# System Upgrade Installation Guide

## HP 3000 99x Family, HP 9000 T-Class Systems

### HP 3000 Corporate Business Systems and HP 9000 Enterprise Servers

**Upgrading 991/995/T500 and 996/T520 to 997/T600**

**Adding Processors to 997/T600**


**Part No. A3329-90001**
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# Safety Information

For your protection, this product has been tested to various national and international regulations and standards. The scope of this regulatory testing includes electrical/mechanical safety, radio frequency interference, ergonomic, acoustic, and hazardous materials. Where required, approvals obtained from third-party test agencies are shown on the product label. In addition, various regulatory bodies require some of the information under the following headings.

## Safety Considerations

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation. The following figure shows some of the safety symbols used on the product to indicate various safety considerations.

**Safety Symbols**

Instruction manual symbol: the product will be marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect the product against damage.

Indicates hazardous voltages.

Indicates wiring terminal intended for connection of the protective earthing conductor associated with the supply wiring.

Indicates chassis earth (ground) terminal (used to indicate common connected to grounded chassis and for ESD prevention).

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## Preface

This edition of the System Upgrade Installation Guide contains technical information about processor and memory cards for HP 3000 Corporate Business Systems and HP 9000 Corporate Enterprise Servers, and is intended for experienced Hewlett-Packard customer service personnel.

At the time of publication, HP 3000 Corporate Business Systems and HP 9000 Corporate

Enterprise Servers included the following models:

**HP 3000 99x Family**

| 990/992 | | 991/995 | | 996[1] | 997 |
|---|---|---|---|---|---|
| 990CX | 990DX | 991CX | 991DX | 996/80 | 997/100 |
| 992/100CX | 992/100DX | 995/100CX | 995/100DX | 996/100 | 997/200 |
| 992/200CX | 992/200DX | 995/200CX | 995/200DX | 996/200 | 997/300 |
| 992/300CX | 992/300DX | 995/300CX | 995/300DX | 996/300 | 997/400 |
| 992/400CX | 992/400DX | 995/400CX | 995/400DX | 996/400 | 997/500 |
| | | 995/500CX | 995/500DX | 996/500 | 997/600 |
| | | 995/600CX | 995/600DX | 996/600 | 997/800 |
| | | 995/700CX | 995/700DX | 996/700 | |
| | | 995/800CX | 995/800DX | 996/800 | |

1. A 996 System may be field upgraded to 9, 10, 11, or 12 processors. Factory integrated servers are sold with a maximum of 8 processors.

**HP 9000 T-Class Systems**

| | | | |
|---|---|---|---|
| 890 | T500 | T520 | T600 |

# 1 Overview

This guide describes two types of upgrades:

- Complete upgrades from a 991/995/T500 or 996/T520 System to a 997/T600 System.
- Adding processors and memory to existing 997/T600 Servers.

**Experienced Users.** Chapter 2 of this manual contains simple checklists for both the HP-UX and MPE upgrades.

**Inexperienced Users.** Although Chapter 2 contains simple checklists for the upgrades, inexperienced users should follow the detailed procedures in Chapter 3, “T500/T520 to T600 Upgrade,” or Chapter 4, “991/995/996 to 997 Upgrade.”

| | |
|---|---|
| **NOTE** | Unless otherwise noted, the installation procedures in this manual apply only to the upgrades listed above. Exceptions are noted by reference to specific server or model numbers. |

| | |
|---|---|
| **WARNING** | **The hardware installation should be performed only by qualified service personnel. High voltages are present and constitute a risk of electric shock hazard.** |

| | |
|---|---|
| **NOTE** | Be sure to review all Service Notes that may pertain to the server and its associated PCAs before performing the installation procedures in this guide. |

# Terminology

The following terms are used in this document to refer to servers and components:

