Processor Setup Menu item Set
Surveillance Parameters). If OS activity stops, 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 OS documentation).

If the operating system is AIX, the menu item under SMIT for setting the restart policy is Automatically Reboot After Crash (True/False), and the default is False. When the setting is True, and if the service processor parameter, Use OS-Defined Restart Policy, is Yes (the default), service processor takes over for AIX to reboot/restart after a Check Stop or Surveillance failure.

**Service processor reboot/restart policy controls**
The operating system's automatic restart policy (see operating system documentation) indicates the OS response to a system crash. The service processor can be instructed to refer to that policy, or not, by the Use OS-Defined Restart Policy menu item.

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 by using the Enable Supplemental Restart Policy selection.

**Use OS-defined restart policy?**
The **Use OS-Defined restart policy** 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 OS would take if it could have responded to the problem causing the restart.

When this setting is NO, or if the OS 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 system when the system loses control as detected by service processor surveillance, and either:

1. The **Use OS-Defined restart policy** is set to NO OR
2. 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 3-39

The following provides a more thorough understanding of the relations among the OS and service processor restart controls:

<table>
<thead>
<tr>
<th>OS automatic reboot/restart after crash setting</th>
<th>Service processor to use OS-defined restart policy?</th>
<th>Service processor enable supplemental restart policy?</th>
<th>System response</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>No</td>
<td>No¹</td>
<td>Reverts</td>
</tr>
<tr>
<td>None</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>Yes¹</td>
<td>No¹</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>Yes¹</td>
<td>Yes</td>
<td>Reverts</td>
</tr>
<tr>
<td>False²</td>
<td>No</td>
<td>No¹</td>
<td></td>
</tr>
<tr>
<td>False²</td>
<td>No</td>
<td>Yes</td>
<td>Reverts</td>
</tr>
<tr>
<td>False²</td>
<td>Yes¹</td>
<td>No¹</td>
<td></td>
</tr>
<tr>
<td>False²</td>
<td>Yes¹</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>No</td>
<td>No¹</td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>No</td>
<td>Yes</td>
<td>Reverts</td>
</tr>
<tr>
<td>True</td>
<td>Yes¹</td>
<td>No¹</td>
<td></td>
</tr>
<tr>
<td>True</td>
<td>Yes¹</td>
<td>Yes</td>
<td>Reverts</td>
</tr>
</tbody>
</table>
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:
1. System firmware bring up (automatic) and
2. Operating system run time (optional).

**System firmware surveillance**
Provides the service processor with a means to detect boot failures while the system firmware is running.

System firmware surveillance is automatically enabled during system power-on. It cannot be disabled via a user selectable option.

If the service processor detects no heartbeats during system IPL (for 7 minutes), 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 repeats, the service processor leaves the machine powered on, logs an error and offers 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**
Provides the service processor with a means to detect hang conditions, 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 by the lack of a return heartbeat.

Operating system surveillance is not enabled by default. This is to allow the user to run operating systems that do not support this service processor option.

Operating system surveillance can be enabled and disabled via:
- Service Processor Menus
- Service Processor Service Aids

Three parameters must be set for operating system surveillance:
1. Surveillance enable/disable
2. Surveillance interval
   - This is the maximum time the service processor should wait for a heartbeat from the operating system before timeout.
3. Surveillance delay
   - This is the length of time to wait from when the operating system is started to when the first heartbeat is expected.

Surveillance will not take effect until the next time the operating system is started after setting the parameters.
If operating system surveillance is enabled (and system firmware has passed control to the operating system), and the service processor does not detect any heartbeats from the operating system, the service processor assumes the system is hung. The machine is left powered on and Service Processor enters standby phase, displaying the operating system surveillance failure code on the operator panel. If Call-out is enabled, the service processor calls to report the failure.

**Service processor flash EPROM updates (and system firmware)**

The service processor EPROM may need to be updated for two different reasons:

1. The UPDATE (composite) portion of the EPROM has become corrupted.
2. Service processor firmware upgrades, without any corruption present.

The use of a Flash EPROM allows updates to occur without physically replacing the memory.

**Firmware updates**

The firmware in your node can be updated using one of two available initiation processes:

1. SMS Utilities initiation
2. Diagnostic Service Aids initiation

Each initiation method is described below. In each case, the process prompts you for your authority and shows the contents of the update media. Verify the file with which to perform the update, and follow any other instructions that may appear. After initiation, the processes are identical and automatic.

There are two areas in each firmware module that may need updating:

1. The gold code or base code or EPROM area
2. The custom or main program or FLASH area

Each update file contains matching gold and custom firmware, so it is not possible to update to a conflicting set.

Before the update process begins, the versions of each of the two areas of the target firmware module are compared to the versions on the update file. Only the area(s) that need updating are updated. In most cases, only the custom area is updated.

An update file can be acquired from the Support page on the Internet or from your service team. The Internet address is:

http://www.rs6000.ibm.com/support/micro

The update files will need to be loaded onto the control workstation prior to distribution to the nodes. This can be done by putting the files on a diskette in TAR or DOS format, and then using the appropriate tar or dosread command at the control workstation. Alternatively, you might be able to FTP the files directly onto the control workstation.

**Checking current firmware levels**

If the node is running AIX or in Service Mode, you may check the current firmware level by performing the first step of the procedure in "Updating firmware from diagnostic service aids" on page 3-43. Otherwise, refer to the downloaded update instructions, the System Management Services, or Service Processor menus on page 3-32 to determine the level of the processor node or service processor flash.

**Distributing firmware files to nodes before update:**

**Note:** This step must be done to propagate the firmware files on the hard drive of the node prior to initiating the firmware update.

1. Locate the required firmware file(s), which may be one or more of the following.
WILyyjjj.IMG - image file used for system firmware
wcyymmdd.bin - binary file used to burn the service processor EEPROM
wcyymmdd.img - image file used for service processor Flash update
(where: yy=year, jjj=julian date, mm=month, dd=day)

2. Transfer the firmware file(s) to the control workstation. The file can be put into any directory. Creating a firmware directory or using /tmp is suggested.

3. Make sure each node that will be updated is IPLed.

4. From the control workstation or each node, use the ftp command to transfer the files to each node. Make sure to use “image” or “binary” mode to ensure that the files are exact duplicates. The file(s) may be put in any directory although a directory with the name /tmp is suggested.

5. You may recheck that the distributed files are exact duplicates by running the following command against the original and distributed files:

```
chksum filename
```

**Updating firmware from the SMS utilities:**

**Notes:**
1. From the SMS menus, select “Utilities”, then select option to “Update System Firmware” or “Update Service Processor”.
2. Select update from filesystem. (Diskette is not supported)
3. Enter the directory and file name of the firmware file.
4. When firmware is completed, the system may reboot.
5. You should recheck the firmware level.

**Note:** The node must be powered-on to bring up the SMS Menus.

**Updating firmware from diagnostic service aids:**

**Note:** This procedure can be run from Service Mode or from AIX.
1. Check current level of firmware:
   a. From Service Mode, select “Task Selection (Service Aids)”, then select “Display Hardware Vital Product Data”, select “All Resources”, then press the commit key. Continue at [1c] below.
   b. From AIX, use `lscfg -pv | pg` to list VPD information. Continue at [1c] below.
   c. Scan the output for the following (towards the bottom):
      - System Firmware:
         ROM Level (alterable)......Lyyjjj
      - SP_CARD_
        ... ROM Level (non-alterable)....yyyymmdd
        ... ROM Level (alterable)......yyyymmdd
2. If running from AIX, enter the diag command, then select “Task Selection (Service Aids)”.
3. From the “TASK SELECTION LIST”, select “Update System or Service Processor Flash” (near the bottom of the list).
4. Select “FILESYSTEM” (diskette not supported).
5. Enter the directory and file name of the firmware file.
6. When firmware is completed, the system may reboot.
7. You should recheck the firmware level.
Service processor error logs

The service processor error logs contain error conditions detected by the service processor.

<table>
<thead>
<tr>
<th>Error Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>19970626223337 0. Loss of Redundant Fan #5</td>
</tr>
<tr>
<td>40210091</td>
</tr>
</tbody>
</table>

Press "C" to clear error log. Press "Enter" to continue. >

The time stamp in this error log is Coordinated Universal Time (CUT), also known as Greenwich Mean Time (GMT). AIX error logs have more information available and are able to time stamp with local time.

System POST errors

If POST (Power-On Self Test) errors occur during startup, this error log help isolate faults when used with the diagnostics.

Service processor operational phases

This section provides a high-level flow of the phases of the service processor.

```
Service Processor Power Applied
  Pre-Standby Phase
    Standby Phase  Service Processor Menus Available
      Pre-Bringup Phase  System Initialized by Service Processor.
        Bring-Up Phase  SMS Menus Available
          Runtime Phase  Diagnostic Service Aids Available
```

Pre-standby phase

This phase is entered when the node is connected to a power source. The node may or may not be fully powered on. This phase is exited when the Power-On Self Tests (POSTs) and configurations tasks are completed.

The Pre-Standby phase components are:

- Service Processor Initialization
  - The service processor performs any necessary hardware and software initialization.
- Service Processor POST
  - The service processor conducts Power-On Self Tests on its various work and code areas.
- Service processor Unattended Start Mode Checks
To assist fault recovery. If unattended start mode is set, the service processor automatically reboots the node. The service processor does not wait for a user-input or power-on command, but will move straight through the phase and into the Bringup Phase. The unattended start mode can be reset by accessing SMS menus, or service processor menus.

**Standby phase**

The standby phase can be reached in two ways:

1. With the node OFF and power connected (the normal path), recognized by **OK** in the LCD display.
2. With the node ON after an operating system fault, recognized by **STBY** or an 8-digit code in the LCD display.

In the Standby phase, the service processor takes care of some automatic duties and is available for menus operation. The service processor remains in the standby phase until a power-on request is detected.

The Standby phase components are:

- **Modem Configuration**
  The service processor will configure the modem (if installed) so that incoming calls may be received, or outgoing calls may 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 node is so equipped and the user enables this function.

- **Menus**
  The service processor menus are password protected. Before you can access them you need to know either General User (Power-On Password or POP) or Privileged User (Privileged Access Password or PAP).

**Bring-up phase**

This phase is entered upon power-on, and exited upon loading of the operating system.

The Bring-up phase components are:

- **Retry Request Check**
  The service processor checks to see if the previous IPL attempt failed. If two consecutive fails are detected, the service processor displays an error code and places an outgoing call to notify an external party if the user has enabled this option.

- **Dial Out**
  The service processor can dial a pre-programmed telephone number in the event of an IPL failure. The service processor issues an error report with the last reported IPL status indicated and any other available error information.

- **Update Operator Panel**
  The service processor displays Operator Panel data on the ASCII terminal if a remote connection is active.

- **Environmental Monitoring**
  Environmental Monitoring is now controlled by the service processor instead of the base system, with expanded error recording and reporting.

- **System Firmware Surveillance (Heartbeat Monitoring)**
  The service processor monitors and times the interval between system firmware heartbeats.

- **Responding to System Processor Commands**
  The service processor responds to any command issued by the system processor.
Runtime phase
This phase includes the tasks that the service processor performs during steady-state execution of the operating system.

- Environmental Monitoring
  The service processor monitors voltages, temperatures and fan speeds (on some nodes).
- 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 two reboot attempts are made before placing an outgoing call.
Chapter 4. FRU removals and replacements

Handling static-sensitive devices ................................................. 4-3
Service procedures for 332 MHz SMP Thin and Wide Nodes .............. 4-3
   Removing a 332 MHz SMP Thin Node ..................................... 4-5
   Replacing a 332 MHz SMP Thin Node .................................... 4-5
   Removing a 332 MHz SMP Wide Node ..................................... 4-6
   Replacing a 332 MHz SMP Wide Node .................................... 4-6
   Removing the CPU power assembly ....................................... 4-7
   Replacing the CPU power assembly ....................................... 4-7
   Removing the I/O expansion power assembly ............................ 4-8
   Replacing the I/O expansion power assembly ............................ 4-8
   Removing a fan ..................................................................... 4-10
   Replacing a fan ..................................................................... 4-10
   Removing the node supervisor card ....................................... 4-11
   Replacing the node supervisor card ....................................... 4-11
   Removing a DASD .................................................................. 4-11
   Replacing a DASD .................................................................. 4-11
   Removing the SCSI cable ....................................................... 4-12
   Replacing the SCSI cable ....................................................... 4-12
   Removing the SPS MX adapter card ....................................... 4-12
   Replacing the SPS MX adapter card ....................................... 4-12
   Removing a PCI adapter card ................................................ 4-12
   Replacing a PCI adapter card ................................................ 4-13
   Removing the service processor ............................................. 4-14
   Replacing the service processor ............................................. 4-14
   Removing a memory card ....................................................... 4-15
   Replacing a memory card ....................................................... 4-15
   Removing a CPU card .......................................................... 4-15
   Replacing a CPU card .......................................................... 4-15
   Removing the Thin Node I/O planar ....................................... 4-16
   Replacing the Thin Node I/O planar ....................................... 4-16
   Removing the Thin Node system planar .................................... 4-18
   Replacing the Thin Node system planar .................................... 4-19
   Removing the PCI riser card assembly .................................... 4-20
   Replacing the PCI riser card assembly .................................... 4-20
   Removing the optional SCSI cable ....................................... 4-21
   Replacing the optional SCSI cable ....................................... 4-21
   Removing the optional SCSI card ......................................... 4-21
   Replacing the optional SCSI card ......................................... 4-21
   Removing the interposer signal cable ..................................... 4-21
   Replacing the interposer signal cable ..................................... 4-21
   Removing the interposer card ................................................ 4-22
   Replacing the interposer card ................................................ 4-22
   Removing the power/supervisor cable ................................... 4-22
   Replacing the power/supervisor cable ................................... 4-22
   Removing the power cable assembly ...................................... 4-22
   Replacing the power cable assembly ...................................... 4-23
   Removing the I/O expansion planar ....................................... 4-23
   Replacing the I/O expansion planar ....................................... 4-23
   Removing the I/O expansion control cable .............................. 4-24
   Replacing the I/O expansion control cable .............................. 4-24
Service procedures for POWER3 SMP Thin and Wide Nodes .............. 4-25
   Removing a POWER3 SMP Thin Node ..................................... 4-26
   Replacing a POWER3 SMP Thin Node ..................................... 4-26

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<table>
<thead>
<tr>
<th>Component</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removing a POWER3 SMP Wide Node</td>
<td>4-27</td>
</tr>
<tr>
<td>Replacing a POWER3 SMP Wide Node</td>
<td>4-28</td>
</tr>
<tr>
<td>Removing the CPU power assembly</td>
<td>4-28</td>
</tr>
<tr>
<td>Replacing the CPU power assembly</td>
<td>4-28</td>
</tr>
<tr>
<td>Removing the I/O expansion power assembly</td>
<td>4-28</td>
</tr>
<tr>
<td>Replacing the I/O expansion power assembly</td>
<td>4-28</td>
</tr>
<tr>
<td>Removing a fan</td>
<td>4-30</td>
</tr>
<tr>
<td>Replacing a fan</td>
<td>4-31</td>
</tr>
<tr>
<td>Removing the node supervisor card</td>
<td>4-31</td>
</tr>
<tr>
<td>Replacing the node supervisor card</td>
<td>4-31</td>
</tr>
<tr>
<td>Removing a DASD</td>
<td>4-31</td>
</tr>
<tr>
<td>Replacing a DASD</td>
<td>4-31</td>
</tr>
<tr>
<td>Removing the SCSI cable</td>
<td>4-32</td>
</tr>
<tr>
<td>Replacing the SCSI cable</td>
<td>4-32</td>
</tr>
<tr>
<td>Removing the SPS MX2 adapter card</td>
<td>4-32</td>
</tr>
<tr>
<td>Replacing the SPS MX2 adapter card</td>
<td>4-32</td>
</tr>
<tr>
<td>Removing a PCI adapter card</td>
<td>4-32</td>
</tr>
<tr>
<td>Replacing a PCI adapter card</td>
<td>4-32</td>
</tr>
<tr>
<td>Removing a memory card</td>
<td>4-34</td>
</tr>
<tr>
<td>Replacing a memory card</td>
<td>4-35</td>
</tr>
<tr>
<td>Removing a CPU card</td>
<td>4-35</td>
</tr>
<tr>
<td>Replacing a CPU card</td>
<td>4-35</td>
</tr>
<tr>
<td>Removing the POWER3 SMP Thin Node I/O planar</td>
<td>4-36</td>
</tr>
<tr>
<td>Replacing the POWER3 SMP Thin Node I/O planar</td>
<td>4-36</td>
</tr>
<tr>
<td>Removing the POWER3 SMP Thin Node system planar</td>
<td>4-38</td>
</tr>
<tr>
<td>Replacing the POWER3 SMP Thin Node system planar</td>
<td>4-40</td>
</tr>
<tr>
<td>Removing the optional SCSI cable</td>
<td>4-36</td>
</tr>
<tr>
<td>Replacing the optional SCSI cable</td>
<td>4-36</td>
</tr>
<tr>
<td>Removing the interposer signal cable</td>
<td>4-41</td>
</tr>
<tr>
<td>Replacing the interposer signal cable</td>
<td>4-41</td>
</tr>
<tr>
<td>Removing the interposer card</td>
<td>4-41</td>
</tr>
<tr>
<td>Replacing the interposer card</td>
<td>4-42</td>
</tr>
<tr>
<td>Removing the power/supervisor cable</td>
<td>4-42</td>
</tr>
<tr>
<td>Replacing the power/supervisor cable</td>
<td>4-42</td>
</tr>
<tr>
<td>Removing the power cable assembly</td>
<td>4-42</td>
</tr>
<tr>
<td>Replacing the power cable assembly</td>
<td>4-42</td>
</tr>
<tr>
<td>Removing the I/O expansion planar</td>
<td>4-43</td>
</tr>
<tr>
<td>Replacing the I/O expansion planar</td>
<td>4-43</td>
</tr>
<tr>
<td>Removing the I/O expansion control cable</td>
<td>4-44</td>
</tr>
<tr>
<td>Replacing the I/O expansion control cable</td>
<td>4-44</td>
</tr>
</tbody>
</table>

Attention: Components in the frame are susceptible to damage from static discharge. Always use an ESD wristband when working inside frame covers. (See Personal ESD requirements on page 3-3 for more details.) Do not touch the pins or circuitry on these components.

This chapter describes the removal and replacement of RS/6000 SP product-specific Field Replaceable Unit (FRU) components.

For common RS/6000 components, refer to the 7012 POWERstation and POWERserver: Installation and Service Guide (SA23-2624) for the Thin Node component, the 7013 POWERstation and POWERserver: Installation and Service Guide (SA23-2622) for the Wide Node component, or the 7015 Models R30, R40, and R50 CPU Enclosure Installation and Service Guide (SA23-2743) for the 604 or 604e High Node.
Handling static-sensitive devices

Attention: Adapters, planars, disk drives, supervisor cards and memory cards are sensitive to static electricity discharge. These devices are wrapped in antistatic bags or containers to prevent this damage.

Perform the following procedures to prevent damage to these devices:
1. Do not remove the device from the antistatic bag or container until you are ready to install the device in the system unit.
2. You must wear an ESD wristband while installing or removing any static-sensitive devices.
3. With the device still in its antistatic bag, touch it to a metal frame of the system.
4. Grasp cards and boards by the edges. Hold drives by the frame. Avoid touching the solder joints and pins.
5. Handle the devices carefully in order to prevent permanent damage.

![Figure 4-1. Handling an anti-static device](image)

Service procedures for 332 MHz SMP Thin and Wide Nodes

These procedures cover the removal and replacement of the 332 MHz SMP Wide and Thin Node components.

Note: A 5.5 mm socket is required to perform some of the following service procedures.
Procedures for 332 MHz SMP Thin and Wide Nodes

Figure 4-2. 332 MHz SMP Node high level component diagram
Removing a 332 MHz SMP Thin Node

1. If necessary, fence the node from the system.
2. Ensure that the Thin Node is offline (shutdown) and powered off from the control workstation.
3. Ensure the Thin Node power supply circuit breaker is in the Off (‘0’) position.
4. Ensure the 48-volt input cable in-line switch is in the Off (‘0’) position.
5. Remove all attached cables from the rear of the Thin Node.
6. After removing the 48-volt input cable, place a protective cover (part number 48G3055) over the plug end. The cover is supplied with the ship group.
7. Remove the CPU power assembly using the steps in “Removing the CPU power assembly” on page 4-7 or “Removing the I/O expansion power assembly” on page 4-8.
8. Remove the hold-down screws located at the rear of the Thin Node.
9. Remove the Thin Node from the front of the frame.
10. Return to the procedure that directed you here.

Replacing a 332 MHz SMP Thin Node

1. Reinstall the Thin Node in the front of the frame.
2. Reinstall the hold-down screws located at the rear of the Thin Node.
3. Reinstall the CPU power assembly using the steps in “Replacing the CPU power assembly” on page 4-7.
4. Remove the protective cover (part number 48G3055) from the 48-volt input cable in J8. Ensure the alignment arrow is pointing to the bottom of the connector. Store the protective cover with the ship group tools.
5. Reattach all cables that were removed from the rear of the Thin Node.
Procedures for 332 MHz SMP Thin and Wide Nodes

6. Ensure the 48-volt input cable in-line switch is in the On (‘1’) position.
7. Ensure the Thin Node power supply circuit breaker is in the On (‘1’) position.
8. If necessary, unfence the node.
9. Return to the procedure that directed you here.

Removing a 332 MHz SMP Wide Node

1. If necessary, fence the node from the system.
2. Ensure that the node is offline (shutdown) and powered off from the control workstation.
3. Ensure the Wide Node power supply circuit breakers are in the Off (‘0’) position.
4. Ensure the 48-volt input cable in-line switches are in the Off (‘0’) position.
5. Remove all attached cables from the rear of the node.
6. After removing the 48-volt input cables, place protective covers (part number 48G3055) over the plug ends. The covers are supplied with the ship group.
7. Remove the CPU power assembly and the I/O expansion power assembly using the steps in "Removing the CPU power assembly" on page 4-7 or "Removing the I/O expansion power assembly" on page 4-8.
8. Remove the hold-down screws located at the rear of the node.
9. Remove the Wide Node from the front of the frame.
10. Return to the procedure that directed you here.

**Replacing a 332 MHz SMP Wide Node**

1. Reinstall the Wide Node in the front of the frame.
2. Reinstall the hold-down screws located at the rear of the node.
3. Reinstall the CPU power assembly and the I/O expansion power assembly using the steps in "Replacing the CPU power assembly" and "Replacing the I/O expansion power assembly" on page 4-8.
4. Remove the protective covers (part number 48G3055) from the 48-volt input cables. Store the protective covers with the ship group tools.
5. Connect the cable to both J8 connectors. Ensure the alignment arrows are pointing to the bottom of the connectors.
6. Reattach all of the cables that were removed from the rear of the node.
7. Ensure the 48-volt input cable in-line switches are in the On (‘1’) position.
8. Ensure the Wide Node power supply circuit breakers are in the On (‘1’) position.
9. If necessary, unfence the node.
10. Return to the procedure that directed you here.

**Removing the CPU power assembly**

1. Ensure that the processor node is offline (shutdown) and powered off from the control workstation.
2. Ensure the node power supply circuit breakers are in the Off (‘0’) position.
3. Ensure the 48-volt input cable in-line switches are in the Off (‘0’) position.
4. Remove the front cover panel by removing the screws. Retain the screws for later installation.
5. If necessary, unplug the 4-drop DASD cable from the I/O expansion assembly.
6. Remove the retaining screw at the front of the power assembly and retain for later use.
7. Pull forward and down on the power interlock bar to unlatch and remove the power assembly.
8. If you are replacing the power assembly with a new assembly, continue with step 9. Otherwise, return to the procedure that directed you here.
9. Remove the supervisor card using the steps in "Removing the node supervisor card" on page 4-11.
10. Remove the DASD using the steps in "Removing a DASD" on page 4-11.
11. Unplug the SCSI cable from the CPU power assembly interposer card and retain for later installation.
12. Return to the procedure that directed you here.

**Replacing the CPU power assembly**

1. If you are replacing the power assembly with a new assembly, continue with step 2, otherwise go to step 4.
2. Plug the SCSI cable to the CPU power assembly interposer card.
3. Install the DASD (removed from the old power assembly) using the steps in "Replacing a DASD" on page 4-11.
4. Install the CPU power assembly in the node.
5. Push up and back on the power interlock bar until the power assembly is engaged and locked.
6. Push the power interlock tab marked ‘PUSH’ at the right side front of the power assembly to engage the power connections.
7. Secure the front of the power assemblies with the retaining screw that was previously removed.
8. If necessary, plug the 4-drop DASD cable in the I/O expansion assembly.
9. If necessary, install the supervisor card, removed from the old power assembly, using the steps in "Replacing the node supervisor card" on page 4-11.
10. Install the front cover panel using the screws that were previously removed.
11. Ensure the 48-volt input cable in-line switches are in the On (‘1’) position.
12. Ensure the node power supply circuit breakers are in the On (‘1’) position.
13. Return to the procedure that directed you here.
Removing the I/O expansion power assembly

1. Ensure that the processor node is offline (shutdown) and powered off from the control workstation.
2. Ensure the node power supply circuit breakers are in the Off ('0') position.
3. Ensure the 48-volt input cable in-line switches are in the Off ('0') position.
4. Remove the front cover panel by removing the screws. Retain the screws for later installation.
5. If necessary, unplug the 4-drop DASD cable from the I/O expansion assembly.
6. Remove the retaining screw at the front of the power assembly and retain for later use.
7. Pull forward and down on the power interlock bar to unlatch and remove the power assembly.
8. If you are replacing the power assembly with a new assembly, continue with step 9. Otherwise, return to the procedure that directed you here.
9. Remove the DASD using the steps in "Removing a DASD" on page 4-11.
10. Return to the procedure that directed you here.

Replacing the I/O expansion power assembly

1. If you are replacing the power assembly with a new assembly, continue with step 2; otherwise go to step 3.
2. Install the DASD (removed from the old power assembly) using the steps in "Replacing a DASD" on page 4-11.
3. Push up and back on the power interlock bar until the power assembly is engaged and locked.
4. Push the power interlock tab marked ‘PUSH' at the right side front of the power assembly to engage the power connections.
5. Secure the front of the power assemblies with the retaining screw that was previously removed.
6. If necessary, plug the 4-drop DASD cable in the I/O expansion assembly.
7. Install the front cover panel using the screws that were previously removed.
8. Ensure the 48-volt input cable in-line switches are in the On ('1') position.
9. Ensure the node power supply circuit breakers are in the On ('1') position.
10. Return to the procedure that directed you here.
Figure 4-5. 332 MHz SMP Node power assemblies

Procedures for 332 MHz SMP Thin and Wide Nodes
Removing a fan

1. Ensure ESD antistatic wrist device is attached.
2. Remove the power assembly using the steps in "Removing the CPU power assembly" on page 4-7 or "Removing the I/O expansion power assembly" on page 4-8.
3. Remove the screw from the top of the fan bracket.
4. Loosen the screw on the side of the fan bracket.
5. Lift the fan bracket from the power assembly.
6. Locate and disconnect the fan plug.
7. Remove the shock mounts from the bracket and retain for later installation.
Replacing a fan
1. Install the shock mounts, removed from the old fan, to the replacement fan.
2. Install the fan with the wires to the bottom and the airflow indicator pointing to the rear of the chassis.
3. Connect the fan plug.
4. Reinstall the fan bracket.
5. Install 1 screw on the top and 1 screw on the side of the fan bracket.
6. Check that no cable touches the fan.
7. Reinstall the power assembly using the steps in "Replacing the CPU power assembly" on page 4-7 or "Replacing the I/O expansion power assembly" on page 4-8.
8. Return to the procedure that directed you here.

Removing the node supervisor card
1. Ensure ESD antistatic wrist device is attached.
2. Remove the front cover panel by removing the screws. Retain the screws for later installation.
3. Remove the screws holding the node supervisor card to the mounting bracket. Retain the screws for later installation.
4. Remove the node supervisor card.

Replacing the node supervisor card
Note: Inform the customer that the clocks will need to be reset. Refer the customer to "Resetting the clock and bootlist after servicing a node" on page 3-11 or Parallel System Support Programs for AIX: Installation and Migration Guide, GA22-7347, for this procedure.
1. Ensure ESD antistatic wrist device is attached.
2. Firmly seat the node supervisor card in the mounting bracket and secure with the screws that were previously removed.
3. Install the front cover panel using the screws that were previously removed.
4. Perform "Updating the node supervisor code" on page 3-10.
5. Return to the procedure that directed you here.

Removing a DASD
1. Ensure ESD antistatic wrist device is attached.
2. Remove the front cover panel by removing the screws. Retain the screws for later installation.
3. Disconnect the SCSI cable and the power cable.
4. Record the DASD location.
5. Remove the screws that secure the DASD tray to the power assembly. Retain the screws for later installation.
6. Slide the DASD tray from the front of the power assembly.
7. Remove the screws that secure the DASD to the DASD tray. Retain the screws for later installation.
8. Remove the DASD from the DASD tray.
9. Check the jumper position(s) on the DASD, if any. Record the settings for the replacement DASD.

Note: Ensure the grounding strips located around the edges are firmly in place.

Replacing a DASD
1. Ensure ESD antistatic wrist device is attached.
2. Set the jumper position(s) on the new DASD, if any, using the settings you recorded in the removal procedure.
3. Ensure all required DASD jumpers are installed. Refer to RS/6000: Adapters, Devices, and Cable Information for Multiple Bus Systems, SA38-0516, for the required jumper information.
4. Install the DASD in the DASD tray using the screws that were previously removed.
5. Reinstall the DASD tray into the front of the power assembly and secure with the screws that were previously removed.
6. Connect the SCSI cable and power cable to the DASD.
Procedures for 332 MHz SMP Thin and Wide Nodes

7. Install the front cover panel using the screws that were previously removed.
8. Return to the procedure that directed you here.

Removing the SCSI cable
1. Ensure ESD antistatic wrist device is attached.
2. Remove the front cover panel by removing the screws. Retain the screws for later installation.
3. Disconnect SCSI cable and the power cable connectors from all installed DASD.
4. Record the location of each CPU DASD.
5. Loosen the screws that secure the DASD tray to the power assembly.
6. Slide each CPU DASD assembly from the front of the power assembly.
7. Remove the SCSI cable from the CPU interposer card.

Replacing the SCSI cable
1. Ensure ESD antistatic wrist device is attached.
2. Connect the SCSI cable to the CPU interposer card.
3. Reinstall the DASD assembly into the front of the power assembly in the positions previously recorded and tighten the screws.
4. Connect the SCSI cable and power cable connectors to all installed DASD.
5. Install the front cover panel using the screws that were previously removed.
6. Return to the procedure that directed you here.

Removing the SPS MX adapter card
1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP node using the steps in “Removing a 332 MHz SMP Thin Node” on page 4-5 or “Removing a 332 MHz SMP Wide Node” on page 4-6.
3. Remove the Thin Node cover by loosening the screws on top of the cover.
4. Loosen the screw at the top of the rear card guide and remove the SPS MX adapter card from the Thin Node system planar slot J9.
5. Remove the protective cover from port P1 and retain for later use.

Replacing the SPS MX adapter card
1. Ensure ESD antistatic wrist device is attached.
2. Install the protective cover, that was previously removed, on port P1, if necessary.
3. Install the SPS MX adapter card in the Thin Node system planar slot J9 and tighten the screw at the top of the rear card guide.
4. Reinstall the Thin Node cover by tightening the screws on top of the cover.
5. Reinstall the 332 MHz SMP node using the steps in “Replacing a 332 MHz SMP Thin Node” on page 4-5 or “Replacing a 332 MHz SMP Wide Node” on page 4-7.
6. Return to the procedure that directed you here.

Removing a PCI adapter card
1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP node using the steps in “Removing a 332 MHz SMP Thin Node” on page 4-5 or “Removing a 332 MHz SMP Wide Node” on page 4-6.
3. Remove the I/O expansion assembly cover or the Thin Node cover (depending on the location of the PCI adapter card) by loosening the screws on top of the assembly.
4. Loosen the knurled knob, for this adapter, at the rear of the assembly.
5. Check for (and record) internal connections to other adapter cards or cables before removing them.
6. If the adapter card has a card extender, holding the front end of the adapter, release the extender by pressing the locking tab to the side.
7. Place plastic inserts, from the ship group, on either side of the card to be removed.
8. Grasp the adapter by the pull tabs and pull it out of the slot.
Replacing a PCI adapter card

1. Ensure ESD antistatic wrist device is attached.
2. Check for any jumpers or switches to be set on this card, then set as appropriate.
3. If the adapter card requires a card extender, attach the extender to the front end of the adapter and lock in place with locking tab.
4. Align the adapter in the slot, then push the card into the slot.
5. Remove the plastic inserts, previously used for card removal, and return them to the ship group.
6. Tighten the knurled knob, for this adapter, at the rear of the assembly.
7. If this card has any internal connections to other adapter(s) or cables, connect them, as appropriate.
8. Reinstall the I/O expansion assembly cover or the Thin Node cover (depending on the location of the PCI adapter card) by tightening the screws on top of the assembly.
9. Reinstall the 332 MHz SMP node using the steps in “Replacing a 332 MHz SMP Thin Node” on page 4-5 or “Replacing a 332 MHz SMP Wide Node” on page 4-7.
10. Return to the procedure that directed you here.
Removing the service processor

1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP node using the steps in “Removing a 332 MHz SMP Thin Node” on page 4-5 or “Removing a 332 MHz SMP Wide Node” on page 4-6.

3. Remove the Thin Node cover by loosening the screws on top of the thin node.

4. Remove the screw securing the service processor card to the I/O planar. Retain the screw for later installation.

5. Remove the service processor card from connector J1 on the I/O planar.

Replacing the service processor

1. Ensure ESD antistatic wrist device is attached.

2. Install the service processor card in connector J1 on the I/O planar.

3. Install the screw (retained from the removal procedure) to secure the service processor card to the I/O planar. Retain the screw for later installation.

