

**RS/6000 SP Service Guide Updates
(December 1999)**

Preface

This document contains updates to the November 1999 edition of the following RS/6000 SP hardware service publications:

- *RS/6000 SP: System Service Guide* , GA22-7442-00
- *RS/6000 SP: SMP Thin and Wide Node Service Guide* , GA22-7447-00
- *RS/6000 SP: POWER3 SMP High Node Service Guide* , GA22-7448-00

RS/6000 SP: System Service Guide

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The following updates are needed for the RS/6000 SP System Service Guide (GA22-7442-00).

Chapter 1, Maintenance Analysis Procedures (MAPs)

Table 1-2

Note: Table 1-2 is located in Step 0100-002.

Replace "Priority 6" (all other table entries remain the same).

Table 1. Table 1-2. System conditions and suggested actions

Priority	Condition	Action
6	<p>Problem with processor node:</p> <ul style="list-style-type: none"> • TTY console and/or system monitor (errpt/not topology) reports a hardware problem for processor nodes (slots 1-16). • Problem with node power. <ul style="list-style-type: none"> – Uniprocessor (Thin/Wide Node) <ul style="list-style-type: none"> - Yellow LED on or flashing. – OR – - Green LED off or flashing. – SMP (Thin/Wide/High Node) <ul style="list-style-type: none"> - Supervisor LED #1 flashing (green) – OR – - Supervisor LED #5 flashing (yellow) – SP Expansion I/O Unit <ul style="list-style-type: none"> - Yellow LED on or flashing. – OR – - Green LED off or flashing. 	Go to Processor node diagnostics and descriptions (MAP 0130) .

Step 120-013

Replace the diagnostic steps after the "Attention" statements with the following:

Once you have the customer's verification that it is OK to initiate the shutdown procedure, make certain that the processor node or switch is not in use by customer then,

1. Put the circuit breakers on the processor node or switch assembly into the Off ('0') position.
2. Perform Supervisor self-tests for nodes, SP Expansion I/O Units, and switches . You can repeat this test as necessary.
3. Check slot address indicated by self-test against physical location. In a frame with processor nodes, the switch assembly is at slot address 17.
4. Does the supervisor card pass self-test, including the correct slot address?
 - If the supervisor card **passes** the self-test, go to Step 0120–014 .
 - If the supervisor card **fails** the self-test:
 - a. If this is a 604, 604e, 332 MHz SMP, or any type of POWER3 SMP supervisor card, make certain that the failure is not base code related (see Base code verification) .
 - b. If the failure is not base code related, go to Step 0120–015.

Table 1-8

Note: Table 1-8 is located in Step 0120-016.

Replace the entire table with this updated table:

<i>Table 2. Table 1-8. Processor node and switch instructions</i>	
Unit	Action
Thin node Wide node SPS assembly SPS-8 assembly	Replace supervisor card inside the processor node or switch assembly
604 high node 604e high node	Replace node supervisor card
332 MHz SMP Nodes, POWER3 SMP High Nodes, or POWER3 SMP Thin and Wide	Replace node supervisor card. Note: Prior to replacing the node supervisor card, verify 48 V power cables are plugged in the rear panels.

Table 1-9

Note: Table 1-9 is located in Step 0120–017.

Replace the entire table with this updated table:

<i>Table 3. Table 1-9. Replacement recommendations if supervisor self-test fails after bus swap procedure</i>		
Unit	Replace	Reference
Thin node Wide node	Supervisor bus cable inside the processor node or switch assembly	"FRU removals and replacements" in the applicable node or switch service guide.
SPS assembly SPS-8 assembly	Inner chassis cable	"Removing the switch inner chassis cable (SPS, SPS-8)" in <i>RS/6000 SP: SP Switch Service Guide</i> .
604 or 604e high node	High node supervisor adapter cable	"FRU removals and replacements" in <i>RS/6000 SP: 604 and 604e SMP High Node Service Guide</i>
332 MHz SMP Nodes or POWER3 SMP Thin and Wide Nodes	Reseat the power supply modules	"FRU removals and replacements" in <i>RS/6000 SP: SMP Thin and Wide Node Service Guide</i>
POWER3 SMP High Node	Replace the PICO riser card	Replacing the PICO riser card in the "FRU removals and replacements" section of <i>RS/6000 SP: POWER3 SMP High Node Service Guide</i>

Step 120-018

Replace the entire step with this update:

The replacement installed in Step 0120-017 must now be verified.