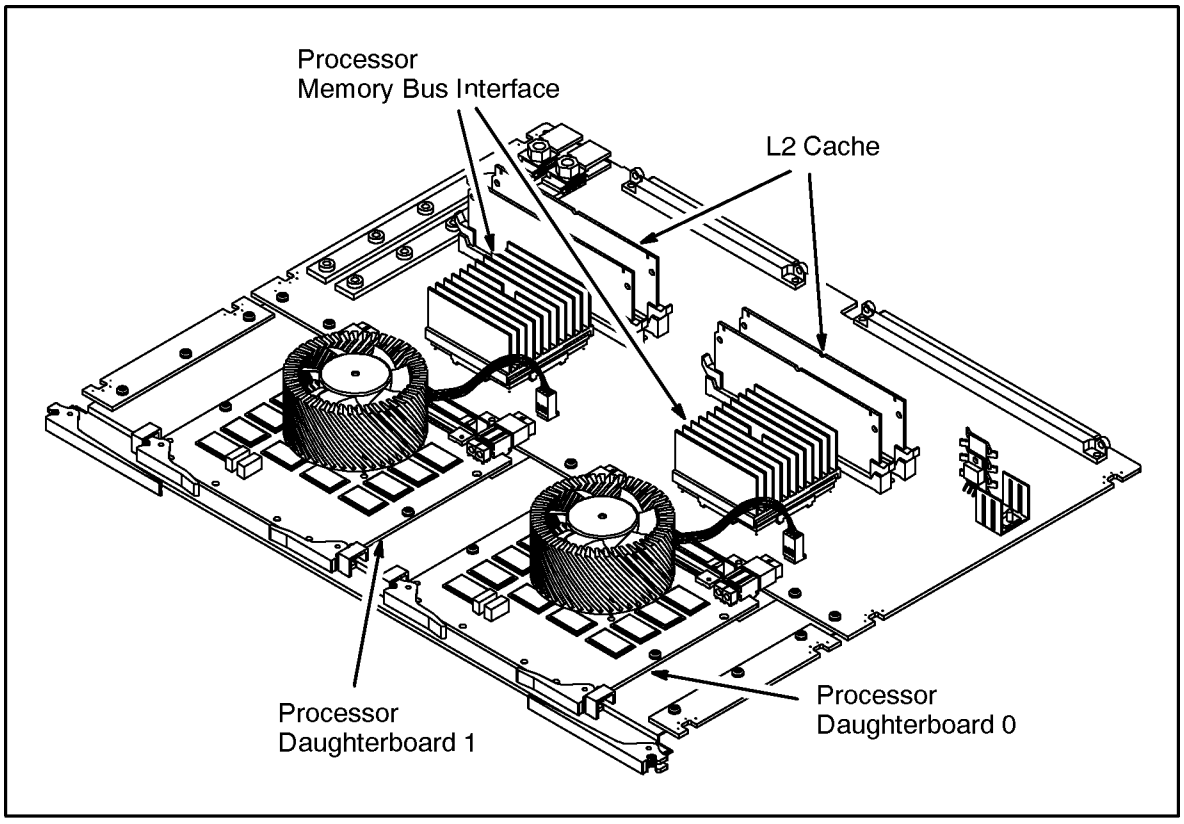
**Table 1-1 Terminology**

| Term | Refers to: |
|---|---|
| 991/995 | Pre-upgraded HP 3000 Corporate Business System (991/995) |
| 996 | Pre-upgraded HP 3000 Corporate Business System (996) |
| 997 | Upgraded HP 3000 Corporate Business Server |
| 99x | All HP 3000 990, 991, 992, 995, 996, 997 Systems and Servers |
| T500 | Pre-upgraded HP 9000 Servers (T500) |
| T520 | Pre-upgraded HP 9000 Servers (T520) |
| T600 | Upgraded HP 9000 Corporate Business Servers |
| T-Class Systems | All HP 9000 890, T500, T520, T600 Servers |
| HP-HSC I/O Bus Converter | The bus converter motherboard on an 997/T600 System to which HSC I/O cards and HP-PB I/O Bus Converters are attached. |
| HSC I/O cards | High Speed Connect I/O cards (also know as General System Connect + (GSC+) cards) |
| HP-PB I/O Bus Converter | Adapter card used to connect to internal and external HP-PB card cages on 997/T600 Systems. It has the same function on the 997/T600 System as the Upper Bus Converter does on systems prior to the 997/T600. |

# Upgrade Cards

To upgrade a 991/995/T500 or 996/T520 System to a 997/T600 system, processor cards or processor daughterboards (see Figure 1-1), bus converter modules (see Figure 1-2), and power modules have to be installed.