4. Reinstall the Thin Node cover by tightening the screws on top of the thin node.

5. Reinstall the 332 MHz SMP node using the steps in “Replacing a 332 MHz SMP Thin Node” on page 4-5 or “Replacing a 332 MHz SMP Wide Node” on page 4-7.

6. If necessary, update the service processor firmware. See “Installing firmware updates on SP nodes” on page 3-12.

7. Return to the procedure that directed you here.

Removing a memory card

1. Ensure ESD antistatic wrist device is attached.

2. Remove the 332 MHz SMP node using the steps in “Removing a 332 MHz SMP Thin Node” on page 4-5 or “Removing a 332 MHz SMP Wide Node” on page 4-6.

3. Remove the cover by loosening the screws on top of the assembly.

Attention: Do not rock cards from side-to-side when plugging or unplugging.

4. Pull up on the thumb locks to disengage the memory card.

5. Remove the memory card.

Replacing a memory card

1. Ensure ESD antistatic wrist device is attached.

2. Align the memory card with the slot.

3. Push down on the thumb locks to engage the memory card.

4. Reinstall the cover by tightening the screws on top of the assembly.

5. Reinstall the 332 MHz SMP node using the steps in “Replacing a 332 MHz SMP Thin Node” on page 4-5 or “Replacing a 332 MHz SMP Wide Node” on page 4-7.

6. Return to the procedure that directed you here.

Removing a CPU card

1. Ensure ESD antistatic wrist device is attached.

2. Remove the 332 MHz SMP node using the steps in “Removing a 332 MHz SMP Thin Node” on page 4-5 or “Removing a 332 MHz SMP Wide Node” on page 4-6.

3. Remove the cover by loosening the screws on top of the assembly.

Attention: Do not rock cards from side-to-side when plugging or unplugging.

4. Pull up on the thumb locks to disengage the CPU card.
Attention: Do not grasp the card by the heat sink when plugging or unplugging. This will damage the processor chip.

5. Remove the CPU card.

**Replacing a CPU card**

1. Ensure ESD antistatic wrist device is attached.

Attention: Do not grasp the card by the heat sink when plugging or unplugging. This will damage the processor chip.

2. Align the CPU card with the slot.

Attention: Do not rock cards from side-to-side when plugging or unplugging.

3. Push down on the thumb locks to engage the CPU card.
4. Reinstall the cover by tightening the screws on top of the assembly.
5. Reinstall the 332 MHz SMP node using the steps in "Replacing a 332 MHz SMP Thin Node" on page 4-5 or "Replacing a 332 MHz SMP Wide Node" on page 4-7.
6. Return to the procedure that directed you here.

**Removing the Thin Node I/O planar**

Attention: Licensed programs frequently rely on network configuration and system information stored on the VPD on the I/O planar (see Figure 2-11 on page 2-12). If the MAPs indicate that the I/O planar should be replaced, swap the VPD from the old I/O planar 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 from licensed programs may be required.

1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP Thin Node using the steps in "Removing a 332 MHz SMP Thin Node" on page 4-5.
3. Remove the Thin Node cover by loosening the screws on top of the node.
4. Remove the PCI card(s) using the steps in "Removing a PCI adapter card" on page 4-12.
5. Remove the SPS MX adapter card, if present, using the steps in "Removing the SPS MX adapter card" on page 4-12.
6. Remove the PCI card guide rail.
7. Remove the service processor card using the steps in "Removing the service processor" on page 4-14.
8. Remove the memory card(s) using the steps in "Removing a memory card" on page 4-15.
9. Remove the CPU card(s) using the steps in "Removing a CPU card" on page 4-15.
10. Remove the plastic insulator.
11. Remove the I/O expansion control cable using the steps in "Removing the I/O expansion control cable" on page 4-24.
12. Remove the Ethernet BNC nut and washer.
13. Remove the 9 screws securing the I/O planar.
14. Remove the 8 screws securing the system planar.
15. Unseat the I/O planar from the locator pin.

Attention: Components on the underside of the I/O planar can be damaged by the chassis standoffs. Keep the planar elevated, at an angle, when servicing the planar.
16. Separate the I/O planar and the system planar.
17. Slide the I/O planar out from the chassis through the power side.

## Replacing the Thin Node I/O planar

**Attention:** Licensed programs frequently rely on network configuration and system information stored on the VPD on the I/O planar (see Figure 2-11 on page 2-12). If the MAPs indicate that the I/O planar should be replaced, swap the VPD from the old I/O planar 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 from licensed programs may be required.

**Attention:** The system ID will change when replacing a Thin Node I/O planar if keeping the VPD module supplied with the FRU. Inform the Customer, before removing and replacing the I/O planar, that some software applications that use the system ID number for licensing purposes may be impacted by this change.

**Note:** Inform the customer that the MAC address will need to be updated. Refer the customer to “Updating the Ethernet hardware address” on page 3-6 for this procedure.

1. Ensure ESD antistatic wrist device is attached.
2. Slide the I/O planar into the chassis.
3. Attach the I/O planar to the system planar.
4. Seat the I/O planar at the locator pin.
5. Reinstall the 8 screws to secure the system planar.
6. Reinstall the 9 screws to secure the I/O planar.
7. Reinstall the Ethernet BNC nut and washer.
8. Reinstall the I/O expansion control cable using the steps in “Replacing the I/O expansion control cable” on page 4-24.
9. Reinstall the plastic insulator.
10. Install the PCI card guide rail.
11. Replace the PCI card(s) using the steps in “Replacing a PCI adapter card” on page 4-13.
12. Reinstall the SPS MX adapter card, if present. using the steps in “Replacing the SPS MX adapter card” on page 4-12.
13. Replace the service processor card using the steps in “Replacing the service processor” on page 4-15.
14. Replace the memory card(s) using the steps in “Replacing a memory card” on page 4-15.
15. Replace the CPU card(s) using the steps in “Replacing a CPU card” on page 4-16.
16. Reinstall the Thin Node cover by tightening the screws on top of the node.
17. Replace the 332 MHz SMP Thin Node using the steps in “Replacing a 332 MHz SMP Thin Node” on page 4-6.
18. If necessary, update the service processor firmware. See “Installing firmware updates on SP nodes” on page 3-12.
19. Return to the procedure that directed you here.
Removing the Thin Node system planar

1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP Thin Node using the steps in “Removing a 332 MHz SMP Thin Node” on page 4-5.
3. Remove the Thin Node cover by loosening the screws on top of the node.
4. Remove the PCI card(s) using the steps in “Removing a PCI adapter card” on page 4-12.
5. Remove the SPS MX adapter card, if present, using the steps in “Removing the SPS MX adapter card” on page 4-12.
6. Remove the PCI card guide rail.
7. Remove the service processor card using the steps in “Removing the service processor” on page 4-14.
8. Remove the memory card(s) using the steps in “Removing a memory card” on page 4-15.
9. Remove the CPU card(s) using the steps in “Removing a CPU card” on page 4-15.
10. If installed, remove the metal card guides from the CPU and memory card positions.
11. Remove the plastic insulator.
12. Remove the Ethernet BNC nut and washer.
13. Remove the 3 power plugs from the chassis side of the system planar.
14. Remove the 9 screws securing the I/O planar.
15. Remove the 8 screws securing the system planar.
16. Unseat the I/O planar from the locator pin.
Attention: Components on the underside of the I/O planar can be damaged by the chassis standoffs. Keep the planar elevated, at an angle, when servicing the planar.

17. Separate the I/O planar and the system planar.
18. Remove the system planar from the chassis.

Replacing the Thin Node system planar

Note: Inform the customer that the boot address will need to be updated. Refer the customer to "Resetting the clock and bootlist after servicing a node" on page 3-11 or Parallel System Support Programs for AIX: Installation and Migration Guide, GA22-7347, for this procedure.

Note: Inform the customer that the MAC address will need to be updated, see "Updating the Ethernet hardware address" on page 3-6 for this procedure.

1. Ensure ESD antistatic wrist device is attached.
2. Reinstall the system planar into the chassis.
3. Attach the I/O planar to the system planar.
4. Seat the I/O planar at the locator pin.

Attention: Install the I/O planar at an angle. Insert the BNC connector through the back wall first. Then set the planar in position with the holes aligned with the standoffs. Setting the planar flat on the standoffs, then sliding it to the rear to access the BNC will damage the components on the underside of the planar.

5. Reinstall the 8 screws to secure the system planar.
6. Reinstall the 9 screws to secure the I/O planar.
7. Reinstall the 3 power plugs to the chassis side of the system planar.
8. Reinstall the Ethernet BNC nut and washer.
9. Reinstall the plastic insulator.
10. Install the PCI card guide rail.
11. Replace the PCI card(s) using the steps in "Replacing a PCI adapter card" on page 4-13.
12. Reinstall the SPS MX adapter card, if present, using the steps in "Replacing the SPS MX adapter card" on page 4-12.
13. Replace the service processor card using the steps in "Replacing the service processor" on page 4-15.
14. If previously removed, reinstall the metal card guides to the CPU and memory card positions.
15. Replace the memory card(s) using the steps in "Replacing a memory card" on page 4-15.
16. Replace the CPU card(s) using the steps in "Replacing a CPU card" on page 4-16.
17. Reinstall the Thin Node cover by tightening the screws on top of the node.
18. Reinstall the 332 MHz SMP Thin Node using the steps in "Replacing a 332 MHz SMP Thin Node" on page 4-5.
19. If necessary, update the service processor firmware. See "Installing firmware updates on SP nodes" on page 3-12.
20. Return to the procedure that directed you here.
Removing the PCI riser card assembly
1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP Wide Node using the steps in "Removing a 332 MHz SMP Wide Node" on page 4-6.
3. Remove the I/O expansion assembly cover by loosening the screws on top of the I/O expansion assembly.
4. Remove the Thin Node cover by loosening the screws on top of the thin node.
5. Remove the PCI riser card cable from connector J6 on the Thin Node I/O planar.
6. Loosen the screw at the top of the rear card guide and remove the PCI riser card from the PCI expansion planar slot J9.
7. Return to the procedure that directed you here.

Replacing the PCI riser card assembly
1. Ensure ESD antistatic wrist device is attached.
2. Install the PCI riser card in PCI expansion planar slot J9 and tighten the screw at the top of the rear card guide.
3. Connect the PCI riser card cable to connector J6 on the Thin Node I/O planar.
4. Reinstall the Thin Node cover by tightening the screws on top of the thin node.
5. Reinstall the I/O expansion assembly cover by tightening the screws on top of the I/O expansion assembly.
6. Replace the 332 MHz SMP Wide Node using the steps in "Replacing a 332 MHz SMP Wide Node" on page 4-7.
7. Return to the procedure that directed you here.

Removing the optional SCSI cable
1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP Wide Node using the steps in "Removing a 332 MHz SMP Wide Node" on page 4-6.
3. Remove the I/O expansion assembly cover by loosening the screws on top of the assembly.
4. Disconnect the SCSI cable from the top of the SCSI card.
5. Disconnect the SCSI cable from connector J2 on the interposer card.

Replacing the optional SCSI cable
1. Ensure ESD antistatic wrist device is attached.
2. Connect the SCSI cable to connector J2 on the interposer card.
3. Connect the SCSI cable to the top of the SCSI card.
4. Reinstall the I/O expansion assembly cover by tightening the screws on the top of the assembly.
5. Reinstall the 332 MHz SMP Wide Node using the steps in "Replacing a 332 MHz SMP Wide Node" on page 4-7.
6. Return to the procedure that directed you here.

Removing the optional SCSI card
1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP Wide Node using the steps in "Removing a 332 MHz SMP Wide Node" on page 4-6.
3. Remove the I/O expansion assembly cover by loosening the screws on top of the assembly.
4. Disconnect the SCSI cable from the top of the SCSI card.
5. Record the position of the SCSI card, then remove the card.

Replacing the optional SCSI card
1. Ensure ESD antistatic wrist device is attached.
2. Install the SCSI card in the position recorded in the removal procedure.
3. Connect the SCSI cable to the top of the SCSI card.
4. Reinstall the I/O expansion assembly cover by tightening the screws on the top of the assembly.
5. Reinstall the 332 MHz SMP Wide Node using the steps in "Replacing a 332 MHz SMP Wide Node" on page 4-7.
6. Return to the procedure that directed you here.

Removing the interposer signal cable
1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP Wide Node using the steps in "Removing a 332 MHz SMP Wide Node" on page 4-6.
3. Remove the I/O expansion assembly cover by loosening the screws on top of the assembly.
4. Disconnect the interposer signal cable at J1 on the interposer card.
5. Disconnect the interposer signal cable at J14 on the PCI expansion planar.

Replacing the interposer signal cable
1. Ensure ESD antistatic wrist device is attached.
2. Connect the interposer signal cable at J14 on the PCI expansion planar.
3. Connect the interposer signal cable at J1 on the interposer card.
4. Reinstall the I/O expansion assembly cover by tightening the screws on the top of the assembly.
Procedures for 332 MHz SMP Thin and Wide Nodes

5. Reinstall the 332 MHz SMP Wide Node using the steps in “Replacing a 332 MHz SMP Wide Node” on page 4-7.

6. Return to the procedure that directed you here.

Removing the interposer card

1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP Wide Node using the steps in “Removing a 332 MHz SMP Wide Node” on page 4-6.
3. Remove the I/O expansion assembly cover by loosening the screws on top of the assembly.
4. Disconnect the interposer signal cable at J1 on the interposer card.
5. Disconnect the I/O expansion control cable at J4 on the interposer card.
6. If applicable, disconnect the SCSI cable from connector J2 on the interposer card.
7. Remove the screws securing the interposer card. Retain the screws for later installation.
8. Remove the interposer card.

Replacing the interposer card

1. Ensure ESD antistatic wrist device is attached.
2. Install the interposer card with the screws that were previously removed.
3. If applicable, connect the SCSI cable to connector J2 on the interposer card.
4. Connect the I/O expansion control cable at J4 on the interposer card.
5. Connect the interposer signal cable at J1 on the interposer card.
6. Reinstall the I/O expansion assembly cover by tightening the screws on the top of the assembly.
7. Reinstall the 332 MHz SMP Wide Node using the steps in “Replacing a 332 MHz SMP Wide Node” on page 4-7.
8. Return to the procedure that directed you here.

Removing the power/supervisor cable

1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP node using the steps in “Removing a 332 MHz SMP Thin Node” on page 4-5 or “Removing a 332 MHz SMP Wide Node” on page 4-6.
3. Refer to “Removing the Thin Node system planar” on page 4-18 to remove the 332 MHz SMP Thin Node system planar.
4. Remove the screws holding the power/supervisor cable to the rear of the chassis. Retain the screws for later installation.
5. Remove the screws holding the power/supervisor cable to the cable support bracket. Retain the screws for later installation.
6. Remove the screws holding the power/supervisor cable to the front of the chassis. Retain the screws for later installation.

Replacing the power/supervisor cable

1. Ensure ESD antistatic wrist device is attached.
2. Tighten the screws holding the power/supervisor cable to the front of the chassis using the screws retained from the removal procedure.
3. Tighten the screws holding the power/supervisor cable to the assembly support bracket using the screws retained from the removal procedure.
4. Tighten the screws holding the power/supervisor assembly to the rear of the chassis using the screws retained from the removal procedure.
5. Refer to “Replacing the Thin Node system planar” on page 4-19 to replace the 332 MHz SMP Thin Node system planar.
6. Reinstall the 332 MHz SMP node using the steps in “Replacing a 332 MHz SMP Thin Node” on page 4-5 or “Replacing a 332 MHz SMP Wide Node” on page 4-7.
7. Return to the procedure that directed you here.
Removing the power cable assembly
1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP Wide Node using the steps in “Removing a 332 MHz SMP Wide Node” on page 4-6.
3. Remove the I/O expansion planar using the steps in “Removing the I/O expansion planar”.
4. Remove the screws holding the power cable assembly to the rear of the chassis. Retain the screws for later installation.
5. Remove the screws holding the power cable assembly to the cable assembly support bracket. Retain the screws for later installation.
6. Remove the screws holding the power cable assembly to the front of the chassis. Retain the screws for later installation.

Replacing the power cable assembly
1. Ensure ESD antistatic wrist device is attached.
2. Tighten the screws holding the power cable assembly to the front of the chassis using the screws retained from the removal procedure.
3. Tighten the screws holding the power cable assembly to the assembly support bracket using the screws retained from the removal procedure.
4. Tighten the screws holding the power assembly to the rear of the chassis using the screws retained from the removal procedure.
5. Reinstall the I/O expansion planar using the steps in “Replacing the I/O expansion planar”.
6. Reinstall the 332 MHz SMP Wide Node using the steps in “Replacing a 332 MHz SMP Wide Node” on page 4-7.
7. Return to the procedure that directed you here.

Removing the I/O expansion planar
1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP Wide Node using the steps in “Removing a 332 MHz SMP Wide Node” on page 4-6.
3. Remove the I/O expansion assembly cover by loosening the screws on top of the I/O expansion assembly.
4. Remove the PCI card(s) using the steps in “Removing a PCI adapter card” on page 4-12.
5. Remove the PCI riser card using the steps in “Removing the PCI riser card assembly” on page 4-20.
6. Remove the PCI card guide rail.
7. Remove the remaining plugs from the I/O planar (J11, J12, J13, and J14).
8. Remove the 5 screws securing the I/O planar.
9. Remove the I/O planar from the chassis.

Replacing the I/O expansion planar
Note: Inform the customer that the boot address will need to be updated. Refer the customer to “Resetting the clock and bootlist after servicing a node” on page 3-11 or Parallel System Support Programs for AIX: Installation and Migration Guide, GA22-7347, for this procedure.

Note: Inform the customer that the MAC address will need to be updated, see “Updating the Ethernet hardware address” on page 3-6 for this procedure.
1. Ensure ESD antistatic wrist device is attached.
2. Reinstall the I/O planar in the chassis.
3. Reinstall the 5 screws to secure the I/O planar.
4. Reinstall the cables into the I/O planar (J11, J12, J13, and J14).
5. Install the PCI card guide rail.
6. Replace the PCI riser card using the steps in “Replacing the PCI riser card assembly” on page 4-20.
7. Replace the PCI card(s) using the steps in “Replacing a PCI adapter card” on page 4-13.
Procedures for 332 MHz SMP Thin and Wide Nodes

8. Reinstall the I/O expansion assembly cover by tightening the screws on top of the I/O expansion assembly.
9. Replace the 332 MHz SMP Wide Node using the steps in “Replacing a 332 MHz SMP Wide Node” on page 4-7.
10. Return to the procedure that directed you here.

Removing the I/O expansion control cable

1. Ensure ESD antistatic wrist device is attached.
2. Remove the 332 MHz SMP Wide Node using the steps in “Removing a 332 MHz SMP Wide Node” on page 4-6.
3. Remove the covers of the I/O expansion assembly and the Thin Node by loosening the screws on top of the assemblies.
4. Disconnect the expansion control cable at J4 on the interposer card in the I/O expansion assembly.
5. Disconnect the expansion control cable at J2 on the I/O planar in the Thin Node.
6. If necessary, cut the cable tie that secures the cable to the tie-down on the bottom of the chassis.

Replacing the I/O expansion control cable

1. Ensure ESD antistatic wrist device is attached.
2. Connect the expansion control cable at J2 on the I/O planar in the thin node.
3. Connect the expansion control cable at J4 on the interposer card in the I/O expansion assembly.
4. Reinstall the covers on the I/O expansion assembly and the Thin Node by tightening the screws on the top of the assemblies.
5. **Reinstall** the 332 MHz SMP Wide Node using the steps in “Replacing a 332 MHz SMP Wide Node” on page 4-7.

6. Return to the procedure that directed you here.

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**Service procedures for POWER3 SMP Thin and Wide Nodes**

These procedures cover the removal and replacement of the 200 MHz POWER3 SMP and 375/450 MHz POWER3 SMP Thin and Wide Node components.

**Note:** A 5.5 mm socket is required to perform some of the following service procedures.

![POWER3 SMP Thin and Wide Node high level component diagram](image)

*Figure 4-11. POWER3 SMP Thin and Wide Node high level component diagram*
Removing a POWER3 SMP Thin Node
1. If necessary, fence the node from the system.
2. Ensure that the Thin Node is offline (shutdown) and powered off from the control workstation.
3. Ensure the Thin Node power supply circuit breaker is in the Off (‘0’) position.
4. Ensure the 48-volt input cable in-line switch is in the Off (‘0’) position.
5. Remove all attached cables from the rear of the Thin Node.
6. After removing the 48-volt input cable, place a protective cover (part number 48G3055) over the plug end. The cover is supplied with the ship group.
7. Remove the CPU power assembly using the steps in “Removing the CPU power assembly” on page 4-28.
8. Remove the hold-down screws located at the rear of the Thin Node.
9. Remove the Thin Node from the front of the frame.
10. Return to the procedure that directed you here.

Replacing a POWER3 SMP Thin Node
1. Reinstall the Thin Node in the front of the frame.
2. Reinstall the hold-down screws located at the rear of the Thin Node.
3. Reinstall the CPU power assembly using the steps in “Replacing the CPU power assembly” on page 4-28 or “Replacing the I/O expansion power assembly” on page 4-29.
4. Remove the protective cover (part number 48G3055) from the 48-volt input cable in J8. Ensure the alignment arrow is pointing to the bottom of the connector. Store the protective cover with the ship group tools.
5. Reattach all cables that were removed from the rear of the Thin Node.
6. Ensure the 48-volt input cable in-line switch is in the On (‘1’) position.
7. Ensure the Thin Node power supply circuit breaker is in the On (‘1’) position.
8. If necessary, unfence the node.
9. Return to the procedure that directed you here.
Removing a POWER3 SMP Wide Node

1. If necessary, fence the node from the system.
2. Ensure that the node is offline (shutdown) and powered off from the control workstation.
3. Ensure the Wide Node power supply circuit breakers are in the Off ('0') position.
4. Ensure the 48-volt input cable in-line switches are in the Off ('0') position.
5. Remove all attached cables from the rear of the node.
6. After removing the 48-volt input cables, place protective covers (part number 48G3055) over the plug ends. The covers are supplied with the ship group.
7. Remove the CPU power assembly and the I/O expansion power assembly using the steps in "Removing the CPU power assembly" on page 4-28 and "Removing the I/O expansion power assembly" on page 4-28.
8. Remove the hold-down screws located at the rear of the node.
9. Remove the Wide Node from the front of the frame.
10. Return to the procedure that directed you here.
Replacing a POWER3 SMP Wide Node

1. Reinstall the Wide Node in the front of the frame.
2. Reinstall the hold-down screws located at the rear of the node.
3. Reinstall the CPU power assembly and the I/O expansion power assembly using the steps in “Replacing the CPU power assembly” and “Replacing the I/O expansion power assembly” on page 4-29.
4. Remove the protective covers (part number 48G3055) from the 48-volt input cables. Store the protective covers with the ship group tools.
5. Connect the cable to both J8 connectors. Ensure the alignment arrows are pointing to the bottom of the connectors.
6. Reattach all of the cables that were removed from the rear of the node.
7. Ensure the 48-volt input cable in-line switches are in the On (‘1’) position.
8. Ensure the Wide Node power supply circuit breakers are in the On (‘1’) position.
9. If necessary, unfence the node.
10. Return to the procedure that directed you here.

Removing the CPU power assembly

1. Ensure that the processor node is offline (shutdown) and powered off from the control workstation.
2. Ensure the node power supply circuit breakers are in the Off (‘0’) position.
3. Ensure the 48-volt input cable in-line switches are in the Off (‘0’) position.
4. Remove the front cover panel by removing the screws. Retain the screws for later installation.
5. If necessary, unplug the 4-drop DASD cable from the I/O expansion assembly.
6. Remove the retaining screw at the front of the power assembly and retain for later use.
7. Pull forward and down on the power interlock bar to unlatch and remove the power assembly.
8. If you are replacing the power assembly with a new assembly, continue with step 9. Otherwise, return to the procedure that directed you here.
9. Remove the supervisor card using the steps in “Removing the node supervisor card” on page 4-31.
10. Return to the procedure that directed you here.

Replacing the CPU power assembly

1. If you are replacing the power assembly with a new assembly, continue with step 2, otherwise go to step 4.
2. Plug the SCSI cable to the CPU power assembly interposer card.
3. Install the DASD (removed from the old power assembly) using the steps in “Replacing a DASD” on page 4-31.
4. Install the CPU power assembly in the node.
5. Push up and back on the power interlock bar until the power assembly is engaged and locked.
6. Push the power interlock tab marked ‘PUSH’ at the right side front of the power assembly to engage the power connections.
7. Secure the front of the power assemblies with the retaining screw that was previously removed.
8. If necessary, plug the 4-drop DASD cable in the I/O expansion assembly.
9. If necessary, install the supervisor card, removed from the old power assembly, using the steps in “Replacing the node supervisor card” on page 4-31.
10. Install the front cover panel using the screws that were previously removed.
11. Ensure the 48-volt input cable in-line switches are in the On (‘1’) position.
12. Ensure the node power supply circuit breakers are in the On (‘1’) position.
13. Return to the procedure that directed you here.

Removing the I/O expansion power assembly

1. Ensure that the processor node is offline (shutdown) and powered off from the control workstation.
2. Ensure the node power supply circuit breakers are in the Off (‘0’) position.
3. Ensure the 48-volt input cable in-line switches are in the Off (‘0’) position.
4. Remove the front cover panel by removing the screws. Retain the screws for later installation.
Procedures for POWER3 SMP Thin and Wide Nodes

5. If necessary, unplug the 4-drop DASD cable from the I/O expansion assembly.
6. Remove the retaining screw at the front of the power assembly and retain for later use.
7. Pull forward and down on the power interlock bar to unlatch and remove the power assembly.
8. If you are replacing the power assembly with a new assembly, continue with step 9. Otherwise, return to the procedure that directed you here.
9. Remove the DASD using the steps in “Removing a DASD” on page 4-31.
10. Return to the procedure that directed you here.

Replacing the I/O expansion power assembly

1. If you are replacing the power assembly with a new assembly, continue with step 2; otherwise go to step 3.
2. Install the DASD (removed from the old power assembly using the steps in “Replacing a DASD” on page 4-31.
3. Push up and back on the power interlock bar until the power assembly is engaged and locked.
4. Push the power interlock tab marked ‘PUSH’ at the right side front of the power assembly to engage the power connections.
5. Secure the front of the power assemblies with the retaining screw that was previously removed.
6. If necessary, plug the 4-drop DASD cable in the I/O expansion assembly.
7. Install the front cover panel using the screws that were previously removed.
8. Ensure the 48-volt input cable in-line switches are in the On (‘1’) position.
9. Ensure the node power supply circuit breakers are in the On (‘1’) position.
10. Return to the procedure that directed you here.

Figure 4-14. POWER3 SMP Thin and Wide Node power assemblies
Removing a fan

1. Ensure ESD antistatic wrist device is attached.
2. Remove the power assembly using the steps in "Removing the CPU power assembly" on page 4-28 or "Removing the I/O expansion power assembly" on page 4-28.
3. Remove the screw from the top of the fan bracket.
4. Loosen the screw on the side of the fan bracket.
5. Lift the fan bracket from the power assembly.
6. Locate and disconnect the fan plug.
7. Remove the shock mounts from the bracket and retain for later installation.
Replacing a fan
1. Install the shock mounts, removed from the old fan, to the replacement fan.
2. Install the fan with the wires to the bottom and the airflow indicator pointing to the rear of the chassis.
3. Connect the fan plug.
4. Reinstall the fan bracket.
5. Install 1 screw on the top and 1 screw on the side of the fan bracket.
6. Check that no cable touches the fan.
7. Reinstall the power assembly using the steps in “Replacing the CPU power assembly” on page 4-28 or “Replacing the I/O expansion power assembly” on page 4-29.
8. Return to the procedure that directed you here.

Removing the node supervisor card
1. Ensure ESD antistatic wrist device is attached.
2. Remove the front cover panel by removing the screws. Retain the screws for later installation.
3. Remove the screws holding the node supervisor card to the mounting bracket. Retain the screws for later installation.
4. Remove the node supervisor card.

Replacing the node supervisor card
Note: Inform the customer that the clocks will need to be reset. Refer the customer to “Resetting the clock and bootlist after servicing a node” on page 3-11 or Parallel System Support Programs for AIX: Installation and Migration Guide, GA22-7347, for this procedure.
1. Ensure ESD antistatic wrist device is attached.
2. Firmly seat the node supervisor card in the mounting bracket and secure with the screws that were previously removed.
3. Install the front cover panel using the screws that were previously removed.
4. Perform “Updating the node supervisor code” on page 3-10.
5. Return to the procedure that directed you here.

Removing a DASD
1. Ensure ESD antistatic wrist device is attached.
2. Remove the front cover panel by removing the screws. Retain the screws for later installation.
3. Disconnect the SCSI cable and the power cable.
4. Record the DASD location.
5. Loosen the screws that secure the DASD tray to the power assembly.
6. Slide the DASD assembly from the front of the power assembly.
7. Remove the screws that secure the DASD to the DASD tray. Retain the screws for later installation.
8. Remove the DASD from the DASD tray.
9. Check the jumper position(s) on the DASD, if any. Record the settings for the replacement DASD.

Note: Ensure the grounding strips located around the edges are firmly in place.

Replacing a DASD
1. Ensure ESD antistatic wrist device is attached.
2. Set the jumper position(s) on the new DASD, if any, using the settings you recorded in the removal procedure.
3. Ensure all required DASD jumpers are installed. Refer to RS/6000: Adapters, Devices, and Cable Information for Multiple Bus Systems, SA38-0516, for the required jumper information.
4. Install the DASD in the DASD tray using the screws that were previously removed.
5. Reinstall the DASD assembly into the front of the power assembly in the position previously recorded and tighten the screws.
6. Connect the SCSI cable and power cable to the DASD.
7. Install the front cover panel using the screws that were previously removed.
8. Return to the procedure that directed you here.

Removing the SCSI cable
1. Ensure ESD antistatic wrist device is attached.
2. Remove the front cover panel by removing the screws. Retain the screws for later installation.
3. Disconnect SCSI cable and the power cable connectors from all installed DASD.
4. Record the location of each CPU DASD.
5. Loosen the screws that secure the DASD tray to the power assembly.
6. Slide each CPU DASD assembly from the front of the power assembly.
7. Remove the SCSI cable from the CPU interposer card.

Replacing the SCSI cable
1. Ensure ESD antistatic wrist device is attached.
2. Connect the SCSI cable to the CPU interposer card.
3. Reinstall the DASD assembly into the front of the power assembly in the positions previously recorded and tighten the screws.
4. Connect the SCSI cable and power cable connectors to all installed DASD.
5. Install the front cover panel using the screws that were previously removed.
6. Return to the procedure that directed you here.

Removing the SPS MX2 adapter card
1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP Thin node using the steps in "Removing a POWER3 SMP Thin Node" on page 4-26 or "Removing a POWER3 SMP Wide Node" on page 4-27.
3. Turn the CPU assembly cover locking screws and remove the cover.
4. Loosen the screw at the top of the rear card guide and remove the SPS MX2 adapter card from the Thin Node system planar slot J9.
5. Remove the protective cover from port P1 and retain for later use.

Replacing the SPS MX2 adapter card
1. Ensure ESD antistatic wrist device is attached.
2. Install the protective cover, that was previously removed, on port P1, if necessary.
3. Install the SPS MX2 adapter card in the Thin Node system planar slot J9 and tighten the screw at the top of the rear card guide.
4. Replace the CPU assembly cover. Turn the locking screws to secure the cover.
5. Reinstall the POWER3 SMP Thin node using the steps in "Replacing a POWER3 SMP Thin Node" on page 4-26 or "Replacing a POWER3 SMP Wide Node" on page 4-28.
6. Return to the procedure that directed you here.

Removing a PCI adapter card
1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP node using the steps in "Removing a POWER3 SMP Thin Node" on page 4-26 or "Removing a POWER3 SMP Wide Node" on page 4-27.
3. Turn the CPU assembly or I/O expansion assembly cover locking screws and remove the cover.
4. Loosen the knurled knob, for this adapter, at the rear of the assembly.
5. Check for (and record) internal connections to other adapter cards or cables before removing them.
6. If the adapter card has a card extender, holding the front end of the adapter, release the extender by pressing the locking tab to the side.
7. Place plastic inserts, from the ship group, on either side of the card to be removed.
8. Grasp the adapter by the pull tabs and pull it out of the slot.

Replacing a PCI adapter card
1. Ensure ESD antistatic wrist device is attached.
2. Check for any jumpers or switches to be set on this card, then set as appropriate.
3. If the adapter card requires a card extender, attach the extender to the front end of the adapter and lock in place with locking tab.
4. Align the adapter in the slot, then push the card into the slot.
5. Remove the plastic inserts, previously used for card removal, and return them to the ship group.
6. Tighten the knurled knob, for this adapter, at the rear of the assembly.
7. If this card has any internal connections to other adapter(s) or cables, connect them, as appropriate.
8. Replace the CPU assembly or I/O expansion assembly cover. Turn the locking screws to secure the cover.
9. Reinstall the POWER3 SMP node using the steps in “Replacing a POWER3 SMP Thin Node” on page 4-26 or “Replacing a POWER3 SMP Wide Node” on page 4-28.
10. Return to the procedure that directed you here.
Removing a memory card

1. Ensure ESD antistatic wrist device is attached.
Procedures for POWER3 SMP Thin and Wide Nodes

2. Remove the POWER3 SMP node using the steps in "Removing a POWER3 SMP Thin Node" on page 4-26 or "Removing a POWER3 SMP Wide Node" on page 4-27.

3. Turn the CPU assembly cover locking screws and remove the cover.

**Attention:** Do not rock cards from side-to-side when plugging or unplugging.

4. Pull up on the thumb locks to disengage the memory card.

5. Remove the memory card.

**Replacing a memory card**

1. Ensure ESD antistatic wrist device is attached.

**Attention:** Do not rock cards from side-to-side when plugging or unplugging.

2. Align the memory card with the slot.

3. Push down on the thumb locks to engage the memory card.

4. Replace the CPU assembly cover. Turn the locking screws to secure the cover.

5. Reinstall the POWER3 SMP node using the steps in "Replacing a POWER3 SMP Thin Node" on page 4-26 or "Replacing a POWER3 SMP Wide Node" on page 4-28.

