V2200 to V2250 Upgrade Guide

V-Class

HP 9000 Servers

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1 V2200 to V2250 Upgrade Guide

Who Should Use this Guide

The procedures in this guide are intended to be performed by a person who is qualified in the installation and servicing of computer equipment, and is trained to recognize the hazards involved. Processors are installed in an area of the product where energy levels considered hazardous may be produced.

Unpacking and inspection procedures

Inspection

All shipping containers are designed to protect their components under normal shipping conditions. Carefully inspect each carton for signs of shipping damage *before* it is unpacked. If damage is found after visual inspection, document the damage with photographs and contact the transport carrier immediately.

Unpacking

Your bill of materials lists all equipment shipped from Hewlett-Packard. Use it as a checklist to ensure that all equipment has arrived.

Use the following procedure to unpack the shipping container:

Step 1. Remove each item from its shipping container.

Step 2. Inspect each item as it is unpacked for any signs of shipping damage.

Step 3. If equipment damage is found, document the damage, and proceed to the next section.

Save all packing material until after operational checkout of the equipment. This enables equipment to be returned safely to Hewlett-Packard if required.

Damage claims

If the equipment is damaged, complete a damage claim form and give it to the shipping representative. Claim forms are normally obtained from the shipping representative.

Overview of Processor Upgrade

You can upgrade more than one processor in a V-Class system:

1. Order one (1) 240 Mhz processor upgrade kit (A5083A).
2. Order as many processor upgrade kits (A5066A) as needed to replace other existing processors (which may be as many as 15).

NOTE Do not mix 200 Mhz and 240 Mhz processors on a server.

Upgrading processors in V-Class systems requires the following steps:

A. Check the contents of the processor upgrade kit.

B. Check the configuration of existing processor(s).

C. Plan the processor installation.

D. Make sure the system administrator has done a system backup.

E. Install test station software (V4.1 or later) to support new processor cards.

F. Shut down and power off the system.

G. Make sure you are grounded.

H. Remove the existing processor cards.

I. Install the new processor cards.

J. Verify processor upgrade.

K. Attach enclosed label to back of V-Class system to reflect that the V-Class system has been upgraded.

L. Follow instructions in the return credit document to return replaced processor cards.

If the processor verification is not successful, refer to the section titled "Troubleshooting Processor Configuration Error Symptoms" at the end of this manual.

Required Tools

To perform the procedures in this upgrade guide, the following tools are required:

- Flatblade screwdriver
- Phillips screwdriver
- ESD (Electrostatic Discharge) Field Service Kit

Safety Considerations

WARNING

The upgrade procedures in this guide require opening the system cabinet, which may expose you to high-energy (high-amperage) circuits, possible ejection of molten metal, and exposed sharp edges on the chassis. Be sure to remove all rings, watches, and other jewelry from fingers, wrists, and arms before opening the system cabinet.

Electrostatic Discharge Precautions

Electrostatic discharge can damage the integrated circuits on printed-circuit boards. To prevent such damage from occurring, be sure to observe the following precautions when handling and installing boards:

- Use a grounding mat and an anti-static wrist strap, such as those included in the ESD Field Service Kit (HP P/N A3024-80004).
- Wear the anti-static wrist strap to ensure that any accumulated electrostatic charge is discharged from your body to ground.
- Keep uninstalled printed-circuit boards in their protective anti-static bags until you are ready to install them.
- Handle printed-circuit boards by their edges after you have removed them from their protective anti-static bags.
- Handle processor boards carefully: SRAM is sensitive to damage.

Processor Installation Procedure

A. Check Contents of Processor Upgrade Kit

Open the processor upgrade kit and verify that, in addition to this manual, it contains the following:

- 240 Mhz processor board
- Test station software V4.1 (or later) CD and documentation
- Product number label
- Return instructions
- ESD (Electrostatic Discharge) kit

NOTE

Do not mix 200 Mhz and 240 Mhz processors on a server.

Also, check that you have enough 240 Mhz processor boards to replace existing 200 Mhz processor boards.

B. Check Existing Processor Configuration

To check the existing processor configuration, run the on-line diagnostic tool, xconfig.

1. If you are not already logged on, logon at the test station as sppuser and enter the password. (The factory default password is: spp user.)
2. In a tcsh window, type `xconfig`.

   xconfig is a graphical tool that shows the configuration state. Refer to Figure 1-1 on page 1-7. There is legend in the lower right of the screen. A green box indicates the component is present and enabled. A blue box means the component slot is empty.