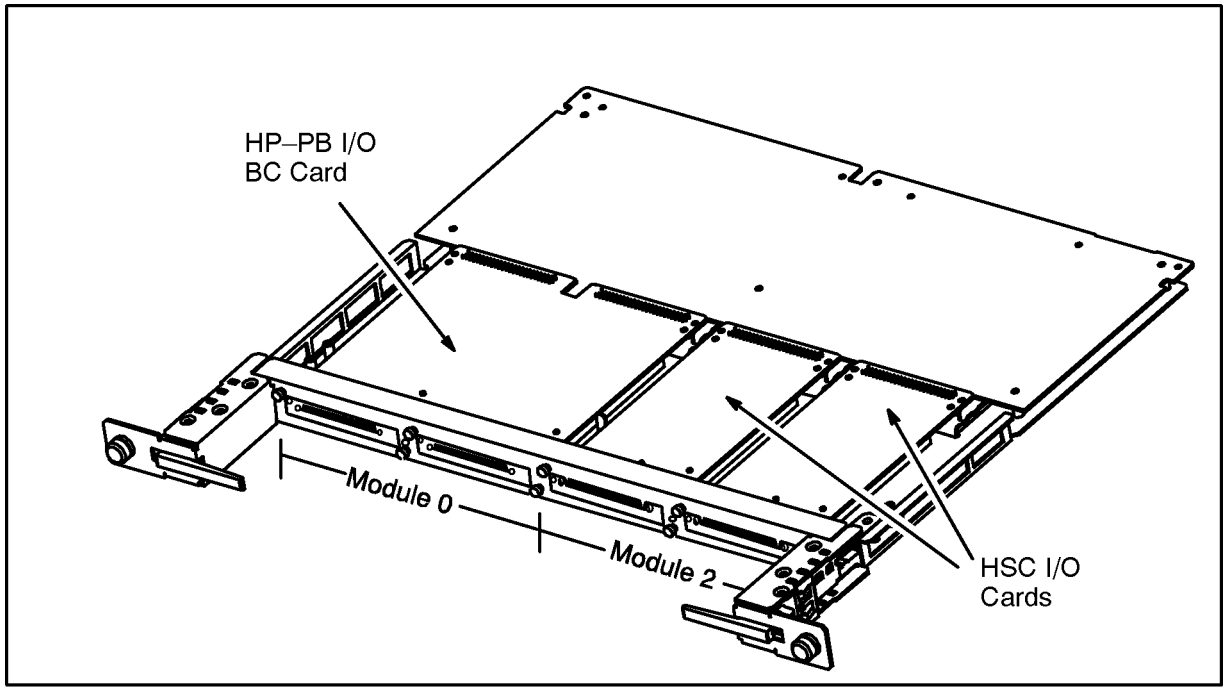
**Figure 1-1 997/T600 Processor Card**




jd024a

Each processor card for the 997/T600 System contains one or two processor daughterboards (modules).

**Figure 1-2 HSC I/O BC Card with one HP-PB I/O BC and two HSC I/O Cards**

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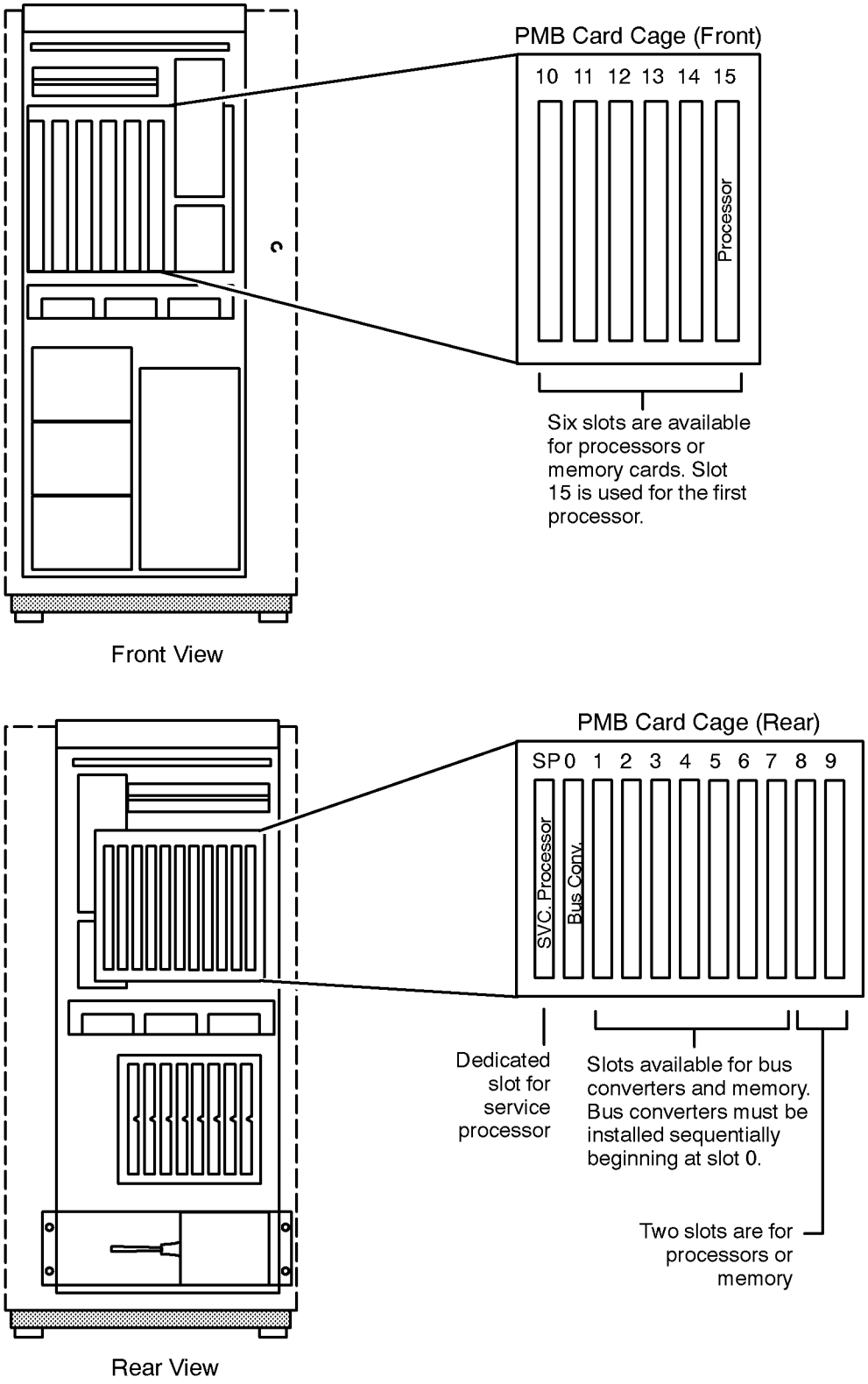
On 997/T600 Systems, the upper bus converter function is performed by two cards: a motherboard (called an HP-HSC I/O Bus Converter) and an HP-PB I/O Bus Converter that is attached to the motherboard. One or two HP-PB I/O Bus Converter cards can be attached to an HP-HSC I/O Bus Converter. In addition to HP-PB I/O Bus Converter cards, you can attach HSC I/O cards such as ATM, Fibre Channel, and Fast/Wide SCSI to the HP-HSC I/O Bus Converter. The HP-PB I/O Bus Converter occupies two positions on the HP-HSC I/O Bus Converter and each HSC I/O card occupies one slot.