6. Return to the procedure that directed you here.

**Removing a CPU card**

1. Ensure ESD antistatic wrist device is attached.

2. Remove the POWER3 SMP node using the steps in "Removing a POWER3 SMP Thin Node" on page 4-26 or "Removing a POWER3 SMP Wide Node" on page 4-27.

3. Turn the CPU assembly cover locking screws and remove the cover.

**Attention:** Do not rock cards from side-to-side when plugging or unplugging.

4. Pull up on the thumb locks to disengage the CPU card.

**Attention:** Do not grasp the card by the heat sink when plugging or unplugging. This will damage the processor chip.

5. Remove the CPU card.

**Replacing a CPU card**

1. Ensure ESD antistatic wrist device is attached.

**Attention:** Do not grasp the card by the heat sink when plugging or unplugging. This will damage the processor chip.

2. Align the CPU card with the slot.

**Attention:** Do not rock cards from side-to-side when plugging or unplugging.

3. Push down on the thumb locks to engage the CPU card.

4. Replace the CPU assembly cover. Turn the locking screws to secure the cover.
5. Reinstall the POWER3 SMP node using the steps in "Replacing a POWER3 SMP Thin Node" on page 4-26 or "Replacing a POWER3 SMP Wide Node" on page 4-28.
6. Return to the procedure that directed you here.

Removing the POWER3 SMP Thin Node I/O planar

Attention: Licensed programs frequently rely on network configuration and system information stored on the VPD on the I/O planar (see Figure 2-20 on page 2-16). If the MAPs indicate that the I/O planar should be replaced, swap the VPD from the old I/O planar 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 from licensed programs may be required.

1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP node. Refer to "Removing a POWER3 SMP Thin Node" on page 4-26 or "Removing a POWER3 SMP Wide Node" on page 4-27.
3. Turn the processor node cover locking screws and remove the cover.
4. Remove the PCI card(s) using the steps in "Removing a PCI adapter card" on page 4-32.
5. Remove the SPS MX2 adapter card, if present, using the steps in "Removing the SPS MX2 adapter card" on page 4-32.
6. Remove the memory card(s) using the steps in "Removing a memory card" on page 4-34.
7. Remove the CPU card(s) using the steps in "Removing a CPU card" on page 4-35.
8. Remove the PCI card guide bracket.
9. If this is a Wide Node: Unplug the I/O expansion control cable from J2 on the I/O planar using the steps in "Removing the I/O expansion control cable" on page 4-44.
10. If this is a Wide Node: Separate the CPU assembly from the I/O expansion assembly after removing the screws connecting them.
11. Remove the screws holding the system planar and separate the system planar from the I/O planar.
12. Remove the Ethernet BNC nut and washer.
13. Remove the screws holding the I/O planar.
14. Unseat the I/O planar from the locator pin.

Attention: Components on the underside of the I/O planar can be damaged by the chassis standoffs. Keep the planar elevated, at an angle, when servicing the planar.

15. Separate the I/O planar and the system planar.
16. Slide the I/O planar out from the chassis through the power side.

Replacing the POWER3 SMP Thin Node I/O planar

Attention: Licensed programs frequently rely on network configuration and system information stored on the VPD on the I/O planar (see Figure 2-20 on page 2-16). If the MAPs indicate that the I/O planar should be replaced, swap the VPD from the old I/O planar 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 from licensed programs may be required.

Attention: The system ID will change when replacing a Thin Node I/O planar if keeping the VPD module supplied with the FRU. Inform the Customer, before removing and replacing the I/O planar, that some software applications that use the system ID number for licensing purposes may be impacted by this change.

Note: Inform the customer that the boot address will need to be updated. Refer the customer to "Resetting the clock and bootlist after servicing a node" on page 3-11 or Parallel System Support Programs for AIX: Installation and Migration Guide, GA22-7347, for this procedure.
Inform the customer that the MAC address will need to be updated, see "Updating the Ethernet hardware address" on page 3-6 for this procedure.

1. Ensure ESD antistatic wrist device is attached.
2. Slide the I/O planar into the chassis.

Attention: Install the I/O planar at an angle. Insert the BNC connector through the back wall first. Then set the planar in position with the holes aligned with the standoffs. Setting the planar flat on the standoffs, then sliding it to the rear to access the BNC will damage the components on the underside of the planar.

3. Attach the I/O planar to the system planar.
4. Seat the I/O planar at the locator pin.
5. Reinstall the screws to secure the I/O planar.
6. Reinstall the Ethernet BNC nut and washer.
7. Connect the system planar to the I/O planar and reinstall the screws to secure the system planar.
8. If this is a Wide Node: Connect the CPU assembly to the I/O expansion assembly and secure with screws.
9. If this is a Wide Node: Reinstall the I/O expansion control cable to J2 on the I/O planar using the steps in "Replacing the I/O expansion control cable" on page 4-44.
10. Install the PCI card guide bracket.
11. Replace the PCI card(s) using the steps in "Replacing a PCI adapter card" on page 4-32.
12. Reinstall the SPS MX2 adapter card, if present, using the steps in "Replacing the SPS MX2 adapter card" on page 4-32.
13. Replace the memory card(s) using the steps in "Replacing a memory card" on page 4-35.
14. Replace the CPU card(s) using the steps in "Replacing a CPU card" on page 4-35.
15. Replace the processor node cover and turn the locking screws to secure the cover.
16. Reinstall the POWER3 SMP node using the steps in "Replacing a POWER3 SMP Thin Node" on page 4-26 or "Replacing a POWER3 SMP Wide Node" on page 4-28.
17. If necessary, update the service processor firmware. See "Installing firmware updates on SP nodes" on page 3-12.
18. Return to the procedure that directed you here.
Removing the POWER3 SMP Thin Node system planar

1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP node. Refer to “Removing a POWER3 SMP Thin Node” on page 4-26 or “Removing a POWER3 SMP Wide Node” on page 4-27.
3. Turn the processor node cover locking screws and remove the cover.
4. Remove the memory card(s) using the steps in “Removing a memory card” on page 4-34.
5. Remove the CPU card(s) using the steps in “Removing a CPU card” on page 4-35.
6. If installed, remove the metal card guide from the memory card position.
7. Remove the black plastic cable retainer.
8. Remove the 2 power plugs from the power supply end of the system planar.
9. Remove the screws securing the system planar.
10. Separate the I/O planar and the system planar.
11. Remove the system planar from the chassis.

**Note:** Retain the insulation sheet covering the power cables for later installation.

**Replacing the POWER3 SMP Thin Node system planar**

**Note:** Inform the customer that the boot address will need to be updated. Refer the customer to "Resetting the clock and bootlist after servicing a node" on page 3-11 or Parallel System Support Programs for AIX: Installation and Migration Guide, GA22-7347, for this procedure.

**Note:** Inform the customer that the MAC address will need to be updated, see "Updating the Ethernet hardware address" on page 3-6 for this procedure.

1. Ensure ESD antistatic wrist device is attached.
2. Reinstall the system planar into the chassis.

**Note:** Fan out the power cable to allow the planar to install properly. Also, make sure the insulation sheet is in place.

3. Attach the I/O planar to the system planar.
4. Reinstall the screws to secure the system planar.
5. Reinstall the 2 power plugs to the power supply end of the system planar.
6. Reinstall the plastic insulator.
7. If previously removed, reinstall the metal card guide to the memory card position.
8. Replace the memory card(s) using the steps in "Replacing a memory card" on page 4-35.
9. Replace the CPU card(s) using the steps in "Replacing a CPU card" on page 4-35.
10. Replace the processor node cover and turn the locking screws to secure the cover.
11. Reinstall the POWER3 SMP node using the steps in "Replacing a POWER3 SMP Thin Node" on page 4-26 or "Replacing a POWER3 SMP Wide Node" on page 4-28.
12. If necessary, update the service processor firmware. See "Installing firmware updates on SP nodes" on page 3-12.
13. Return to the procedure that directed you here.
Removing the optional SCSI cable

1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP Wide node using the steps in "Removing a POWER3 SMP Wide Node" on page 4-27.
3. Turn the I/O expansion assembly cover locking screws and remove the cover.
4. Disconnect the SCSI cable from the top of the SCSI card.
5. Disconnect the SCSI cable from connector J2 on the interposer card.
Replacing the optional SCSI cable
1. Ensure ESD antistatic wrist device is attached.
2. Connect the SCSI cable to connector J2 on the interposer card.
3. Connect the SCSI cable to the top of the SCSI card.
4. Replace the I/O expansion assembly cover. Turn the locking screws to secure the cover.
5. Reinstall the POWER3 SMP Wide node using the steps in “Replacing a POWER3 SMP Wide Node” on page 4-28
6. Return to the procedure that directed you here.

Removing the optional SCSI card
1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP Wide node using the steps in “Removing a POWER3 SMP Wide Node” on page 4-27
3. Turn the I/O expansion assembly cover locking screws and remove the cover.
4. Disconnect the SCSI cable from the top of the SCSI card.
5. Record the position of the SCSI card, then remove the card.

Replacing the optional SCSI card
1. Ensure ESD antistatic wrist device is attached.
2. Install the SCSI card in the position recorded in the removal procedure.
3. Connect the SCSI cable to the top of the SCSI card.
4. Replace the I/O expansion assembly cover. Turn the locking screws to secure the cover.
5. Reinstall the POWER3 SMP Wide Node using the steps in “Replacing a POWER3 SMP Wide Node” on page 4-28
6. Return to the procedure that directed you here.

Removing the interposer signal cable
1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP Wide node using the steps in “Removing a POWER3 SMP Wide Node” on page 4-27
3. Turn the I/O expansion assembly cover locking screws and remove the cover.
4. Disconnect the interposer signal cable at J1 on the interposer card.
5. Disconnect the interposer signal cable at J14 on the PCI expansion planar.
6. If necessary, cut the cable tie that secures the cable to the tie-down on the bottom of the chassis.

Replacing the interposer signal cable
1. Ensure ESD antistatic wrist device is attached.
2. Connect the interposer signal cable at J14 on the PCI expansion planar.
3. Connect the interposer signal cable at J1 on the interposer card.
4. Secure the cable to the tie-down on the bottom of the chassis with a cable tie.
5. Replace the I/O expansion assembly cover. Turn the locking screws to secure the cover.
6. Reinstall the POWER3 SMP Wide Node using the steps in “Replacing a POWER3 SMP Wide Node” on page 4-28
7. Return to the procedure that directed you here.

Removing the interposer card
1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP Wide node using the steps in “Removing a POWER3 SMP Wide Node” on page 4-27
3. Turn the I/O expansion assembly cover locking screws and remove the cover.
4. Disconnect the interposer signal cable at J1 on the interposer card.
5. Disconnect the I/O expansion control cable at J4 on the interposer card.
6. If applicable, disconnect the SCSI cable from connector J2 on the interposer card.
7. Remove the screws securing the interposer card. Retain the screws for later installation.
8. Remove the interposer card.

Replacing the interposer card
1. Ensure ESD antistatic wrist device is attached.
2. Install the interposer card with the screws that were previously removed.
3. If applicable, connect the SCSI cable to connector J2 on the interposer card.
4. Connect the I/O expansion control cable at J4 on the interposer card.
5. Connect the interposer signal cable at J1 on the interposer card.
6. Replace the I/O expansion assembly cover. Turn the locking screws to secure the cover.
7. Reinstall the POWER3 SMP Wide Node using the steps in "Replacing a POWER3 SMP Wide Node" on page 4-28.
8. Return to the procedure that directed you here.

Removing the power/supervisor cable
1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP node using the steps in "Removing a POWER3 SMP Thin Node" or "Removing a POWER3 SMP Wide Node" on page 4-27.
3. Refer to "Removing the POWER3 SMP Thin Node system planar" on page 4-38 to remove the POWER3 SMP Thin Node system planar.
4. Remove the screws holding the power/supervisor cable to the rear of the chassis. Retain the screws for later installation.
5. Loosen the pin guide screws that secure the cable jack to the front of the chassis.

Replacing the power/supervisor cable
1. Ensure ESD antistatic wrist device is attached.
2. Tighten the pin guide screws to secure the cable jack to the front of the chassis.
3. Tighten the screws holding the power/supervisor assembly to the rear of the chassis using the screws retained from the removal procedure.
4. Refer to "Replacing the POWER3 SMP Thin Node system planar" on page 4-39 to replace the POWER3 SMP Thin Node system planar.
5. Reinstall the POWER3 SMP node using the steps in "Replacing a POWER3 SMP Thin Node" or "Replacing a POWER3 SMP Wide Node" on page 4-28.
6. Return to the procedure that directed you here.

Removing the power cable assembly
1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP Wide Node using the steps in "Removing a POWER3 SMP Wide Node" on page 4-27.
3. Turn the I/O expansion assembly cover locking screws and remove the cover.
4. Remove the screws holding the power cable assembly to the rear of the chassis. Retain the screws for later installation.
5. Loosen the pin guide screws holding the cable assembly jack to the front of the chassis.
6. If necessary, cut the cable tie that secures the cable to the tie-down on the bottom of the chassis.

Replacing the power cable assembly
1. Ensure ESD antistatic wrist device is attached.
2. Secure the cable to the tie-down on the bottom of the chassis with a cable tie.
3. Tighten the pin guide screws to secure the cable assembly jack to the front of the chassis.
4. Tighten the screws holding the power assembly to the rear of the chassis using the screws retained from the removal procedure.
5. Replace the I/O expansion assembly cover. Turn the locking screws to secure the cover.
6. Reinstall the POWER3 SMP Wide Node using the steps in "Replacing a POWER3 SMP Wide Node" on page 4-28.
7. Return to the procedure that directed you here.
Removing the I/O expansion planar
1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP Wide Node using the steps in "Removing a POWER3 SMP Wide Node" on page 4-27.
3. Turn the I/O expansion assembly cover locking screws and remove the cover.
4. Remove the PCI card(s) using the steps in "Removing a PCI adapter card" on page 4-32.
5. Remove the PCI card guide bracket.
6. Remove the remaining plugs from the I/O planar (J11, J12, J13, and J14).
7. Remove the screws securing the I/O planar.
8. Separate the I/O expansion planar and the CPU assembly I/O planar.
9. Remove the I/O planar from the chassis.

Replacing the I/O expansion planar

Note: Inform the customer that the boot address will need to be updated. Refer the customer to "Resetting the clock and bootlist after servicing a node" on page 3-11 or Parallel System Support Programs for AIX: Installation and Migration Guide, GA22-7347, for this procedure.

Note: Inform the customer that the MAC address will need to be updated, see "Updating the Ethernet hardware address" on page 3-6 for this procedure.
1. Ensure ESD antistatic wrist device is attached.
2. Reinstall the I/O planar in the chassis.
3. Attach the I/O expansion planar and the CPU assembly I/O planar.
4. Reinstall the screws to secure the I/O planar.
5. Reinstall the cables into the I/O planar (J11, J12, J13, and J14).
6. Install the PCI card guide bracket.
7. Replace the PCI card(s) using the steps in "Replacing a PCI adapter card" on page 4-32.
8. Replace the I/O expansion assembly cover. Turn the locking screws to secure the cover.
9. Replace the POWER3 SMP Wide Node using the steps in "Replacing a POWER3 SMP Wide Node" on page 4-28.
10. Return to the procedure that directed you here.
Removing the I/O expansion control cable

1. Ensure ESD antistatic wrist device is attached.
2. Remove the POWER3 SMP Wide Node using the steps in "Removing a POWER3 SMP Wide Node" on page 4-27.
3. Turn the locking screws on the CPU assembly and I/O expansion covers and remove the covers.
4. Disconnect the expansion control cable at J4 on the interposer card in the I/O expansion assembly.
5. Note the location of any adapter cards.
6. Remove the adapter cards (see "Removing the SPS MX2 adapter card" on page 4-32 and "Removing a PCI adapter card" on page 4-32).
7. Remove the card guide mounting nuts and remove the card guide.
8. Disconnect the I/O expansion control cable at J2 on the I/O planar in the Thin Node and remove the cable.
9. If necessary, cut the cable tie that secures the cable to the tie-down on the bottom of the chassis.

Replacing the I/O expansion control cable

1. Ensure ESD antistatic wrist device is attached.
2. Connect the expansion control cable at J2 on the I/O planar in the thin node.
3. Replace the card guide and secure with the mounting nuts.
4. Replace adapter cards in the locations noted in the removal procedure (see "Replacing the SPS MX2 adapter card" on page 4-32 and "Replacing a PCI adapter card" on page 4-32).
5. Connect the expansion control cable at J4 on the interposer card in the I/O expansion assembly.
6. Replace the CPU assembly and I/O expansion covers. Turn the locking screws to secure the covers.
7. Reinstall the POWER3 SMP Wide Node using the steps in “Replacing a POWER3 SMP Wide Node” on page 4-28.

8. Return to the procedure that directed you here.
Procedures for POWER3 SMP Thin and Wide Nodes
Chapter 5. Parts catalog

332 MHz Symmetric MultiProcessor (SMP) Thin and Wide Nodes .................................. 5-2
332 MHz SMP Thin Node assembly (F/C 2050) (view 1) ............................................. 5-4
332 MHz SMP Thin Node assembly (F/C 2050) (view 2) ............................................. 5-6
332 MHz SMP Thin Node assembly (F/C 2050) (view 3) ............................................. 5-8
332 MHz SMP Wide Node assembly (F/C 2051) (view 1) .......................................... 5-10
332 MHz SMP Wide Node assembly (F/C 2051) (view 2) .......................................... 5-12
332 MHz SMP Wide Node assembly (F/C 2051) (view 3) .......................................... 5-14
332 MHz SMP I/O Expansion assembly (view 1) ....................................................... 5-16
332 MHz SMP I/O Expansion assembly (view 2) ....................................................... 5-18
332 MHz SMP I/O Expansion assembly (view 3) ....................................................... 5-20
POWER3 Symmetric MultiProcessor (SMP) Thin and Wide Nodes ................................. 5-22
POWER3 SMP Thin Node assembly (F/C 2052/2056) (view 1) ................................ 5-24
POWER3 SMP Thin Node assembly (F/C 2052/2056) (view 2) ................................ 5-26
POWER3 SMP Thin Node assembly (F/C 2052/2056) (view 3) ................................ 5-28
POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 1) ................................. 5-30
POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 2) ................................. 5-32
POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 3) ................................. 5-34
POWER3 SMP Wide Node I/O Expansion assembly (view 1) ........................................ 5-36
POWER3 SMP Wide Node I/O Expansion assembly (view 2) ........................................ 5-38
POWER3 SMP Wide Node I/O Expansion assembly (view 3) ........................................ 5-40
DASD part numbers ...................................................................................................... 5-42
RS/6000 SP memory part numbers ................................................................................ 5-42

This chapter presents the Parts Catalog, listing all RS/6000 SP parts and FRUs, with corresponding figures containing indexed descriptions.
332 MHz Symmetric MultiProcessor (SMP) Thin and Wide Nodes
### Table 5-1. 332 MHz Symmetric MultiProcessor (SMP) Thin and Wide Nodes

<table>
<thead>
<tr>
<th>Assembly index</th>
<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>AR</td>
<td></td>
<td>332 MHz Symmetric MultiProcessor (SMP) Nodes</td>
</tr>
<tr>
<td>1</td>
<td>31L8515</td>
<td>1</td>
<td>Rail, Left</td>
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<tr>
<td>3</td>
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<td>2</td>
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<td>332 MHz SMP Node enclosure</td>
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<tr>
<td>7</td>
<td>1624763</td>
<td>2</td>
<td>• Screw</td>
</tr>
<tr>
<td></td>
<td>21L2727</td>
<td>4</td>
<td>• Wear strip “A” (not shown)</td>
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<tr>
<td></td>
<td>21L2728</td>
<td>2</td>
<td>• Wear strip “A1” (not shown)</td>
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<td></td>
<td>21L2729</td>
<td>2</td>
<td>• Wear strip “B” (not shown)</td>
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<tr>
<td></td>
<td>21L2732</td>
<td>2</td>
<td>• Wear strip “C” (not shown)</td>
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<tr>
<td>8</td>
<td></td>
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<td>332 MHz SMP Thin Node (reference only, see “332 MHz SMP Thin Node assembly (F/C 2050) (view 1)” on page 5-4)</td>
</tr>
<tr>
<td>9</td>
<td>21L3060</td>
<td>1</td>
<td>Panel assembly, front</td>
</tr>
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<td>10</td>
<td>21L3060</td>
<td>1</td>
<td>332 MHz SMP I/O Expansion assembly (reference only, see “332 MHz SMP I/O Expansion assembly (view 1)” on page 5-16)</td>
</tr>
</tbody>
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332 MHz SMP Thin Node assembly (F/C 2050) (view 1)
Table 5-2. 332 MHz SMP Thin Node assembly (F/C 2050) (view 1)

<table>
<thead>
<tr>
<th>Assembly index</th>
<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
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<td>CPU power assembly</td>
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<td>1</td>
<td>11J6513</td>
<td>1</td>
<td>Fan assembly, med spd</td>
</tr>
<tr>
<td>2</td>
<td>11J6514</td>
<td>1</td>
<td>Fan assembly, high spd</td>
</tr>
<tr>
<td>4</td>
<td>05N5775</td>
<td>1</td>
<td>Card, Supervisor</td>
</tr>
<tr>
<td>5</td>
<td>11J3928</td>
<td>2</td>
<td>DASD Sled assembly</td>
</tr>
<tr>
<td>6</td>
<td>0055726</td>
<td>4</td>
<td>• Screw, 6-32</td>
</tr>
<tr>
<td>7</td>
<td>08J6105</td>
<td>1</td>
<td>SCSI cable assembly, DASD, 2-drop</td>
</tr>
<tr>
<td>8</td>
<td>AR</td>
<td></td>
<td>DASD (reference only) (see &quot;DASD part numbers&quot; on page 5-42)</td>
</tr>
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332 MHz SMP Thin Node assembly (F/C 2050) (view 2)
<table>
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<th>Part number</th>
<th>Units</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>11J5248</td>
<td>1</td>
<td>Gasket, EMC</td>
</tr>
<tr>
<td>1</td>
<td>51H8738</td>
<td>2</td>
<td>• Standoff</td>
</tr>
<tr>
<td></td>
<td>1622316</td>
<td>2</td>
<td>• Washer</td>
</tr>
<tr>
<td>2</td>
<td>84X3459</td>
<td>1</td>
<td>Nut, Hex</td>
</tr>
<tr>
<td>2</td>
<td>84X3460</td>
<td>1</td>
<td>Washer</td>
</tr>
<tr>
<td>3</td>
<td>11J5244</td>
<td>1</td>
<td>Shield</td>
</tr>
<tr>
<td>4</td>
<td>05N4992</td>
<td>1</td>
<td>Chassis, Thin node</td>
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<tr>
<td>5</td>
<td>31L8511</td>
<td>1</td>
<td>Cable assembly, Planar power</td>
</tr>
<tr>
<td></td>
<td>6340846</td>
<td>2</td>
<td>• Screw, Shoulder</td>
</tr>
<tr>
<td>6</td>
<td>51H9358</td>
<td>2</td>
<td>Pin, Guide</td>
</tr>
<tr>
<td>7</td>
<td>11P0283</td>
<td>1</td>
<td>Cable assembly, Power/Supervisor</td>
</tr>
<tr>
<td></td>
<td>851H8738</td>
<td>4</td>
<td>• Standoff</td>
</tr>
<tr>
<td></td>
<td>1622316</td>
<td>4</td>
<td>• Washer</td>
</tr>
<tr>
<td></td>
<td>1624763</td>
<td>4</td>
<td>• Screw, M4x5</td>
</tr>
<tr>
<td>9</td>
<td>11J3866</td>
<td>1</td>
<td>Insulator</td>
</tr>
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<td>10</td>
<td>07L9718</td>
<td>1</td>
<td>Planar, System</td>
</tr>
<tr>
<td></td>
<td>1624765</td>
<td>9</td>
<td>• Screw, M4x8</td>
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<td>41L6138</td>
<td>1</td>
<td>Planar, I/O</td>
</tr>
<tr>
<td></td>
<td>1624765</td>
<td>8</td>
<td>• Screw, M4x8</td>
</tr>
<tr>
<td>12</td>
<td>51H9412</td>
<td>1</td>
<td>Standoff, Hex</td>
</tr>
<tr>
<td>13</td>
<td>21L3046</td>
<td>1</td>
<td>Cover (not shown)</td>
</tr>
</tbody>
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332 MHz SMP Thin Node assembly (F/C 2050) (view 3)
Table 5-4. 332 MHz SMP Thin Node assembly (F/C 2050) (view 2)

<table>
<thead>
<tr>
<th>Assembly index</th>
<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>03N4173</td>
<td>AR</td>
<td>Cards, Memory (reference only)</td>
</tr>
<tr>
<td>2</td>
<td>03N3007</td>
<td>2</td>
<td>Cards, Processor (reference only)</td>
</tr>
<tr>
<td>3</td>
<td>78X8993</td>
<td>3</td>
<td>Screw, M3x8</td>
</tr>
<tr>
<td>4</td>
<td>84X4841</td>
<td>2</td>
<td>Nut, M4</td>
</tr>
<tr>
<td>5</td>
<td>03N3677</td>
<td>1</td>
<td>Service Processor</td>
</tr>
<tr>
<td>6</td>
<td>11J5205</td>
<td>1</td>
<td>Bracket assembly, Card guide</td>
</tr>
<tr>
<td>7</td>
<td>0418787</td>
<td>1</td>
<td>Washer, Flat</td>
</tr>
<tr>
<td>8</td>
<td>1624763</td>
<td>1</td>
<td>Screw, M4x5</td>
</tr>
<tr>
<td>9</td>
<td>12K0551</td>
<td>1</td>
<td>Adapter, SPS MX (F/C 4022)</td>
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<tr>
<td>10</td>
<td>11J3865</td>
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<td>Air baffle</td>
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332 MHz SMP Thin Node assembly (F/C 2050) (view 3) (reference only)

DIMM, 128 MB (see Table 5-23 on page 5-42)
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<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
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<td>332 MHz SMP Thin Node (reference only)</td>
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<td></td>
</tr>
<tr>
<td>3</td>
<td>332 MHz SMP I/O Expansion assembly (reference only)</td>
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</tr>
<tr>
<td>4</td>
<td>21L3046</td>
<td>2</td>
<td>Cover assembly</td>
</tr>
<tr>
<td>5</td>
<td>21L3953</td>
<td>1</td>
<td>Enclosure, 332 MHz SMP Node</td>
</tr>
<tr>
<td>6</td>
<td>1624763</td>
<td>2</td>
<td>Screw</td>
</tr>
<tr>
<td>7</td>
<td>21L3060</td>
<td>1</td>
<td>Panel assembly, Front</td>
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<tr>
<td>7</td>
<td>17H5026</td>
<td>2</td>
<td>Screw</td>
</tr>
<tr>
<td>51H9446</td>
<td>1</td>
<td></td>
<td>Cable, supervisor extension (not shown)</td>
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</tbody>
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332 MHz SMP Wide Node assembly (F/C 2051) (view 2)
Table 5-6. 332 MHz SMP Wide Node assembly (F/C 2051) (view 2)

<table>
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<th>Part number</th>
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<th>Description</th>
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<td></td>
<td></td>
<td></td>
<td>(reference only)</td>
</tr>
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<td>2</td>
<td>08J6105</td>
<td>AR</td>
<td>SCSI cable assembly, DASD, 4-drop</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SCSI cable assembly, DASD, 2-drop</td>
</tr>
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</table>
332 MHz SMP Wide Node assembly (F/C 2051) (view 3)

I/O Expansion Chassis

CPU Chassis
Table 5-7. 332 MHz SMP Wide Node assembly (F/C 2051) (view 3)

<table>
<thead>
<tr>
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<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
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<tr>
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<td>51H9389</td>
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<td>Cable, I/O expansion control</td>
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<tr>
<td>2</td>
<td>0418787</td>
<td>2</td>
<td>Washer, Flat</td>
</tr>
<tr>
<td>3</td>
<td>1624763</td>
<td>2</td>
<td>Screw, M4x5</td>
</tr>
</tbody>
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332 MHz SMP Wide Node assembly (F/C 2051) (view 3) (reference only)
332 MHz SMP I/O Expansion assembly (view 1)
### Table 5-8. 332 MHz SMP I/O Expansion assembly (view 1)

<table>
<thead>
<tr>
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<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21L3046</td>
<td>1</td>
<td>Cover assembly</td>
</tr>
<tr>
<td>2</td>
<td>AR</td>
<td></td>
<td>Cards, PCI (reference only)</td>
</tr>
<tr>
<td>3</td>
<td>78X8993</td>
<td>8</td>
<td>Screw, M3x8</td>
</tr>
<tr>
<td>4</td>
<td>51H9412</td>
<td>2</td>
<td>Standoff, Hex M4</td>
</tr>
<tr>
<td>5</td>
<td>51H9384</td>
<td>2</td>
<td>Standoff, Key Head</td>
</tr>
<tr>
<td>6</td>
<td>11J6524</td>
<td>1</td>
<td>I/O Expansion power assembly</td>
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</tbody>
</table>
332 MHz SMP I/O Expansion assembly (view 2)
## Table 5-9. 332 MHz SMP I/O Expansion assembly (view 2)

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<th>Part number</th>
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<th>Description</th>
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<td>11K0222</td>
<td>1</td>
<td>Card, PCI Riser</td>
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<tr>
<td></td>
<td>78X8993</td>
<td>1</td>
<td>• Screw, M3x8</td>
</tr>
<tr>
<td>2</td>
<td>03N3716</td>
<td>1</td>
<td>Planar, PCI Expansion</td>
</tr>
<tr>
<td></td>
<td>1624765</td>
<td>5</td>
<td>• Screw, M4x8</td>
</tr>
<tr>
<td>3</td>
<td>21L3927</td>
<td>1</td>
<td>PCI Guide assembly, 8-position</td>
</tr>
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<td></td>
<td>84X4841</td>
<td>3</td>
<td>• Nut, M4</td>
</tr>
<tr>
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<td>21L3878</td>
<td>1</td>
<td>Chassis assembly, I/O Expansion</td>
</tr>
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<td>51H9385</td>
<td>1</td>
<td>Cable assembly, PCI Power</td>
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<td>6340846</td>
<td>2</td>
<td>• Screw, Shoulder</td>
</tr>
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<td>51H9358</td>
<td>2</td>
<td>Pin, Guide</td>
</tr>
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<td>11J6147</td>
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<td>Cable assembly, Power</td>
</tr>
<tr>
<td>8</td>
<td>51H8738</td>
<td>2</td>
<td>• Standoff</td>
</tr>
<tr>
<td></td>
<td>1622316</td>
<td>2</td>
<td>• Lock Washer</td>
</tr>
<tr>
<td>9</td>
<td>46H9165</td>
<td>1</td>
<td>Card, Interposer</td>
</tr>
<tr>
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<td>1624765</td>
<td>4</td>
<td>• Screw, M4x8</td>
</tr>
<tr>
<td>10</td>
<td>08J6111</td>
<td>1</td>
<td>Cable assembly (reference only), alternate DASD cabling (F/C 1241)</td>
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<tr>
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<td>51H9386</td>
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<td>Cable assembly, Interposer signal</td>
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332 MHz SMP I/O Expansion assembly (view 3)
Table 5-10. 332 MHz SMP I/O Expansion assembly (view 3)

<table>
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<tr>
<th>Assembly index</th>
<th>Part number</th>
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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>11J6513</td>
<td>2</td>
<td>Fan assembly, Med spd</td>
</tr>
<tr>
<td>2</td>
<td>11J6524</td>
<td>1</td>
<td>I/O Power assembly</td>
</tr>
<tr>
<td>3</td>
<td>11J3928</td>
<td>2</td>
<td>DASD Sled assembly</td>
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<td>4</td>
<td>0055726</td>
<td>4</td>
<td>Screw, 6-32</td>
</tr>
<tr>
<td>5</td>
<td>AR</td>
<td></td>
<td>DASD (reference only) (see “DASD part numbers” on page 5-42)</td>
</tr>
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</table>
### Table 5-11. POWER3 Symmetric MultiProcessor (SMP) Thin and Wide Nodes

<table>
<thead>
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<th>Part number</th>
<th>Units</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>31L8515</td>
<td>1</td>
<td>Rail, Left</td>
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<td>2</td>
<td>77G0599</td>
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<td>Screw</td>
</tr>
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<td>3</td>
<td>31L8514</td>
<td>1</td>
<td>Rail, Right</td>
</tr>
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<td>4</td>
<td>0375867</td>
<td>2</td>
<td>Nut Clip</td>
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<td>46G6953</td>
<td>1</td>
<td>Shelf assembly - Thin Node (not shown)</td>
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<td>11J4774</td>
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<td>Panel, Blank</td>
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<td>21l3953</td>
<td>1</td>
<td>POWER3 SMP Thin and Wide Node enclosure</td>
</tr>
<tr>
<td>7</td>
<td>1624763</td>
<td>2</td>
<td>• Screw</td>
</tr>
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<td></td>
<td>21L2727</td>
<td>4</td>
<td>• Wear strip “A” (not shown)</td>
</tr>
<tr>
<td></td>
<td>21L2728</td>
<td>2</td>
<td>• Wear strip “A1” (not shown)</td>
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<tr>
<td></td>
<td>21L2729</td>
<td>2</td>
<td>• Wear strip “B” (not shown)</td>
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<tr>
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<td>21L2732</td>
<td>2</td>
<td>• Wear strip “C” (not shown)</td>
</tr>
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<td>8</td>
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</tr>
<tr>
<td>9</td>
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<td>Panel assembly, Front</td>
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<td>10</td>
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</table>
POWER3 SMP Thin Node assembly (F/C 2052/2056) (view 1)
Table 5-12. POWER3 SMP Thin Node assembly (F/C 2052/2056) (view 1)