   If a tcsh window is not displayed on the test station screen:

   a. Move the cursor into a non-window area of the screen.

   b. Press and hold down the left mouse button.

      The “root menu” appears.

   c. Select “shell menu,” then “tcsh.”

Figure 1-1 xconfig Display

3. Determine which processor locations are occupied by examining the screen for green boxes containing the label “PB” followed by the PB1L,” for example, refers to the processor board in position 1 on the left side. Notice that position numbers range from 0 to 7 on both the right and left side of the system.

C. Plan the Processor Board Installation

Table 1-1 shows the order in which processors should be added to the system.

NOTE

This order is recommended for optimum performance. The system may still work if this order is not followed.

Figure 1-2 shows where the processors are located. Before you shut down the system, determine where you are going to install the processors.

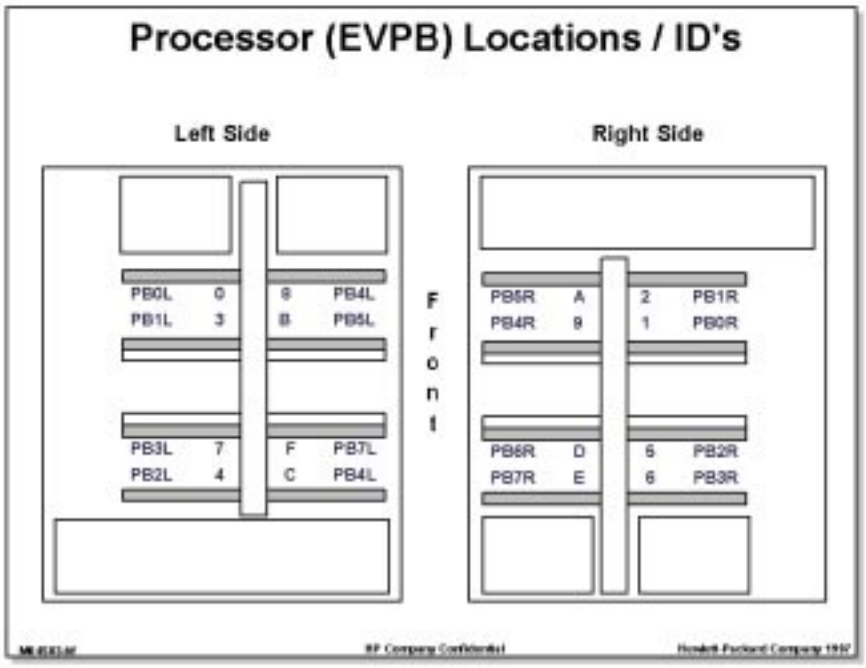
NOTE

A processor must be installed on every Processor Agent Chip (EPAC) that has a PCI-Bus Interface Controller (EPIC) attached.

Table 1-1 Processor Board Installation Sequence

Order	Slot Name
1st	PB1L
2nd	PB5L
3rd	PB0R
4th	PB4R
5th	PB2L
6th	PB6L
7th	PB3R
8th	PB7R
9th	PB0L
10th	PB4L
11th	PB1R
12th	PB5R
13th	PB3L
14th	PB7L
15th	PB2R
Last	PB6R

Figure 1-2 Processor Board Slot Locations



D. Make Sure System Administrator has Done a System Backup

Make sure the system administrator has done a system backup.

E. Install Test Station Software

See the release notice for Exemplar Test Station Software V4.1 (or later) for detailed instructions.

F. Shut Down and Turn Off Power to the System

1. Before you shut down the system, exit from xconfig by selecting Exit from the File menu.

2. If the system administrator has not done so already, shut down the operating system. At the sppconsole window, type:

   `/etc/shutdown -h` *time*

   You must be logged on as root to shutdown the system.

   The *time* argument can be used to schedule a timed shutdown or the keyword "`now`" can be used to shut down the system immediately. See the `shutdown` man page for more information on this command.

3. When you see the message,

   ```
   System has halted

   OK to turn off power or reset system

   UNLESS "WAIT for UPS to turn off power" message was
   printed above
   ```

   Set the node key switch to DC OFF. See Figure 1-3 on page 1-12.