## Card Location

Processor cards, memory cards, and HP-HSC I/O Bus Converter Cards are installed in the front and rear of the Processor-Memory Bus (PMB) card cage. See Figure 1-3.

**Figure 1-3 Card Locations in the Processor-Memory Bus (PMB) Card Cage**



# 2 Upgrade Checklists

# Upgrade Checklist (HP-UX)

This section contains an OVERVIEW of the upgrade procedure.

**NOTE** Do not try to do your first installation by using this checklist only. The procedure is complex. Failure to perform each step accurately and in order can result in a non-operational system. The details of the procedure are described in Chapter 3, “T500/T520 to T600 Upgrade.”

The following procedure summarizes the main steps required to upgrade a T500 or T520 to a T600 system.

1. Make sure the system has been backed up.
2. Verify the contents of upgrade kit.
3. Make sure the operating system has been updated to HP-UX 10.20 Hardware Extensions or higher.
4. Make sure the ccio and, if the system includes SCSI interface modules, c720 device drivers are configured into the kernel.
   a. Run **sam.**
   b. Select "Kernel Configuration."
   c. Select "Drivers."
   d. Scroll the list and check for "ccio" and, if the system includes SCSI interface modules, “c720.”

      Make sure the "Current State" and the "Pending State" are IN.

**WARNING** **Do not continue unless you are going to perform the hardware upgrade now.**

5. Execute the ioconfig Remapping Program.
6. Update FUT, if required.
7. Install new hardware:
   a. Power down the system.
   b. Install processor cards.
      - Remove existing motherboards from slots 10, 11, 12, 13, 14, and 15.
      - Move the memory card from slot 9 to slot 12.
      - Ad new processors to slots 9, 10, 11, 13, 14, and 15.
   c. Install new power supplies.
      - Remove 5V 130A power modules from slots P10 and P1.

- Install new 3.3V 130A power modules in slots P1, P9, P10, and P11.
- Remove the 5V 325W power modules from slots P6, P7, and P13.
- Install new versions of the 5V 325W modules in slots P5, P6, P7, and P13.

d. Install additional PFC, if appropriate.

e. Remove the existing bus converter card in PMB slot 0 and label the cables.

f. Unplug the Support cable and remove the Service Processor card.

g. Replace the EMC clips.

**CAUTION** Failure to replace EMC clips may cause hardware damage to the bus converter card(s) in slot 0.

h. Install HSC and HP-PB BCs to the BC motherboards, if required.

i. Install the new BC card in PMB slot 0.

j. Install the new BC cards in the same slot from which you removed the old BC card.

k. Reinstall the Service Processor card.

l. Remove and replace the cable management bracket.

m. Reattach the cables.

n. Add upgrade memory cards, if required.

o. Install UPS, if ordered.

8. Power up the system.
9. Install new SPU firmware.
10. Reset the system boot device.
11. Verify that the control panel reports the new number of processors.
12. Verify the proper configuration of processors.
13. Verify that the initial PDC display reports the new number of processors and amount of memory.
14. Run the diagnostics UDIAG (processors), MEMTEST (memory cards), JAVADIAG (upper HP-HSC BC), KEYDIAG (upper HP-PB BC cards), and (ACMEDIAG (the lower HP-PB BC cards).
15. Run, IOTEST, and PERFVER.
16. Clear the SPU tombstone logs.
17. Run SS_CONFIG.
18. Attach upgrade labels and nameplate.

# Upgrade Checklist (MPE)

The following procedure summarizes the main steps required to upgrade a 991/995 or 996 system to a 997 system. The complete procedure is described in Chapter 4, "991/995/996 to 997 Upgrade."

**NOTE** Do not try to do your first installation by using this checklist only. The procedure is complex. Failure to perform each step accurately and in order can result in a non-operational system.