1. Perform Supervisor self-tests for nodes, SP Expansion I/O Units, and switches to verify fix.
2. Does the supervisor self-test pass?
 - If the supervisor self-test passes:
 - a. If this is a 604, 604e, or 332 MHz SMP, or POWER3 SMP node, reinstall the old node supervisor card.
 - b. Then, for all nodes, go to Step 0120-019 .
 - If the supervisor self-test still fails:
 - **For 604 or 604e high nodes:**
 - a. If this is the **first time** here, replace the blue ribbon I2C cable inside the high node supervisor card assembly.
 - Then go back to the beginning of Step 0120-018 and rerun the "Node/switch supervisor self-test."
 - b. If this is the **second time** here, replace the supervisor interface card within the high node supervisor card assembly.
 - Then go back to the beginning of Step 0120-018 and rerun the "Node/switch supervisor self-test."
 - c. If both parts have been replaced, call next level of support
 - **For 332 MHz SMP Nodes or POWER3 SMP Thin and Wide Nodes:**
 - a. If this is the **first time** here, replace the power mix board.
 - Then go back to the beginning of Step 0120-018 and rerun the "Node/switch supervisor self-test."
 - b. If this is the **second time** here, replace the tailgate card and cable.
 - Then go back to the beginning of Step 0120-018 and rerun the "Node/switch supervisor self-test."
 - c. If both parts have been replaced, call next level of support.
 - **For POWER3 SMP High Nodes:**
 - a. If this is the **first time** here, replace the I/O planar.
 - Then return to the beginning of Step 0120-018 and rerun the "Node/Switch supervisor self-test."
 - b. If this is the **second time** here, call next level of support.
 - **For all other nodes**, call the next level of support.

Table 1-10

Note: Table 1-10 is located in Step 0130-001.

Replace priority 1 and 2 in the table with these updates (priorities 3, 4, and 5 are unchanged):

Table 4. Table 1-10. Node error message references

Priority	Message or condition	Action
1	<p>Environmental problems</p> <ul style="list-style-type: none"> • Errpt: "Failure..." • Log: "Shutdown: Voltage..." • Log: "Shutdown: Fan..." • Log: "Shutdown: Temperature..." • Log: "Shutdown: Memory protect fault" • Errpt: "Warning..." • Log: "Warning:..." • "rc.powerfail" from TTY • Node's errpt -a pg shows "Loss of Electric Power" • LED conditions: <ul style="list-style-type: none"> – Uniprocessor (Thin/Wide Node) <ul style="list-style-type: none"> - Yellow LED on or flashing – All SMP (Thin/Wide/High Node) <ul style="list-style-type: none"> - LED #5 (yellow) on or flashing – SP Expansion I/O Unit <ul style="list-style-type: none"> - Yellow LED on or flashing 	<p>Go to the "Environment" MAP in the service guide for the applicable processor node or expansion I/O unit and perform the required service action.</p> <p>SP-Attached Servers (RS/6000 7017 Models S70, S7A, and S80): Consult the <i>RS/6000 Enterprise Servers S70, S7A, and S80 Installation and Service Guide</i>.</p> <p>Note: Before disconnecting cables or performing service actions on an SP-Attached Server, perform "Decoupling and coupling code for SP-Attached Servers" in <i>RS/6000 SP: System Service Guide</i>.</p>
2	<p>Power problem</p> <ul style="list-style-type: none"> • Uniprocessor (Thin/Wide Node) <ul style="list-style-type: none"> – Green LED off or flashing • All SMP (Thin/Wide/High Node) <ul style="list-style-type: none"> – LED #1 (green) off or flashing • SP Expansion I/O Unit <ul style="list-style-type: none"> – Green LED off or flashing • (Power) Green LED off or flashing • Node has no power • All voltages at zero 	<p>Perform Supervisor self-tests for nodes, SP Expansion I/O Units, and switches to verify operation of LEDs.</p> <ul style="list-style-type: none"> • If supervisor test fails, go to Step 0120–001". • If test passes, go to the "Node power" MAP in the applicable node service guide to perform the required service action. <p>SP-Attached Servers (RS/6000 7017 Models S70, S7A, and S80): Consult the <i>RS/6000 Enterprise Servers S70, S7A, and S80 Installation and Service Guide</i>.</p> <p>Note: Before disconnecting cables or performing service actions on an SP-Attached Server, perform "Decoupling and coupling code for SP-Attached Servers" in <i>RS/6000 SP: System Service Guide</i>.</p>

Ethernet LAN (MAP 0580)

Change the descriptions of the processor node Ethernet LAN connections at the beginning of the MAP to read:

Each processor node has at least one Ethernet LAN connection:

- Standard RS/6000 SP system (and coexistence 9076 SP1 system):

Thin processor nodes: Integrated Ethernet connection (N00-BH-J5). Connects this processor node to the customer's LAN.

Important Note for Thin Nodes with TTP

The Ethernet riser card port on the thin node (and thin node 2) must be set to the “thick” position. See “Setting the Ethernet Riser Card Jumpers” in the removal and replacement section of *7012 POWERstation and POWERserver: Install and Service Guide* (SA23-2624) for details.

Wide processor nodes: Micro Channel Ethernet connection (N00-MC-0/1). Connects this processor node to the customer's LAN.

604 or 604e high processor nodes:

Micro Channel Ethernet connection (N00-MC-1/1). Connects this processor node to the customer's LAN.

SP-Attached Server S70, S7A, and S80

PCI Ethernet connection (ent0). Connects this processor node to the customer's LAN.

332 MHz SMP Nodes, POWER3 SMP Thin and Wide Nodes, or POWER3 SMP High Nodes:

Integrated Ethernet connection (no riser card). Connects this processor node to the customer's LAN.

- Additional Ethernet cards may be present in the I/O adapter slots.

Chapter 3, Service procedures

SERVICE mode (from disk)

Note: This information is listed under "Running diagnostics in a processor node."