4. To access the main circuit breaker, remove the right side cabinet skin by pulling from the top and bottom of the skin until it pops out. Each skin has a set of four catch pins securing it to the chassis. (Figure 1-3 shows the left side being removed, but the procedure for removing the side skin is the same for both sides.)

5. Turn off the main circuit breaker at the lower right side of the cabinet.

   The green light next to the circuit breaker will stay on even after you turn off the circuit breaker. This light indicates that there is power at the power plug.

G. Personal Grounding

Electrostatic damage to electronic devices may be caused by the direct discharge of a charged conductor or by exposure to the static fields surrounding charged objects. The following procedure will eliminate this type of damage.

1. Ground yourself to the node by wearing the wrist strap connected to a metal portion of the chassis.
2. Set up a grounded work area by using a static dissipating mat grounded to the node chassis.
3. Position the mat on top or near the node.

H. Remove Existing Processor Board

Replace or remove all existing processor boards. Do not mix 200 Mhz and 240 Mhz processor boards.

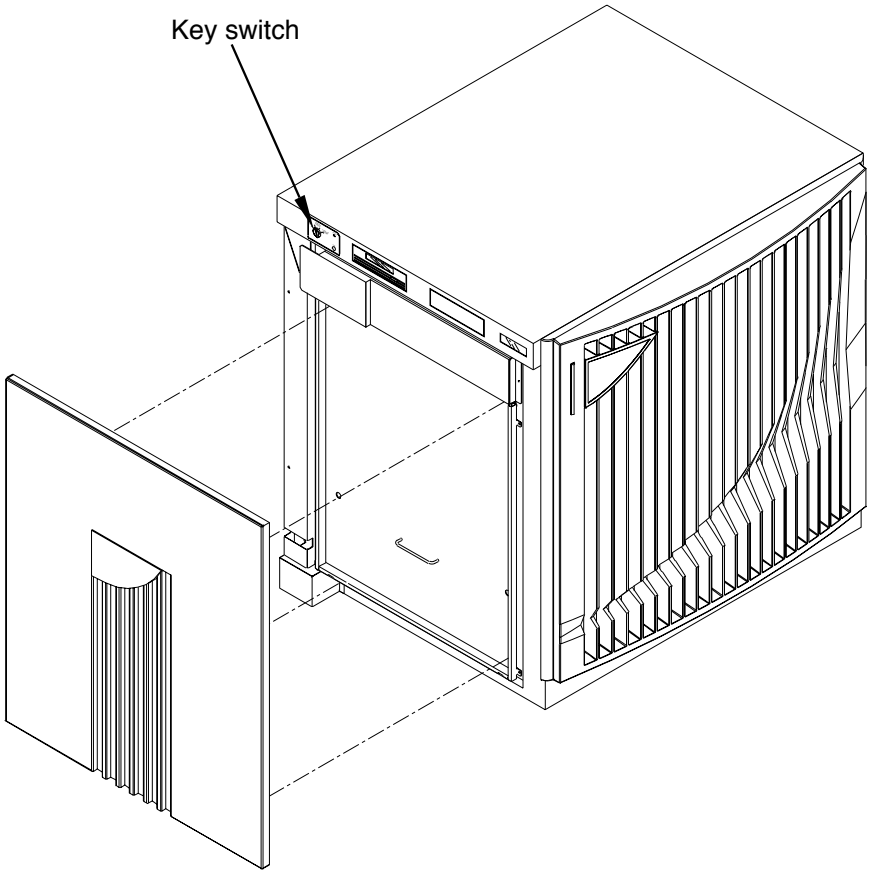
1. Verify that the system has been shut down.
   a. Make sure the key switch on the operator panel is set to the DC OFF position.
   b. Make sure the circuit beaker switch is in the OFF position.

WARNING

Power to the system must be off before you remove or install processor boards. Failure to do so will damage electronic components and will expose you to hazardous voltages.