1. Make sure the system has been backed up.
2. Verify the contents of upgrade kit.
3. Make sure the operating system has been updated to MPE/iX Release 5.5 (VUF C.55.03) or higher.
4. Make a backup copy of the `CONFIG.SYS` group and the file `NMCONFIG.PUB.SYS`.
5. Convert the `SYSGEN` configuration files using the command file `IOCNVRT.PUB.SYS`.
6. Convert the file `NMCONFIG.PUB.SYS` using the tool `JADETOOL`.
7. If Remote Job Entry (RJE) links are used on the system, run `NMMGR` to update any RJE links in the new (converted) NMCONFIG.PUB.SYS file.
8. Shut down the system.
9. Load FUT firmware, if required.
10. Install new hardware:
    a. Power down the system.
    b. Install processor cards.
        - Remove existing motherboards from slots 10, 11, 12, 13, 14, and 15.
        - Move the memory card from slot 9 to slot 12.
        - Add new processors to slots 9, 10, 11, 13, 14, and 15.
    c. Install new power supplies.
        - Remove 5V 130A power modules from slots P10 and P1.
        - Install new 3.3V 130A power modules in slots P1, P9, P10, and P11.
        - Remove the 5V 325W power modules from slots P6, P7, and P13.
        - Install new versions of the 5V 325W modules in slots P5, P6, P7, and P13.
    d. Install additional PFC, if appropriate.
    e. Remove the existing bus converter card in PMB slot 0 and label the cables.
    f. Unplug the Support cable and remove the Service Processor card.

g. Replace the EMC clips.

**CAUTION** Failure to replace EMC clips may cause hardware damage to the bus converter card(s) in slot 0.

h. Install HSC and HP-PB BCs to the BC motherboards, if required.

i. Install the new BC card in PMB slot 0.

j. Install the new BC cards in the same slot from which you removed the old BC card.

k. Reinstall the Service Processor card.

l. Remove and replace the cable management bracket.

m. Reattach the cables.

n. Add upgrade memory cards, if required.

o. Install UPS, if ordered.

11. Power up the system.

12. Install new SPU firmware.

13. Reset the system boot device.

14. Verify that the control panel reports the new number of processors.

15. Verify the proper configuration of processors.

16. Verify that the initial PDC display reports the new number of processors and amount of memory.

17. Run the diagnostics UDIAG (processors), MEMTEST (memory cards), JAVADIAG (upper HP-HSC BC), KEYDIAG (upper HP-PB BC cards), and (ACMEDIAG (the lower HP-PB BC cards).

18. Run, IOTEST, and PERFVER.

19. Clear the SPU tombstone logs.

20. Run SS_CONFIG.

21. Reboot the system using the newly created configuration files.

22. If the 997 `SYSGEN` configuration files are not in the group `CONFIG.SYS`, copy them into the `CONFIG.SYS` group.

23. Run `NMMGR` and validate `DTS`.

24. Shut down and reboot the system.

25. Attach upgrade labels and nameplate.

# 3 T500/T520 to T600 Upgrade

## Detailed Upgrade Procedure (HP-UX)

This sections describes in detail the T500/T520 to T600 Upgrade. A checklist of these steps is available in “Upgrade Checklist (HP-UX)” on page 2-2.

### Verifying the Contents of the Kit

Verify that the upgrade kit contains:

- The flyer, *Readme Before Installing or Updating HP-UX 10.20 Hardware Extensions* 2.0
- Card Cage labels.
- Upgrade labels.
- The manual, *99x/T-Class System Firmware Update Guide* (PN A1820-90002)
- *Firmware Update Quick Reference*
- 10.20 Hardware Extensions 2.0 (CD-ROM Kit)
  - CD-ROM (HP-UX Release 10.20)

    (On the World Wide Web, the HP-UX 10.20 Operating System and Hardware Extensions 2.0 is available at the HP Software Depot as a Patch Bundle at http://www.software.hp.com. Customers who want a subset of patches need not install the entire bundle, but can retrieve patches selectively from the web site.)
  - *HP-UX Release 10.20 Hardware Extensions* 2.0
- HP-UX Support Release 10.20 (CD-ROM)
- S800 Upgrade CD-ROM T600 I/O Script (CD-ROM)
- *Update Return Instructions*
- Firmware Update Tool (FUT):

  The latest firmware part numbers and applications are specified in the Firmware Update Guide Errata Sheet (PN 5960-3790). This document is provided with the Firmware Update Kit.
- Processor cards:
  - 1-CPU upgrade: 1 processor motherboard with 1 processor daughterboard (module).
  - 2-CPU upgrade: 1 processor motherboard with 2 processor daughterboards (modules).