Replace the entire section with:

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. For Thin or Wide Node:
 - 1) Set the mode switch to SERVICE by clicking on the “Service” button
 - 2) Reboot the node by powering off/on the node
 - b. For 604 or 604e High Node:
 - 1) Open the TTY console
 - 2) Issue **ssb**
 - 3) Select “1 Set Flags”
 - 4) Check for “1 BUMP Console Present disabled”
 - 5) Change “2 Autoserve IPL” to “ENABLE”
 - 6) Change “6 FAST IPL” to “DISABLE”
 - 7) Exit the BUMP menu
 - 8) Power on the node

- 9) 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".
- c. For 332 MHz Symmetric MultiProcessor (SMP), POWER3 SMP Thin and Wide Nodes, and POWER3 SMP High Nodes:
 - 1) Reboot the node (power the node off, wait briefly, then power the node on)
 - 2) Immediately after the words "memory" and "keyboard" are displayed, press and hold the **6** key (for a few seconds) on the TTY console
 - 3) Enter any requested passwords
 - 4) 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)

New information

This is new information that **must be added** under "Running diagnostics in a processor node" **after** the section titled "SERVICE mode (from disk)".

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.
 - The command should be:


```
spbootins -r diag frame# slot# 1
```
 - Refer to [Selecting a processor node boot response](#) for more information.
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.
 - The command should be:


```
spbootins -r disk frame# slot# 1
```
 - Refer to [Selecting a processor node boot response](#) for more information.

Information removals

Note: These sections are listed under "Running diagnostics in a processor node" and they **must** be removed.

Remove the following sections:

1. Basic stand-alone mode (from network boot)
2. Extended stand-alone mode (from network boot)

Including the following subsections:

- Supported functions
- Loading image from tape to control workstation
- Setting up the boot server
- Using image on processor nodes
- Cleaning up the control workstation

Supervisor self-tests

New information

This is new information that **must be added** under "Node/switch supervisor self-test" **after** the section titled "If this is a 332 MHz SMP Node or any type of POWER3 SMP Thin, Wide, or High Node".

If this is an SP Expansion I/O Unit:

1. Power off the expansion unit from the circuit breaker at the rear of the unit.
2. Detach supervisor harness from connector at back of the unit. Detaching the supervisor harness removes the 12 volt power from the supervisor card.
3. Reinsert the supervisor harness to perform the supervisor card self-test.
4. Check green and yellow LEDs at the rear of the unit.

This self-test should indicate one of the following conditions for the processor node:

Self-test Conditions

Pass sequence

1. Both LEDs light (for about 10 seconds)
2. Both LEDs go off
3. The green LED stays off, while yellow LED flashes node address
4. Yellow goes off for about two seconds (green LED stays off)
5. Both LEDs light (for about one second)

Fail conditions

- Green and Yellow LEDs never light
- Yellow LED flashes wrong address

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Chapter 1, Maintenance Analysis Procedures (MAPs)

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: Each step in this MAP (except Step 0320–001) requires the node to be placed in the service position (see "Placing a 332 MHz SMP or POWER3 SMP Thin and Wide Node into service position" on page 3-12).. Perform the appropriate FRU removal and replacement procedures (refer to Chapter 4, "FRU removals and replacements" on page 4-1) as directed in the step. Then, before answering the question "Does the node IPL properly?" within the step, the node must be returned from the service position see "Replacing a 332 MHz SMP or POWER3 SMP Thin and Wide Node from service position" on page 3-13). The node will then automatically attempt to IPL.

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.

Although boot disk is typically set to *hdisk0* (which is typically the disk located in the lower CPU chassis DASD tray) it is possible that some other disk is defined as the boot disk. You can check the boot disk for this node using `sp1stdata -b` (then look at address jumpers on the disks). If possible, keep this boot disk in the configuration, even if it means physically moving the boot disk from the I/O Expansion assembly chassis to the CPU assembly chassis.

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.
- 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.
- If no:
 - a. The problem is in the thin node section.
 - b. Go to Step 0320–008.

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?
 - If yes, go to Step 0320–004.
 - If no:
 - a. The problem is likely in the minimum configured I/O Expansion assembly.
 - b. Go to Step 0320–016.

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?
 - If yes, go to Step 0320–007.
 - If no, 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?
 - If yes:
 - 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*.
 - If no:

- 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.

- **Replace** the I/O Expansion assembly planar.
- Does the node IPL properly?
 - If yes, go to Step 0320–004.
 - 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 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.
 - If no, go to Step 0360–009.

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.
 - If no, go to Step 0320–011.

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?
 - If yes:
 - a. Return to Step 0320–010 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 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?
 - If yes, return to Step 0320–010.
 - 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 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, 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?
 - If yes, go to "End of call MAP (MAP 0650)" in *RS/6000 SP: System Service Guide*.
 - 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.

1. **Remove** all adapter cards from the I/O Expansion assembly.
2. Does the node IPL properly?
 - If yes, go to Step 0320–004.
 - 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.
 - If no, go to Step 0320–017.

POWER3 SMP Thin and Wide Node minimum configuration (MAP 0360)

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.
 - 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.
 - 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.
 - 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.
 - 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 assembly power supply.
2. Does the node IPL properly?
 - If yes, return to Step 0320–004.
 - If no, call the next level of support.