<table>
<thead>
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<th>Part number</th>
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<th>Description</th>
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<tbody>
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<td>31L7865</td>
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<td>CPU Power assembly</td>
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<td>1</td>
<td>11J6513</td>
<td>1</td>
<td>Fan assembly, Med spd</td>
</tr>
<tr>
<td>2</td>
<td>11J6514</td>
<td>1</td>
<td>Fan assembly, High spd</td>
</tr>
<tr>
<td>4</td>
<td>05N5775</td>
<td>1</td>
<td>Card, Supervisor</td>
</tr>
<tr>
<td>5</td>
<td>11J3928</td>
<td>2</td>
<td>DASD Sled assembly</td>
</tr>
<tr>
<td>6</td>
<td>0055726</td>
<td>4</td>
<td>Screw, 6-32</td>
</tr>
<tr>
<td>7</td>
<td>08J6105</td>
<td>1</td>
<td>SCSI Cable assembly, DASD, 2-drop</td>
</tr>
<tr>
<td>8</td>
<td>AR</td>
<td></td>
<td>DASD (reference only) (see &quot;DASD part numbers&quot; on page 5-42)</td>
</tr>
</tbody>
</table>

Note: 31L7838 is found only on early releases of the POWER3 SMP thin node.
POWER3 SMP Thin Node assembly (F/C 2052/2056) (view 2)
Table 5-13. POWER3 SMP Thin Node assembly (F/C 2052/2056) (view 2)

<table>
<thead>
<tr>
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<th>Part number</th>
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<th>Description</th>
</tr>
</thead>
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<td>Cover</td>
</tr>
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<td>2</td>
<td>03N2866</td>
<td>1</td>
<td>Planar, I/O (200 MHz POWER3 SMP Thin and Wide Nodes)</td>
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<td>2</td>
<td>09P5822</td>
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<td>Planar, I/O (375/450 MHz POWER3 SMP Thin and Wide Nodes)</td>
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<tr>
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<td>1624766</td>
<td>8</td>
<td>Screw, M4x10</td>
</tr>
<tr>
<td>3</td>
<td>11J5248</td>
<td>1</td>
<td>Gasket, EMC</td>
</tr>
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<td>51H8738</td>
<td>2</td>
<td>Screw Lock</td>
</tr>
<tr>
<td></td>
<td>1622316</td>
<td>2</td>
<td>Washer, Lock</td>
</tr>
<tr>
<td>4</td>
<td>84X3459</td>
<td>1</td>
<td>Nut, Hex</td>
</tr>
<tr>
<td>4</td>
<td>84X3460</td>
<td>1</td>
<td>Washer</td>
</tr>
<tr>
<td>5</td>
<td>08L1303</td>
<td>1</td>
<td>Planar, System (200 MHz POWER3 SMP Thin and Wide Nodes)</td>
</tr>
<tr>
<td>5</td>
<td>09P2053</td>
<td>1</td>
<td>Planar, System (375/450 MHz POWER3 SMP Thin and Wide Nodes)</td>
</tr>
<tr>
<td></td>
<td>1624766</td>
<td>8</td>
<td>Screw, M4x10</td>
</tr>
<tr>
<td>6</td>
<td>21L2885</td>
<td>1</td>
<td>Insulator</td>
</tr>
<tr>
<td>7</td>
<td>31L7117</td>
<td>1</td>
<td>Chassis, Thin Node</td>
</tr>
<tr>
<td>8</td>
<td>21L2887</td>
<td>1</td>
<td>Cable assembly, Planar power</td>
</tr>
<tr>
<td></td>
<td>21L2889</td>
<td>2</td>
<td>Screw, Shoulder</td>
</tr>
<tr>
<td>9</td>
<td>51H9358</td>
<td>2</td>
<td>Pin, Guide</td>
</tr>
<tr>
<td>10</td>
<td>11P0283</td>
<td>1</td>
<td>Cable assembly, Power/Supervisor</td>
</tr>
<tr>
<td>11</td>
<td>51H8738</td>
<td>4</td>
<td>Standoff</td>
</tr>
<tr>
<td></td>
<td>1624763</td>
<td>4</td>
<td>Screw, M4x5</td>
</tr>
<tr>
<td></td>
<td>1622316</td>
<td>4</td>
<td>Washer, Lock</td>
</tr>
<tr>
<td>Assembly index</td>
<td>Part number</td>
<td>Units</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>1</td>
<td>00P1967</td>
<td>AR</td>
<td>Cards, Memory (reference only)</td>
</tr>
<tr>
<td>2</td>
<td>09P0695</td>
<td>2</td>
<td>Cards, Processor (200 MHz POWER3 SMP Thin and Wide Nodes) (reference only)</td>
</tr>
<tr>
<td>2</td>
<td>09P0143</td>
<td>2</td>
<td>Cards, 375 MHz Processor (375/450 MHz POWER3 SMP Thin and Wide Nodes) (reference only)</td>
</tr>
<tr>
<td>2</td>
<td>09P4478</td>
<td>2</td>
<td>Cards, 450 MHz Processor (375/450 MHz POWER3 SMP Thin and Wide Nodes) (reference only)</td>
</tr>
<tr>
<td>3</td>
<td>78X8993</td>
<td>3</td>
<td>Screw, M3x8</td>
</tr>
<tr>
<td>4</td>
<td>31L7264</td>
<td>1</td>
<td>Bracket assembly, Card guide</td>
</tr>
<tr>
<td>5</td>
<td>11J5244</td>
<td>1</td>
<td>Insulator</td>
</tr>
<tr>
<td>6</td>
<td>12K0551</td>
<td>1</td>
<td>Adapter, SP Switch MX2 (F/C 4023)</td>
</tr>
<tr>
<td>7</td>
<td>11J3865</td>
<td>1</td>
<td>Air baffle</td>
</tr>
<tr>
<td>31L7253</td>
<td>AR</td>
<td></td>
<td>Card, Dummy (not shown)</td>
</tr>
<tr>
<td>31L7827</td>
<td>1</td>
<td>Block, keying</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** 31L7827 is found only on early releases of the POWER3 SMP thin node.
POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 1)
Table 5-15. POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 1)

<table>
<thead>
<tr>
<th>Assembly index</th>
<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21L3953</td>
<td>1</td>
<td>Enclosure, POWER3 SMP Thin and Wide Node</td>
</tr>
<tr>
<td>2</td>
<td>1624763</td>
<td>2</td>
<td>Screw</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>POWER3 SMP Thin Node (reference only)</td>
</tr>
<tr>
<td>4</td>
<td>21L3060</td>
<td>1</td>
<td>Panel assembly, Front</td>
</tr>
<tr>
<td>5</td>
<td>17H5026</td>
<td>2</td>
<td>Screw</td>
</tr>
<tr>
<td>6</td>
<td>51H9446</td>
<td>1</td>
<td>POWER3 SMP Wide Node I/O Expansion assembly (reference only)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cable, supervisor extension (not shown)</td>
</tr>
</tbody>
</table>
Table 5-16. POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 2)

<table>
<thead>
<tr>
<th>Assembly index</th>
<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11J5177</td>
<td>1</td>
<td>POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 2) (reference only)</td>
</tr>
<tr>
<td>2</td>
<td>08J6105</td>
<td>AR</td>
<td>SCSI Cable assembly, DASD, 4-drop</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SCSI Cable assembly, DASD, 2-drop</td>
</tr>
</tbody>
</table>
POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 3)
<table>
<thead>
<tr>
<th>Assembly index</th>
<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>51H9389</td>
<td>1</td>
<td>Cable, I/O Expansion control</td>
</tr>
<tr>
<td>2</td>
<td>0418787</td>
<td>4</td>
<td>Washer, Flat</td>
</tr>
<tr>
<td>3</td>
<td>1624763</td>
<td>4</td>
<td>Screw, M4x5</td>
</tr>
</tbody>
</table>

Table 5-17. POWER3 SMP Wide Node assembly (F/C 2053/2057) (view 3)
POWER3 SMP Wide Node I/O Expansion assembly (view 1)
Table 5-18. POWER3 SMP Wide Node I/O Expansion assembly (view 1)

<table>
<thead>
<tr>
<th>Assembly index</th>
<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>POWER3 SMP Wide Node I/O Expansion assembly (view 1) (reference only)</td>
</tr>
<tr>
<td>2</td>
<td>21L3046</td>
<td>1</td>
<td>Cover assembly</td>
</tr>
<tr>
<td>3</td>
<td>AR</td>
<td></td>
<td>Cards, PCI (reference only)</td>
</tr>
<tr>
<td>4</td>
<td>78X8993</td>
<td>8</td>
<td>Screw, M3x8</td>
</tr>
<tr>
<td>5</td>
<td>51H9412</td>
<td>4</td>
<td>Standoff, Hex M4</td>
</tr>
<tr>
<td>6</td>
<td>11J6524</td>
<td>1</td>
<td>I/O Expansion Power assembly</td>
</tr>
</tbody>
</table>
POWER3 SMP Wide Node I/O Expansion assembly (view 2)

Tie Wrap
### Table 5-19. POWER3 SMP Wide Node I/O Expansion assembly (view 2)

<table>
<thead>
<tr>
<th>Assembly index</th>
<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>07L8531</td>
<td>1</td>
<td>Planar, PCI Expansion</td>
</tr>
<tr>
<td></td>
<td>1624766</td>
<td>7</td>
<td>Screw, M4x10</td>
</tr>
<tr>
<td>2</td>
<td>21L3954</td>
<td>1</td>
<td>Chassis assembly, I/O Expansion</td>
</tr>
<tr>
<td>3</td>
<td>21L2888</td>
<td>1</td>
<td>Cable assembly, PCI Power</td>
</tr>
<tr>
<td></td>
<td>21L2889</td>
<td>2</td>
<td>Screw, Shoulder</td>
</tr>
<tr>
<td>4</td>
<td>51H9358</td>
<td>2</td>
<td>Pin, Guide</td>
</tr>
<tr>
<td>5</td>
<td>11J6147</td>
<td>1</td>
<td>Cable assembly, Power</td>
</tr>
<tr>
<td>6</td>
<td>51H8738</td>
<td>2</td>
<td>Standoff</td>
</tr>
<tr>
<td></td>
<td>1622316</td>
<td>2</td>
<td>Lock Washer</td>
</tr>
<tr>
<td>7</td>
<td>46H9165</td>
<td>1</td>
<td>Card, Interposer</td>
</tr>
<tr>
<td></td>
<td>1624766</td>
<td>4</td>
<td>Screw, M4x10</td>
</tr>
<tr>
<td>8</td>
<td>08J6111</td>
<td>1</td>
<td>Cable assembly (reference only), Alternate DASD cabling (F/C 1241)</td>
</tr>
<tr>
<td>9</td>
<td>51H9386</td>
<td>1</td>
<td>Cable assembly, Interposer signal</td>
</tr>
</tbody>
</table>
POWER3 SMP Wide Node I/O Expansion assembly (view 3)
Table 5-20. POWER3 SMP Wide Node I/O Expansion assembly (view 3)

<table>
<thead>
<tr>
<th>Assembly index</th>
<th>Part number</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11J6513</td>
<td>2</td>
<td>Fan assembly, Med spd</td>
</tr>
<tr>
<td>2</td>
<td>11J6524</td>
<td>1</td>
<td>I/O Power assembly</td>
</tr>
<tr>
<td>3</td>
<td>11J3928</td>
<td>2</td>
<td>DASD Sled assembly</td>
</tr>
<tr>
<td>4</td>
<td>0055726</td>
<td>4</td>
<td>Screw, 6-32</td>
</tr>
<tr>
<td>5</td>
<td>AR</td>
<td></td>
<td>DASD (reference only) (see &quot;DASD part numbers&quot; on page 5-42)</td>
</tr>
</tbody>
</table>
## DASD part numbers

**Table 5-21. 332 MHz SMP Thin and Wide Node DASD part numbers**

<table>
<thead>
<tr>
<th>Feature code</th>
<th>Part number</th>
<th>Size (GB)</th>
<th>Type</th>
<th>Address jumper</th>
</tr>
</thead>
<tbody>
<tr>
<td>2908</td>
<td>07N3675</td>
<td>9.1</td>
<td>Ultra SCSI</td>
<td>45G9800</td>
</tr>
<tr>
<td>2909</td>
<td>07N3675</td>
<td>9.1</td>
<td>Ultra SCSI disk pair</td>
<td>45G9800</td>
</tr>
<tr>
<td>2918</td>
<td>07N3674</td>
<td>18.2</td>
<td>Ultra SCSI disk pair</td>
<td>45G9800</td>
</tr>
<tr>
<td>2900</td>
<td>76H2697</td>
<td>4.5</td>
<td>Ultra SCSI</td>
<td>45G9800</td>
</tr>
<tr>
<td>2904</td>
<td>03L5256</td>
<td>4.5</td>
<td>Ultra SCSI disk pair</td>
<td>45G9800</td>
</tr>
<tr>
<td>3000</td>
<td>93G3159</td>
<td>4.5</td>
<td>Fast/Wide</td>
<td>45G9800</td>
</tr>
<tr>
<td>3010</td>
<td>93G3160</td>
<td>9.1</td>
<td>Fast/Wide</td>
<td>45G9800</td>
</tr>
<tr>
<td>9146</td>
<td>59H6923</td>
<td>18.2</td>
<td>Ultra SCSI</td>
<td>45G9800</td>
</tr>
</tbody>
</table>

**Note:** Mirrored DASD

---

**Table 5-22. 200 MHz and 375/450 MHz POWER3 SMP Thin and Wide Node DASD part numbers**

<table>
<thead>
<tr>
<th>Feature code</th>
<th>Part number</th>
<th>Size (GB)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2900</td>
<td>76H2697</td>
<td>4.5</td>
<td>Ultra SCSI</td>
</tr>
<tr>
<td>2904</td>
<td>03L5256</td>
<td>4.5</td>
<td>Ultra SCSI</td>
</tr>
<tr>
<td>2908</td>
<td>07N3675</td>
<td>9.1</td>
<td>Ultra SCSI</td>
</tr>
<tr>
<td>2909</td>
<td>07N3721</td>
<td>9.1</td>
<td>Ultra SCSI</td>
</tr>
<tr>
<td>3046</td>
<td>07N3674</td>
<td>18.2</td>
<td>Ultra SCSI</td>
</tr>
<tr>
<td>3804</td>
<td>07N3821</td>
<td>9.1</td>
<td>Ultra SCSI 10K</td>
</tr>
<tr>
<td>2918</td>
<td>07N3711</td>
<td>18.2</td>
<td>Ultra SCSI</td>
</tr>
<tr>
<td>3810</td>
<td>07N3811</td>
<td>18.2</td>
<td>Ultra SCSI 10K</td>
</tr>
<tr>
<td>3820</td>
<td>07N3774</td>
<td>36.4</td>
<td>Ultra SCSI 10K</td>
</tr>
<tr>
<td>3844</td>
<td>07N4798</td>
<td>73.4</td>
<td>Ultra3 SCSI 10K</td>
</tr>
</tbody>
</table>

**Notes:**
1. Mirrored DASD
2. DASD for 375/450 MHz POWER3 SMP Wide Node I/O expansion assembly only

---

## RS/6000 SP memory part numbers

**Table 5-23. Memory DIMMs/cards. (For 332 MHz SMP Thin and Wide Nodes)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Number of DIMMs</th>
<th>Total capacity</th>
<th>FRU number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base card</td>
<td>NA</td>
<td>24 DIMMs (12 pairs)</td>
<td>03N4173</td>
</tr>
</tbody>
</table>
Table 5-23. Memory DIMMs/cards. (For 332 MHz SMP Thin and Wide Nodes)

<table>
<thead>
<tr>
<th>Description</th>
<th>Number of DIMMs</th>
<th>Total capacity</th>
<th>FRU number</th>
</tr>
</thead>
<tbody>
<tr>
<td>128 MB DIMM</td>
<td>1</td>
<td>128 MB</td>
<td>93H4702</td>
</tr>
</tbody>
</table>

Table 5-24. Memory DIMMs/cards. (For 200 MHz POWER3 SMP Thin and Wide Nodes)

<table>
<thead>
<tr>
<th>Description</th>
<th>Number of DIMMs</th>
<th>Total capacity</th>
<th>FRU number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base card</td>
<td>NA</td>
<td>32 DIMMs (16 pairs)</td>
<td>00P1967</td>
</tr>
<tr>
<td>128 MB DIMM</td>
<td>1</td>
<td>128 MB</td>
<td>93H4702</td>
</tr>
</tbody>
</table>

Table 5-25. Memory DIMMs/cards. (For 375/450 MHz POWER3 SMP Thin and Wide Nodes)

<table>
<thead>
<tr>
<th>Description</th>
<th>Number of DIMMs</th>
<th>Total capacity</th>
<th>FRU number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base card</td>
<td>NA</td>
<td>32 DIMMs (16 pairs)</td>
<td>00P1967</td>
</tr>
<tr>
<td>128 MB DIMM</td>
<td>1</td>
<td>128 MB</td>
<td>93H4702</td>
</tr>
<tr>
<td>256 MB DIMM</td>
<td>1</td>
<td>256 MB</td>
<td>07L9030</td>
</tr>
<tr>
<td>512 MB DIMM</td>
<td>1</td>
<td>512 MB</td>
<td>07L9758</td>
</tr>
</tbody>
</table>
Appendix. Messages and codes

Error code to FRU index

The following lists pertain to 332 MHz SMP, 200 MHz POWER3 SMP, and 375/450 MHz POWER3 SMP Thin and Wide Nodes.

The error code to FRU index lists error symptoms and possible causes. The most likely cause is listed first. Use this index to help decide which FRUs to replace when servicing the system.

If the codes in the following tables indicate a device which is present more than once in the processor node, a location code is needed to specify which device generated the error.

Location code descriptions can be found under “Location codes” on page A-43.

Error codes can be obtained from the Service Processor Previous Boot history, System Management Services error log, and System Online Diagnostics (diag):

• Service Processor Menu. Check previous boot log for any errors.
  1. Logically power off the SMP node
  2. From the Service Processor Menu:
     – Choose System Information Menu
     – Choose Read Progress Indicators from Last System Boot
     – Choose Read System POST Errors (optional)
     – Examine data provided for unexpected error codes or abnormal termination of boot progress
     – Find error in this appendix and perform listed action.

• System Management Services error log
  1. Switch the node off, then on.
  2. When the word “keyboard” is displayed, press 1 on the TTY console.
  3. When the System Management Services appear, check the error log for any errors:
     – Choose Utilities
     – Choose Error Log
     – If an error is logged, check the time stamp
     – If the error was logged during the current boot attempt, record it
     – Find error in this appendix and perform listed action
     – If no recent error is logged in the error log, go to the “minimum configuration” MAP for this node type in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1.

• Node Online Diagnostics, Problem Determination
  1. At a node prompt (either from TTY or TN connection), enter diag
  2. Press Enter to continue, then:
     – Choose Diagnostic Routines
     – Choose Problem Determination
     – Press Enter for All Resources
     – Press F7 to Commit and execute
     – When test completes, examine results for error codes reported
     – Find error in this appendix and perform listed action

Attention: Some 48 V dc power cables to the processor nodes have in-line circuit breakers. Ensure that the in-line circuit breaker switch is off (0) before connecting or disconnecting 48 V dc power cables from the node.

Notes:

1. If more than eight digits are displayed in the operator panel, use only the first eight digits to find the error in the tables. The digits that display beyond the first eight digits are location codes that can assist you in diagnosing the problem. See “Location codes” on page A-43.

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2. The 332 MHz Symmetric MultiProcessor (SMP) nodes contain a separate service processor card, the POWER3 SMP Thin and Wide node does not. The service processor component of the POWER3 SMP Thin and Wide node is contained in the I/O planar.

3. If the MAPs indicate the I/O planar should be replaced, perform the following steps:
   a. Licensed programs frequently rely on network configuration and system information stored on the VPD on the I/O planar (see Figure 2-11 on page 2-12). If the MAPs indicate that the I/O planar should be replaced, swap the VPD from the old I/O planar 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 from licensed programs may be required.
   b. Perform actions in note 4 below.
   c. Perform actions in note 5 below.

4. If a network adapter or I/O planar is replaced, notify the system administrator that the new hardware address can be acquired from the node using `smit hrdwrad_dialog` or `sphrdwrad` command. 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.

5. If the I/O planar or service processor are replaced, you must check (and update if necessary) the system and service processor firmware prior to completing service. Refer to “Service processor flash PROM updates (and system firmware)” on page 3-42.

6. Following successful repair of the processor node, go to the “End of call” MAP in RS/6000 SP: System Service Guide.

   If you replace FRUs and the problem is still not corrected, go to “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1.