  - 3-CPU upgrade: 2 processor motherboards with 3 processor daughterboards (modules).
  - 4-CPU upgrade: 2 processor motherboards with 4 processor daughterboards (modules).
  - 5-CPU upgrade: 3 processor motherboards with 5 processor daughterboards (modules).
  - 6-CPU upgrade: 3 processor motherboards with 6 processor daughterboards (modules).
  - 7-CPU upgrade: 4 processor motherboards with 7 processor daughterboards (modules).
  - 8-CPU upgrade: 4 processor motherboards with 8 processor daughterboards (modules).
  - 9-CPU upgrade: 5 processor motherboards with 9 processor daughterboards (modules).
  - 10-CPU upgrade: 5 processor motherboards with 10 processor daughterboards (modules).
  - 11-CPU upgrade: 6 processor motherboards with 11 processor daughterboards (modules).
  - 12-CPU upgrade: 6 processor motherboards with 12 processor daughterboards (modules).
- Memory cards if ordered by customer.
- Power Factor Correcting (PFC) Module if upgraded system has more than two processors. (Or, if you ordered the power resiliency option, an additional PFC module for systems with two processors, and two additional PFCs for systems with more than two processors.)
- HP-PB I/O Bus Converters.
- HSC I/O cards if ordered by customer.
- HP-HSC I/O Bus Converter(s).
- Cable Management Bracket.
- Slot Shield (transitional cover for HP-HSC I/O Bus Converter).
- EMC Clip Extractor Tool.
- EMC Clips (14).
- Nameplate.
- Power Supplies.
  - 3.3V 130A Power Supplies
  - 5V 325W Power Supplies

- Optional 3.0 or 5.5 kVA PowerTrust UPS. (Instructions on how to install the UPS are included with the UPS and are not presented in this manual.)

## Updating the Operating System (System Administrator Tasks)

To upgrade a T5x0 to a T600, the system must be running HP-UX 10.20 Hardware Extensions 2.0. The following tasks should be performed by the system administrator:

1. Make sure the system is running release HP-UX 10.20.
2. Install 10.20 Hardware Extensions 2.0.
3. Modify the I/O System for Use by the T600.
   a. Backup the system.
   b. Copy /stand/vmunix.
   c. Record information about the root disk.
   d. Build a new kernel that includes the ccio device driver.

Details of these tasks are explained in this section.

**NOTE** 10.20 Hardware Extensions 2.0 software must be installed prior to performing the hardware upgrade to a T600.

### Before Installing HP-UX 10.20 Hardware Extensions 2.0

Before installing the HP-UX 10.20 Hardware Extensions 2.0, your system must be running release HP-UX 10.20. If it is not, you can load HP-UX 10.20 and then follow the instructions in this section, or you can cold install HP-UX Hardware Extensions 2.0. The cold install procedure is described in Appendix A.

Also, verify that all your applications are certified to run on 10.20. If your system already runs HP-UX 10.20 (but not HP-UX 10.20 Hardware Extensions 2.0), they are certified.

For detailed information on procedural steps, have handy the following additional documents:

- Release Notes for HP-UX 10.20 Hardware Extensions 2.0 (online in /usr/share/doc), for technical information on the functionality changes implemented.
- System Upgrade Installation Guide (P/N A3329-90001), for upgrading T5x0 hardware to T600.
- Installing and Updating HP-UX 10.20 (P/N B2355-90119), for cold installation.
- Installing and Updating HP-UX 10.x (P/N B2355-90126), for server installation.
- Managing HP-UX Software with SD-UX (P/N B2355-90107), for information on using swinstall.

### Installing 10.20 Hardware Extensions 2.0

1. Check that your CD-ROM drive is turned on.

2. Turn on the system and log in as root.
3. Open a terminal window, if you are using CDE or HP VUE.
4. Insert the 10.20 Hardware Extensions 2.0 CD-ROM.
5. Mount the CD-ROM, if necessary.
6. Type `swinstall` and press **Enter** to initiate the SD-UX interface.

   For details on the SD-UX procedures, refer to *Managing HP-UX Software with SD-UX*.
7. Select the Source Depot Type: `Local CDROM` and press `OK`.
8. Highlight the bundle(s) to install.
9. Go to `Actions`, select `Mark for Install` to choose the bundles/products to be installed.
10. Go back to `Actions` and select `Install (analysis)`.

    SD-UX analyses the build. If the program reports that it encounters errors in the scheduled products, read the log file and resolve the errors before continuing. If swinstall lets you continue, do so.
11. Log in to the system.

## Modifying the I/O System for Use by the T600

When upgrading the hardware of a Model T500 or T520 to a T600, the upper bus converter (upper bc) is replaced. From the software perspective,

- The ccio and, if the system includes SCSI interface modules, the c720 drivers must be configured into the kernel.
- The ioconfig files (/etc/ioconfig and /stand/ioconfig) must be changed to include a new element in the hardware path to the root disk.
- The internal data structures must be remapped.

---

**CAUTION** This set of procedures must be performed as the very last operation before performing the hardware upgrade. If you perform it too soon, you will end up with an operating system that does not match your actual configuration.

---

### Impact of Hardware Upgrade on the Hardware Path.

- Before the hardware upgrade, the hardware path to the root disk is 0/4.4.
- After the hardware upgrade, the hardware path to the root disk is 0/28/4.4.

### Before Modifying the I/O.

- It is highly recommended that a full backup of the system be performed prior to executing these procedures.
- Make a copy of /stand/vmunix before proceeding to execute the procedures. For example,

cp /stand/vmunix /stand/vmunix.orig

- If you must cancel the hardware upgrade, the ioconfig files must be returned to their premodified state. See Appendix B.
- Remapping the ioconfig files requires multiple shutdown/reboot cycles, whose duration depends on the system configuration being upgraded. Due to the complexity of the hardware upgrade, do not install new peripheral devices until after successfully completing the T600 hardware upgrade.