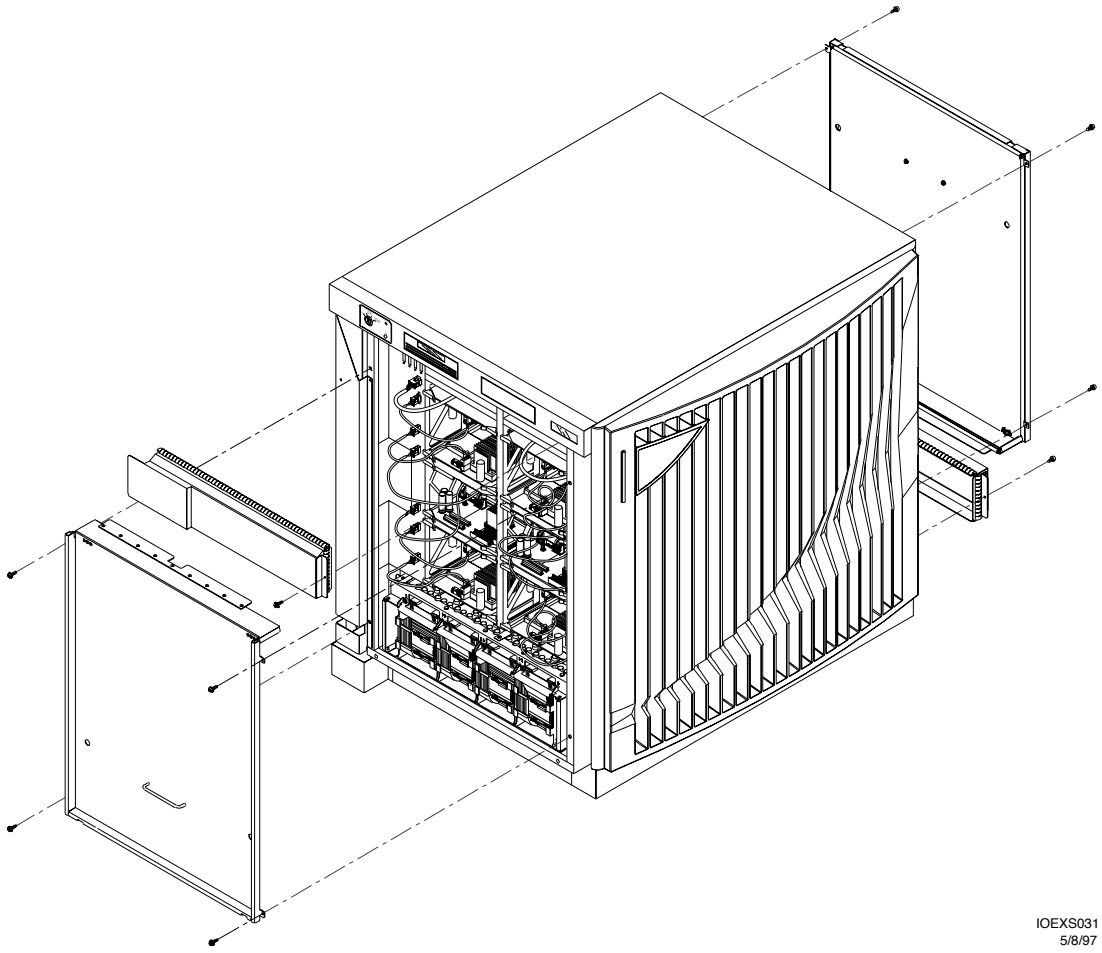
2. Remove the applicable side cabinet skin by pulling from the top and bottom of the skin until it pops out. Each skin has a set of four catch pins securing it to the chassis. Figure 1-3 shows the left panel removed.