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.

POWER3 SMP Thin and Wide Node minimum configuration (MAP 0360)

Attention: Each step in this MAP (except Step 0360–001) requires the node to be placed in the service position (see "Placing a 332 MHz SMP or POWER3 SMP Thin and Wide Node into service position" on page 3-12). Perform the appropriate FRU removal and replacement procedures (refer to Chapter 4, "FRU removals and replacements" on page 4-1) as directed in the step. Then, before answering the question "Does the node IPL properly?" within the step, the node must be returned from the service position (see "Replacing a 332 MHz SMP or POWER3 SMP Thin and Wide Node from service position" on page 3-13).). The node will then automatically attempt to IPL.

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.

Although boot disk is typically set to *hdisk0* (which is typically the disk located in the lower CPU chassis DASD tray) it is possible that some other disk is defined as the boot disk. You can check the boot disk for this node using `sp1stdata -b` (then look at address jumpers on the disks). If possible, keep this boot disk in the configuration, even if it means physically moving the boot disk from the I/O Expansion chassis to the CPU chassis.

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

- If you have a POWER3 SMP Thin Node, go to Step 0360–008.
- 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.
 - If no:
 - a. The problem is in the thin node section.
 - b. Go to Step 0360–008.

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?
 - If yes, go to Step 0360–004.
 - If no:
 - a. The problem is likely in the minimum configured I/O Expansion assembly.
 - b. Go to Step 0360–016.

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?
 - If yes, go to Step 0360–007.
 - 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?
 - 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*.
 - 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.

POWER3 SMP Thin and Wide Node minimum configuration (MAP 0360)

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?
 - If yes, go to Step 0360–004.
 - If no, call the next level of support.

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 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 nodesection 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 POWER3 SMP Thin and Wide Node locations on page 2-12), 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.
 - 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.
 - If no, go to Step 0360–011.

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 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 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.

POWER3 SMP Thin and Wide Node minimum configuration (MAP 0360)

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) 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.
 - 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.
 - 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.
 - 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.
 - 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.
 - 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 assembly power assembly.
2. Does the node IPL properly?
 - If yes, go to Step 0360–004.
 - If no, call the next level of support.

Chapter 2, Service procedures

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
```

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 3-35).

RS/6000 SP: POWER3 SMP High Node Service Guide

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The following updates are needed for the RS/6000 SP POWER3 SMP High Node Service Guide (GA22-7448-00).

Chapter 1, Maintenance Analysis Procedures (MAPs)

Step 0370-002

Replace the entire step with this update:

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. Run the advanced diagnostics problem determination routine to obtain failure data.
2. Does the message indicate a loss of power or that the power is off?
 - If yes, go to Step 0370–004 .
 - 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 0370–003 .
 - b. If the message **is not** a warning, go to Step 0370–005 .

Step 0370-005

Replace the entire step with this update:

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

1. Check the node supervisor green LED 1.
2. Is the node supervisor green LED 1 On or flashing?
 - If green LED 1 is On and it **is not** flashing, go to go to Step 0370–006 .
 - If green LED 1 is **off** or **flashing**, go to go to POWER3 SMP High Node power (MAP 0380) .

Table 1-9

Table 1-9 is located at the beginning of SP Expansion I/O Unit environment (MAP 0410). Replace the entire table with this updated table:

Green LED	Yellow LED	Indicates:
On	Off	Normal operation (On)
Flashing	Off	48 V available (logically powered off)
Off	Off	48 V circuit breaker off (physically powered off)
On	On	Non-critical power, environmental, or SES problem
NA	Flashing	Critical power, environmental, or SES problem

Step 0410-018

Replace the entire step with this update:

You found a flashing yellow LED on an SP Expansion I/O Unit.

1. Place the unit into the service position.
2. Use Table 1-12 to replace components.

<i>Table 6. Table 1-12. SP Expansion I/O Unit service actions</i>		
Priority	Component	Action
1	DASD Controller Card	<ol style="list-style-type: none"> 1. Replace card 2. Continue at Step 0410-019 .
2	DASD Docking Card	<ol style="list-style-type: none"> 1. Replace card 2. Continue at Step 0410-019 .
3	DASD power cable assembly	<ol style="list-style-type: none"> 1. Replace assembly 2. Continue at Step 0410-019 .
4	Supervisor Card	<ol style="list-style-type: none"> 1. Replace card 2. Continue at Step 0410-019 .
5	Power supply 1, 2 Note: See Figure 1-2.	<ol style="list-style-type: none"> 1. Replace power supply as described in Chapter 4, FRU removals and replacements. Refer to: <ul style="list-style-type: none"> • Removing a power supply • Replacing a power supply • The error log utility on the service processor menu. 2. Fix any obvious problems. 3. Continue at "Step 0410-019".
6	Fan 1, 2 Note: See Figure 1-2.	<ol style="list-style-type: none"> 1. Replace fan and/or cooling module as described in Chapter 4, FRU removals and replacements. Refer to: <ul style="list-style-type: none"> • Removing a fan • Replacing a fan • The error log utility on the service processor menu. 2. Fix any obvious problems. 3. Continue at "Step 0410-019".
7	I/O Planar	<ol style="list-style-type: none"> 1. Replace assembly 2. Continue at "Step 0410-019".
8	All replaced	Call next level of support.

Step 0410-019

Replace the entire step with this update:

You have replaced a component.

1. Remove the unit from the service position.
2. Reconnect all cables at the rear of the processor node.
3. Put the circuit breakers on processor node into the On ('1') position.
4. Check the yellow LED.
5. Is the yellow LED still flashing?
 - If yes, go to Step 0410-020 .
 - If no:

- a. You have resolved the critical problem.
- b. Return to Step 0410–001 to resolve any additional problems.

Step 0410-020

Replace the entire step with this update:

You have replaced a component but the problem still exists.

1. Put SP Expansion I/O Unit's circuit breaker into the Off ('0') position.
2. Reinstall the previously removed component.
3. Return to Step 0410–018 to service the next highest priority component listed in "Table 1-12".

Table 1-13

Table 1-13 is located at the beginning of SP Expansion I/O Unit power (MAP 0420). Replace the entire table with this updated table:

<i>Table 7. Table 1-13. SP Expansion I/O Unit Supervisor LEDs</i>		
Green LED	Yellow LED	Indicates:
On	Off	Normal operation (On)
Flashing	Off	48 V available (logically powered off)
Off	Off	48 V circuit breaker off (physically powered off)
On	On	Non-critical power, environmental, or SES problem
NA	Flashing	Critical power, environmental, or SES problem

Chapter 3, Service procedures

SERVICE mode (from network boot)

Replace the entire section with this update:

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.

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.
 - The command should be:


```
spbootins -r diag frame# slot# 1
```
 - Refer to "Selecting a processor node boot response" for more information.
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 nodes to an appropriate value.
 - The command should be:


```
spbootins -r disk frame# slot# 1
```
 - Refer to "Selecting a processor node boot response" for more information.

SP Expansion I/O Unit supervisor self test

New information

This is new information that **must be added** under "Node supervisor self-test" **after** the box listing node supervisor "Self-test Conditions."

If this is an SP Expansion I/O Unit:

1. Power off the expansion unit from the circuit breaker at the rear of the unit.
2. Detach supervisor harness from connector at back of the unit. Detaching the supervisor harness removes the 12 volt power from the supervisor card.
3. Reinsert the supervisor harness to perform the supervisor card self-test.
4. Check green and yellow LEDs at the rear of the unit.

This self-test should indicate one of the following conditions for the processor node:

Self-test Conditions

Pass sequence

1. Both LEDs light (for about 10 seconds)
2. Both LEDs go off
3. The green LED stays off, while yellow LED flashes node address
4. Yellow goes off for about two seconds (green LED stays off)
5. Both LEDs light (for about one second)

Fail conditions

- Green and Yellow LEDs never light
- Yellow LED flashes wrong address

Placing a POWER3 SMP High Node into the service position

Replace the entire procedure with this update:

1. If necessary, fence the node from the system.
2. Ensure the POWER3 SMP High Node and all attached SP Expansion I/O Units have been shutdown and powered off before continuing.
3. Set the circuit breaker at the node rear panel in the Off ('0') position.
4. Set the circuit breakers in the 48-volt power cables in the Off ('0') position.
5. Remove the two 48-volt power cables from the rear of the node.

6. Remove the supervisor cable from the node by disconnecting the supervisor bus connector from the supervisor extension cable.
7. If necessary, remove the Ethernet cable from the rear of the processor node.
8. Pull the rear lock button and move the processor node to either the front or rear detent position.
9. Loosen the screws on the two rear locking levers and pull the locking levers toward you to disengage the I/O assembly from the CEC assembly.
10. If performing service on the CEC or power assembly, continue.
11. Refer to [Removing the cooling assembly](#) to gain access to the front of the node.

Note: When sliding the node out of the frame, make certain that the cable loops are able to fully extend.

Removing a POWER3 SMP High Node from the service position

Replace the entire procedure with this update:

1. Refer to [Replacing the cooling assembly](#) to replace the cooling assembly and node front panel.
2. Slide the I/O assembly against the CEC assembly and engage the two locking levers by pushing toward the node to connect the two assemblies.
3. Tighten the locking lever screws.
4. Pull the rear lock button and return the processor node to the middle detent position.
5. If necessary, install the Ethernet cable in the rear of the processor node.
6. Install the supervisor cable to the node by connecting the supervisor bus connector to the supervisor extension cable.
7. Install the two 48-volt power cables in the rear of the node.
8. Set both circuit breakers on the 48-volt power cables in the On ('1') position.
9. Make certain that all circuit breakers on the attached SP Expansion I/O Units are in the On ('1') position.
10. Set the circuit breaker on the POWER3 SMP High Node rear panel to the On ('1') position.
11. If necessary, unfence the node.

Placing an SP Expansion I/O Unit into the service position

Replace the entire procedure with this update:

1. Ensure the attached POWER3 SMP High Node has been shutdown and powered off from the control workstation before continuing
2. Set **all** circuit breakers on the POWER3 SMP High Node and all attached SP Expansion I/O Units to the Off ('0') position
3. Set the circuit breaker in the power cable in the Off ('0') position
4. If performing service on the DASD docking card, planar, LED card, fan, CB assembly or any internal cable, continue with the remainder of this procedure to remove the unit from the frame. If performing service on other components, stop here and go to the applicable service procedure.
5. Record external cable locations at the rear of the unit and label if necessary
6. Remove cables attached to the rear of the unit
7. Remove the unit from the frame and place it on an ESD approved surface to continue service

Removing an SP Expansion I/O Unit from the service position

Replace the entire procedure with this update:

1. Install the SP Expansion I/O Unit in the frame
2. Install any cables removed from the rear of the unit
3. Set the circuit breaker on the 48 v power cable in the On ('1') position
4. Set the circuit breaker on the rear panels of all SP Expansion I/O Units to the On ('1') position
5. Set the circuit breaker on the POWER3 SMP High Node to the On ('1') position

6. Return to the procedure that sent you here

Installing firmware updates on SP nodes

Replace the entire section with the following update:

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.

Chapter 4, FRU removals and replacements

Removing the cooling assembly

Replace the entire procedure with this update:

Processor node procedure

1. Ensure that the processor node and **all** attached SP Expansion I/O Units are offline (shutdown) and logically powered off from the control workstation.
2. Set the circuit breaker on the rear panel of the processor node in the Off ('0') position.
3. Loosen the screws on the POWER3 SMP High Node front panel and remove the panel and filter.
4. Remove the screws on the cooling assembly.
5. Pull the cooling assembly forward and remove it.

Replacing the cooling assembly

Replace the entire procedure with this update:

Processor node procedure

1. Carefully align the connector plugs and reinstall the cooling assembly. Tighten the screws.
2. Install the POWER3 SMP High Node filter and front panel and tighten the screws.
3. Set **all** SP Expansion I/O Unit circuit breakers to the On ('1') position.
4. Set the circuit breaker on the processor node rear panel to the On ('1') position.
5. Return to the procedure that directed you here.

Removing a fan

Replace the entire procedure with this update:

Processor node procedure

1. Remove the cooling assembly (see: Removing the cooling assembly).
2. Remove the screws holding the fan to the cooling assembly.
3. Locate and disconnect the fan plug.

Replacing a fan

Replace the entire procedure with this update:

Processor node procedure

1. Reinstall new fan with the airflow indicator pointing to the rear of the chassis.
2. Connect the fan plug
3. Carefully align the connector plugs and install the cooling assembly. Then tighten the screws.
4. Install the POWER3 SMP High Node front panel and tighten the screws.
5. Set **all** SP Expansion I/O Unit circuit breakers to the On ('1') position.
6. Set the circuit breaker on the processor node rear panel to the On ('1') position.
7. Return to the procedure that directed you here.

Removing a memory card

Replace the entire procedure with this update:

Processor node procedure

1. Ensure ESD antistatic wrist device is attached.
2. Ensure that the processor node and **all** attached SP Expansion I/O Units are offline (shutdown) and logically powered off from the control workstation.
3. Set the circuit breaker at the node rear panel in the Off ('0') position.
4. Set the circuit breakers in the 48-volt power cables in the Off ('0') position.
5. Remove the two 48-volt power cables from the rear of the node.
6. Remove the supervisor cable from the node by disconnecting the supervisor bus connector from the supervisor extension cable.
7. If necessary, remove the Ethernet cable from the rear of the processor node.
8. Pull the rear lock button and move the processor node to the forward detent position.
9. Remove the processor assembly cover by removing the screws on the top of the cover, then lift the front edge while pulling it toward you.
10. Record the position of any cards to be removed.

Attention: Do **not** rock cards from side-to-side when plugging or unplugging.

11. Loosen the screws and lift the locking handles to disengage the memory card.
12. Remove the memory card.
13. Record the position of the DIMMs installed on the memory card. The DIMMs will be installed in the same positions on the replacement memory card.

Replacing a memory card

Replace the entire procedure with this update:

Processor node procedure

1. Ensure ESD antistatic wrist device is attached.
2. Install the DIMMs on the replacement memory card in the positions recorded in the removal procedure.
3. Align the memory card in the slot.

Attention: Do **not** rock cards from side-to-side when plugging or unplugging.

4. Push down on the locking handles to engage the memory card. Tighten the screws.
5. Reinstall the processor assembly cover and tighten the screws on the top of the assembly.
6. Pull the rear lock button and return the processor node to the middle detent position.
7. If necessary, install the Ethernet cable in the rear of the processor node.

8. Install the supervisor cable to the node by connecting the supervisor bus connector to the supervisor extension cable.
9. Install the two 48-volt power cables in the rear of the processor node.
10. Set both circuit breakers on the 48-volt power cables in the On ('1') position.
11. Set **all** SP Expansion I/O Unit circuit breakers to the On ('1') position.
12. Set the circuit breaker on the processor node rear panel in the On ('1') position.
13. Return to the procedure that directed you here.

Removing a CPU card

Replace the entire procedure with this update:

Processor node procedure

1. Ensure ESD antistatic wrist device is attached.
2. Ensure that the processor node and **all** attached SP Expansion I/O Units are offline (shutdown) and logically powered off from the control workstation.
3. Set the circuit breaker at the node rear panel in the Off ('0') position.
4. Set the circuit breakers in the 48-volt power cables in the Off ('0') position.
5. Remove the two 48-volt power cables from the rear of the node.
6. Remove the supervisor cable from the node by disconnecting the supervisor bus connector from the supervisor extension cable.