**NOTE** The remapping process affects only the root disk. If there are other disks connected to the system, they will be automatically remapped regardless of whether they are configured as Whole Disk Partitions or with Logical Volume Manager.

### Record Information about the Root Disk.

- Determine whether the root disk is configured with Logical Volume Manager (LVM) or as a Whole Disk Partition, by examining output of the bdf command. bdf always lists the root disk file system first.
- If the root disk is an LVM volume, examine output you will need to record the Volume Group Name also.
- Configuration type (LVM or whole disk), device special file name, and hardware path of the root disk must be recorded for later use, when rebooting the platform with the updated hardware.

This section also contains sample configurations that may help you determine what type of root disk is configured on your system.

If the root disk is configured with LVM,

- Write the root disk volume group name: _____
- Write the device special file name of the LVM physical volume, as shown in the vgdisplay output: _____

If the root disk is not configured with LVM,

- Write the device special file name: _____
- Record the Hardware Paths of the Root Disk and CD-ROM Drive.
- Use ioscan to determine the hardware path of the root disk and CD- ROM drive configured on the system. For example:

```
# ioscan -kfnC disk
Class I  H/W Path  Driver   S/W State  H/W Type Description
============================================================
disk  0 8/0.5.0    sdisk    CLAIMED    DEVICE  HP C2490WD
   /dev/dsk/c0t5d0   /dev/rdsk/c0t5d0
disk  1 8/0.6.0    sdisk    CLAIMED    DEVICE  SEAGATE ST...
   /dev/dsk/c0t6d0   /dev/rdsk/c0t6d0
disk  2 8/12/5.2.0 sdisk    CLAIMED    DEVICE  TOSHIBA CD-ROM ...
   /dev/dsk/c4t2d0   /dev/rdsk/c4t2d0
```

- Match the device special file of the root disk with its hardware path. In the sample ioscan output shown, the hardware path of /dev/dsk/c0t6d0 is 8/0.6.0
- Write the hardware path of the root disk: _____
- Write the hardware path of the CD-ROM drive: _____

**Sample Root Disk in an LVM Configuration.** The following bdf and vgdisplay output was taken from a system whose root disk is configured with LVM.

- The volume group name for the root disk is vg00, which is typical of default installations.
- The physical volume name shown is /dev/dsk/c0t6d0.

```
# bdf
      Filesystem          kbytes     used     avail  %used   Mounted on
/dev/vg00/lvol1      47829    26151     16895    61%     /
/dev/vg00/lvol8      69125    56579      5633    91%     /var
/dev/vg00/lvol7     299157    98317    170924    37%     /usr

# vgdisplay -v /dev/vg00
     - Volume groups -
VG Name                     /dev/vg00   ...
     - Physical volumes -
PV Name                     /dev/dsk/c0t6d0  ....
```

**Sample Whole Disk Configuration.** The following output was taken from a system whose root disk is configured as a Whole Disk Partition. The system has no LVM volumes.

The device special file name of the root disk is /dev/dsk/c1t6d0.

```
# bdf
Filesystem       kbytes    used   avail       %used   Mounted on
/dev/dsk/c1t6d0   1836361   155716 1497008           9%      /
```

**Sample Combined Non-LVM and LVM Configuration.** The following bdf output was taken from a system with a combination non-LVM and LVM configuration.

The root disk is configured as a Whole Disk Partition whose device special file name is /dev/dsk/c1t6d0.

A second disk is configured with LVM.

```
# bdf
Filesystem       kbytes     used   avail  %used    Mounted on
/dev/dsk/c1t6d0 1836361  155716  1497008     9%        /
/dev/vg00/lvol1 1025617       9   923046     0%        /lvol1
/dev/vg00/lvol2   1001729        9   901547      0%        /lvol2
```

Since the root disk is not configured with LVM, you do not need the vgdisplay information.

**Build a New Kernel that Includes the Pertinent Device Drivers.** To build a new kernel using HP-UX commands:

1. Change directory to /stand.

   ```
   # cd /stand
   ```

2. Edit the system file to add device drivers. For example,

   ```
   # vi system
   ```

3. Insert the ccio driver to the Drivers/Subsystem section of the system file. Use wq! to write to this read-only file.

---

**NOTE** If the T5x0 system uses HP-PB buses, you must include the c720 (SCSI Interface Module) device driver to make the HSC buses functional after the hardware is installed.

---

4. Save a copy of the old kernel.

```
# cp vmunix vmunix.bkup
```

5. Change directory to /stand/build.

```
# cd /stand/build
```

6. Generate a new kernel, which will be called vmunix_test.

```
# mk_kernel -s ../system
```

7. Move the new kernel into the /stand directory.

```
# mv vmunix_test /stand/vmunix
```

8. Reboot the system using the newly built kernel.

```
# cd; shutdown -r -y 0
```

When the system boots up, the kernel will contain the ccio driver.