Figure 1-3 Side Skin Removal



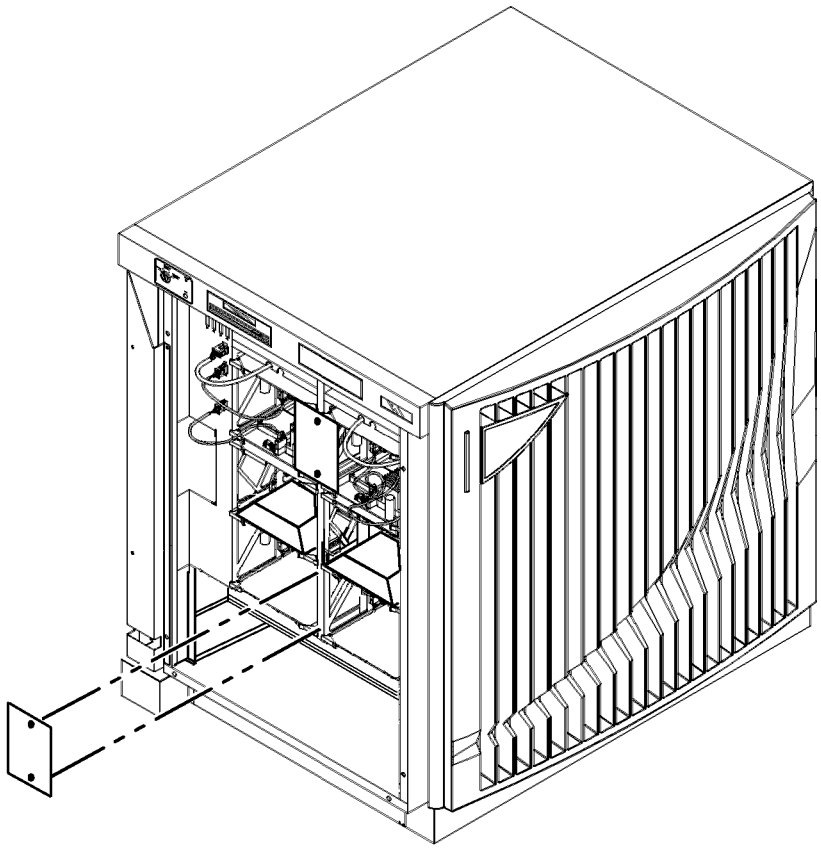
3. Remove the EMI panels by removing the four screws that fasten the panels to the chassis. Refer to Figure 1-4.

Figure 1-4 EMI Panel Removal



4. Remove the Board Restraint Bracket that partially covers the slot into which you are installing the processor board by unscrewing the two thumbscrews. Refer to Figure 1-5.

Figure 1-5 Board Restraint Bracket



exsm062c

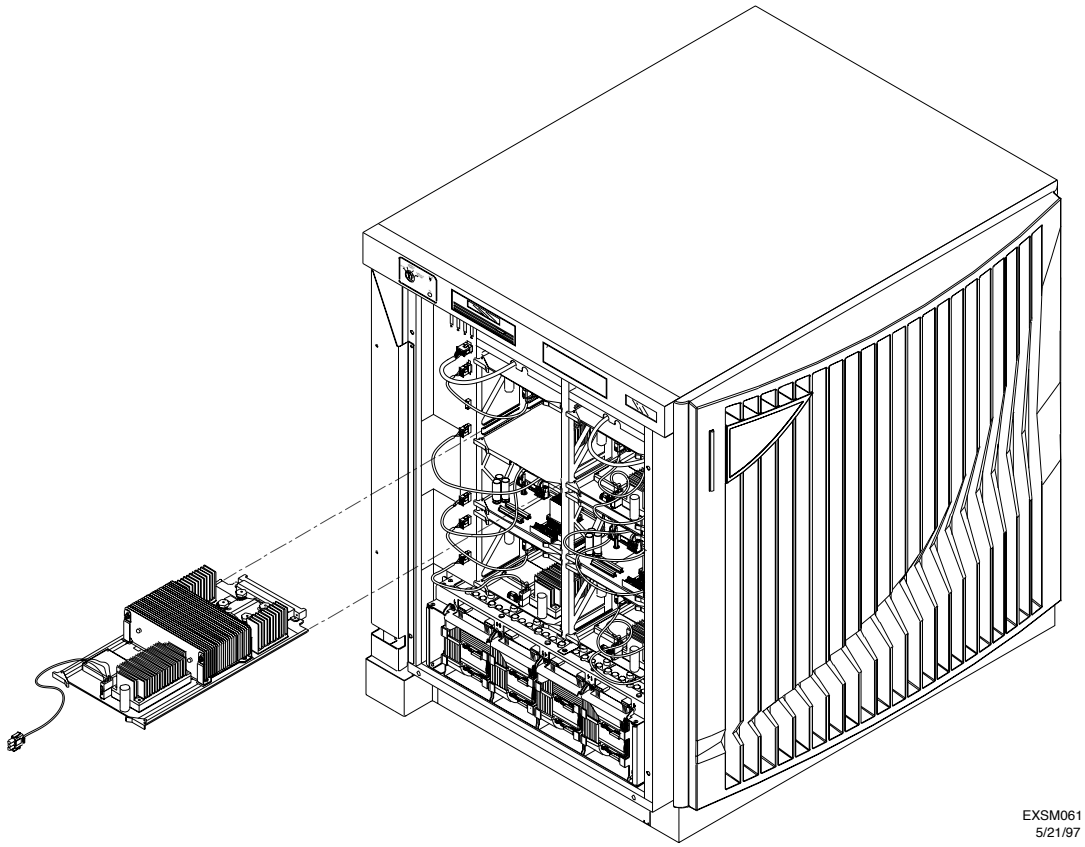
5. If a filler blank is in the slot where a processor board is to be added, remove it.