---

### Table A-1. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware error codes.

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>203w0xyz</td>
<td>• w=loop number&lt;br&gt; • x=0 missing link&lt;br&gt; • y=port number&lt;br&gt; • z=c for interconnect z=b missing link back z=E RIO de-configured</td>
<td>Check Cables, then Remote I/O.</td>
</tr>
<tr>
<td>20A80xxx</td>
<td>Remote initial program load (RIPL) error.</td>
<td></td>
</tr>
<tr>
<td>20A80000</td>
<td>Insufficient information to boot.</td>
<td>Verify the IP address.</td>
</tr>
<tr>
<td>20A80001</td>
<td>Client IP address is already in use by other network device.</td>
<td>Change IP address.</td>
</tr>
<tr>
<td>20A80002</td>
<td>Cannot get gateway IP address.</td>
<td>Refer to “Checkpoints” on page A-31 table using code E174.</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>20A80003</td>
<td>Cannot get server hardware address.</td>
<td>Refer to &quot;Checkpoints&quot; on page A-31 table using code E174.</td>
</tr>
<tr>
<td>20A80004</td>
<td>Boot up failed.</td>
<td>Refer to &quot;Checkpoints&quot; on page A-31 table using code E175.</td>
</tr>
<tr>
<td>20A80005</td>
<td>File transmission (FTP) failed.</td>
<td>Check network connection, try again.</td>
</tr>
<tr>
<td>20A80006</td>
<td>Image too big. Ran out of available firmware memory resources loading boot</td>
<td>Verify boot server configuration.</td>
</tr>
<tr>
<td></td>
<td>image.</td>
<td></td>
</tr>
<tr>
<td>20D00xxx</td>
<td>Unknown/Unrecognized device</td>
<td></td>
</tr>
<tr>
<td>20D0000F</td>
<td>Self-test failed on device, no error/location code information available.</td>
<td>Check the System Management Services error log entry (see step 5 on page A-1) for this error code. The location code (if present) in the error log entry should identify the location of the failing device.</td>
</tr>
<tr>
<td>20D00010</td>
<td>Self-test failed on device, can’t locate package.</td>
<td>Contact your service support representative for assistance.</td>
</tr>
<tr>
<td>20D00011</td>
<td>Cannot determine machine model.</td>
<td>The machine model is part of the system Vital Product Data (VPD). Perform corrective actions listed for errors 2BA00050, 2BA00051</td>
</tr>
<tr>
<td>20E00xxx</td>
<td>Security</td>
<td></td>
</tr>
<tr>
<td>20E00000</td>
<td>Power on Password entry error.</td>
<td>The password has been entered incorrectly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retry installing the password.</td>
</tr>
<tr>
<td>20E00001</td>
<td>Privileged-access password entry error.</td>
<td>The password has been entered incorrectly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retry installing the password.</td>
</tr>
<tr>
<td>20E00002</td>
<td>Privileged-access password jumper not enabled.</td>
<td>The privileged-access password jumper is not in the correct position for password initial entry. Consult the system’s User’s Guide for jumper location and position.</td>
</tr>
<tr>
<td>20E00003</td>
<td>Power on Password must be set for Unattended mode.</td>
<td>Unattended mode requires the setting of the Power On password before it is enabled.</td>
</tr>
<tr>
<td>20E00004</td>
<td>Gold cap drained or needs replacement.</td>
<td>Replace I/O planar. (See notes on A-1)</td>
</tr>
</tbody>
</table>
| 20E00005   | EEPROM locked.                                                               | 1. Turn off, then turn on the processor node  
2. Replace the I/O planar (See notes on A-1)                                                   |
| 20E00008   | CMOS corrupted or tampering evident, CMOS initialized.                       | Check your machine for evidence of tampering.                                                 |
|            |                                                                              | If no tampering evident: Replace I/O planar. (See notes on A-1)                               |
| 20E00009   | Invalid password entered - system locked.                                    | The password has been entered incorrectly 3 times.                                           |
|            |                                                                              | Turn off, then turn on the processor node, then enter the password correctly.                 |
| 20E0000A   | EEPROM lock problem.                                                         | If for privileged-access password install, is jumper in correct position?                     |
|            |                                                                              | Consult the system’s User’s Guide for jumper location and position.                           |
|            |                                                                              | 1. Power the node circuit breaker(s) off and then on, retry                                |
|            |                                                                              | 2. Replace I/O planar. (See notes on A-1)                                                     |
Table A-1. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware error codes. (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
</table>
| 20E0000B   | EEPROM write problem. | 1. Power the node circuit breaker(s) off and then on, retry  
2. Replace I/O planar. (See notes on A-1) |
| 20E0000C   | EEPROM read problem. | 1. Power the node circuit breaker(s) off and then on, retry  
2. Replace I/O planar. (See notes on A-1) |
| 20E00017   | Cold boot needed for password entry. | Turn off, turn on the processor node. |
| 20EE0xxx   | Informational | |
| 20EE0003   | IP parameter requires 3 dots "." | Enter valid IP parameter.  
Example: 000.000.000.000 |
| 20EE0004   | Invalid IP parameter. | Enter valid (numeric) IP parameter.  
Example: 000.000.000.000 |
| 20EE0005   | Invalid IP parameter (>255). | Enter valid (numeric) IP parameter in the range of 0 to 255.  
Example: 255.192.002.000 |
| 20EE0006   | No SCSI controllers present. | The I/O planar should always have (at least) one integrated PCI SCSI controller; replace the I/O planar. (See notes on A-1) |
| 20EE0008   | No configurable adapters found in the system. | This warning occurs when the selected SMS function cannot locate any devices/adapters supported by the function. If a supported device is installed:  
1. Replace the device or adapter  
2. Replace I/O planar. (See notes on A-1) |
| 20EE0009   | Unable to communicate with the Service processor. | 1. Replace the service processor card (332 MHz SMP node)  
2. Replace I/O planar. (See notes on A-1)  
3. Replace system planar |
| 20EE000A   | Pointer to the operating system found in nonvolatile storage. | Values normally found in nonvolatile storage that point to the location of an operating system were not found. This can happen for two reasons, either your installed operating system doesn’t support storing the values or some event occurred that caused the system to lose nonvolatile storage information (drainage of the Gold cap). 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. Please refer to your AIX documentation for the exact syntax and usage of the bootlist command.  
In order to boot the operating system so that the above mentioned values can be reconstructed, power the system down and power it back up again, this should cause the system to look for the operating system in the devices contained in the custom boot list or in the default boot list, depending on the condition of the system. If this is not successful, modify the boot sequence (also known as boot list) to include devices that are known to contain a copy of the operating system. This can be accomplished by using the System Management Services menus. For example, select a hard disk known to have a copy of the operating system as the first and only device in the boot sequence (boot list) and attempt to boot again. |
### Table A-1. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware error codes. (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>20EE000B</td>
<td>The system was not able to find an operating system on the device list that was attempted.</td>
<td>Modify the boot sequence (also known as boot list) to include devices that are known to contain a copy of the operating system. This can be accomplished by using the System Management Services menus. For example, select a hard disk known to have a copy of the operating system as the first and only device in the boot sequence (boot list) and attempt to boot again. If the System Management Services menus do not display valid SCSI devices which were previously available: 1. Ensure SCSI signal, SCSI terminator, and power cables are securely connected and not damaged 2. Replace the I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>21A000001</td>
<td>Test Unit Ready failed - hardware error.</td>
<td>Refer to the notes in error code 21A000000xxx. 1. Replace the SCSI device 2. Replace the SCSI cable 3. Replace the SCSI controller</td>
</tr>
<tr>
<td>21A000002</td>
<td>Test Unit Ready failed - sense data available.</td>
<td>Refer to the notes in error code 21A000000xxx. 1. Replace the media (Removable media devices) 2. Replace the SCSI device</td>
</tr>
<tr>
<td>21A000003</td>
<td>Send Diagnostic failed.</td>
<td>Refer to the notes in error code 21A000000xxx. Replace the SCSI device.</td>
</tr>
<tr>
<td>21A000004</td>
<td>Send Diagnostic failed - DevOff cmd.</td>
<td>Refer to the notes in error code 21A000000xxx. Replace the SCSI device.</td>
</tr>
<tr>
<td>21F20xxx</td>
<td>SCSI read/write optical.</td>
<td>Refer to 21A000000xxx for a description and repair action for the xxx value.</td>
</tr>
<tr>
<td>22000001</td>
<td>Internal wrap test failed.</td>
<td>Replace adapter.</td>
</tr>
<tr>
<td>22001001</td>
<td>Internal wrap test failed.</td>
<td>Replace adapter.</td>
</tr>
<tr>
<td>22002001</td>
<td>Adapter failed to complete hardware initialization.</td>
<td>Replace adapter.</td>
</tr>
<tr>
<td>22010001</td>
<td>Adapter failed to complete hardware initialization.</td>
<td>Replace adapter.</td>
</tr>
<tr>
<td>22011001</td>
<td>Adapter failed to complete hardware initialization.</td>
<td>Replace adapter.</td>
</tr>
<tr>
<td>25000000</td>
<td>Memory controller failed.</td>
<td>Replace the system planar.</td>
</tr>
<tr>
<td>25010xxx</td>
<td>Flash update problem.</td>
<td>Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>25010003</td>
<td>Cannot open OPENPROM package.</td>
<td>Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>25010004</td>
<td>Cannot find OPENPROM node.</td>
<td>Replace I/O planar. (See notes on A-1)</td>
</tr>
</tbody>
</table>
## Table A-1. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware error codes. (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>25010006</td>
<td>System id does not match image system id.</td>
<td>Make sure correct and non-corrupted firmware file is used.</td>
</tr>
<tr>
<td>25010007</td>
<td>Image has bad CRC.</td>
<td>Make sure correct and non-corrupted firmware file is used.</td>
</tr>
<tr>
<td>25010008</td>
<td>Flash is write protected, update cancelled.</td>
<td>1. Power the node circuit breaker(s) off and then on, retry 2. Replace I/O planar. (See notes on [A-1])</td>
</tr>
<tr>
<td>25010009</td>
<td>Flash module is unsupported or not recognized.</td>
<td>Make sure correct and non-corrupted firmware file is used.</td>
</tr>
<tr>
<td>2501000A</td>
<td>Flash write protected.</td>
<td>1. Power the node circuit breaker(s) off and then on, retry 2. Replace I/O planar. (See notes on [A-1])</td>
</tr>
<tr>
<td>25A0xxx0</td>
<td>L2 Cache controller problem.</td>
<td>1. Replace the processor card 2. Replace the system planar See error code 2B2xxx22 for xxx definitions.</td>
</tr>
<tr>
<td>25A0xxx1</td>
<td>L2 Cache controller problem.</td>
<td>1. Replace the processor card 2. Replace the system planar See error code 2B2xxx22 for xxx definitions.</td>
</tr>
<tr>
<td>25A1xxx1</td>
<td>L2 SRAM failure</td>
<td>Replace the processor card See error code 2B2xxx22 for xxx definitions.</td>
</tr>
</tbody>
</table>
| 25A80xxx   | NVRAM problems | **NVRAM problem resolution:**  
Note: The gold cap, which is charged by the supervisor bus, will maintain NVRAM data and RTC (clock) for about 5 days with the node disconnected from the supervisor bus.  
1. Errors reported against NVRAM can be caused by low gold cap voltage and (more rarely) power outages that occur during normal system usage. With the exception of the 25A80000 error, these errors are warnings that the NVRAM data content had to be re-established and do not require any FRU replacement unless the error is persistent. When one of these errors occurs, any system customization (for example, boot device list) information has been lost, the system may need to be re-configured.  
2. **332 MHz SMP Node:** Verify that a jumper is installed on I/O planar J15 pins 2 and 3. Refer to *Figure 2-11 on page 2-12*  
**POWER3 SMP Thin and Wide Node:** Verify that a jumper is installed on I/O planar J14 pins 2 and 3. Refer to *Figure 2-20 on page 2-16*  
3. If the error is persistent, replace the I/O planar. (See notes on [A-1]) |
<p>| 25A80000   | Initialization failed, device test failed. | Refer to “Action/Failing FRU” under error code 25A80xxx. |
| 25A80001   | Init-NVRAM invoked, ALL of NVRAM initialized. | Refer to “Action/Failing FRU” under error code 25A80xxx. |
| 25A80002   | Init-NVRAM invoked, some data partitions may have been preserved. | Refer to “Action/Failing FRU” under error code 25A80xxx. |
| 25A80011   | Data corruption detected, ALL of NVRAM initialized. | Refer to “Action/Failing FRU” under error code 25A80xxx. |
| 25A80012   | Data corruption detected, some data partitions may have been preserved. | Refer to “Action/Failing FRU” under error code 25A80xxx. |</p>
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>25A80100</td>
<td>NVRAM data validation check failed.</td>
<td>Turn off, turn on the processor node and retry the operation before replacing any system component. Refer to “Action/Failing FRU” under error code 25A80xxx.</td>
</tr>
<tr>
<td>25A80201</td>
<td>Unable to expand target partition while saving configuration variable.</td>
<td>Refer to “Action/Failing FRU” under error code 25A80xxx.</td>
</tr>
<tr>
<td>25A80202</td>
<td>Unable to expand target partition while writing error log entry.</td>
<td>Refer to “Action/Failing FRU” under error code 25A80xxx.</td>
</tr>
<tr>
<td>25A80203</td>
<td>Unable to expand target partition while writing VPD data.</td>
<td>Refer to “Action/Failing FRU” under error code 25A80xxx.</td>
</tr>
<tr>
<td>25A80210</td>
<td>Setenv/$Setenv parameter error - name contains a null character.</td>
<td>Refer to “Action/Failing FRU” under error code 25A80xxx.</td>
</tr>
<tr>
<td>25A80211</td>
<td>Setenv/$Setenv parameter error - value contains a null character.</td>
<td>Refer to “Action/Failing FRU” under error code 25A80xxx.</td>
</tr>
<tr>
<td>25A80998</td>
<td>NVRAMRC script evaluation error - command line execution error.</td>
<td>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 (using 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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a. Select the SCSI ID utility from the SMS menus.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Verify the list of SCSI controllers/adapters. If the list is not correct, suspect a problem with the adapter(s) installed but not listed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Select the option to Save the configuration information.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Restart the system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>e. 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.</td>
</tr>
<tr>
<td>25A80999</td>
<td>NVRAMRC script evaluation error - stack unbalanced on completion.</td>
<td>This is a firmware debug environment error. There is no user action or FRU replacement for this error.</td>
</tr>
</tbody>
</table>
| 25AA0xxx   | EEPROM problems                                                              | **EEPROM problem resolution:**
|            |                                                                              | 1. Ensure that the EEPROM Security jumper is in the correct position if doing a privileged-access password install
|            |                                                                              | 2. Retry the operation
|            |                                                                              | 3. If retries do not solve the problem, replace the I/O planar. (See notes on A-1)                                                                                                                                             |
| 25AA0000   | Unable to unlock EEPROM.                                                     | Refer to “Action/Failing FRU” under error code 25AA0xxx.                                                                                                                                                                      |
Table A-1. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware error codes. (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>25AA0001</td>
<td>Read-Recv error.</td>
<td>Refer to “Action/Failing FRU” under error code 25AA0xxx.</td>
</tr>
<tr>
<td>25AA0002</td>
<td>Read-Trans error.</td>
<td>Refer to “Action/Failing FRU” under error code 25AA0xxx.</td>
</tr>
<tr>
<td>25AA0003</td>
<td>Write-enable error.</td>
<td>Refer to “Action/Failing FRU” under error code 25AA0xxx.</td>
</tr>
<tr>
<td>25AA0004</td>
<td>Write-recv error.</td>
<td>Refer to “Action/Failing FRU” under error code 25AA0xxx.</td>
</tr>
<tr>
<td>25AA0005</td>
<td>Write-disable error.</td>
<td>Refer to Action under error code 25AA0xxx.</td>
</tr>
<tr>
<td>25AA0006</td>
<td>Write-Trans error.</td>
<td>Refer to Action under error code 25AA0xxx.</td>
</tr>
<tr>
<td>25AA0007</td>
<td>Unable to lock EEPROM.</td>
<td>Refer to Action under error code 25AA0xxx.</td>
</tr>
<tr>
<td>25B00001</td>
<td>No memory modules detected in either memory card 1 or 2.</td>
<td>Replace memory card(s)</td>
</tr>
</tbody>
</table>
| 25B00002   | Multiple memory modules failed memory test. | 1. Replace memory card(s)  
2. Replace system planar. |
| 25Cyyxxx   | Memory Card problems (Also see the following codes for exact match.) | See "Memory PD bits" on page A-29 for definition of “yy”.  
Be sure to check second line of the LCD display for location codes. Refer to "332 MHz SMP Thin and Wide Node AIX and physical location code reference table" on page A-44 to decode P1-Mx.x, and "Location diagrams of the RS/6000 SP components" on page 2-3 for card and DIMM locations.  
Alternatively, you can use the location code obtained from the System Management Services Error Log utility (see step 3 on page A-1) to identify which memory module (or memory module pair) the error is reported against. |
| 25Cyy001   | Memory module is not supported. | Replace unsupported memory module.  
Note: Memory module must be replaced with a supported type memory module. If an unsupported memory module is replaced by the same unsupported type, the error does not go away.  
There may be 2 memory module related memory errors reported to indicate a memory module pair. One of the 2 indicated memory modules may be good, when replacing memory replace 1 memory module at a time, not both. |  
See "Memory PD bits" on page A-29 for definition of “yy”.  
Refer to “Action/Possible Failing FRU” for 25Cyyxxx for more information. |
| 25Cyy002   | Memory module fails memory test. | 1. Replace memory module  
2. Replace memory card  
3. Replace the system planar  
See "Memory PD bits" on page A-29 for definition of “yy”  
Refer to “Action/Possible Failing FRU” for 25Cyyxxx for more information. |
| 25Cyy003   | PD bits are mis-matched or missing one memory module. | 1. Make sure both memory modules in the pair are the same type  
2. Replace system planar  
See "Memory PD bits" on page A-29 for definition of “yy”  
Refer to “Action/Possible Failing FRU” for 25Cyyxxx for more information. |
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>25Cyy004</td>
<td>Memory modules are disabled.</td>
<td>Remove this unused memory module.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” for 25Cyyxxx for more information.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> If more than 3 GB memory is installed in a 332 MHz SMP node, this error will occur.</td>
</tr>
<tr>
<td>25Cyy005</td>
<td>Memory module failed address test.</td>
<td>1. Replace memory module</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace memory card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace system planar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace processor card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See &quot;Memory PD bits&quot; on page A-29 for definition of “yy”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” for 25Cyyxxx for more information.</td>
</tr>
<tr>
<td>25Cyy006</td>
<td>Memory module failed inter-extent test.</td>
<td>1. Replace memory module</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace memory card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace system planar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace processor card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See &quot;Memory PD bits&quot; on page A-29 for definition of “yy”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” for 25Cyyxxx for more information.</td>
</tr>
<tr>
<td>25Cyy007</td>
<td>Memory module failed extent access test.</td>
<td>1. Replace memory module</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace memory card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace system planar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace processor card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See &quot;Memory PD bits&quot; on page A-29 for definition of “yy”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” for 25Cyyxxx for more information.</td>
</tr>
<tr>
<td>25Cyy008</td>
<td>Memory module has been deconfigured</td>
<td>1. Replace memory module</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace memory card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the system planar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See &quot;Memory PD bits&quot; on page A-29 for definition of “yy”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” for 25Cyyxxx for more information.</td>
</tr>
<tr>
<td>26020001</td>
<td>Invalid PCI adapter vendor ID</td>
<td>1. Move adapter to another slot (behind a different PCI bridge)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check for available firmware updates for adapter. Apply if available</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Run AIX diagnostics on adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Check for system firmware updates. Apply if available</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Replace power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Replace I/O planar</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
| 26020002   | Invalid PCI adapter device ID. | 1. Move adapter to another slot (behind a different PCI bridge)  
2. Check for available firmware updates for adapter. Apply if available  
3. Run AIX diagnostics on adapter  
4. Replace adapter  
5. Check for system firmware updates. Apply if available  
6. Replace power supply FRU  
7. Replace I/O planar |
| 26020003   | Invalid PCI adapter class code. | 1. Move adapter to another slot (behind a different PCI bridge)  
2. Check for available firmware updates for adapter. Apply if available  
3. Run AIX diagnostics on adapter  
4. Replace adapter  
5. Check for system firmware updates. Apply if available  
6. Replace power supply FRU  
7. Replace I/O planar |
| 26020007   | Failed to allocate bus resources to PCI adapter. | 1. Move adapter to another slot (behind a different PCI bridge)  
2. Check for available firmware updates for adapter. Apply if available  
3. Run AIX diagnostics on adapter  
4. Replace adapter  
5. Check for system firmware updates. Apply if available  
6. Replace power supply FRU  
7. Replace I/O planar |
| 26800Cxx   | Machine check occurred. | If the location code shown on LCD identifies a PCI adapter slot:  
1. Replace the adapter in the slot identified  
2. Replace I/O planar  
If the location code does not identify a PCI adapter slot, or if there is no location code: Replace I/O planar. |
| 26800Dxx   | Machine check occurred, unable to isolate to a single device. | The "xx" indicates the PCI bus number with the error.  
1. Attempt to reboot the system in Service Mode, this preserves the AIX error log. If the reboot fails, attempt to reboot CD-ROM. If the reboot is successful, run Diagnostics in Problem Determination mode to determine the cause of failure. Otherwise continue.  
2. Refer to "Bus SRN to FRU reference table" on page A-29 using PCI Bus "xx" for isolation of the failing device |
Table A-1. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware error codes. (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
</table>
| 28030xxx   | Real-Time Clock (RTC) errors (Also see the following codes for exact match.) | **Note:** The gold cap, which is charged by the supervisor bus, will maintain NVRAM data and RTC (clock) for about 5 days with the node disconnected from the supervisor bus. Errors reported against the Real Time Clock (RTC) can be caused by low gold cap voltage and (more rarely) power outages that occur during normal system usage. These errors are warnings that the RTC data content needs to be re-established and do not require any FRU replacement unless the error is persistent. When one of these errors occurs, the Power On Password and Time and Date information has been lost.  
  1. To set/restore a Power-On Password, use the System Management Services utility  
  2. To set/restore the Time and Date, use the operating system facility  
  3. If the error is persistent, replace the I/O planar. (See notes on A-1) |
| 28030001   | RTC initialization required- RTC not updating, corrected. | Refer to “Action/Failing FRU” under error code 28030xxx. |
| 28030002   | Bad time/date values | 1. Set the time and date  
  2. Refer to “Action/Failing FRU” under error code 28030xxx |
| 28030003   | RTC initialization required - RTC not updating, not corrected | Replace the I/O planar. (See notes on A-1). |
| 28030004   | RTC operating mode parameters changed (for example, data format) | 1. Set/restore the time and date  
  2. Refer to “Action/Failing FRU” under error code 28030xxx |
| 28030005   | RTC battery (gold cap) error | 1. Replace the I/O planar. (See notes on A-1)  
  2. Refer to “Action/Failing FRU” under error code 28030xxx |
| 28030006   | Processor frequency measurement error | 1. Verify the current level of system firmware is installed.  
  2. Replace processor card  
  3. Replace the I/O planar. (See notes on A-1) |
| 29000002   | Super I/O sub-device 1,0 controller failed self-test. | |
| 2B200402   | Unsupported processor. | Replace the processor card. |
| 2B2xxx11   | Processor is manually disabled. | Use service processor menus to re-enable the processor and reboot the system. See error code 2B2xxx22 for definitions of xxx. |
| 2B2xxx22   | Processor disabled. | Replace the processor card. Where xxx indicates the processor type as follows:  
  451 332 MHz 1 way processor card  
  461 332 MHz 2 way processor card  
  4A1 332 MHz 2 way processor card  
  654 POWER3 SMP 1–way processor card  
  768 375 MHz POWER3 SMP 2–way processor card |
Table A-1. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware error codes. (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>2B2xxx42</td>
<td>Unsupported processor type</td>
<td>Replace processor card&lt;br&gt;See error code 2B2xxx22 for xxx definitions.</td>
</tr>
<tr>
<td>2BA00000</td>
<td>Service processor POST failure.</td>
<td>1. Power off the node circuit breaker(s) and wait until the power LEDs are off&lt;br&gt;2. Power on the node circuit breaker(s), retry the operation&lt;br&gt;3. Replace the service processor card (332 MHz SMP node)&lt;br&gt;4. Replace the I/O planar. (See notes on [A-1])</td>
</tr>
<tr>
<td>2BA00012</td>
<td>Service processor reports self-test failure.</td>
<td>1. Power off the node circuit breaker(s) and wait until the power LEDs are off&lt;br&gt;2. Power on the node circuit breaker(s), retry the operation&lt;br&gt;3. Replace the service processor card (332 MHz SMP node)&lt;br&gt;4. Replace the I/O planar. (See notes on [A-1])</td>
</tr>
<tr>
<td>2BA00013</td>
<td>Service processor reports bad NVRAM CRC.</td>
<td>Refer to “Action/Failing FRU” under error code 25A80xxx.</td>
</tr>
<tr>
<td>2BA00014</td>
<td>Service processor reports bad service processor firmware.</td>
<td>Re-program the system firmware. See “Service processor flash EPROM updates (and system firmware)” on page 3-42 for flash EPROM and firmware update procedures.</td>
</tr>
<tr>
<td>2BA00017</td>
<td>Service processor reports bad or low battery.</td>
<td>1. Refer to “Action/Failing FRU” under error code 25A80xxx&lt;br&gt;2. If problem persists, replace the service processor</td>
</tr>
<tr>
<td>2BA00018</td>
<td>EPOW test failure.</td>
<td>1. Replace the service processor card (332 MHz SMP node)&lt;br&gt;2. Replace the I/O planar. (See notes on [A-1])</td>
</tr>
<tr>
<td>2BA00019</td>
<td>IRQ13 test failure.</td>
<td>1. Replace the I/O planar. (See notes on [A-1])&lt;br&gt;2. Replace the service processor card (332 MHz SMP node)</td>
</tr>
<tr>
<td>2BA00024</td>
<td>Service processor reports bad power controller firmware.</td>
<td>Re-program the system firmware. See “Service processor flash EPROM updates (and system firmware)” on page 3-42 for flash EPROM and firmware update procedures.</td>
</tr>
<tr>
<td>2BA00040</td>
<td>Service processor reports service processor VPD module not present.</td>
<td>1. Re-program the service processor firmware. See “Service processor flash EPROM updates (and system firmware)” on page 3-42 for flash EPROM and firmware update procedures&lt;br&gt;2. Replace the service processor card (332 MHz SMP node)</td>
</tr>
<tr>
<td>2BA00041</td>
<td>Service processor VPD is corrupted.</td>
<td>1. Re-program the service processor firmware. See “Service processor flash EPROM updates (and system firmware)” on page 3-42 for flash EPROM and firmware update procedures&lt;br&gt;2. Replace the service processor card (332 MHz SMP node)</td>
</tr>
<tr>
<td>2BA00050</td>
<td>Service processor reports system VPD module not present or not recognizable.</td>
<td>Replace the I/O planar.&lt;br&gt;Note: Do not swap the old VPD module from the old I/O planar to the new one. See notes on [A-1]</td>
</tr>
</tbody>
</table>
### Table A-1: 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware error codes. (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>2BA00051</td>
<td>System VPD data corrupted.</td>
<td>Replace the I/O planar.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> Do not swap the old VPD module from the old I/O planar to the new one. See notes on <a href="#">A-1</a>.</td>
</tr>
<tr>
<td>2BA00052</td>
<td>Service processor reports node supervisor VPD data corrupted.</td>
<td>Replace node supervisor card.</td>
</tr>
<tr>
<td>2BA00053</td>
<td>Service processor reports node supervisor VPD module not present.</td>
<td>Replace node supervisor card.</td>
</tr>
<tr>
<td>2BA00060</td>
<td>Service processor reports I/O planar VPD module not present.</td>
<td>Replace the I/O planar. (See notes on <a href="#">A-1</a>).</td>
</tr>
<tr>
<td>2BA00061</td>
<td>Service processor reports I/O planar VPD data corrupted.</td>
<td>Replace the I/O planar. (See notes on <a href="#">A-1</a>).</td>
</tr>
<tr>
<td>2BA00062</td>
<td>Service processor reports system planar VPD module not present.</td>
<td>Replace the system planar.</td>
</tr>
<tr>
<td>2BA00063</td>
<td>Service processor reports system planar VPD data corrupted.</td>
<td>Replace the system planar.</td>
</tr>
<tr>
<td>2BA00064</td>
<td>Service processor reports PCI riser card VPD module not present.</td>
<td>1. Make sure firmware level is up to date 2. Replace the PCI riser card (332 MHz SMP node)</td>
</tr>
<tr>
<td>2BA00065</td>
<td>Service processor reports PCI riser card VPD data corrupted.</td>
<td>Replace the PCI riser card (332 MHz SMP node).</td>
</tr>
<tr>
<td>2BA00066</td>
<td>Service processor reports PCI expansion planar VPD module not present.</td>
<td>1. Replace PCI expansion planar. 2. Replace I/O expansion interposer card.</td>
</tr>
<tr>
<td>2BA00067</td>
<td>Service processor reports PCI expansion planar VPD data corrupted.</td>
<td>1. Replace PCI expansion planar. 2. Replace I/O expansion interposer card.</td>
</tr>
<tr>
<td>2BA00070</td>
<td>Service processor reports processor card VPD module not present.</td>
<td>Replace the processor card(s).</td>
</tr>
<tr>
<td>2BA00071</td>
<td>VPD data corrupted for processor card in slot 1.</td>
<td>Replace the processor card in slot 1.</td>
</tr>
<tr>
<td>2BA00073</td>
<td>VPD data corrupted for processor card in slot 2.</td>
<td>Replace the processor card in slot 2.</td>
</tr>
<tr>
<td>2BA00080</td>
<td>Service processor reports memory card VPD module not present.</td>
<td>Replace the memory card(s).</td>
</tr>
<tr>
<td>2BA00081</td>
<td>VPD data corrupted for memory card in slot 0.</td>
<td>Replace the memory card in slot 0.</td>
</tr>
<tr>
<td>2BA00083</td>
<td>VPD data corrupted for memory card in slot 1.</td>
<td>Replace the memory card in slot 1.</td>
</tr>
<tr>
<td>2BA00101</td>
<td>Service processor is not installed, update cancelled.</td>
<td>1. Install the service processor 2. Retry operation</td>
</tr>
<tr>
<td>2BA00103</td>
<td>Service processor firmware update file is corrupted, update cancelled.</td>
<td>1. Obtain new service processor firmware 2. Retry operation</td>
</tr>
<tr>
<td>2BA00104</td>
<td>Service processor firmware update file is the same level as the service processor firmware, update cancelled.</td>
<td>1. Obtain new level of service processor firmware 2. Retry operation</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2BA00200</td>
<td>Service processor firmware update error occurred, update not completed.</td>
<td>Service processor firmware update error recovery procedure:</td>
</tr>
<tr>
<td></td>
<td>Error occurred during service processor flash write operation.</td>
<td>1. Turn the system Off</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Turn the system On</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Retry operation. If problem persists, replace service processor card (332 MHz SMP node)</td>
</tr>
<tr>
<td>2BA00201</td>
<td>Service processor firmware update error occurred, update not completed.</td>
<td>See error code 2BA00200 for recovery procedure.</td>
</tr>
<tr>
<td></td>
<td>Error occurred while reading service processor CRC.</td>
<td></td>
</tr>
<tr>
<td>2BA00202</td>
<td>Service processor firmware update error occurred, update not completed.</td>
<td>See error code 2BA00200 for recovery procedure.</td>
</tr>
<tr>
<td></td>
<td>Error occurred while verifying service processor CRC.</td>
<td></td>
</tr>
<tr>
<td>2BA00203</td>
<td>Service processor firmware update error occurred, update not completed.</td>
<td>See error code 2BA00200 for recovery procedure.</td>
</tr>
<tr>
<td></td>
<td>Error occurred while reading new service processor CRC after updating service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>processor firmware.</td>
<td></td>
</tr>
<tr>
<td>2BA00204</td>
<td>Service processor firmware update error occurred, update not completed.</td>
<td>See error code 2BA00200 for recovery procedure.</td>
</tr>
<tr>
<td></td>
<td>Error occurred while calculate CRC write.</td>
<td></td>
</tr>
<tr>
<td>2BA00300</td>
<td>Service processor reports slow fan 1.</td>
<td>1. Replace fan 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. If problem persists, replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00301</td>
<td>Service processor reports slow fan 2.</td>
<td>1. Replace fan 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. If problem persists, replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00302</td>
<td>Service processor reports slow fan 3.</td>
<td>1. Replace fan 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. If problem persists, replace I/O power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00303</td>
<td>Service processor reports slow fan 4.</td>
<td>1. Replace fan 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. If problem persists, replace I/O power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00309</td>
<td>Service processor reports generic cooling alert.</td>
<td>1. Check for cool air flow obstructions to the system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Read the Service Processor Error Logs in Service processor menus.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If various temperature faults (402xxxxx and 2BA003xx) are logged, replace the service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>processor card (332 MHz SMP node).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
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<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2BA00310</td>
<td>Service processor reports CPU over temperature</td>
<td>1. Check for cool air flow obstructions to the system&lt;br&gt;2. Read the Service Processor Error Logs</td>
</tr>
<tr>
<td></td>
<td>alert.</td>
<td>in Service processor menus if various temperature faults (402xxxxx and 2BA003xx) are logged,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>replace the service processor card (332 MHz SMP node).&lt;br&gt;3. Replace I/O planar. (See notes on</td>
</tr>
<tr>
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<td></td>
<td>A-1. If the problem persists, replace processor card</td>
</tr>
<tr>
<td>2BA00311</td>
<td>Service processor reports I/O over temperature</td>
<td>1. Check for cool air flow obstructions to the system&lt;br&gt;2. Read the Service Processor Error Logs</td>
</tr>
<tr>
<td></td>
<td>alert.</td>
<td>in Service processor menus if various temperature faults (402xxxxx and 2BA003xx) are logged,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>replace the service processor card (332 MHz SMP node).&lt;br&gt;3. Replace I/O planar. (See notes on</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A-1. If the problem persists, replace processor card</td>
</tr>
<tr>
<td>2BA00312</td>
<td>Service processor reports memory over temperature</td>
<td>1. Check for cool air flow obstructions to the system&lt;br&gt;2. Read the Service Processor Error Logs</td>
</tr>
<tr>
<td></td>
<td>alert.</td>
<td>in Service processor menus if various temperature faults (402xxxxx and 2BA003xx) are logged,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>replace the service processor card (332 MHz SMP node).&lt;br&gt;3. Replace I/O planar. (See notes on</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A-1. If the problem persists, replace processor card</td>
</tr>
<tr>
<td>2BA00313</td>
<td>Service processor reports generic power alert.</td>
<td>1. Replace CPU (or I/O) power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00314</td>
<td>Service processor reports 5V over voltage alert.</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00315</td>
<td>Service processor reports 5V under voltage alert.</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00316</td>
<td>Service processor reports 3.3V over voltage alert.</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00317</td>
<td>Service processor reports 3.3V under voltage alert.</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00318</td>
<td>Service processor reports 2.5V over voltage alert.</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00319</td>
<td>Service processor reports 2.5V under voltage alert.</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00320</td>
<td>Service processor reports +12V over voltage alert.</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00321</td>
<td>Service processor reports +12V under voltage alert.</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00322</td>
<td>Service processor reports -12V over voltage alert.</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00323</td>
<td>Service processor reports -12V under voltage alert.</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>2BA00324</td>
<td>Service processor reports 5V standby over voltage</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td></td>
<td>alert.</td>
<td></td>
</tr>
<tr>
<td>2BA00325</td>
<td>Service processor reports 5V standby under voltage</td>
<td>1. Replace CPU power supply FRU&lt;br&gt;2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
</tbody>
</table>
| 2BA00326   | Service processor reports PCI expansion planar 5V over voltage alert.         | 1. Replace CPU (or I/O) power supply FRU  
2. Replace I/O expansion interposer card  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00327   | Service processor reports PCI expansion planar 5V under voltage alert.        | 1. Replace CPU (or I/O) power supply FRU  
2. Replace I/O expansion interposer card  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00328   | Service processor reports PCI expansion planar 3.3V over voltage alert.       | 1. Replace CPU (or I/O) power supply FRU  
2. Replace I/O expansion interposer card  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00329   | Service processor reports PCI expansion planar 3.3V under voltage alert.      | 1. Replace CPU (or I/O) power supply FRU  
2. Replace I/O expansion interposer card  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00330   | Service processor reports PCI expansion planar +12V over voltage alert.       | 1. Replace CPU (or I/O) power supply FRU  
2. Replace I/O expansion interposer card  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00331   | Service processor reports PCI expansion planar +12V under voltage alert.      | 1. Replace CPU (or I/O) power supply FRU  
2. Replace I/O expansion interposer card  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00332   | Service processor reports PCI expansion planar -12V over voltage alert.       | 1. Replace CPU (or I/O) power supply FRU  
2. Replace I/O expansion interposer card  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00333   | Service processor reports PCI expansion planar -12V under voltage alert.      | 1. Replace CPU (or I/O) power supply FRU  
2. Replace I/O expansion interposer card  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00334   | Service processor reports generic slow shutdown request.                      | 1. Replace power supply FRU  
2. Replace I/O planar. (See notes on A-1)  
3. Read the Service Processor Error Logs. Perform “Read Service Processor Error Logs” in Service processor menus. If various temperature faults (402xxxxx and 2BA003xx) are logged, replace the service processor card (332 MHz SMP node). |
| 2BA00335   | Service processor reports CPU critical over temperature slow shutdown request. | 1. Check for cool air flow obstructions to the system  
2. Check fans for obstructions that prevent them from normal operation (example: a cable caught in the fan preventing it from spinning)  
3. Read the Service Processor Error Logs. Perform “Read Service Processor Error Logs” in Service processor menus. If various temperature faults (402xxxxx and 2BA003xx) are logged, replace the service processor card (332 MHz SMP node).  
4. If problem persists, replace processor card |
| 2BA00336   | Service processor reports I/O critical over temperature slow shutdown request. | 1. Check for cool air flow obstructions to the system  
2. Check fans for obstructions that prevent them from normal operation (example: a cable caught in the fan preventing it from spinning)  
3. If problem persists, replace I/O planar. (See notes on A-1)  
4. Read the Service Processor Error Logs. Perform “Read Service Processor Error Logs” in Service processor menus. If various temperature faults (402xxxxx and 2BA003xx) are logged, replace the service processor card (332 MHz SMP node). |
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
</table>
| 2BA00337   | Service processor reports memory critical over temperature slow Shutdown request. | 1. Check for cool airflow obstructions to the system  
2. Check fans for obstructions that prevent them from normal operation (example: a cable caught in the fan preventing it from spinning)  
3. If problem persists, replace memory card  
4. Read the Service Processor Error Logs. Perform “Read Service Processor Error Logs” in Service processor menus. If various temperature faults (402xxxxx and 2BA003xx) are logged, replace the service processor card (332 MHz SMP node) |
| 2BA00338   | Service processor reports generic fast shutdown request.                      | 1. Replace power supply FRU  
2. Replace I/O planar. (See notes on A-1)  
3. Read the Service Processor Error Logs. Perform “Read Service Processor Error Logs” in Service processor menus. If various temperature faults (402xxxxx and 2BA003xx) are logged, replace the service processor card (332 MHz SMP node) |
| 2BA00340   | Service processor reports locked fan - fast shutdown request fan 1.           | 1. Replace fan 1  
2. If problem persists, replace CPU power supply FRU  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00341   | Service processor reports locked fan - fast shutdown request fan 2.           | 1. Replace fan 2  
2. If problem persists, replace CPU power supply FRU  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00342   | Service processor reports locked fan - fast shutdown request fan 3.           | 1. Replace fan 3  
2. If problem persists, replace I/O power supply FRU  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00343   | Service processor reports locked fan - fast shutdown request fan 4.           | 1. Replace fan 4  
2. If problem persists, replace I/O power supply FRU  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00350   | Service processor reports generic immediate shutdown request.                 | 1. Replace power supply FRU  
2. Replace I/O planar. (See notes on A-1) |
| 2BA00351   | Service processor reports generic power loss EPOW.                            | 1. Replace power supply FRU  
2. Replace I/O planar. (See notes on A-1) |
| 2BA00352   | Service processor reports loss of power (frame).                              | 1. Replace power supply FRU  
2. Replace I/O planar. (See notes on A-1) |
| 2BA00353   | Service processor reports loss of power (power button).                       | 1. Replace power supply FRU  
2. Replace I/O planar. (See notes on A-1) |
| 2BA00360   | Service processor reports slow fan 1.                                         | 1. Replace fan 1  
2. If problem persists, replace power supply FRU  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00361   | Service processor reports slow fan 2.                                         | 1. Replace fan 2  
2. If problem persists, replace power supply FRU  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00362   | Service processor reports slow fan 3.                                         | 1. Replace fan 3  
2. If problem persists, replace power supply FRU  
3. Replace I/O planar. (See notes on A-1) |
| 2BA00363   | Service processor reports slow fan 4.                                         | 1. Replace fan 4  
2. If problem persists, replace power supply FRU  
3. Replace I/O planar. (See notes on A-1) |
### Table A-1. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware error codes. (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
</table>
| 2BA00364    | Service processor reports locked fan 1   | 1. Remove obstruction from fan 1  
2               | 2. Replace fan 1                         | 3. If problem persists, replace power supply FRU  
4               | 3. Replace I/O planar. (See notes on A-1) | |
| 2BA00365    | Service processor reports locked fan 2   | 1. Remove obstruction from fan 2  
2               | 2. Replace fan 2                         | 3. If problem persists, replace power supply FRU  
4               | 3. Replace I/O planar. (See notes on A-1) | |
| 2BA00366    | Service processor reports locked fan 3   | 1. Remove obstruction from fan 3  
2               | 2. Replace fan 3                         | 3. If problem persists, replace power supply FRU  
4               | 3. Replace I/O planar. (See notes on A-1) | |
| 2BA00367    | Service processor reports locked fan 4   | 1. Remove obstruction from fan 4  
2               | 2. Replace fan 4                         | 3. If problem persists, replace power supply FRU  
4               | 3. Replace I/O planar. (See notes on A-1) | |
| 2BA00368    | Service processor reports slow fan 1     | 1. Replace fan 1                
2               | 2. If problem persists, replace power supply FRU  
3               | 3. Replace I/O planar. (See notes on A-1) | |
| 2BA00369    | Service processor reports slow fan 2     | 1. Replace fan 2                
2               | 2. If problem persists, replace power supply FRU  
3               | 3. Replace I/O planar. (See notes on A-1) | |
| 2BA00370    | Service processor reports slow fan 3     | 1. Replace fan 3                
2               | 2. If problem persists, replace power supply FRU  
3               | 3. Replace I/O planar. (See notes on A-1) | |
| 2BA00371    | Service processor reports locked fan 1   | 1. Remove obstruction from fan 1  
2               | 2. Replace fan 1                         | 3. If problem persists, replace power supply FRU  
4               | 3. Replace I/O planar. (See notes on A-1) | |
| 2BA00372    | Service processor reports locked fan 2   | 1. Remove obstruction from fan 2  
2               | 2. Replace fan 2                         | 3. If problem persists, replace power supply FRU  
4               | 3. Replace I/O planar. (See notes on A-1) | |
| 2BA00373    | Service processor reports locked fan 3   | 1. Remove obstruction from fan 3  
2               | 2. Replace fan 3                         | 3. If problem persists, replace power supply FRU  
4               | 3. Replace I/O planar. (See notes on A-1) | |
| 2BA00374    | Service processor reports power supply 1 and fans failed. | 1. Replace CPU power supply FRU  
2               | 2. Replace I/O planar. (See notes on A-1) | |
| 2BA00375    | Service processor reports power supply 2 and fans failed. | 1. Replace I/O power supply FRU  
2               | 2. Replace I/O planar. (See notes on A-1) | |
| 2BA00376    | Service processor reports power supply failure. | 1. Replace failing power supply FRU  
2               | 2. Replace I/O planar. (See notes on A-1) | |
| 2BA00399    | Service processor reports unsupported value in EPOW. | Replace I/O planar. (See notes on A-1) |