7. If necessary, remove the Ethernet cable from the rear of the processor node.
8. Pull the rear lock button and move the processor node to the forward detent position.
9. Remove the processor assembly cover by removing the screws on the top of the cover, then lift the front edge while pulling it toward you.
10. Record the position of any cards to be removed.

Attention: Do **not** rock cards from side-to-side when plugging or unplugging.

11. Loosen the screws and lift the locking handles to disengage the CPU card.
12. Remove the CPU card.

Replacing a CPU card

Replace the entire procedure with this update:

Processor node procedure

1. Ensure ESD antistatic wrist device is attached.
2. Align the CPU card in the slot.

Attention: Do **not** rock cards from side-to-side when plugging or unplugging.

3. Push down on the locking handles to engage the CPU card. Tighten the screws.
4. Reinstall the processor assembly cover and tighten the screws on the top of the assembly.
5. Pull the rear lock button and return the processor node to the middle detent position.
6. If necessary, install the Ethernet cable in the rear of the processor node.
7. Install the supervisor cable to the node by connecting the supervisor bus connector to the supervisor extension cable.
8. Install the two 48-volt power cables in the rear of the node.
9. Set both circuit breakers on the 48-volt power cables in the On ('1') position.
10. Set **all** SP Expansion I/O Unit circuit breakers to the On ('1') position.
11. Set the circuit breaker on the node rear panel in the On ('1') position.
12. Return to the procedure that directed you here.

Removing the node supervisor card

Replace the entire procedure with this update:

Note: To access components in the rear of the node, it may be helpful (but not necessary) to remove the cable management bracket. Be sure to replace the bracket after replacing the FRU.

Processor node procedure

1. Ensure ESD antistatic wrist device is attached.
2. Ensure that the processor node and **all** attached SP Expansion I/O Units are offline (shutdown) and logically powered off from the control workstation.
3. Set the circuit breaker at the node rear panel in the Off ('0') position.
4. Set the circuit breakers in the power cables in the Off ('0') position.
5. Remove the two screws holding the node supervisor card to the node rear panel.
6. Remove the node supervisor card.

Replacing the node supervisor card

Replace the entire procedure with this update:

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* or *IBM Parallel System Support Programs for AIX: Installation Guide* for this procedure.

Processor node procedure

1. Ensure ESD antistatic wrist device is attached.
2. Install the node supervisor card in the node rear panel and tighten the two screws.
3. Set the power cable inline circuit breakers to the On ('1') position.
4. Set all SP Expansion I/O Unit circuit breakers to the On ('1') position.
5. Set the circuit breaker on the processor node rear panel in the On ('1') position.
6. Perform *Updating the node supervisor code* .
7. Return to the procedure that directed you here.

Removing the fan control card

Replace the entire procedure with this update:

Attention: Do **not** rock cards from side-to-side when plugging or unplugging.

Processor node procedure

1. Ensure ESD antistatic wrist device is attached.
2. Place the processor node into the service position (see: *Placing a POWER3 SMP High Node into the service position*).
3. Remove the screws on the edge of the power assembly cover.
4. Remove the cover by lifting the front edge while pulling it toward you.
5. Lift the locking handles to disengage the fan control card.
6. Remove the fan control card.

Replacing the fan control card

Replace the entire procedure with this update:

Attention: Do **not** rock cards from side-to-side when plugging or unplugging.

Processor node procedure

1. Ensure ESD antistatic wrist device is attached.
2. Install the fan control card.
3. Push down on the locking handles to engage the fan control card.
4. Install the power assembly cover and tighten the screws on the edge of the assembly.
5. Place the processor node in a usable state (see: Removing a POWER3 SMP High Node from the service position).
6. Return to the procedure that directed you here.

Removing a power card

Replace the entire procedure with this update:

Processor node procedure

1. Ensure ESD antistatic wrist device is attached.
2. Place the processor node into the service position (see: Placing a POWER3 SMP High Node into the service position).
3. Remove the screws on the edge of the power assembly cover.
4. Remove the cover by lifting the front edge while pulling it toward you.
5. Record the position of any cards to be removed.
6. Lift the locking handles to disengage the power card.
7. Remove the card.
8. Repeat to the previous two steps to remove additional power cards.

Removing an SP expansion I/O interposer

Replace the entire procedure with this update:

Expansion unit procedure

Note: This procedure is the same as Removing the I/O planar .

- Perform that procedure to remove the interposer.

Replacing an SP expansion I/O interposer

Replace the entire procedure with this update:

Expansion unit procedure