   This black plastic blank is used to redirect air flow when no processor board is installed.

6. Disconnect the power cable from the processor board to the chassis. The power receptacle is located on the chassis to the side of the processor board. The board designator (for example, “PB4L”) is stamped into the chassis next to the power receptacle.

7. Remove the processor board from the chassis by first pulling toward you the two extractor levers on the front of the processor board. Then, supporting the processor board, continue sliding it all the way out.

Figure 1-6 Processor Board Removal



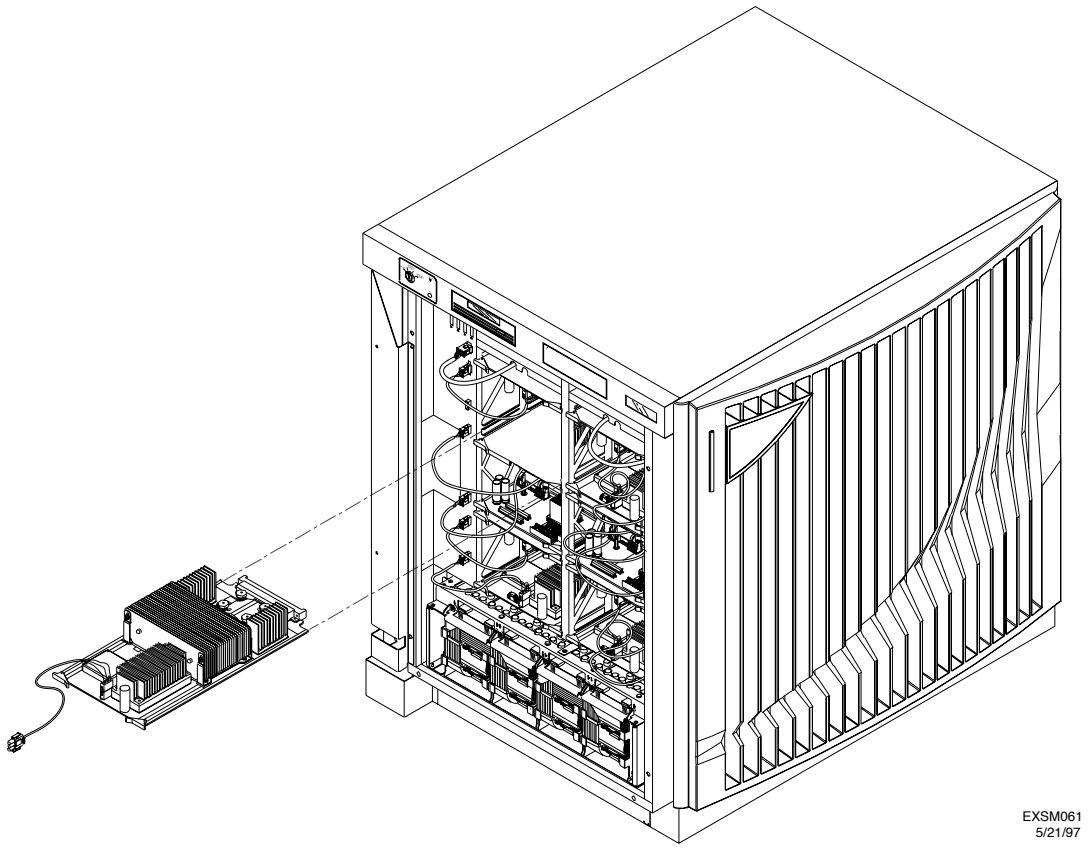
I. Install Processor Board

1. Install the new processor board into the chassis by lining up the processor board with the guide rails. Continue sliding the processor board into the chassis and secure it by pressing it in firmly. Press firmly on the extractor levers to ensure that it is fully seated in the node routing board (ENRB).

CAUTION

Make sure you install the processor board in a processor slot. Installing a processor board in a memory board slot will seriously damage the system.