### Table A-2. Service processor error codes.

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>40100005</td>
<td>A loss of system power detected.</td>
<td>Possible 48V power loss. If not, replace power supply FRU</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>40100007</td>
<td>Immediate shutdown.</td>
<td>Possible 48V power loss. If not, replace power supply FRU</td>
</tr>
</tbody>
</table>
| 40110001   | Power supply fail.                                                                                  | 1. Power supply FRU  
2. I/O planar. (See notes on A-1)  
3. Service processor  
4. Possible problem with DASD power  
5. Possible problem with CPU card  
6. System planar  
7. Power cables to system planar |
| 40110002   | Voltage is present, but not detected on both processor cards.                                      | 1. Check power interlock tab on CPU power supply FRU  
2. Check power cable at processor card(s) for proper seating (332 MHz SMP node)  
3. Check power cable at system planar for proper seating (POWER3 SMP node)  
4. Replace CPU power supply FRU  
5. Replace system planar power cable assembly |
| 40110003   | Voltage is present, but not detected on one processor card. (If the system is running, refer to the AIX error log to find out which processor card is failing. If the system is not running, refer to the service processor error log.) | 1. Check power interlock tab on CPU power supply FRU  
2. Check power cable at processor card(s) for proper seating (332 MHz SMP node)  
3. Check power cable at system planar for proper seating (POWER3 SMP node)  
4. Replace failing processor card  
5. Replace planar power cable assembly |
| 40110012   | Voltage not found on I/O expansion planar                                                           | 1. Check power interlock tab on I/O expansion power supply FRU  
2. Check power cable at I/O expansion planar for proper seating  
3. Check interposer signal cable  
4. Check I/O expansion control cable  
5. Replace power supply  
6. Replace I/O expansion planar  
7. Replace I/O expansion control cable, I/O expansion power cable, and interposer signal cable assemblies  
8. Replace interposer card |
| 4011002    | An unknown power problem detected.                                                                 | 1. Replace power supply FRU  
2. Replace I/O planar. (See notes on A-1) |
| 4011022    | A high 5.0 voltage reading detected.                                                                | 1. Replace CPU power supply FRU  
2. Replace I/O planar. (See notes on A-1) |
| 4011032    | A high 3.3 voltage reading detected.                                                                 | 1. Replace processor card  
2. Replace CPU (or I/O) power supply FRU |
| 4011033    | A high 2.5 voltage reading detected.                                                                | 1. Replace processor card  
2. Replace CPU (or I/O) power supply FRU |
| 4011052    | A high +12 voltage reading detected.                                                                | 1. Replace CPU (or I/O) power supply FRU  
2. Replace I/O planar. (See notes on A-1) |
| 4011062    | A high –12 voltage reading detected.                                                                | 1. Replace CPU (or I/O) power supply FRU  
2. Replace I/O planar. (See notes on A-1) |
| 4011072    | A high +5 standby voltage reading detected.                                                          | 1. Replace processor card  
2. Replace CPU (or I/O) power supply FRU |
| 4011082    | A low 5.0 voltage reading detected.                                                                 | 1. Replace CPU (or I/O) power supply FRU  
2. Replace processor card |
| 4011092    | A low 3.3 voltage reading detected.                                                                 | 1. Replace processor card  
2. Replace CPU (or I/O) power supply FRU |
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
</table>
| 40111093   | A low 2.5 voltage reading detected.                                          | 1. Replace CPU power supply FRU  
2. Replace processor card |
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>40112062</td>
<td>A low 1.8 voltage reading detected</td>
<td>1. Replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace processor card</td>
</tr>
<tr>
<td>40112063</td>
<td>A critical low 1.8 voltage reading detected</td>
<td>1. Replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace processor card</td>
</tr>
<tr>
<td>40112064</td>
<td>A critical high 1.8 voltage reading detected</td>
<td>1. Replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace processor card</td>
</tr>
<tr>
<td>40112065</td>
<td>A critical low 2.5 voltage reading detected</td>
<td>1. Replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace processor card</td>
</tr>
<tr>
<td>40112066</td>
<td>A critical high 2.5 voltage reading detected</td>
<td>1. Replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace processor card</td>
</tr>
<tr>
<td>40112082</td>
<td>A low 5.0 voltage reading detected</td>
<td>1. Replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace processor card</td>
</tr>
<tr>
<td>40112092</td>
<td>A low 3.3 voltage reading detected</td>
<td>1. Replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>40112093</td>
<td>A low 2.5 voltage reading detected</td>
<td>1. Replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace processor card</td>
</tr>
<tr>
<td>401120B2</td>
<td>A low +12 voltage reading detected</td>
<td>1. Replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>401120C2</td>
<td>A low -12 voltage reading detected</td>
<td>1. Replace CPU power supply FRU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>4020xxxx</td>
<td>Cooling problem detected (Also see following codes for exact match.)</td>
<td>1. Read the Service Processor Error Logs. Perform “Read Service Processor Error Logs” in Service processor menus. If various temperature faults (402xxxx and 2BA003xx) are logged, replace the service processor card (332 MHz SMP node). 2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>40200001</td>
<td>An unknown cooling problem detected.</td>
<td>Cooling problem; check system fans.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” under error code 4020xxxx for more information.</td>
</tr>
<tr>
<td>40200021</td>
<td>A CPU temperature warning detected.</td>
<td>Over temperature on processor card.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” under error code 4020xxxx for more information.</td>
</tr>
<tr>
<td>40200023</td>
<td>A critical CPU temperature condition detected.</td>
<td>Critical temperature on processor card.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” under error code 4020xxxx for more information.</td>
</tr>
<tr>
<td>40200031</td>
<td>An I/O planar temperature warning detected.</td>
<td>Over temperature on I/O planar.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” under error code 4020xxxx for more information.</td>
</tr>
<tr>
<td>40200033</td>
<td>A critical I/O planar temperature condition detected.</td>
<td>Critical temperature on I/O planar.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” under error code 4020xxxx for more information.</td>
</tr>
<tr>
<td>40200041</td>
<td>A memory temperature warning detected.</td>
<td>Over temperature on the memory card.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to “Action/Possible Failing FRU” under error code 4020xxxx for more information.</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>4020043</td>
<td>A critical memory temperature condition detected.</td>
<td>Critical temperature on the memory card. Refer to “Action/Possible Failing FRU” under error code 4020xxxx for more information.</td>
</tr>
<tr>
<td>4020051</td>
<td>An inlet temperature warning detected.</td>
<td>Over temperature on the airflow inlet.</td>
</tr>
<tr>
<td>4021011</td>
<td>A slow fan detected.</td>
<td>Check: 1. Room operating temperature 2. Fans</td>
</tr>
<tr>
<td>4021014</td>
<td>1. A stopped fan detected 2. If the system is running, refer to the AIX error log to find which fan is failing. If the system is not running, refer to the SP error log 3. Fan connector unplugged 4. Fan sensor defective</td>
<td>1. Check connector 2. Replace failing fan 3. Replace power supply FRU Note: SP Menu locations = F0-F3. AIX error log locations = F1-F4.</td>
</tr>
<tr>
<td>4021024</td>
<td>Loss of fan and subsequent slow fan. If the system is running, refer to the AIX error log to find which fan is failing. If the system is not running, refer to the SP error log.</td>
<td>1. Replace failing fan 2. Replace power supply FRU</td>
</tr>
<tr>
<td>4021091</td>
<td>Loss of fan. Refer to the SP error log to find which fan is failing.</td>
<td>1. Replace failing fan 2. Replace power supply FRU</td>
</tr>
<tr>
<td>4021804</td>
<td>Failure to communicate with FMC.</td>
<td>1. Replace failing fan 2. Replace power supply FRU</td>
</tr>
<tr>
<td>40A00000</td>
<td>System firmware IPL failure (surveillance).</td>
<td>1. Go to the Service Processor menus. 2. Select “System Information Menu”. 3. Select “Read Progress Indicators from Last Boot” and use the posted code indicated by the arrow. (Refer to “Service processor checkpoints” on page A-31 or “Firmware checkpoints” on page A-35 for help.) 4. Replace I/O planar. (See notes on A-1) 5. If the problem persists, call the support center for assistance.</td>
</tr>
<tr>
<td>40B00000</td>
<td>The operating system surveillance interval exceeded.</td>
<td>Refer to “Action/Failing FRU” under error code 40A00000.</td>
</tr>
<tr>
<td>40B00100</td>
<td>Surveillance timeout on CPU 1 (slot 1).</td>
<td>Refer to “Action/Failing FRU” under error code 40A00000.</td>
</tr>
<tr>
<td>40B00101</td>
<td>Surveillance timeout on CPU 2 (slot 1).</td>
<td>Refer to “Action/Failing FRU” under error code 40A00000.</td>
</tr>
<tr>
<td>40B00102</td>
<td>Surveillance timeout on CPU 3 (slot 2).</td>
<td>Refer to “Action/Failing FRU” under error code 40A00000.</td>
</tr>
<tr>
<td>40B00103</td>
<td>Surveillance timeout on CPU 4 (slot 2).</td>
<td>Refer to “Action/Failing FRU” under error code 40A00000.</td>
</tr>
<tr>
<td>40D0003</td>
<td>An unknown slow shutdown commanded.</td>
<td>Critical cooling problem. Check to ensure the temperature is in the ambient range.</td>
</tr>
<tr>
<td>40D0004</td>
<td>An unknown fast shutdown commanded.</td>
<td>Locked fan failure detected. Make sure all fans are operating normally.</td>
</tr>
<tr>
<td>40D00101</td>
<td>BIST on I/O planar failed.</td>
<td>Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>40D00102</td>
<td>BIST on system planar failed.</td>
<td>Replace system planar.</td>
</tr>
<tr>
<td>40D00200</td>
<td>Processor array initialization fail.</td>
<td>Location code will point to failing FRU.</td>
</tr>
<tr>
<td>40D00201</td>
<td>JTAG chip id miscompare.</td>
<td>Location code will point to failing FRU.</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
</tbody>
</table>
| 450000C0    | Uncorrectable memory error (checkstop)                    | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000C1    | Memory ECC correctable error (checkstop)                  | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000C2    | Memory ECC correctable error threshold exceeded (checkstop)| 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000C3    | Memory controller subsystem internal error (checkstop)    | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000C4    | Memory address error (invalid address or access attempt) (checkstop) | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000C5    | Memory data error (bad data going to memory) (checkstop)  | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000C6    | Memory bus/switch internal error (checkstop)              | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000C7    | Memory time-out error (checkstop)                         | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000D0    | System bus time-out error (checkstop)                     | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000D1    | System bus parity error (checkstop)                       | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000D2    | System bus protocol/transfer error (checkstop)            | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000D3    | I/O host bridge time-out error (checkstop)                | 1. Replace the FRU as indicated by the physical location code.  
                                                      | 2. Check the Service Processor error log for additional FRU.   |
| 450000D4    | I/O host bridge address/data bus parity error (checkstop) | 1. Replace the FRU as indicated by the physical location code.  
<pre><code>                                                  | 2. Check the Service Processor error log for additional FRU.   |
</code></pre>
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>450000D6</td>
<td>System support function error (checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the Service Processor error log for additional FRU.</td>
</tr>
<tr>
<td>450000D7</td>
<td>System bus internal hardware/switch error (checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the Service Processor error log for additional FRU.</td>
</tr>
<tr>
<td>45800000</td>
<td>Memory controller checkstop</td>
<td>Replace system planar.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perform the &quot;POWER3 SMP Thin and Wide Node minimum configuration&quot; MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1</td>
</tr>
<tr>
<td>45B00001</td>
<td>A non-compatible memory card is detected</td>
<td>Replace the memory card, as indicated by the physical location code, with a compatible memory card supported by this system.</td>
</tr>
<tr>
<td>45C00000</td>
<td>Memory checkstop (uncorrectable memory error)</td>
<td>1. Reboot the system in Service Mode. This preserves the AIX error log.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Run diagnostics in problem determination mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace system planar</td>
</tr>
<tr>
<td>460000C0</td>
<td>I/O bus address parity error (checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the Service Processor error log for additional FRU.</td>
</tr>
<tr>
<td>460000C1</td>
<td>I/O bus data parity error (checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the Service Processor error log for additional FRU.</td>
</tr>
<tr>
<td>460000C2</td>
<td>I/O bus time-out, access, or other error (checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the Service Processor error log for additional FRU.</td>
</tr>
<tr>
<td>460000C3</td>
<td>I/O bridge/device internal error (checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the Service Processor error log for additional FRU.</td>
</tr>
<tr>
<td>460000C4</td>
<td>Error from a PCI to non-PCI bridge chip, indicating an error on the secondary bus (checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the Service Processor error log for additional FRU.</td>
</tr>
<tr>
<td>460000C5</td>
<td>Mezzanine/system bus address parity error (checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the Service Processor error log for additional FRU.</td>
</tr>
<tr>
<td>460000C6</td>
<td>Mezzanine/system bus data parity error (checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the Service Processor error log for additional FRU.</td>
</tr>
<tr>
<td>460000C7</td>
<td>Mezzanine/system bus time-out transfer or protocol error (checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the Service Processor error log for additional FRU.</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 460000D4  | I/O expansion bus data parity or CRC protocol error (checkstop)              | 1. Replace the FRU as indicated by the physical location code.  
2. Check the Service Processor error log for additional FRU.                                                                                          |
| 460000D5  | I/O expansion bus data time-out, access, or other error (checkstop)          | 1. Replace the FRU as indicated by the physical location code.  
2. Check the Service Processor error log for additional FRU.                                                                                          |
| 460000D6  | I/O expansion bus connection failure (checkstop)                             | 1. Replace the FRU as indicated by the physical location code.  
2. Check the Service Processor error log for additional FRU.                                                                                          |
| 460000D7  | I/O expansion bus unit not in an operating state (power down, off-line)     | 1. Replace the FRU as indicated by the physical location code.  
2. Check the Service Processor error log for additional FRU.                                                                                          |
| 460000D8  | A generic memory controller-detected checkstop has occurred.                 | Consult AIX diagnostics for further information.                                                                                                             |
| 460000D9  | A generic I/O controller-detected checkstop has occurred.                    | Consult AIX diagnostics for further information.                                                                                                             |
| 48800909  | System VPD error                                                              | Replace I/O planar. (See notes on [A-1])                                                                                                                  |
| 4880090A  | System planar VPD read fail                                                  | 1. Replace system planar  
2. Replace I/O planar                                                                                                                                          |
| 4880090B  | Error identifying system type using VPD                                      | 1. ¹C bus error  
2. Replace I/O planar                                                                                                                                          |
| 4880090C  | JTAG unable to confirm system type using system VPD                          | 1. Remove cards  
2. Verify part numbers  
3. Install valid cards                                                                                                                                            |
| 4B2xxx00  | Checkstop                                                                     | Except for xxx=010. Where xxx is the processor type. Refer to error code 2B2xxx22 for types. See the following code entries for specific description and actions. |
| 4B2xxx01  | Checkstop - slot 1 fail                                                       | 1. Attempt to run Online (Disk Based) Diagnostics, this preserves the AIX error log; if the reboot fails, attempt Network Boot Diagnostics. If node boots to diagnostics, run in Problem Determination mode to determine the cause of the failure. Otherwise continue.  
2. Replace processor card in slot 1  
3. Replace system planar  
4. Replace I/O planar (See notes on [A-1])                                                                                              |
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>4B2xxx02</td>
<td>Checkstop - slot 2 fail</td>
<td>1. Attempt to run Online (Disk Based) Diagnostics, this preserves the AIX error log; if the reboot fails, attempt Network Boot Diagnostics. If node boots to diagnostics, run in Problem Determination mode to determine the cause of the failure. Otherwise continue. 2. Replace processor card in slot 2 3. Replace system planar 4. Replace I/O planar. (See notes on Table A-1)</td>
</tr>
<tr>
<td>4B2xxx10</td>
<td>Machine check - 0</td>
<td>1. Attempt to run Online (Disk Based) Diagnostics, this preserves the AIX error log; if the reboot fails, attempt Network Boot Diagnostics. If node boots to diagnostics, run in Problem Determination mode to determine the cause of the failure. Otherwise continue. 2. Perform “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1</td>
</tr>
<tr>
<td>4B2xxx11</td>
<td>Machine check - 1 (stuck active)</td>
<td>1. Remove processor card in slot 2 (if installed). If problem is resolved, replace processor card, else continue. 2. Exchange processor card in slot 1 with processor card removed from slot 2 in step 1 (replace processor card if only one card exists). If problem is resolved, replace processor card, else continue. 3. Replace system board</td>
</tr>
<tr>
<td>4B2xxx41</td>
<td>ABIST fail.</td>
<td>ABIST fail on first CPU in slot identified by location code.</td>
</tr>
<tr>
<td>4B2xxx42</td>
<td>ABIST fail.</td>
<td>ABIST fail on second CPU in slot identified by location code.</td>
</tr>
<tr>
<td>4B2xxx51</td>
<td>LBIST fail</td>
<td>LBIST fail on first CPU in slot identified by location code.</td>
</tr>
<tr>
<td>4B2xxx52</td>
<td>LBIST fail</td>
<td>LBIST fail on second CPU in slot identified by location code.</td>
</tr>
<tr>
<td>4B2xxxC0</td>
<td>CPU internal error. (Checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code. The xxx indicates the processor type. Refer to error code 2B2xxx22 for xxx definitions. 2. Check the service processor error log for additional FRU.</td>
</tr>
<tr>
<td>4B2xxxC1</td>
<td>CPU internal cache or cache controller error. (Checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code. The xxx indicates the processor type. Refer to error code 2B2xxx22 for xxx definitions. 2. Check the service processor error log for additional FRU.</td>
</tr>
<tr>
<td>4B2xxxC2</td>
<td>External cache parity or multi-bit ECC error. (Checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code. The xxx indicates the processor type. Refer to error code 2B2xxx22 for xxx definitions. 2. Check the service processor error log for additional FRU.</td>
</tr>
<tr>
<td>4B2xxxC3</td>
<td>External cache single-bit ECC error. (Checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code. The xxx indicates the processor type. Refer to error code 2B2xxx22 for xxx definitions. 2. Check the service processor error log for additional FRU.</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4B2xxxC4</td>
<td>System bus time-out error. (Checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code. The xxx indicates the processor type. Refer to error code 2B2xxx22 for xxx definitions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the service processor error log for additional FRU.</td>
</tr>
<tr>
<td>4B2xxxC5</td>
<td>System bus time-out error, waiting for I/O. (Checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code. The xxx indicates the processor type. Refer to error code 2B2xxx22 for xxx definitions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the service processor error log for additional FRU.</td>
</tr>
<tr>
<td>4B2xxxC6</td>
<td>System bus parity error. (Checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code. The xxx indicates the processor type. Refer to error code 2B2xxx22 for xxx definitions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the service processor error log for additional FRU.</td>
</tr>
<tr>
<td>4B2xxxC7</td>
<td>System bus protocol/transfer error. (Checkstop)</td>
<td>1. Replace the FRU as indicated by the physical location code. The xxx indicates the processor type. Refer to error code 2B2xxx22 for xxx definitions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Check the service processor error log for additional FRU.</td>
</tr>
<tr>
<td>4B2xxxC8</td>
<td>A generic CPU detected checkstop has occurred.</td>
<td>Consult AIX diagnostics for further information.</td>
</tr>
<tr>
<td>4B20000A</td>
<td>All CPUs have been deconfigured</td>
<td>1. Replace processor cards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>4B200043</td>
<td>Service Processor reports JTAG fail.</td>
<td>1. Make sure power cables at processor card and system planar are properly seated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. (332 MHz SMP Node only.) The service processor card is the least likely failure, but it is the tester in this case. Replace the service processor card to assure true failure indication. If the failure disappears, the service processor card was bad. Otherwise, reinstall the old service processor card.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the processor card(s).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace the system planar.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>4B200054</td>
<td>The processor cards are not compatible with each other.</td>
<td>1. Remove cards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Verify part numbers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Install valid cards</td>
</tr>
<tr>
<td>4B200055</td>
<td>All CPUs got deconfigured</td>
<td>1. If only one processor card is used, it must be in slot 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. If two processor cards are being used, replace the card in slot 1</td>
</tr>
<tr>
<td>4B200056</td>
<td>No processor card in first slot.</td>
<td>1. If only one processor card is used, it must be in slot 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. If two processor cards are being used, replace the card in slot 1</td>
</tr>
<tr>
<td>4B200057</td>
<td>Processor cards are not compatible with each other.</td>
<td>1. Remove cards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Verify part numbers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Install valid (compatible) cards</td>
</tr>
<tr>
<td>4B200058</td>
<td>Compatibility test on processor card 0 failed</td>
<td>1. Remove cards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Verify part numbers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Install valid (compatible) cards</td>
</tr>
<tr>
<td>Error Code</td>
<td>Description</td>
<td>Action / Possible Failing FRU</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 4B200059      | Compatibility test on processor card 1 failed | 1. Remove cards  
                |                                                                      | 2. Verify part numbers  
                |                                                                      | 3. Install valid (compatible) cards |
| 4B200100      | Checkstop.                           | 1. Attempt to reboot the system in Service Mode, this preserves the AIX error log. If the reboot fails, attempt to reboot from Ethernet. If the reboot is successful, run diagnostics in Problem Determination mode to determine the cause of the failure. Otherwise continue  
                |                                                                      | 2. Replace processor card  
                |                                                                      | 3. Replace system planar  
                |                                                                      | 4. Replace PCI adapter  
                |                                                                      | 5. Replace I/O planar. (See notes on A-1) |
| 4B201020      | TEA Error.                           | Perform “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1. |
| 4BA00000      | The system support controller detects the service processor, but cannot establish communication. The system halts. | 1. Replace the service processor card (332 MHz SMP node)  
                |                                                                      | 2. Replace the I/O Planar. (See notes on A-1) |
| 4BA00001      | The system support controller cannot detect the service processor. | 1. Replace the service processor (332 MHz SMP node)  
                |                                                                      | 2. Replace the I/O Planar. (See notes on A-1) |
| 4BA00800      | Unknown service processor error.     | Check level of service processor, if it is the latest level and problem persists, call support. |
| 4BA00814      | NVRAM checksum (CRC) fail.           | Recoverable temporary condition, unless succeeded by 4BA80015. |
| 4BA00815      | NVRAM reinitialization fail.         | Replace I/O planar.                                               |
| 4BA00826      | Service processor cannot call home.  | Replace the I/O Planar. (See notes on A-1)                         |
| 4BA00828      | Flash update (CRC) checksum fail.    | Replace the flash image.                                          |
| 4BA00829      | Bad system firmware.                 | Replace the I/O Planar. (See notes on A-1)                         |
| 4BA00830      | Boot fail.                           | 1. Verify bootlist in SMS menus  
                |                                                                      | 2. See “E1xx code boot problems” on page 3-14 |
| 4BA00831      | Bad service processor image.         | Replace the I/O Planar. (See notes on A-1)                         |
| 4BA00832      | Error while doing flash update.      | 1. Power the system on and retry the flash programming a few times  
                |                                                                      | 2. Replace I/O planar |
| 4BA10001      | SSC SRAM fail.                       | 1. Replace I/O planar. (See notes on A-1)                         
                |                                                                      | 2. Replace service processor card (332 MHz SMP node) |
| 4BA10002      | SSC flash fail.                      | 1. Replace I/O planar. (See notes on A-1)                         
                |                                                                      | 2. Replace service processor card (332 MHz SMP node) |
| 4BA10003      | Service processor fail.              | 1. Replace I/O planar. (See notes on A-1)                         
                |                                                                      | 2. Replace service processor card (332 MHz SMP node) |
| 4BA10004      | Service processor firmware fail.     | 1. If attempting to download service processor firmware, verify that the firmware file is not corrupted  
                |                                                                      | 2. Power the node circuit breaker(s) off  
                |                                                                      | 3. Wait 30 seconds, then power the node circuit breaker(s) on  
                |                                                                      | 4. If you get the same symptom, replace the service processor card (332 MHz SMP node) |
Table A-2. Service processor error codes. (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Action / Possible Failing FRU</th>
</tr>
</thead>
</table>
| 4BA10005   | I²C Path Fail.                 | 1. Replace I/O planar. (See notes on A-1)  
2. Replace processor card  
3. Replace system planar |
| 4BA80013   | NVRAM.                         | Perform “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1 |
| 4BA80014   | NVRAM (CRC) checksum fail.     | Recoverable temporary condition, unless succeeded by 4BA80015.                          |
| 4BA80015   | NVRAM reinitialization fail.   | 1. Power off the node circuit breakers  
2. Clear the NVRAM manually.  
3. Replace the I/O planar. |

Memory PD bits
The following table expands the firmware error code 25Cyyxxx (see Table A-1 on page A-2), where yy is the PD values in the table below. Use these values to identify the type of memory that generated the error.

If you replace FRUs and the problem is still not corrected, go to “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1 unless otherwise indicated in the tables.

Table A-3. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node memory module PD bits

<table>
<thead>
<tr>
<th>PD value</th>
<th>Size</th>
<th>Clock Cycle (nsecs)</th>
<th>Parity/ ECC</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>512 MB</td>
<td>10</td>
<td>ECC</td>
</tr>
<tr>
<td>2A</td>
<td>512 MB</td>
<td>8</td>
<td>ECC</td>
</tr>
<tr>
<td>38</td>
<td>128 MB</td>
<td>10</td>
<td>ECC</td>
</tr>
<tr>
<td>3A</td>
<td>128 MB</td>
<td>8</td>
<td>ECC</td>
</tr>
<tr>
<td>48</td>
<td>64 MB</td>
<td>10</td>
<td>ECC</td>
</tr>
<tr>
<td>4A</td>
<td>64 MB</td>
<td>8</td>
<td>ECC</td>
</tr>
<tr>
<td>58</td>
<td>32 MB</td>
<td>10</td>
<td>ECC</td>
</tr>
<tr>
<td>5A</td>
<td>32 MB</td>
<td>8</td>
<td>ECC</td>
</tr>
<tr>
<td>68</td>
<td>256 MB</td>
<td>10</td>
<td>ECC</td>
</tr>
<tr>
<td>6A</td>
<td>256 MB</td>
<td>8</td>
<td>ECC</td>
</tr>
</tbody>
</table>

Notes:
1. To get the memory size and part number, use the Service Processor menus (“Service processor menus” on page 3-29) or lscfg -pv and look for information for the “memory-module”.
2. Memory modules must be installed in pairs. 32 MB memory modules are not supported in the 332 MHz SMP and POWER3 SMP Thin and Wide nodes.

Bus SRN to FRU reference table
The following table is used to locate defective FRUs within the I/O planar PCI and ISA buses. The table indicates which devices should be tested for each SRN. For this procedure, if possible, diagnostics are run on the I/O planar bus devices with all adapters removed from the failing bus. If a failure is detected on this system with all adapters removed from the failing bus, the I/O planar is the isolated FRU. If a failure is not detected, the adapters are added back one at a time, to their original slot location, and the configuration is tested until a failure is detected. The failure is then isolated to the failing FRU.
If a failure has not been detected and all the FRUs have been tested, call your technical service support person for assistance.

Table A-4. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node bus SRN to FRU reference table

<table>
<thead>
<tr>
<th>SRN</th>
<th>Bus Identification</th>
<th>Possible Failing Device and AIX Location Code</th>
<th>Associated FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>9CC-100</td>
<td>PCI bus 00</td>
<td>Internal SCSI port 1 (10-60) I/O planar.</td>
<td>Adapter (See notes on A-1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Internal Ethernet port (10-80) I/O planar.</td>
<td>Adapter (See notes on A-1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI adapter installed in thin node chassis slot I2 (10-70 to 10-77)</td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI adapter installed in thin node chassis slot I3 (10-68 to 10-6F)</td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI riser card (P3-X1)</td>
<td>PCI riser card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI bus 00 (P2) - Thin node chassis slots I2-I3</td>
<td>I/O planar (See notes on A-1)</td>
</tr>
<tr>
<td>9CC-101</td>
<td>PCI bus 01</td>
<td>PCI adapter installed in I/O expansion chassis slot I1 (20-58 to 20-5F)</td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI adapter installed in I/O expansion chassis slot I2 (20-60 to 20-67)</td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI adapter installed in I/O expansion chassis slot I3 (20-68 to 20-6F)</td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI adapter installed in I/O expansion chassis slot I4 (20-70 to 20-77)</td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI riser card (P3-X1)</td>
<td>PCI riser card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI bus 01 (P3) - I/O expansion chassis slots I1-I4</td>
<td>PCI Expansion planar</td>
</tr>
<tr>
<td>9CC-102</td>
<td>PCI bus 02</td>
<td>PCI adapter installed in I/O expansion chassis slot I5 (2F-00 to 2F-07)</td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI adapter installed in I/O expansion chassis slot I6 (2F-08 to 2F-0F)</td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI adapter installed in I/O expansion chassis slot I7 (2F-10 to 2F-17)</td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI adapter installed in I/O expansion chassis slot I8 (2F-18 to 2F-1F)</td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI riser card (P3-X1)</td>
<td>PCI riser card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PCI bus 02 (P3) - I/O expansion chassis slots I5-I8 PCI Expansion planar</td>
<td>PCI Expansion planar</td>
</tr>
<tr>
<td>651-730</td>
<td>ISA bus</td>
<td>Diskette drive port/device (01-D1-00-00) I/O planar.</td>
<td>(See notes on A-1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Serial ports (1 and 2)/device (01-S1 and 01-S2) I/O planar.</td>
<td>(See notes on A-1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mouse port/device (01-K1-01-00) I/O planar.</td>
<td>(See notes on A-1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Keyboard port/device (01-K1-00-00) I/O Planar.</td>
<td>(See notes on A-1)</td>
</tr>
</tbody>
</table>
Checkpoints

Checkpoints are intended to let users and service personal 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, it is a good idea to look for better symptoms in the Service Processor error log. See "Read service processor error logs" on page 3-35.

Service processor checkpoints

Service Processor checkpoints are in the range E010 to E0FF. The message OK indicates successful service processor testing and initialization. Firmware checkpoints are listed in "Firmware checkpoints" on page A-35.

Note: Go to “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1 for any of the following conditions:

- A four-digit code in the range of E001 through EFFF displays on the LCD display but is not listed in the checkpoint table
- A four-digit code displays in the checkpoint table, 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

Table A-5. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node service processor checkpoints.

<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/ Possible Failing FRU</th>
</tr>
</thead>
</table>
| E000       | System support controller begins operation. This is an informational checkpoint. | 1. Replace service processor card (332 MHz SMP node)  
             |                                                  | 2. Replace I/O planar. (See notes [A-1])  
             |                                                  | See note [A-31] |
| E010       | Starting service processor self-tests            | 1. Replace service processor card (332 MHz SMP node)  
             |                                                  | 2. Replace I/O planar. (See notes on [A-1]) |
| E011       | Service processor self-tests completed successfully | NA                                                        |
| E012       | Begin to set up service processor helps           | 1. Replace I/O planar. (See notes on [A-1])  
             |                                                  | 2. Replace service processor card (332 MHz SMP node) |
| E01F       | Bad self-test; cannot continue                    |                                                           |
| E020       | Configuring CMOS                                  | 1. Replace I/O planar. (See notes on [A-1])  
             |                                                  | 2. Replace service processor card (332 MHz SMP node) |
| E021       | Configuring NVRAM                                  | 1. Replace I/O planar. (See notes on [A-1])  
             |                                                  | 2. Replace service processor card (332 MHz SMP node) |
| E022       | Accessing system planar VPD                       | Replace the system planar.                                |
| E023       | Accessing memory card 1 VPD                       | Replace memory card 1.                                    |
| E024       | Accessing memory card 2 VPD                       | Replace memory card 2.                                    |
Table A-5. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node service processor checkpoints. (continued)

<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/ Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>E025</td>
<td>Service processor accessing VPD on memory card 1.</td>
<td>N/A</td>
</tr>
<tr>
<td>E026</td>
<td>Service processor accessing VPD on memory card 2.</td>
<td>N/A</td>
</tr>
<tr>
<td>E030</td>
<td>Beginning to build I²C resources</td>
<td>1. Replace service processor card (332 MHz SMP node) 2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E031</td>
<td>Finished building I²C resources</td>
<td>1. Replace service processor card (332 MHz SMP node) 2. Replace processor card 3. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E032</td>
<td>JTAG self-test</td>
<td>Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E040</td>
<td>Starting serial port tests</td>
<td>1. Replace service processor card (332 MHz SMP node) 2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E042</td>
<td>Configuring serial port 1</td>
<td>1. Replace service processor card (332 MHz SMP node) 2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E043</td>
<td>Configuring serial port 2</td>
<td>1. Replace service processor card (332 MHz SMP node) 2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E044</td>
<td>Preparing to set serial port line speed</td>
<td>1. Replace service processor card (332 MHz SMP node) 2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E045</td>
<td>Preparing to initialize serial port</td>
<td>1. Replace service processor card (332 MHz SMP node) 2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E05x</td>
<td>Reserved.</td>
<td>Call for support.</td>
</tr>
<tr>
<td>E051</td>
<td>Reading CPU VPD</td>
<td>Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E052</td>
<td>Reading memory card and DIMM VPD</td>
<td>Replace memory card(s) or DIMMs.</td>
</tr>
<tr>
<td>E053</td>
<td>Reading system planar VPD</td>
<td>Replace system planar.</td>
</tr>
<tr>
<td>E054</td>
<td>Reading I/O VPD</td>
<td>Replace I/O planar.</td>
</tr>
<tr>
<td>E060</td>
<td>Preparing to auto power-on (power restored)</td>
<td>1. Replace service processor card (332 MHz SMP node) 2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E061</td>
<td>Preparing to auto power-on (Timer)</td>
<td>1. Replace service processor card (332 MHz SMP node) 2. Replace I/O planar. (See notes on A-1)</td>
</tr>
<tr>
<td>E070</td>
<td>Configuring modem</td>
<td>1. Replace modem 2. Replace service processor card (332 MHz SMP node) 3. Replace I/O planar. (See notes on A-1) 4. Replace processor card</td>
</tr>
<tr>
<td>Checkpoint</td>
<td>Description</td>
<td>Action/ Possible Failing FRU</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>------------------------------</td>
</tr>
</tbody>
</table>
| E072       | Preparing to call home | 1. Replace modem  
2. Replace service processor card (332 MHz SMP node)  
3. Replace I/O planar. (See notes on A-1)  
4. Replace processor card |
| E075       | Entering Service Processor menus. | 1. Check the TTY window on the control workstation.  
   a. If the service processor menu is not displayed, logically power off the node.  
   b. If the service processor menu is still not displayed, continue with step 2.  
2. Replace service processor card (332 MHz SMP node)  
3. Replace I/O planar. (See notes on A-1) |
| E076       | Leaving Service Processor menus; attempting to disconnect modems | 1. Replace service processor card (332 MHz SMP node)  
2. Replace I/O planar. (See notes on A-1)  
3. Replace processor card |
| E080       | Leaving Service Processor menus; attempting to disconnect modems. | 1. Switch system power on.  
2. Replace I/O planar. (See notes on A-1) |
| E0A0       | Beginning Bring-Up Phase | 1. Replace service processor card (332 MHz SMP node)  
2. Replace I/O planar. (See notes on A-1)  
3. Replace processor card  
4. Replace PCI riser card assembly (332 MHz SMP node) |
| E0B0       | Starting CPU BIST | 1. Replace processor card  
2. Replace I/O planar. (See notes on A-1)  
3. Replace service processor card (332 MHz SMP node) |
| E0BF       | CPU BIST fail | 1. Replace CPU card  
2. Replace system planar  
3. Replace I/O planar |
| E0C0       | Starting X5 BIST | 1. Replace processor card  
2. Replace I/O planar. (See notes on A-1)  
3. Replace service processor card (332 MHz SMP node) |
| E0D0       | Creating scanlog | Wait up to 5 minutes for dump to complete. |
| E0E0       | Pulling CPU out of reset | 1. Replace processor card  
2. Replace I/O planar. (See notes on A-1)  
3. Replace service processor card (332 MHz SMP node) |
Table A-5. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node service processor checkpoints. (continued)

<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/ Possible Failing FRU</th>
</tr>
</thead>
</table>
| E0E1       | CPU not able to start. | 1. Make sure the CPU power supply is properly seated. Push on the CPU power supply lever marked “PUSH”  
2. If this is a 332 MHz SMP node, check for CPU card failure:  
a. Power off node (Perspectives) and open TTY console (s1term –w Frame# Node#).  
b. On TTY console, Main SP Menu, enter 86060 to start the hidden menu.  
c. Disable CPUs 0 and 1 by selecting them on the menu.  
d. Quit menu and power on the node (Perspectives).  
e. If node boots, shutdown node, then replace CPU card in the first slot.  
f. If node hangs at E0E1, power off node, re-enable CPUs 0 and 1, then disable CPUs 2 and 3.  
g. Quit SP menu and power on node (Perspectives).  
h. If node boots, replace CPU card in second slot.  
**Note:** Running AIX with disabled CPUs may result in some unexpected CPU status.  
3. If node fails to boot, generate a hardware call. Ensure PMH reflects correct system serial number. |
| E0E2       | Check point for “Hot-Swap” fans and power supply. | Power supply hot-swap is in progress. Fans and power supply must be replaced within 5 minutes. After 5 minutes the service processor initiates a fast shutdown of the system.  
**Note:** Not applicable for this node. |
| E0FF       | Bad Service Processor (SP) firmware. Reflash. | 1. If attempting to download service processor firmware, verify that the firmware file is not corrupted  
2. Power the node circuit breaker(s) off  
3. Wait 30 seconds, then power the node circuit breaker(s) on  
4. If you get the same symptom, replace the service processor card (332 MHz SMP Node)  
5. Replace I/O planar. (See notes on A-1). |
| OK         | Service processor ready waiting for power-On | None. Normal operation. |
| STBY       | Service Processor ready. System was shutdown 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. |
| Diag_STBY  | Appears in diagnostics mode. Service Processor ready. System was shutdown by the operating system and is still powered on. | This condition can be requested (with no faults) by a privileged system user. See the Service Processor error log for possible operating system fault indications. |
Firmware checkpoints

Firmware uses progress codes (checkpoints) in the range of E1xx to EFFF. These checkpoints occur during system startup and maybe be useful in diagnosing certain problems. Service processor checkpoints are listed in "Service processor checkpoints" on page A-31.