Note: This procedure is the same as Replacing the I/O planar .

- Perform that procedure to replace the interposer.

Removing the I/O planar

Replace the entire procedure with this update:

Expansion unit procedure

1. Ensure ESD antistatic wrist device is attached.
2. Place the SP Expansion I/O Unit in service state (see: Placing an SP Expansion I/O Unit into the service position).
3. Record the location of any I/O adapter cables and cards you are removing for later installation.
4. Remove all PCI adapter cards (see Removing a PCI adapter card).
5. Remove the supervisor card (see Removing the supervisor card).
6. Label and remove both I/O interposer loop cables (external cables attached to the SP expansion I/O interposer).
7. Pull down on the power supply handles to disengage both of the power supplies from the I/O planar.
8. Remove the center cover plate by unlocking the screw and lifting the cover from the unit.
9. Unplug the fan assembly power cables and remove the fan assembly.
10. Unplug the cables attached to the I/O planar at J13, J14 and J50.
11. Loosen the top screw of the cover plate and remove the plate.
12. Pry up on the planar locking tab located on the planar's centerline and in front of the interposer card jacks.
13. Remove the planar by pulling it toward you.
14. Remove the screws and nuts holding the interposers to the planar.
15. Remove the SP expansion I/O interposer.

Replacing the I/O planar

Replace the entire procedure with this update:

Expansion unit procedure

1. Ensure ESD antistatic wrist device is attached.
2. Plug the interposers into the planar.
3. Install the screws and nuts used to hold the interposers to the planar.
4. Install the I/O planar and push it into the unit until it locks into position.
5. Install the cover plate and tighten the screw.
6. Install and tighten the SP expansion I/O interposer standoffs.
7. Plug the cables attached to the I/O planar at J13, J14 and J50.
8. Lower the fan assembly into the unit with the louvers toward the rear of the unit.
9. Align fan assembly on the locator pins.
10. Replug the fan assembly power cables.
11. Install the center cover plate and tighten the locking screw.
12. Push the power supplies into the unit and engage each supply by lifting on the latching handle.
13. Install the SP expansion I/O interposer cables.
14. Install the supervisor card (see Replacing the supervisor card).
15. Install all PCI adapters that were removed (see Replacing a PCI adapter card).
16. Place the SP Expansion I/O Unit in usable state (see: Removing an SP Expansion I/O Unit from the service position).
17. Return to the procedure that directed you here.

Chapter 5, Parts catalog

Assembly 3

Change the units associated with part number 12K0447 from three to two.

Change the units associated with part number 12K0448 from five to three.

RS/6000 SP memory part numbers

Replace table 5-2 with the following updated table:

Description	Number of DIMMs	Total capacity	FRU #
Base card	NA	32 DIMMs	03N4183
128 MB modules	1	128 MB	93H4702
128 MB modules	4	0.5 GB	12K0404
256 MB modules	1	256 MB	07L9030
256 MB modules	4	1 GB	12K0405

Note: DIMMs are ordered separately from base cards.

Appendix A, Messages and codes

Table A-2

Replacing the following error codes with these updates:

Error Code	Description	Action / Possible Failing FRU	FRU Location Code
28030001	RTC not updating—RTC initialization required	<p>Errors reported against the Real Time Clock can be caused by low battery voltage and (rarely) power outages that occur during normal system usage. These errors are warnings that the Real Time Clock data content needs to be reestablished and do not require any FRU replacement unless the error is persistent. When one of these errors occurs, the time and date information has been lost</p> <ul style="list-style-type: none"> To set/restore the time and date, use the operating system facility Check NVRAM jumper, make certain it is in the "charge" position. If the error is persistent replace node I/O planar (P2) 	P2

Table A-9

Replacing the following location code entries with these updates:

<i>Table 10. Table A-9. POWER3 SMP High Node physical location codes</i>			
FRU Name	AIX Location Code	Physical Location Code	Physical Connection
CPU card 1	Cache: 00-00	P1-C1	System planar J02 • See Figure 2-9
	Processor 1: 00-00	P1-C1	
	Processor 2: 00-01	P1-C1	
CPU card 2	Cache: 00-00	P1-C2	System planar J03 • See Figure 2-9
	Processor 1: 00-04	P1-C2	
	Processor 2: 00-05	P1-C2	
CPU card 3	Cache: 00-00	P1-C3	System planar J04 • See Figure 2-9
	Processor 1: 00-08	P1-C3	
	Processor 2: 00-09	P1-C3	
CPU card 4	Cache: 00-00	P1-C4	System planar J05 • See Figure 2-9
	Processor 1: 00-12	P1-C4	
	Processor 2: 00-13	P1-C4	
Memory card 1	00-00	P1-M1	System planar J06 through J09 • See Figure 2-9
DIMM 1–32	00-00	P1-M1.1 to P1-M1.32	Memory card 1 • See Figure 2-10
Memory card 2	00-00	P1-M2	System planar J10 through J13 • See Figure 2-9
DIMM 1–32	00-00	P1-M2.1–P1-M2.32	Memory card 2 • See Figure 2-10
Memory card 3	00-00	P1-M3	System planar J14 through J17 • See Figure 2-9
DIMM 1–32	00-00	P1-M3.1–P1-M3.32	Memory card 3 • See Figure 2-10
Memory card 4	00-00	P1-M4	System planar J16 through J21 • See Figure 2-9
DIMM 1–32	00-00	P1-M4.1–P1-M4.32	Memory card 4 • See Figure 2-10