Figure 1-7 Processor Board Installation



2. Connect the power cable from the processor board to the chassis. The power receptacle is located on the chassis, to the side of the processor board. The board designator (for example, "PB4L") is stamped into the chassis next to the power receptacle.
3. Install the Board Restraint Bracket. See Figure 1-5 on page 1-14.
4. Install the EMI panels. Use four screws. See Figure 1-4 on page 1-13
5. Turn on the main circuit breaker at the lower right side of the system.
6. Install the skins.
7. Set the node key switch to "DC On." See Figure 1-3 on page 1-12.

   Power On Self Test (POST) and OBP load.
8. Make sure the cursor is in the sppconsole window.
9. Press a key when the following message appears:

   ```
   Processor is starting the autoboot process

   To discontinue, press any key within 10 seconds.
   ```

   This message will appear only if autoboot is enabled.

J. Verify Processor Upgrade

You can use two tests to verify the processor upgrade:

- Run xconfig to verify that the new processor board is "Available." The xconfig program can be run offline. Refer to "B. Check Existing Processor Configuration" on page 1-6.
- Run the online diagnostic, ioscan, using the procedure that follows.

1. At the PDC Boot Command Menu in the sppconsole window, type: `boot`.

   HP-UX loads.
2. Login as sppuser and enter the password.

3. At the HP-UX prompt in the sppconsole window, type: `ioscan`

   A screen similar to the following appears:

Figure 1-8 ioscan Display

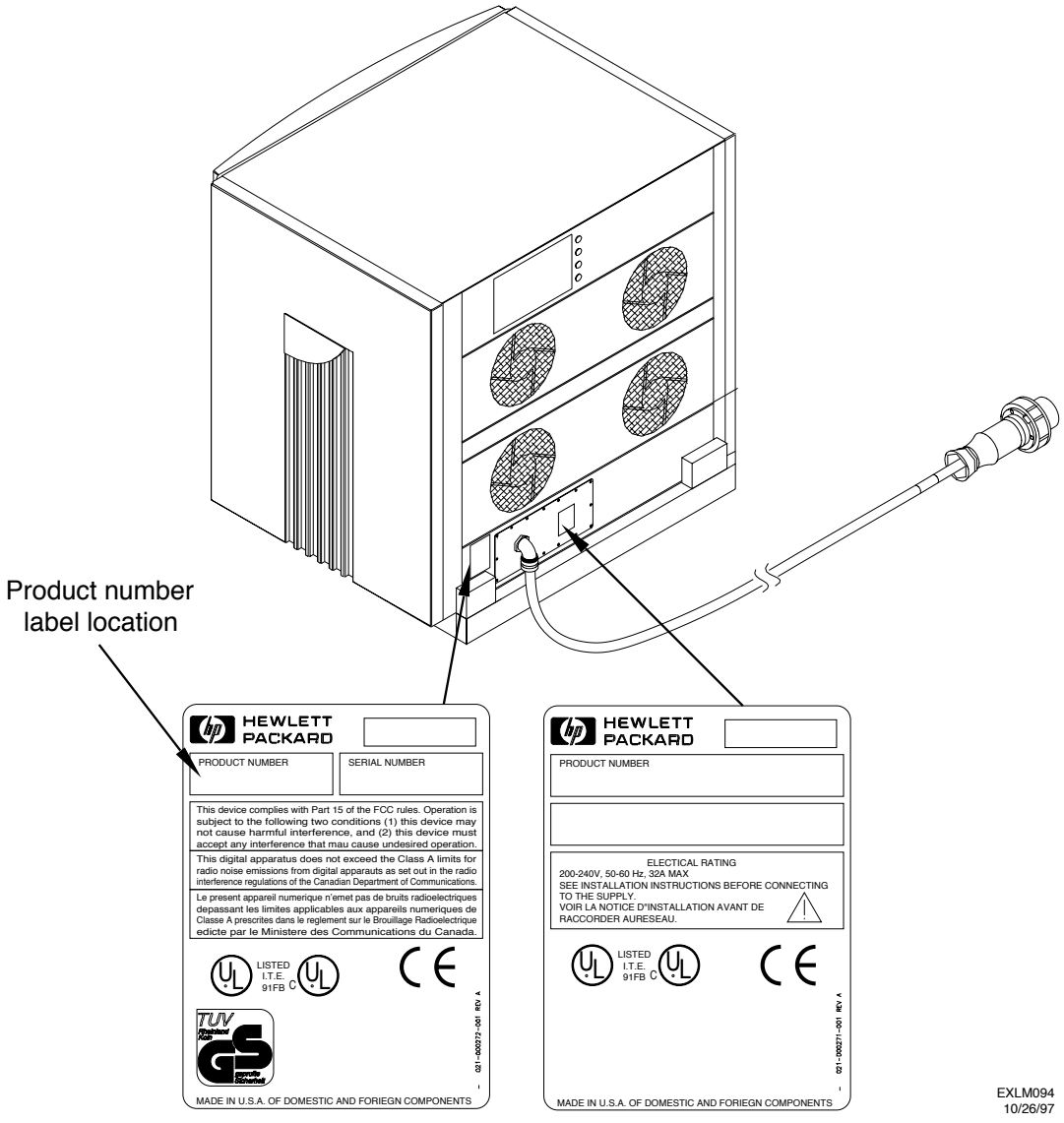
IOSCAN

```
rif B.11.00 ic16B 64bits >ioscan
H/W Path    Class                   Description
============================================
...
8           memory                  Memory
15          ba                      Core I/O Adapter
15/1            tty                 Built-in Serial Port DUART
15/2            tty                 Built-in Serial Port DUART
15/3            unknown             Unknown
17          processor               Processor
19          processor               Processor
25          processor               Processor
27          processor               Processor
```