Note: If you replace FRUs and the problem is still not corrected, go to “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1 or “Maintenance Analysis Procedures (MAPs)” on page 1-1 unless otherwise indicated in the tables.

Table A-6. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware checkpoints.

<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/ Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>E100</td>
<td>Reserved/unused</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E101</td>
<td>Video enabled, extended memory test (quick restart path)</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E102</td>
<td>Firmware restart (quick restart path)</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E103</td>
<td>Set memory refresh (composite img)</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E104</td>
<td>Set memory refresh (recovery block)</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E105</td>
<td>Transfer control to operating system (normal boot).</td>
<td>See “E1xx code boot problems” on page 3-14</td>
</tr>
<tr>
<td>E108</td>
<td>Run recovery block base memory (test 2K), set stack</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E109</td>
<td>Copy CRC verification code to RAM</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E10A</td>
<td>Turn on cache</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E10B</td>
<td>Flush cache</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E10C</td>
<td>Jump to CRC verification code in RAM</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E10D</td>
<td>Compute composite image CRC</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E10E</td>
<td>Jump back to ROM</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E10F</td>
<td>Transfer control to Open Firmware</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E110</td>
<td>Turn off cache, check if composite image CRC is valid</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E111</td>
<td>GOOD CRC - jump to composite image</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E112</td>
<td>BAD CRC - initialize base memory, stack</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E113</td>
<td>BAD CRC - copy uncompressed recovery block code to RAM</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E114</td>
<td>BAD CRC - jump to code in RAM</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E115</td>
<td>BAD CRC - turn on cache</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E116</td>
<td>BAD CRC - copy recovery block data section to RAM</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E117</td>
<td>BAD CRC - Invalidate and flush cache, set TOC</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E118</td>
<td>BAD CRC - branch to high level recovery control routine.</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E119</td>
<td>Initialize base memory, stack</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E11A</td>
<td>Copy uncompressed recovery block code to RAM</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E11B</td>
<td>Jump to code in RAM</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E11C</td>
<td>Turn on cache</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>Checkpoint</td>
<td>Description</td>
<td>Action/Possible Failing FRU</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>E11D</td>
<td>Copy recovery block data section to RAM</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E11E</td>
<td>Invalidate and flush cache, set TOC</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E11F</td>
<td>Branch to high level control routine.</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E120</td>
<td>Initialize I/O and early memory block</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E121</td>
<td>Initialize service processor</td>
<td>See note on A-31</td>
</tr>
</tbody>
</table>
| E122       | No memory detected (system lockup) | 1. Replace memory modules  
2. Replace memory card  
3. Replace system planar  
4. See note on A-31 |
<p>| E123       | No memory module found in socket. | See note on A-31 |
| E124       | Disable defective memory bank | See note on A-31 |
| E125       | Clear PCI devices command reg, go forth | See note on A-31 |
| E126       | Check valid image - start | See note on A-31 |
| E127       | Check valid image - successful | See note on A-31 |
| E128       | Disable interrupts, set interrupt vectors for Open Firmware. | See note on A-31 |
| E129       | Validate target RAM address | See note on A-31 |
| E12A       | Copy ROM to RAM, flush cache | See note on A-31 |
| E12B       | Set MP operational parameters | See note on A-31 |
| E12C       | Set MP CPU node characteristics | See note on A-31 |
| E12D       | Park secondary processors in parking lot | See note on A-31 |
| E12E       | Primary processor sync | See note on A-31 |
| E12F       | Unexpected return from Open Firmware (system lockup) | See note on A-31 |
| E130       | Build device tree | See note on A-31 |
| E131       | Create ROOT node | See note on A-31 |
| E132       | Create CPUs node | See note on A-31 |
| E133       | Create L2 Cache node | See note on A-31 |
| E134       | Create memory node | See note on A-31 |
| E135       | Create memory module node | See note on A-31 |
| E136       | Test memory | See note on A-31 |
| E137       | Create openprom node | See note on A-31 |
| E138       | Create options node | See note on A-31 |
| E139       | Create aliases node and system aliases | See note on A-31 |
| E13A       | Create packages node | See note on A-31 |
| E140       | PReP style load | See note on A-31 |
| E149       | Create boot mgr node | See note on A-31 |
| E14C       | Create terminal-emulator node | See note on A-31 |
| E14D       | Load boot image | See &quot;E1xx code boot problems&quot; on page 3-14 |
| E14E       | Create client interface node/directory | See note on A-31 |</p>
<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/ Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>E14F</td>
<td>NVRAM validation, config variable token generation</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E150</td>
<td>Create host (primary) PCI controller node</td>
<td>See note on A-31</td>
</tr>
</tbody>
</table>
| E151       | Probing primary PCI bus | 1. Replace PCI adapters 2. Replace I/O planar  
If a network adapter or I/O planar is replaced, see A-1  
See note on A-31 |
| E152       | Probe for adapter FCODE, evaluate if present | 1. PCI adapters 2. I/O planar  
If a network adapter or I/O planar is replaced, see A-1  
See note on A-31 |
| E153       | End adapter FCODE, probe/evaluation | 1. Perform minimum configuration isolation of PCI adapters 2. If unsuccessful, go to “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1. For wide node, focus on I/O expansion planar, PCI riser card, and flex cable. For thin/wide node, focus on I/O planar.  
See note on A-31 |
| E154       | Create PCI bridge node | See note on A-31 |
| E155       | Probe PCI bridge secondary bus | Perform actions for code E153. |
| E156       | Create PCI Ethernet node | See note on A-31 |
| E15A       | Create 64 bit host (primary) PCI controller node | See note on A-31 |
| E15B       | Transferring control to operating system (service mode boot) | See “E1xx code boot problems” on page 3-14 |
| E15C       | Probe primary 64 bit PCI bus | See note on A-31 |
| E15D       | Create host PCI controller node | See note on A-31 |
| E15E       | Create MPIC node | See note on A-31 |
| E15F       | Adapter VPD probe | See note on A-31 |
| E160       | CPU node VPD creation | See note on A-31 |
| E161       | Root node VPD creation | See note on A-31 |
| E162       | SP node VPD creation | See note on A-31 |
| E164       | Create PCI graphics node (P9) | See note on A-31 |
| E168       | Create PCI graphics node (S3) | See note on A-31 |
| E16C       | GTX100P subsystem open request. | See note on A-31 |
| E16D       | GTX100P Planar not detected or failed diagnostics. | See note on A-31 |
| E16E       | GTX100P subsystem open successful. | See note on A-31 |
| E16F       | GTX100P close subsystem. | See note on A-31 |
Table A-6: 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware checkpoints. (continued)

<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/ Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>E170</td>
<td>Start of PCI bus probe</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E171</td>
<td>Executing PCI-delay function</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E172</td>
<td>First pass PCI device probe</td>
<td>See note on A-31</td>
</tr>
</tbody>
</table>
| E174       | Establish host connection | Refer to 
  “E1xx code boot problems” on page 3-14 for general considerations. |
| E175       | Boot up request | Refer to 
  “E1xx code boot problems” on page 3-14 for general considerations. 
  1. Power off, then on, then retry the boot operation 
  2. Verify the network connection (network could be down) 
  3. Have network administrator verify the server configuration for this client |
| E176       | TFTP file transfer | See note on A-31 |
| E177       | Transfer failure due to TFTP error condition | See note on A-31 |
| E178       | Create PCI token ring node | See note on A-31 |
| E17B       | Processor frequency measurement. | Replace I/O planar. (See notes on A-1) |
| E180       | Service processor command setup | See note on A-31 |
| E183       | Service processor POST | See note on A-31 |
| E190       | Create ISA node | See note on A-31 |
| E193       | Initialize Super I/O. | See note on A-31 |
| E196       | Probe ISA bus. | See note on A-31 |
| E19B       | Create service processor node. | See note on A-31 |
| E19C       | Create tablet node. | See note on A-31 |
| E19D       | Create NVRAM node. | See note on A-31 |
| E19E       | Real time clock (RTC) creation and initialization. | Refer to error code 28030xxx in “Firmware and service processor codes” on page A-2 |
| E19F       | Create EEPROM node. | See note on A-31 |
| E1AD       | See description of checkpoint E1DE. | See note on A-31 |
| E1B0       | Create lpt node. | See note on A-31 |
| E1B1       | Create serial node. | See note on A-31 |
| E1B2       | Create audio node. | See note on A-31 |
| E1B3       | Create 8042 node. | See note on A-31 |
| E1B6       | Probe for (ISA) keyboard. | See note on A-31 |
| E1BA       | Enable L2 cache. | See note on A-31 |
| E1BB       | Set cache parms for burst. | See note on A-31 |
| E1BC       | Set cache parms for 512 KB. | See note on A-31 |
| E1BD       | Probe for (ISA) mouse. | See note on A-31 |
| E1BE       | Create op-panel node. | See note on A-31 |
| E1BF       | Create pwr-mgmt node. | See note on A-31 |
| E1C0       | Create ISA Ethernet node. | See note on A-31 |
Table A-6. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware checkpoints. (continued)

<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/ Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1C5</td>
<td>Create ISA interrupt controller (pic) node.</td>
<td>See note on [A-31]</td>
</tr>
<tr>
<td>E1C6</td>
<td>Create dma node.</td>
<td>See note on [A-31]</td>
</tr>
<tr>
<td>E1D0</td>
<td>Create PCI SCSI node.</td>
<td>See note on [A-31]</td>
</tr>
<tr>
<td>E1D3</td>
<td>Create (*) wildcard *) SCSI block device node (SD).</td>
<td>See note on [A-31]</td>
</tr>
<tr>
<td>E1D4</td>
<td>Create (*) wildcard *) SCSI byte device node (ST).</td>
<td>See note on [A-31]</td>
</tr>
<tr>
<td>E1DB</td>
<td>Create floppy controller (FDC) node.</td>
<td>See note on [A-31]</td>
</tr>
</tbody>
</table>
| E1DC       | Dynamic console selection. | If selection screen(s) can be seen on the write-enabled console and the appropriate key is pressed, but there is no response to the keystroke within 60 seconds:
1. Reset the node supervisor by issuing following command from the control workstation:
   `hmcmds -G boot_supervisor FRAME#:SLOT#`
   *(Node supervisor will flash slot address. Ignore messages about expected states on/off.)*
2. Replace the node supervisor card
3. Drain the NVRAM *(see "Draining the NVRAM" on page 3-12)*
4. Replace the I/O planar
<p>| E1DD       | Early processor exception | Replace I/O planar <em>(See notes on [A-1])</em> |
| E1DE       | Alternating pattern of E1DE and E1AD is used to indicate a Default Catch condition before the firmware &quot;checkpoint&quot; word is available. | Replace I/O planar <em>(See notes on [A-1])</em> |
| E1DF       | Create diskette drive (disk) node | See note on [A-31] |
| E1E0       | Program flash | See note on [A-31] |
| E1E1       | Flash update complete | See note on [A-31] |
| E1E2       | Initialize System I/O | See note on [A-31] |
| E1E3       | PRep boot image initialization. | See note on [A-31] |
| E1E4       | Initialize Super I/O with default values. | See note on [A-31] |
| E1E5       | XCOFF boot image initialization. | See note on [A-31] |
| E1E6       | Set up early memory allocation heap. | See note on [A-31] |
| E1E7       | PE boot image initialization. | See note on [A-31] |
| E1E8       | Initialize primary diskette drive (polled mode). | See note on [A-31] |
| E1E9       | ELF boot image initialization. | See note on [A-31] |</p>
<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/ Possible Failing FRU</th>
</tr>
</thead>
</table>
| E1EA       | Firmware flash corrupted | 1. Ensure that the hard drive contains a recovery image appropriate for this processor node  
2. The System Management Services recovery procedure for the flash EEPROM should be executed. See “Service processor flash EPROM updates (and system firmware)” on page 3-42  
If the hard drive contains the correct recovery image file, then suspect:  
1. The recovery image file  
2. The hard disk  
3. The I/O planar. (See notes on A-1)  
See note on A-31 |
| E1EB       | Verify flash EPROM recovery image. | Perform actions for code E1EA. |
| E1EC       | Get recovery image entry point | See note on A-31 |
| E1ED       | Invalidate instruction cache | See note on A-31 |
| E1EE       | Jump to composite image | See note on A-31 |
| E1EF       | Erase flash | See note on A-31 |
| E1F0       | Start O.B.E. | See note on A-31 |
| E1F1       | Begin self-test sequence on boot device(s) | See note on A-31 |
| E1F2       | Power-On Password prompt. | Prompt should be visible on the system console.  
If a console is attached but nothing is displayed on it, go to the “Start MAP” in RS/6000 SP: System Service Guide |
| E1F3       | Privileged-Access Password prompt. | Prompt should be visible on the system console.  
If a console is attached but nothing is displayed on it, go to the “Start MAP” in RS/6000 SP: System Service Guide |
| E1F5       | Build boot device list. | This may be caused by Multiboot option enabled. Disable using SMS Multiboot Menu, setting Multiboot Startup <OFF>.  
Prompt should be visible on the system console.  
If a console is attached but nothing is displayed on it, go to the “Start MAP” in RS/6000 SP: System Service Guide |
<p>| E1F6       | Determine boot device sequence. | See note on A-31 |</p>
<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/Possible Failing FRU</th>
</tr>
</thead>
</table>
| E1F7       | No boot image located. | 1. Have the system administrator perform “Diagnosing Boot Problems” in the Parallel System Support Programs for AIX: Diagnosis Guide, GA22-7350, to determine if the boot server is configured to serve the network boot image.  
2. Check the Ethernet LAN connections between the node and the boot server and control workstation. On a BNC/coax LAN, check for 50 ohm terminators at each end (do not confuse with 25 ohm wrap plugs). If a hub or switch is present, check that it is active.  
3. If the problem still exists, clear NVRAM in the node.  
<p>| E1FB       | Scan SCSI bus for attached devices. | See note on A-31 |
| E1FD       | Default Catch | The operator panel alternates between the code E1FD and another Exxx code, where Exxx is the point at which the error occurred. If the Exxx is not listed in this table, go to “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1. |
| E201       | Setup PHB BARC addresses. | Replace the I/O planar (See notes on A-1). See note on A-31 |
| E202       | Initialize PHB registers and PHB’s PCI configuration registers. | Replace the I/O planar (See notes on A-1). See note on A-31 |
| E203       | Look for PCI to ISA bridge. | Replace the I/O planar (See notes on A-1). See note on A-31 |
| E204       | Setup ISA bridge. PCI config. registers and initialize | Replace the I/O planar (See notes on A-1). See note on A-31 |
| E206       | Look for PRISM on PCG and switch to 50 MHz. | Replace the I/O planar (See notes on A-1). See note on A-31 |
| E207       | Setup Data gather mode and 64/32-bit mode on PCG. | Replace the I/O planar (See notes on A-1). See note on A-31 |
| E208       | Assign bus number on PCG. | Replace the I/O planar (See notes on A-1). See note on A-31 |
| E209       | Assign PCI I/O addresses on PCI. | Replace the I/O planar (See notes on A-1). See note on A-31 |
| E20A       | Assign PCI I/O addresses on PCG | Replace the I/O planar (See notes on A-1). See note on A-31 |</p>
<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/ Possible Failing FRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>E20B</td>
<td>Check MCERs stuck at fault.</td>
<td>1. Replace the system planar. See note on A-31.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace the interposer card in the I/O expansion assembly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. If the problem persists, go to “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1.</td>
</tr>
<tr>
<td>E20C</td>
<td>Testing L2 cache.</td>
<td>Replace the processor card (See note on A-31)</td>
</tr>
<tr>
<td>E211</td>
<td>IPL ROS CRC checking.</td>
<td>Replace the I/O planar (See note on A-31)</td>
</tr>
<tr>
<td>E212</td>
<td>Processor POST.</td>
<td>Replace the processor card (See note on A-31)</td>
</tr>
<tr>
<td>E213</td>
<td>Initial memory configuration.</td>
<td>1. Replace the memory card (See note on A-31)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace the system planar. See note on A-31</td>
</tr>
<tr>
<td>E214</td>
<td>Memory test.</td>
<td>1. Replace the memory card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace the I/O planar. See note on A-31</td>
</tr>
<tr>
<td>E216</td>
<td>Copy ROS into RAM. Setup Translation and C environment.</td>
<td>Replace the memory card (See note on A-31)</td>
</tr>
<tr>
<td>E218</td>
<td>Memory test</td>
<td>Replace the memory card (See note on A-31)</td>
</tr>
<tr>
<td>E21A</td>
<td>System has good memory.</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E220</td>
<td>Final memory configuration.</td>
<td>Go to “332 MHz SMP Node minimum configuration” or “POWER3 SMP Thin and Wide Node minimum configuration” MAP in Chapter 1, “Maintenance Analysis Procedures (MAPs)” on page 1-1.</td>
</tr>
<tr>
<td>E240</td>
<td>Set up Winbond ISA bridge.</td>
<td>Replace the I/O planar (See note on A-31)</td>
</tr>
<tr>
<td>E241</td>
<td>Reset PCI bus.</td>
<td>Replace the I/O planar (See note on A-31)</td>
</tr>
<tr>
<td>E242</td>
<td>Initialize ISA DMA channel.</td>
<td>Replace the I/O planar (See note on A-31)</td>
</tr>
<tr>
<td>E246</td>
<td>System firmware corrupted, take recover path.</td>
<td>Replace the I/O planar (See note on A-31)</td>
</tr>
<tr>
<td>E247</td>
<td>Capture DIMM SPD’s into NVRAM.</td>
<td>Replace the I/O planar (See note on A-31)</td>
</tr>
<tr>
<td>E249</td>
<td>Enter recover path’s main code.</td>
<td>Replace the I/O planar (See note on A-31)</td>
</tr>
<tr>
<td>E297</td>
<td>Start firmware softload path execution</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E298</td>
<td>Start firmware softload path execution</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E299</td>
<td>Start C code execution.</td>
<td>See note on A-31</td>
</tr>
<tr>
<td>E3xx</td>
<td>Memory test</td>
<td>See “Memory test hang problem” on page 3-13</td>
</tr>
<tr>
<td>E440</td>
<td>Validate NVRAM, initialize partitions as needed.</td>
<td>1. Verify that the system and service processor firmware levels are at the current release levels, update as necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace the memory card (See note on A-31)</td>
</tr>
</tbody>
</table>
Table A-6. 332 MHz SMP and POWER3 SMP (200 and 375 MHz) Thin and Wide Node firmware checkpoints. (continued)

<table>
<thead>
<tr>
<th>Checkpoint</th>
<th>Description</th>
<th>Action/ Possible Failing FRU</th>
</tr>
</thead>
</table>
| E441       | Generate /options node NVRAM configuration variable properties. | 1. Verify that the system and service processor firmware levels are at the current release levels, update as necessary.  
2. Replace the memory card (See notes on A-1. Also, See note on A-31) |
| E442       | Validate NVRAM partitions. | 1. Verify that the system and service processor firmware levels are at the current release levels, update as necessary.  
2. Replace the memory card (See notes on A-1. See note on A-31) |
| E443       | Generate NVRAM configuration variable dictionary words | Suspect a system firmware problem if this problem persists. Verify that the system firmware is at the current release level, update as necessary. See note on A-31. |
| E600       | SSA PCI adapter open firmware has run successfully. | |
| E601       | SSA PCI adapter BIST started but failed to complete after 4 seconds. | Replace I/O adapter. |
| E602       | SSA PCI adapter open firmware started. | Replace I/O adapter. |
| E603       | SSA PCI adapter BIST completed with an error. | Replace I/O adapter. |
| E604       | SSA PCI adapter BIST and subsequent POSTs completed successfully. | Replace I/O adapter. |
| E605       | SSA PCI adapter BIST completed successfully, but subsequent POSTs failed. | Replace I/O adapter. |
| E60E       | SSA PCI adapter open firmware about to exit (no stack corruption). | Replace I/O adapter. |
| E60F       | SSA PCI adapter open firmware has run successfully. | Replace I/O adapter. |
| E6FF       | SSA PCI adapter open firmware about to exit (with stack corruption). | Replace I/O adapter. |

**Location codes**

This processor node uses Physical Location Codes in conjunction with AIX Location Codes to provide mapping of the failing field replaceable units. The location codes are produced by the processor node’s firmware and AIX.

**Physical location codes**

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

**Location code format**

The format for the location code is an alphanumeric string of variable length, consisting of a series of location identifiers, separated by the standard dash (-) or slash (/) character. The series is hierarchical; that is, each location identifier in the string is a physical child of the one preceding it.
• The - (dash) separator character represents a normal structural relationship where the child is a separate physical package and it plugs into (or is connected to) the parent. For example, P1-C1 is a processor card (C1) plugged into a planar (P1), or P1-M1 is a memory card (M1) plugged into a planar (P1).

• The / (slash) separator character separates the base location code of a function from any extended location information. A group of logical devices can have the same base location code because they are all on the same physical package, but may require extended location information to describe the connectors they support. For example, P2/S1 describes the location of the serial port 1 controller and its connector (S1), which is located on planar P2 (its base location code), but the / indicates that further devices can be connected to it at the external S1 serial connector. The keyboard controller and its connector likewise have location code P2/K1, which means they have the same base location code (P2) as serial port 1, but a different external connector. In contrast, the location code P2-K1 actually points to the device connected to connector K1; that is, the keyboard. The location code P2/Z1 indicates an integrated SCSI controller which drives connector Z1, while location codes of P2-Z1-... point to the actual SCSI bus and devices.

Each location identifier consists of one alpha prefix character that identifies a location type, and a decimal integer number (typically one or two digits) that identifies a specific instance of this location type. Certain location types may also support secondary sub-locations, which are indicated by appending a period ("." ) character and a sub-location instance number.

Specifically, the format of a location code is defined as follows:

pn[n][- or /]pn[n][- or /]...

Where p is a defined alpha location type prefix, n is a location instance number, and [.n] is a sub-location instance number (where applicable). Sub-location notation is used only for location types which have clearly defined and limited expansion sites; for example, memory SIMMs slots on a memory card.

Primarily, the [.n] sub-location notation is intended for use as an abbreviation of the location code in cases where:

1. Based on the device structure, the abbreviated sub-location code conveys the same information in a more concise form than an additional level of location identifier -- for example:
   • P1-M1.4 (pluggable module 4 on Memory Card 1 on Planar 1), rather than P1-M1-M4
   • P1-C1.1 (pluggable processor 1 on processor card 1 on planar 1), rather than P1-C1-C1
   • P2-Z1-A3.1 (LUN 1 at SCSI ID 3 on integrated SCSI bus 1 from planar 2), rather than P2-Z1-A3-A1

2. The sub-location is either a basic physical extension or sub-enclosure of the base location, but does not represent additional function or connectivity; for example, a drawer in a rack (U1.2) or a riser card on an I/O planar (P2.1).

332 MHz SMP Thin and Wide Node AIX and physical location code reference table

Note: Refer to "Location diagrams of the RS/6000 SP components" on page 2-3 for figures showing physical locations.

<table>
<thead>
<tr>
<th>FRU Name</th>
<th>AIX Location Code</th>
<th>Physical Location Code</th>
<th>Physical Connection</th>
<th>Logical Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin Node Chassis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System planar</td>
<td>00-00</td>
<td>P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processor card 1</td>
<td>00-00</td>
<td>P1-C1</td>
<td>Processor connectors J9 and J8</td>
<td>CPU ID 0x00 and 0x01 (if 2-way card)</td>
</tr>
<tr>
<td>Processor card 2</td>
<td>00-00</td>
<td>P1-C2</td>
<td>Processor connectors J6 and J5</td>
<td>CPU ID 0x04 and 0x05 (if 2-way card)</td>
</tr>
<tr>
<td>FRU Name</td>
<td>AIX Location Code</td>
<td>Physical Location Code</td>
<td>Physical Connection</td>
<td>Logical Identification</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------</td>
<td>------------------------</td>
<td>---------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Memory card 1</td>
<td>00-00</td>
<td>P1-M1</td>
<td>Processor connector J12</td>
<td></td>
</tr>
<tr>
<td>Memory card 1</td>
<td>00-00</td>
<td>P1-M1.1 through P1-M1.16</td>
<td>Memory card sockets J1,J2,J3,J4, J5,J6,J7,J8, J9,J10,J11,J12, J13,J14,J15,J16</td>
<td>Extents: 8L,8H,10L,10H, 12L,12H,14L,14H, 9L,9H,11L,11H, 13L,13H,15L,15H</td>
</tr>
<tr>
<td>Memory card 1</td>
<td>00-00</td>
<td>P1-M2</td>
<td>Processor connector J13</td>
<td></td>
</tr>
<tr>
<td>Power mix card</td>
<td></td>
<td>X4</td>
<td>I/O planar connector P2 System planar connectors J1, J2, J3, J4</td>
<td></td>
</tr>
<tr>
<td>Thin Node I/O Components</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I/O planar</td>
<td>00-00</td>
<td>P2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diskette port</td>
<td>01-D1</td>
<td>P2/D1</td>
<td>I/O planar connector J1</td>
<td>0x03f0</td>
</tr>
<tr>
<td>Keyboard port</td>
<td>01-K1-00</td>
<td>P2/K1</td>
<td>I/O planar connector J3</td>
<td>0x0060</td>
</tr>
<tr>
<td>Mouse port</td>
<td>01-K1-01</td>
<td>P2/O1</td>
<td>I/O planar connector J3</td>
<td>0x0060</td>
</tr>
<tr>
<td>Serial port 1</td>
<td>01-S1</td>
<td>P2/S1</td>
<td>No connector</td>
<td>0x0318</td>
</tr>
<tr>
<td>Serial port 2</td>
<td>01-S2</td>
<td>P2/S2</td>
<td>I/O planar connector J10</td>
<td>0x0218</td>
</tr>
<tr>
<td>Ethernet port</td>
<td>10-80</td>
<td>P2/E1</td>
<td>I/O planar connector J13 (TP) or J14 (BNC/coax)</td>
<td>Host bridge ID00, device 06</td>
</tr>
<tr>
<td>SCSI port 1</td>
<td>10-60</td>
<td>P2/Z1</td>
<td>Power interface card connector J2</td>
<td>Host bridge ID00, device 04</td>
</tr>
<tr>
<td>Card in slot I1</td>
<td>00-f10000000</td>
<td>P2-I1</td>
<td>I/O planar connector J9</td>
<td></td>
</tr>
<tr>
<td>Adapter in PCI Slot I2</td>
<td>10-70</td>
<td>P2-I2</td>
<td>I/O planar connector J8</td>
<td></td>
</tr>
<tr>
<td>Adapter in PCI Slot I3</td>
<td>10-68</td>
<td>P2-I3</td>
<td>I/O planar connector J7</td>
<td></td>
</tr>
<tr>
<td>I/O Expansion Chassis I/O Components</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCI expansion planar</td>
<td></td>
<td>P3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCI riser card 1</td>
<td>20-78</td>
<td>P3.1 or P3-X1</td>
<td>PCI expansion planar connector J9</td>
<td></td>
</tr>
<tr>
<td>Adapter in PCI Slot I1</td>
<td>20-58 to 20-5F</td>
<td>P3-I1</td>
<td>PCI expansion planar connector J1</td>
<td>Host bridge ID01, device 01</td>
</tr>
<tr>
<td>Adapter in PCI Slot I2</td>
<td>20-60 to 20-67</td>
<td>P3-I2</td>
<td>PCI expansion planar connector J2</td>
<td>Host bridge ID01, device 02</td>
</tr>
<tr>
<td>FRU Name</td>
<td>AIX Location Code</td>
<td>Physical Location Code</td>
<td>Physical Connection</td>
<td>Logical Identification</td>
</tr>
<tr>
<td>----------</td>
<td>------------------</td>
<td>------------------------</td>
<td>---------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Adapter in PCI slot I3</td>
<td>20-68 to 20-6F</td>
<td>P3-I3</td>
<td>PCI expansion planar connector J3</td>
<td>Host bridge ID00, device 03</td>
</tr>
<tr>
<td>Adapter in PCI slot I4</td>
<td>20-70 to 20-77</td>
<td>P3-I4</td>
<td>PCI expansion planar connector J4</td>
<td>Host bridge ID00, device 04</td>
</tr>
<tr>
<td>Adapter in PCI slot I5</td>
<td>2F-00 to 2F-07</td>
<td>P3.1-I5</td>
<td>PCI expansion planar connector J5</td>
<td>Host bridge ID02, device 01</td>
</tr>
<tr>
<td>Adapter in PCI slot I6</td>
<td>2F-08 to 2F-0F</td>
<td>P3.1-I6</td>
<td>PCI expansion planar connector J6</td>
<td>Host bridge ID02, device 02</td>
</tr>
<tr>
<td>Adapter in PCI slot I7</td>
<td>2F-10 to 2F-17</td>
<td>P3.1-I7</td>
<td>PCI expansion planar connector J7</td>
<td>Host bridge ID02, device 03</td>
</tr>
<tr>
<td>Adapter in PCI slot I8</td>
<td>2F-18 to 2F-1F</td>
<td>P3.1-I8</td>
<td>PCI expansion planar connector J8</td>
<td>Host bridge ID02, device 04</td>
</tr>
</tbody>
</table>

**SCSI Devices**

- **DASD in thin node chassis - lower tray**
  - Location Code: 10-60-00-0,0
  - Location Code: P2-Z1-A0
  - Primary SCSI bus ID 0

- **DASD in thin node chassis - upper tray**
  - Location Code: 10-60-00-1,0
  - Location Code: P2-Z1-A1
  - Primary SCSI bus ID 1

- **DASD in I/O expansion chassis - lower tray**
  - Location Code: 10-60-00-2,0
  - Location Code: P2-Z1-A2
  - Primary SCSI bus ID 2

- **DASD in I/O expansion chassis - upper tray**
  - Location Code: 10-60-00-3,0
  - Location Code: P2-Z1-A3
  - Primary SCSI bus ID 3

- **DASD in I/O expansion chassis when connected to PCI adapter in slot P3-In**
  - Location Code: AB-CD-00-G, 0
  - Location Code: P3-In-Z1-B2.G
  - SCSI bus ID G

**Service Processor**

- Service processor (SP) card
  - Location Code: P2-X1
  - Location Code: I/O planar connector J5

**Node Supervisor**

- Node supervisor card
  - Location Code: L1-N1
  - Location Code: Power mix card connector J1

**Power Supply**

- CPU power supply FRU
  - Location Code: V1
  - Location Code: Power mix card connector J5

- I/O power supply FRU
  - Location Code: V2
  - Location Code: Power mix card connector J5

**Fans**

- Fan 1 and fan 2
  - Location Code: F1 and F2
  - Location Code: Fan connectors on CPU power supply FRU

- Fan 3 and fan 4
  - Location Code: F3 and F4
  - Location Code: Fan connectors on I/O power supply FRU

**Notes:**

1. The SCSI bus ID’s are the recommended values. Features installed at the manufacturing site will correspond to these IDs. Field installations may not comply with these recommendations.
POWER3 SMP Thin and Wide Node AIX and physical location code reference table

**Note:** Refer to “Location diagrams of the RS/6000 SP components” on page 2-3 for figures showing physical locations.

<table>
<thead>
<tr>
<th>FRU Name</th>
<th>AIX Location Code</th>
<th>Physical Location Code</th>
<th>Physical Connection</th>
<th>Logical Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin Node Chassis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System planar</td>
<td>00-00</td>
<td>P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processor Card 1</td>
<td>00-00</td>
<td>P1-C1</td>
<td></td>
<td>Processor Connectors J8 (200 MHz POWER3 SMP Nodes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Processor Connectors J6 (375/450 MHz POWER3 SMP Nodes)</td>
</tr>
<tr>
<td>Processor Card 2</td>
<td>00-02</td>
<td>P1-C2</td>
<td></td>
<td>Processor Connectors J6 (200 MHz POWER3 SMP Nodes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Processor Connectors J8 (375/450 MHz POWER3 SMP Nodes)</td>
</tr>
<tr>
<td>Memory Card 1</td>
<td>00-00</td>
<td>P1-M1</td>
<td>Processor Connector J3</td>
<td></td>
</tr>
<tr>
<td>Memory Card 1 modules 1–16</td>
<td></td>
<td>P1-M1.1 through P1-M1.16</td>
<td>Memory Card Sockets J1,J2,J3,J4, J5,J6,J7,J8, J9,J10,J11,J12, J13,J14,J15,J16</td>
<td></td>
</tr>
<tr>
<td>Memory Card 2</td>
<td>00-00</td>
<td>P1-M2.1 through P1-M2.16</td>
<td>Processor Connector J2</td>
<td></td>
</tr>
<tr>
<td>Memory Card 2 modules 1–16</td>
<td></td>
<td>P1-M2.1 through P1-M2.16</td>
<td>Memory Card Sockets J1,J2,J3,J4, J5,J6,J7,J8, J9,J10,J11,J12, J13,J14,J15,J16</td>
<td></td>
</tr>
<tr>
<td>Power mix card</td>
<td></td>
<td>X4</td>
<td>I/O planar connector P2 System planar connectors J1, J2, J3, J4</td>
<td></td>
</tr>
<tr>
<td>Thin Node I/O Components</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I/O planar</td>
<td></td>
<td>P2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diskette Port</td>
<td>01-D1</td>
<td>P2/D1</td>
<td>I/O planar connector J1</td>
<td></td>
</tr>
<tr>
<td>Keyboard/mouse Port</td>
<td>01-K1</td>
<td>P2/K1</td>
<td>I/O planar connector J3</td>
<td></td>
</tr>
<tr>
<td>Serial Port 1</td>
<td>01-S1</td>
<td>P2/S1</td>
<td>I/O planar connector J13</td>
<td></td>
</tr>
<tr>
<td>Serial Port 2</td>
<td>01-S2</td>
<td>P2/S2</td>
<td>I/O planar connector J12</td>
<td></td>
</tr>
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<td>FRU Name</td>
<td>AIX Location Code</td>
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<td>Logical Identification</td>
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<td>----------------</td>
<td>-------------------</td>
<td>------------------------</td>
<td>--------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Ethernet Port</td>
<td>10-60</td>
<td>P2/E1</td>
<td>I/O planar connector J15 or J16</td>
<td></td>
</tr>
<tr>
<td>SCSI Port</td>
<td>10-68</td>
<td>P2/Z1</td>
<td>I/O planar connector J13</td>
<td></td>
</tr>
<tr>
<td>TB3MX2 Slot 1</td>
<td>00-fb000000</td>
<td>P2-I1</td>
<td>I/O planar connector J9</td>
<td></td>
</tr>
<tr>
<td>PCI Slot I2</td>
<td>10-80</td>
<td>P2-I2</td>
<td>I/O planar connector J8</td>
<td></td>
</tr>
<tr>
<td>PCI Slot I3</td>
<td>10-78</td>
<td>P2-I3</td>
<td>I/O planar connector J7</td>
<td></td>
</tr>
</tbody>
</table>