If you encounter difficulties or unexpected results, refer to "Troubleshooting Processor Configuration Error Symptoms".

K. Attach Label Place enclosed label on the machine so that it updates the Product Number (not the Serial Number), as shown in the illustration below.

Figure 1-9 **Product Number Label**



L. Return Replaced Boards

To return replaced boards,follow procedures in the return instructions.

Troubleshooting Processor Configuration Error Symptoms

This section discusses the tests and procedures to troubleshoot a processor board installation. The following three tests can be used:

- Run xconfig and ioscan
- Run dcm script

Troubleshooting Strategy

Use the following strategy to troubleshoot the upgrade:

1. If, after running xconfig and ioscan, the system fails to recognize the new processors:
   a. Power down the system.
   b. Make sure you are grounded.
   c. Remove the skin and EMI panels.
   d. Remove the Board Restraint Bracket.
   e. Check that connectors and boards are installed properly.
   f. Verify that the new processor boards conform to the recommended configuration sequence shown in Table 1-1.
   g. Install the Board Restraint Bracket.
   h. Install the EMI panels and skin.
   i. Power up the system.
   j. Rerun xconfig or the online diagnostic ioscan. See “J. Verify Processor Upgrade” on page 1-17.

      If the system still fails to recognize the new processor board, you may want to run the dcm script. See “Run dcm Script”, which follows. Otherwise, return the board to Hewlett-Packard. (Materials to return the boards are included in the upgrade kit.)

Run dcm Script

The dcm script reads, parses, and prints to the screen the boot configuration map in NVRAM.

To run the dcm script:

1. At the tcsh (shell) window, type, `dcm 0 | more`

   Output similar to the following will be displayed:

```
Excalibur Configuration Map Dump: Node:0
============================================================
VERSION: 001.000.000.000 compiled: 1997/10/10 13:23:07 by:---
Acquiring the Boot Configuration Map.
Check Sum: 0xf1a83645

Boot Config Map Size: 113 Words
POST Revision: 4.0.0.1
...
CPUs (ICache, DCache) Size in Bytes
==================================
PB0l - EMPTY (Unknown, Unknown) PB0R - PASS (-------, ------)
PB1R - EMPTY (Unknown, Unknown) PB1L - PASS (-------, ------)
PB2L - PASS (-------, -------), PB2R - PASS (-------, ------)
PB3R - EMPTY (Unknown, Unknown) PB3L - PASS (-------, ------)
PB4L - EMPTY (Unknown, Unknown) PB4R - PASS (-------, ------)
PB5R - EMPTY (Unknown, Unknown) PB5L - PASS (-------, ------)
PB6L - PASS (-------, -------), PB6R - PASS (-------, ------)
PB7R - EMPTY (Unknown, Unknown) PB7L - PASS (-------, ------)
...
```

If the dcm script fails to show the new processor board, return the board to HP.

For more information about the dcm script, refer to the *HP Diagnostics Guide (S-Class, X-Class, and V-Class Servers)* (P/N A3725-90009).