**I/O Expansion Chassis I/O Components**

<table>
<thead>
<tr>
<th>PBS Expansion Chassis I/O Components</th>
<th>P3</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI Slot I1</td>
<td>20-58 to 20-5F</td>
</tr>
<tr>
<td>PCI Slot I2</td>
<td>20-60 to 20-67</td>
</tr>
<tr>
<td>PCI Slot I3</td>
<td>20-68 to 20-6F</td>
</tr>
<tr>
<td>PCI Slot I4</td>
<td>20-70 to 20-77</td>
</tr>
<tr>
<td>PCI Slot I5</td>
<td>30-58 to 30-5F</td>
</tr>
<tr>
<td>PCI Slot I6</td>
<td>30-60 to 30-67</td>
</tr>
<tr>
<td>PCI Slot I7</td>
<td>30-68 to 30-6F</td>
</tr>
<tr>
<td>PCI Slot I8</td>
<td>30-70 to 30-77</td>
</tr>
</tbody>
</table>

**SCSI Devices**

<table>
<thead>
<tr>
<th>SCSI Devices</th>
<th>P2-Z1-A0</th>
<th>Primary SCSI Bus ID 0 ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>DASD in thin node chassis - Lower tray</td>
<td>10-68-00-0,0</td>
<td>Primary SCSI Bus ID 0 ¹</td>
</tr>
<tr>
<td>DASD in thin node chassis - Upper tray</td>
<td>10-68-00-1,0</td>
<td>Primary SCSI Bus ID 1 ¹</td>
</tr>
<tr>
<td>DASD in I/O expansion chassis - Lower tray</td>
<td>10-68-00-2,0</td>
<td>Primary SCSI Bus ID 2 ¹</td>
</tr>
<tr>
<td>DASD in I/O expansion chassis - Upper tray</td>
<td>10-68-00-3,0</td>
<td>Primary SCSI Bus ID 3 ¹</td>
</tr>
<tr>
<td>DASD in I/O expansion chassis when connected to PCI adapter in slot P3-In</td>
<td>AB-CD-00-G, 0</td>
<td>P3-In-Z1-B2.G</td>
</tr>
</tbody>
</table>

**Node Supervisor**
<table>
<thead>
<tr>
<th>FRU Name</th>
<th>AIX Location Code</th>
<th>Physical Location Code</th>
<th>Physical Connection</th>
<th>Logical Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Node Supervisor Card</td>
<td></td>
<td>L1-N1</td>
<td>Power mix card connector J1</td>
<td></td>
</tr>
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</table>

**Power Supply**

<table>
<thead>
<tr>
<th>FRU Name</th>
<th>AIX Location Code</th>
<th>Physical Location Code</th>
<th>Physical Connection</th>
<th>Logical Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU power supply FRU</td>
<td></td>
<td>V1</td>
<td>Power mix card connector J5</td>
<td></td>
</tr>
<tr>
<td>I/O power supply FRU</td>
<td></td>
<td>V2</td>
<td>Power mix card connector J5</td>
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</tr>
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</table>

**Fans**

<table>
<thead>
<tr>
<th>FRU Name</th>
<th>AIX Location Code</th>
<th>Physical Location Code</th>
<th>Physical Connection</th>
<th>Logical Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan 1 and Fan 2</td>
<td></td>
<td>F1 and F2</td>
<td>Fan connectors on CPU power supply FRU</td>
<td></td>
</tr>
<tr>
<td>Fan 3 and Fan 4</td>
<td></td>
<td>F3 and F4</td>
<td>Fan connectors on I/O power supply FRU</td>
<td></td>
</tr>
</tbody>
</table>

**Voltage Levels**

<table>
<thead>
<tr>
<th>Voltage Level</th>
<th>AIX Location Code</th>
<th>Physical Location Code</th>
<th>Logical Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>+5 V</td>
<td></td>
<td>I/O planar P2</td>
<td></td>
</tr>
<tr>
<td>+3.3 V</td>
<td></td>
<td>I/O planar P2</td>
<td></td>
</tr>
<tr>
<td>+5 V SB</td>
<td></td>
<td>I/O planar P2</td>
<td></td>
</tr>
<tr>
<td>+12 V</td>
<td></td>
<td>I/O planar P2</td>
<td></td>
</tr>
<tr>
<td>+5 V</td>
<td></td>
<td>I/O expansion planar P3</td>
<td></td>
</tr>
<tr>
<td>+3.3 V</td>
<td></td>
<td>I/O expansion planar P3</td>
<td></td>
</tr>
<tr>
<td>+12 V</td>
<td></td>
<td>I/O expansion planar P3</td>
<td></td>
</tr>
<tr>
<td>-12 V</td>
<td></td>
<td>I/O expansion planar P3</td>
<td></td>
</tr>
<tr>
<td>Inlet Temp</td>
<td></td>
<td>P2</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. The SCSI bus ID’s are the recommended values. Features installed at the manufacturing site will correspond to these IDs. Field installations may not comply with these recommendations.

**AIX location codes**

The basic formats of the AIX location codes are:

- 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:

AB-CD-EF-GH

<table>
<thead>
<tr>
<th>Device/FRU/Port ID</th>
<th>Connector ID</th>
<th>devfunc Number, Adapter Number or Physical Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Bus Type or PCI Parent Bus</td>
</tr>
</tbody>
</table>

- 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 with just AB-CD.

The possible values for AB are:

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

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

For pluggable PCI adapters, 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). This allows the location code to uniquely identify multiple adapters on individual PCI adapters.

For pluggable ISA adapters, CD is equal to the order the ISA cards defined/configured either by SMIT or the ISA Adapter Configuration Service Aid.

For integrated ISA adapters, CD is equal to a unique code identifying the ISA adapter. In most cases this is equal to the adapter’s physical location code. In cases where a physical location code is not available, CD will be FF.

EF is the connector ID. It is used to identify the adapter’s connector that a resource is attached to.

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 defines which 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 the location code is defined as:

```
AB-CD-EF-G,H
```

<table>
<thead>
<tr>
<th>AB-CD-EF-G,H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical Unit address of the SCSI Device</td>
</tr>
<tr>
<td>Control Unit Address of the SCSI Device</td>
</tr>
<tr>
<td>Connector ID</td>
</tr>
<tr>
<td>devfunc Number, Adapter Number or Physical Location</td>
</tr>
<tr>
<td>Bus Type or PCI Parent Bus</td>
</tr>
</tbody>
</table>

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

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

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

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

Examples of physical location codes displayed by AIX are:

- Processor card in slot 1 of planar 1
  
P1-C1

- Memory module in system planar slot 2
  
P1-M2

- Memory module 12 in card in slot 2 of system planar
  
U1-P1-M2.12

Examples of AIX location codes displayed are:

- Integrated PCI adapter
  
10-80 Ethernet

- Integrated SCSI Port 1
  
10-60

- Pluggable PCI adapters
00-f100000 SP Switch MX adapter, thin node chassis slot I1
10-70 to 10-77 (332 MHz SMP node) Any PCI adapter in thin node chassis slot I2
10-68 to 10-6F (332 MHz SMP node) Any PCI adapter in thin node chassis slot I3
10-80 to 10-87 (POWER3 SMP node) Any PCI adapter in thin node chassis slot I2
10-78 to 10-7F (POWER3 SMP node) Any PCI adapter in thin node chassis slot I3
20-78 PCI riser card
20-58 to 20-5F Any PCI adapter in I/O expansion chassis slot I1
20-60 to 20-67 Any PCI adapter in I/O expansion chassis slot I2
20-68 to 20-6F Any PCI adapter in I/O expansion chassis slot I3
20-70 to 20-77 Any PCI adapter in I/O expansion chassis slot I4
2F-00 to 2F-07 (332 MHz SMP node) Any PCI adapter in I/O expansion chassis slot I5
2F-08 to 2F-0F (332 MHz SMP node) Any PCI adapter in I/O expansion chassis slot I6
2F-10 to 2F-17 (332 MHz SMP node) Any PCI adapter in I/O expansion chassis slot I7
2F-18 to 2F-1F (332 MHz SMP node) Any PCI adapter in I/O expansion chassis slot I8
30-58 to 30-5F (POWER3 SMP Thin and Wide node) Any PCI adapter in I/O expansion chassis slot I5
30-60 to 30-67 (POWER3 SMP Thin and Wide node) Any PCI adapter in I/O expansion chassis slot I6
30-68 to 30-6F (POWER3 SMP Thin and Wide node) Any PCI adapter in I/O expansion chassis slot I7
30-70 to 30-77 (POWER3 SMP Thin and Wide node) Any PCI adapter in I/O expansion chassis slot I8

Integrated ISA adapters

01-D1 Diskette adapter
01-S1 Serial port 1 adapter
01-S2 Serial port 2 adapter

Non-integrated ISA adapters

01-01 First ISA card defined/configured
01-02 Second ISA card defined/configured

Device attached to SCSI controller

10-60-00-4,0 Device attached to Integrated SCSI Port 1
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Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

United Kingdom telecommunications safety requirements

Notice to customers
This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunications systems in the United Kingdom.

Industry Canada compliance statement
This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.
For installations in Japan:

The following is a summary of the VCCI Japanese statement in the box above. This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

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The following is a summary of the EMI Taiwan statement above.

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Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse A. Für diese von Geräten gilt folgende Bestimmung nach dem EMVG:

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(Auszug aus dem EMVG vom 9.Nov.92, Para.3, Abs.4)

Hinweis

Dieses Genehmigungsverfahren ist von der Deutschen Bundespost noch nicht veröffentlicht worden.
### Numerics

0055726 5-5, 5-21, 5-25, 5-41  
00P1967 5-29, 5-43  
0375867 5-3, 5-23  
03L5256 5-42  
03N2866 5-27  
03N3007 5-9  
03N3368 5-27  
03N3677 5-9  
03N3716 5-19  
03N4173 5-9, 5-42  
0418787 5-9, 5-15, 5-35  
05N4992 5-7  
05N5775 5-5, 5-25  
07L8531 5-39  
07L9030 5-29, 5-43  
07L9718 5-7  
07L9758 5-43  
07N3674 5-42  
07N3675 5-42  
07N3711 5-42  
07N3721 5-42  
07N3774 5-42  
07N3811 5-42  
07N3821 5-42  
07L2885 5-27, 5-39  
07L2887 5-27  
07L2888 5-39  
07L3046 5-7, 5-11, 5-17, 5-37  
07L3060 5-3, 5-11, 5-23, 5-31  
07L3878 5-19  
07L3926 5-9  
07L3927 5-19  
07L3953 5-23  
07L3955 5-3, 5-11, 5-31  
07L3954 5-39  
31L7117 5-27  
31L7204 5-27  
31L7253 5-29  
31L7264 5-9, 5-29  
31L7827 5-29  
31L7838 5-25  
31L7865 5-25  
31L8511 5-7  
31L8514 5-3, 5-23  
31L8515 5-3, 5-23  
332 MHz SMP and POWER3 SMP Thin and Wide Node service procedures 3-12  
332 MHz SMP Node 4-7  
CPU card, removing 4-15  
CPU card, replacing 4-16  
CPU expansion power assembly, removing 4-7  
CPU power assembly, replacing 4-7  
DASD, removing 4-11  
DASD, replacing 4-11  
fans, removing 4-10  
fans, replacing 4-11  
FRU part numbers 5-3, 5-5, 5-7, 5-9, 5-11, 5-13, 5-15, 5-17, 5-19, 5-21, 5-23, 5-25, 5-27, 5-29, 5-31, 5-33, 5-35, 5-37, 5-39, 5-41  
I/O expansion control cable, removing 4-24  
I/O expansion control cable, replacing 4-24  
I/O expansion planar, removing 4-23  
I/O expansion planar, replacing 4-23  
I/O expansion power assembly, removing 4-8  
I/O expansion power assembly, replacing 4-8  
teinterposer card, removing 4-22  
teinterposer card, replacing 4-22  
teinterposer signal cable, removing 4-21  
teinterposer signal cable, replacing 4-21  
locations 2-7  
memory card, removing 4-15  
memory card, replacing 4-15  
node supervisor card, removing 4-11  
node supervisor card, replacing 4-11  
optional SCSI card, removing 4-21  
optional SCSI card, replacing 4-21  
parts 5-3, 5-5, 5-7, 5-9, 5-11, 5-13, 5-15, 5-17, 5-19, 5-21, 5-23, 5-25, 5-27, 5-29, 5-31, 5-33, 5-35, 5-37, 5-39, 5-41  
PCI adapter card, removing 4-12
332 MHz SMP Node (continued)
PCL adapter card, replacing 4-13
PCI riser card assembly, removing 4-20
PCI riser card assembly, replacing 4-20
power assembly, removing 4-7, 4-8
power assembly, replacing 4-7, 4-8
power cable assembly, removing 4-23
power cable assembly, replacing 4-23
power/supervisor cable, removing 4-22
power/supervisor cable, replacing 4-22
SCSI cable, removing 4-12, 4-21
SCSI cable, replacing 4-12, 4-21
service processor, removing 4-14
service processor, replacing 4-15
SPS MX adapter card, removing 4-12
SPS MX adapter card, replacing 4-12
Thin Node I/O planar, removing 4-16
Thin Node I/O planar, replacing 4-17
Thin Node system planar, removing 4-18
Thin Node system planar, replacing 4-19

332 MHz SMP Node Thin and Wide Node MAPs 1-1
332 MHz SMP Node, placing into service position 3-10
332 MHz SMP Node, replacing from service position 3-11
332 MHz SMP Thin and Wide Node control (MAP 0310) 1-14
332 MHz SMP Thin and Wide Node environment (MAP 0290) 1-1
332 MHz SMP Thin and Wide Node minimum configuration (MAP 0320) 1-22
332 MHz SMP Thin and Wide Node power (MAP 0300) 1-7
332 MHz SMP Thin Node 4-5
removing 4-5
replacing 4-5
332 MHz SMP Wide Node 4-6
removing 4-6
replacing 4-7
41L6138 5-7
45G9800 5-42
46G6953 5-23
46H9165 5-19, 5-39
49-inch frame locations 2-4
51H8738 5-7, 5-19, 5-27, 5-39
51H9358 5-7, 5-19, 5-27, 5-39
51H9384 5-17
51H9385 5-19
51H9386 5-19
51H9389 5-15, 5-35
51H9412 5-7, 5-17, 5-37
51H9446 5-11, 5-31
59H6923 5-42
6340846 5-7, 5-19
76H2697 5-42
77G0599 5-3, 5-23
78X9993 5-9, 5-17, 5-29, 5-37
84X3459 5-7, 5-27
84X3460 5-7, 5-27
84X4841 5-9, 5-19, 5-29
93G3159 5-42
93G3160 5-42

AIX location codes A-44, A-47, A-49
assembly naming standard 2-2
audience of this book xix

base code verification 3-9
basic stand-alone mode (from network boot) 3-4
boot devices, select 3-18
boot method, network 3-6
boot problems, E1xx code 3-14
boot process, Failure during 3-39
bus SRN to FRU Table A-29

call-out before restart (enabled/disabled) 3-34
check points 3-35
checking errors using errpt 3-6
checkpoints A-31
   firmware A-35
   service processor A-31
code boot problems, E1xx 3-14
code verification, base 3-9
code, updating the node supervisor 3-10
command prompt, open firmware 3-28
component connector details 2-18
components, Location diagrams 2-3
concurrent diagnostics, NORMAL mode 3-3
configuration/deconfiguration menu, memory 3-37
configuration/deconfiguration menu, processor 3-36
connector location naming standard 2-2
console mirroring
   enable/disable 3-32
console, select 3-28
control (MAP 0310), 332 MHz SMP Thin and Wide Node 1-14
control (MAP 0350), POWER3 SMP Thin and Wide Node 1-40
CPU Repeat Guard, Enable/disable 3-38
current firmware levels, checking 3-42

default, software 3-18
devices, select boot 3-18
devices, select install 3-18
diagnostic service aids, updating firmware from 3-43
diagnostics, NORMAL mode, concurrent 3-3
diagrams of the RS/6000 SP components,
   Location 2-3
DIMM, memory 5-42
display error log 3-22
Distributing firmware files to nodes before update 3-42
E
E1xx code boot problems  3-14
enable supplemental restart policy  3-34
Enable supplemental restart policy?  3-40
Enable/disable CPU Repeat Guard  3-38
Enable/disable MEM Repeat Guard  3-38
environment (MAP 0290), 332 MHz SMP Thin and Wide Node  1-1
environment (MAP 0330), POWER3 SMP Thin and Wide Node  1-27
environmental conditions, view system  3-36
EPROM updates (and system firmware), service processor flash  3-42
error code to FRU index A-2
error codes
  firmware A-2
  POST A-2
error log, display  3-22
error logs  3-35
error logs, read service processor  3-35
error logs, service processor  3-44
ers, system POST  3-44
errpt  3-6
ESD
  procedures  3-3
  requirements  3-3
Ethernet hardware address  3-6
external cable routing  2-20

F
Failure during boot process  3-39
Failure during normal system operation  3-39
feature
  DASD  5-42
  memory  5-42
firmware files to nodes before update, Distributing  3-42
firmware from diagnostic service aids, updating  3-43
firmware from the SMS utilities, updating  3-43
firmware levels, checking current  3-42
firmware updates on SP nodes, installing  3-12
firmware utilities  3-15
firmware, update service processor  3-28
firmware, update system  3-27
flash EPROM updates (and system firmware), service processor  3-42
format structure  2-1
frame cable routing path in rear of frame  2-19
frame locations  2-3, 2-5, 2-6
frame naming standard  2-1
front view of 49-inch frame locations  2-4
front view of frame locations  2-3
front view of multi-switch frame locations  2-4
FRU removals and replacements  4-2

G
general access password, changing  3-32
general memory information  3-13

H
handling static-sensitive devices  4-3
hang problem, memory test  3-13
heartbeat  3-41

I
index, error code to FRU A-2
initial program load setup, remote  3-23
install devices, select  3-18
installing firmware updates on SP nodes  3-12
IPLing processor nodes from network device  3-5

L
language selection  3-38
language, select  3-28
location code
  format A-43
location codes A-43, A-44, A-47
AIX A-49
  physical A-43
location diagrams
  component connector details  2-18
  external cable routing  2-20
top view of a 332 MHz SMP processor node  2-7
top view of a POWER3 SMP Wide Node  2-13
location diagrams of the RS/6000 SP components
  frame  2-6
  front view of 49-inch frame locations  2-4
  front view of multi-switch frame locations  2-4
  rear view of frame locations  2-5
Location diagrams of the RS/6000 SP components
  locations  2-1
  frame cable routing path in rear of frame  2-19
  front view of frame locations  2-3
log, display error  3-22
logs, service processor error  3-44

M
main menu  3-31
major assembly naming standard  2-2
manual (hand-conditioning) method, network boot  3-6
MAP 0290, 332 MHz SMP Thin and Wide Node environment  1-1
MAP 0300, 332 MHz SMP Thin and Wide Node power  1-7
MAP 0310, 332 MHz SMP Thin and Wide Node control  1-14
MAP 0320, 332 MHz SMP Thin and Wide Node minimum configuration  1-22
MAP 0330, POWER3 SMP Thin and Wide Node environment  1-27
MAP 0340, POWER3 SMP Thin and Wide Node power  1-33
MAP 0350, POWER3 SMP Thin and Wide Node control  1-40
MAP 0360, POWER3 SMP Thin and Wide Node minimum configuration  1-48
MAPs, 332 MHz SMP Node Thin and Wide Node 1-1
MAPs, POWER3 SMP Node Thin and Wide Node 1-27
MEM Repeat Guard, Enable/disable 3-38
memory bits A-29
memory configuration/deconfiguration menu 3-37
memory information, general 3-13
memory test hang problem 3-13
memory, feature 5-42
menu inactivity 3-29
menu, main 3-31
menu, memory configuration/deconfiguration 3-37
menu, processor configuration/deconfiguration 3-36
menus
privileged user 3-29
service processor call-in/call-out setup 3-39
service processor language selection 3-38
service processor reboot policy setup 3-33
service processor setup 3-32
service processor system information 3-35
service processor system power control 3-33
service processor, set system name 3-39
support menus
service processor menus 3-29
service processor service aids 3-29
SMS 3-29
menus, service processor 3-29
messages, Service Processor checkpoints A-31
methods, node power-on 3-39
minimum configuration (MAP 0320), 332 MHz SMP Thin and Wide Node 1-22
minimum configuration (MAP 0360), POWER3 SMP Thin and Wide Node 1-48
monitoring - surveillance, Service processor system 3-41
multi-switch frame locations 2-4
Multiboot 3-17
multiboot start 3-20

N
ing naming standard
assembly 2-2
carrier assembly 2-2
for RS/6000 SP components 2-1
format structure 2-1
frame 2-1
major assembly 2-2
network boot method 3-6
network boot, basic stand-alone mode 3-4
network device, IPLing processor nodes from 3-5
Node control (MAP 0310), 332 MHz SMP Thin and Wide 1-14
Node control (MAP 0350), POWER3 SMP Thin and Wide 1-40
Node environment (MAP 0290), 332 MHz SMP Thin and Wide 1-1
Node environment (MAP 0330), POWER3 SMP Thin and Wide 1-27
Node MAPs, POWER3 SMP Thin and Wide 1-27
Node minimum configuration (MAP 0320), 332 MHz SMP Thin and Wide 1-22
Node minimum configuration (MAP 0360), POWER3 SMP Thin and Wide 1-48
Node power (MAP 0300), 332 MHz SMP Thin and Wide 1-7
Node power (MAP 0340), POWER3 SMP Thin and Wide 1-33
node power-on methods 3-39
node supervisor code, updating the 3-10
Node supervisor status verification using Perspectives 3-9
node switch supervisor self-test 3-8
NORMAL mode (concurrent diagnostics) 3-3
number of reboot attempts 3-33
NVRAM 3-36

O
OK 3-45, A-35
OK prompt 3-19
open firmware command prompt 3-28
operational phases, service processor
  Bring-up 3-45
  Pre-standby 3-44
  Runtime 3-46
  standby 3-45
operational phases, Service processor 3-44
OS-defined restart policy 3-40
OS-defined restart policy, use 3-33

P
parts catalog 5-3, 5-5, 5-7, 5-9, 5-11, 5-13, 5-15, 5-17, 5-19, 5-21, 5-23, 5-25, 5-27, 5-29, 5-31, 5-33, 5-35, 5-37, 5-39, 5-41
password utilities 3-20
password, remove privileged-access 3-22
password, set privileged-access 3-22
passwords
  changing general access password 3-32
  changing privileged access password 3-32
  overview 3-32
Perspectives, Node supervisor status verification using 3-9
physical location codes A-43, A-44, A-47
placing a 332 MHz SMP Node into service position 3-10
placing a POWER3 SMP Thin and Wide Node into service position 3-10
POST error codes A-2
POST errors
  read 3-36
POST errors, system 3-44
power (MAP 0300), 332 MHz SMP Thin and Wide Node 1-7
power (MAP 0340), POWER3 SMP Thin and Wide Node 1-33
power-on methods, node 3-39
POWER3 SMP Node 4-28
  CPU card, removing 4-35
  CPU card, replacing 4-35
  CPU power assembly, removing 4-28
POWER3 SMP Node (continued)
- CPU power assembly, replacing 4-28
- DASD, removing 4-31
- DASD, replacing 4-31
- fans, removing 4-30
- fans, replacing 4-31
- I/O expansion control cable, removing 4-44
- I/O expansion control cable, replacing 4-44
- I/O expansion planar, removing 4-43
- I/O expansion planar, replacing 4-43
- I/O expansion power assembly, removing 4-28
- I/O expansion power assembly, replacing 4-29
- interposer card, removing 4-41
- interposer card, replacing 4-42
- interposer signal cable, removing 4-41
- interposer signal cable, replacing 4-41
- memory card, removing 4-34
- memory card, replacing 4-35
- node supervisor cards, removing 4-31
- node supervisor cards, replacing 4-31
- optional SCSI cable, removing 4-40
- optional SCSI cable, replacing 4-41
- optional SCSI card, removing 4-41
- optional SCSI card, replacing 4-41
- PCI adapter card, removing 4-32
- PCI adapter card, replacing 4-32
- power assembly, removing 4-28
- power assembly, replacing 4-28, 4-29
- power cable assembly, removing 4-42
- power cable assembly, replacing 4-42
- power/supervisor cable, removing 4-42
- power/supervisor cable, replacing 4-42
- SCSI cable, removing 4-32
- SCSI cable, replacing 4-32
- SPS MX2 adapter card, removing 4-32
- SPS MX2 adapter card, replacing 4-32

POWER3 SMP Thin and Wide Node control (MAP 0350) 1-40

POWER3 SMP Thin and Wide Node environment (MAP 0330) 1-27

POWER3 SMP Thin and Wide Node MAPs 1-27

POWER3 SMP Thin and Wide Node minimum configuration (MAP 0360) 1-48

POWER3 SMP Thin and Wide Node power (MAP 0340) 1-33

POWER3 SMP Thin and Wide Node service procedures, 332 MHz SMP and 3-12

POWER3 SMP Thin and Wide Node, replacing into service position 3-10

POWER3 SMP Thin and Wide Node, replacing from service position 3-11

POWER3 SMP Thin Node 4-26
- I/O planar, removing 4-36
- I/O planar, replacing 4-36
- removing 4-26
- replacing 4-26
- system planar, removing 4-38
- system planar, replacing 4-39

POWER3 SMP Wide Node 4-27
- locations 2-13
- removing 4-27

POWER3 SMP Wide Node (continued)
- replacing 4-28
- privileged access password, changing 3-32
- privileged user menus 3-29
- privileged-access password, remove 3-22
- privileged-access password, set 3-22
- problems, E1xx code boot 3-14

Procedures
- ESD 3-3
- processor configuration/deconfiguration menu 3-36
- processor configurations, read service 3-36
- processor error logs, read service 3-35
- processor node boot response 3-4
- processor reboot/restart policy controls, Service 3-40
- progress indicator from last system boot, read 3-35
- progress indicators 3-35
- prompt, OK 3-19
- prompt, open firmware command 3-28
- purpose of book xix
  - task procedures overview xix

R
- read progress indicator from last system boot 3-35
- read service processor configurations 3-36
- read service processor error logs 3-35
- read system, POST errors 3-36
- read VPD image from last system boot 3-35
- rear view of frame locations 2-5
- reboot attempts, number of 3-33
- reboot/restart policy controls, Service processor 3-40
- reboot/restart recovery, service processor 3-39
- recovery, service processor reboot/restart 3-39
- remote initial program load setup 3-23
- removals and replacements, FRU 4-2
- remove privileged-access password 3-22
- removing 4-2
- 332 MHz SMP CPU card 4-15
- 332 MHz SMP DASD 4-11
- 332 MHz SMP I/O expansion control cable 4-24
- 332 MHz SMP I/O expansion planar 4-23
- 332 MHz SMP interposer card 4-22
- 332 MHz SMP interposer signal cable 4-21
- 332 MHz SMP memory card 4-15
- 332 MHz SMP node fans 4-10
- 332 MHz SMP Node power assembly 4-7, 4-8
- 332 MHz SMP node supervisor card 4-11
- 332 MHz SMP optional SCSI card 4-21
- 332 MHz SMP PCI adapter card 4-12
- 332 MHz SMP PCI riser card assembly 4-20
- 332 MHz SMP power cable assembly 4-23
- 332 MHz SMP power/supervisor cable 4-22
- 332 MHz SMP SCSI cable 4-12, 4-21
- 332 MHz SMP service processor 4-14
- 332 MHz SMP SPS MX adapter card 4-12
- 332 MHz SMP Thin Node 4-5
- 332 MHz SMP Thin Node I/O planar 4-16
- 332 MHz SMP Thin Node system planar 4-18
- 332 MHz SMP Wide Node 4-6
- I/O expansion control cable 4-44
- I/O expansion planar 4-43
Removing (continued)
interposer card 4-41
interposer signal cable 4-41
optional SCSI cable 4-40
optional SCSI card 4-41
power cable assembly 4-42
power/supervisor cable 4-42
POWER3 SMP CPU card 4-35
POWER3 SMP DASD 4-31
POWER3 SMP memory card 4-35
POWER3 SMP Node fans 4-31
POWER3 SMP Node power assembly 4-28
POWER3 SMP node supervisor card 4-31
POWER3 SMP PCI adapter card 4-32
POWER3 SMP SPS MX2 adapter card 4-32
POWER3 SMP Thin Node 4-26
POWER3 SMP Thin Node I/O planar 4-36
POWER3 SMP Thin Node system planar 4-38
POWER3 SMP Wide Node 4-27
RS/6000 components 4-2

Replacing (continued)
POWER3 SMP SPS MX2 adapter card 4-32
POWER3 SMP Thin Node 4-26
POWER3 SMP Thin Node I/O planar 4-36
POWER3 SMP Thin Node system planar 4-39
POWER3 SMP Wide Node 4-28
the RS/6000 components 4-2
Replacing a 332 MHz SMP Node from service position 3-11
Replacing a POWER3 SMP Thin and Wide Node from service position 3-11
Requirements
ESD 3-3
reset service processor 3-33
restart policy, enable supplemental 3-34
restart policy, Enable supplemental 3-40
restart policy, OS-defined 3-40
restart policy, use OS-defined 3-33
ring indicate power-on 3-33
RS/6000 SP components, Location diagrams 2-3

S
SCSI utilities 3-27
select boot devices 3-18
select console 3-28
select install devices 3-18
select language 3-28
select software 3-18
selecting a processor node boot response 3-4
SERVICE mode (from disk) 3-4
service position procedures 3-10
service procedures
checking errors using errpt 3-6
placing a 332 MHz SMP processor node into service position 3-10
placing a POWER3 SMP processor node into service position 3-10
replacing a 332 MHz SMP processor node from service position 3-11
replacing a POWER3 SMP Thin and Wide Node from service position 3-11
selecting a processor node boot response 3-4
service position procedures 3-10
supervisor bus swap 3-8
upgrading the Ethernet hardware address 3-6
service procedures, 332 MHz SMP and POWER3 SMP Thin and Wide Node 3-12
service processor checkpoints A-31
Service Processor checkpoints A-31
service processor configurations, read 3-36
service processor error logs 3-44
service processor error logs, read 3-35
service processor firmware, update 3-28
service processor flash EPROM updates (and system firmware) 3-42
service processor menus 3-29
accessing locally 3-29
accessing remotely 3-29
call-in/call-out 3-39
language selection 3-38
service processor menus (continued)
menu inactivity 3-29
privileged user 3-29
reboot policy 3-33
restart policy 3-33
set system name 3-39
setup menu 3-32
system information 3-35
system power control 3-33
Service processor operational phases 3-44
Service processor reboot/restart policy controls 3-40
service processor reboot/restart recovery 3-39
Service processor system monitoring - surveillance 3-41
Services, text-based System Management 3-15
set privileged-access password 3-22
setup, remote initial program load 3-23
SMS utilities, updating firmware from the 3-43
software default 3-18
software, select 3-18
SP components, Location diagrams 2-3
stand-alone mode (from network boot), basic 3-4
start mode, unattended 3-22
start talk mode 3-32
start, multiboot 3-20
starting system programs 3-15
static-sensitive devices 4-3
status verification using Perspectives, Node supervisor 3-9
STBY 3-45, A-35
supervisor bus swap 3-8
supervisor code, updating the node 3-10
supervisor status verification using Perspectives 3-9
supplemental restart policy 3-40
supplemental restart policy, enable 3-34
surveillance
failure 3-41
operating system 3-41
set parameters 3-32
system firmware 3-41
surveillance, Service processor system monitoring - 3-41
system environmental conditions, view 3-36
system firmware, service processor flash EPROM updates 3-42
system firmware, update 3-27
system information menu 3-35
System Management Services, text-based 3-15
system monitoring - surveillance, Service processor 3-41
system operation, Failure during normal 3-39
system POST errors 3-44
read 3-36
system programs 3-15
starting 3-15

T

T

thin and Wide Node service procedures, 332 MHz SMP and POWER3 SMP 3-12
top view of 332 MHz SMP processor node 2-7
top view of POWER3 SMP Wide Node 2-13
trademarks B-1

U

unattended start mode 3-22
unattended start mode, enable/disable 3-33
update service processor firmware 3-28
update system firmware 3-27
update, Distributing firmware files to nodes before 3-42
updates on SP nodes, installing firmware 3-12
updating firmware from diagnostic service aids 3-43
updating firmware from the SMS utilities 3-43
updating the Ethernet hardware address 3-6
updating the node supervisor code 3-10
use OS-defined restart policy 3-33
Use OS-defined restart policy? 3-40
utilities, firmware 3-15
utilities, password 3-20
utilities, SCSI 3-27
utilities, updating firmware from the SMS 3-43

V

verification and isolation procedures
node/switch supervisor self-test 3-8
verification, base code 3-9
view system environmental conditions 3-36
VPD (vital product data) 3-35
VPD image from last system boot, read 3-35

W

who should use book xix
Wide Node service procedures, 332 MHz SMP and POWER3 SMP Thin, 3-12

Index

X-7
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Thin and Wide Node
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