## Verifying that Operating System has been Updated (CE Tasks)

The remaining tasks in this chapter should be performed by a qualified HP Customer Engineer.

---

**NOTE** There is a difference between HP-UX 10.20 and **HP-UX 10.20 Hardware Extensions 2.0. HP-UX 10.20 will not work with this upgrade.**

A version of the Operating System higher than 10.20 T600 Harware Extensions 2.0 will work with this upgrade.

---

To verify that the correct version of the operating system has been installed, at the super user prompt (#), type the following sequence of commands:

1. `uname -a`

   The display should show the following: `HP-UX pedev B.10.20 A…`

2. `cd /var/adm/sw`
3. `ls`
4. `more swinstall.log`
5. Search for the Hardware Extensions 2.0 by typing, `/B6232AA`
6. Make sure the ccio and, if the system includes SCSI interface modules, the c720 device drivers are configured into the kernel.

   a. Run **sam** at the system prompt (#).

b. Select "Kernel Configuration."

c. Select "Drivers."

d. Scroll the list and check for "ccio" and, if the system includes SCSI interface modules, “c720.”

e. Make sure the "Current State" and the "Pending State" are IN.

## Executing the ioconfig Remapping Program

Anytime you run the ioconfig remapping utility or proc_upgrade.XXXX, **be sure that pseudoswap is enabled by verifying that the kernel tunable parameter swapmem_on is configured to a value of 1.**

Failure to enable pseudoswap can result in a swapconf panic during bootup after the processor upgrade.

The kernel parameter can be configured via **sam** by using the following screens:

- Kernel Configuration
  - Configurable Parameters

    Change swapmem_on to 1 and regenerate a new kernel.

**WARNING** **Do not continue unless the hardware is to be upgraded now.**

1. Insert the S800 Upgrade CD-ROM (HP P/N 24998-12425), which is packaged with the hardware, into the CD drive.
2. Create the directory for the file system to reference. For example:

   ```
   # cd /
   # mkdir ProcUpgrade
   ```
3. Determine the device name of the CD-ROM:

   ```
   # ioscan -fknC disk
   ```
4. Mount the CD using the `-r` option and the device file. For example:

   ```
   # mount -r /dev/dsk/c4t2d0 /ProcUpgrade
   ```
5. Change directory to the ProcUpgrade directory:

   ```
   # cd /ProcUpgrade
   ```
6. Execute the remapping script:

   ```
   # ./proc_upgrade.T600 [-v]
   ```

   If verbose mode (`-v`) is used, `proc_upgrade.T600` reports every hardware path it changes. When finished, the script reports that `/etc/ioconfig` and `/stand/ioconfig` files have been modified successfully, and you may proceed to upgrade the hardware.

7. Unmount the CD using the commands:

```
# cd /
# umount /ProcUpgrade
```

8. Remove the CD from the drive.

---

**CAUTION** If, during the hardware upgrade, a decision is made to abort the upgrade, you must reset the HP-UX `ioconfig` files to their original state. This is done using the backup files created automatically during that procedure. Refer to Appendix B.

---

## Loading FUT Firmware

Before loading FUT firmware, compare the FUT firmware version number in the alternate bank on the system with the FUT version number on the CD-ROM containing the firmware. To display the FUT version number:

1. Type `Control-B`.
2. At the `CM>` prompt, type `SP`.
3. At the `SP>` prompt, type `FV`.

   The FUT version will be listed in the Alternate Firmware Versions section of the screen.

   - If the FUT firmware version number in the alternate bank is not the latest version, continue.
   - If the FUT firmware version number in the alternate bank is the latest version:

     a. Make sure a system backup has been performed.

     b. Shutdown the operating system using the normal shutdown procedure.

     c. Type `Control-B`.

     d. At the `CM>` prompt, type `SP`.

     e. At the SP prompt, type SW (to switch the FUT firmware from the alternate bank to the primary bank).

     f. Go to “Installing New Hardware” on page 3-12.

Use the steps that follow to load the FUT firmware.

1. If you have not already done so, **use the normal shutdown procedure** for HP-UX. Ensure that a system backup has been performed.
2. After the shutdown completes, execute the RS command at the SP> prompt to perform a hard reboot.

```
Control-B
CM> SP
SP> RS                    /* hard reboot (ReSet)
```

**NOTE** If the autoboot flag is set, you will see the message "Processor is starting the autoboot process." Press any key within 10 seconds.

3. At the PDC prompt "Continue with primary boot path?", press **N**.
4. At the PDC prompt "Continue with alternate boot path?", press **N** to enter the PDC user interface.

   You should see a display like the following:

```
------- Main Commands ---------------------------------------------------

        Commands Available

         PR Primary:     Continue boot using primary boot path
         RE Restart:     Restart the system and activate new settings


        Menus Available

         BO Boot:        Perform boot tasks (menu)
         FI Firmware:    Update firmware (menu)
         SE Service:     Service the system (menu)
         TO Tomb:        Display HPMC troubleshooting information (menu)


         HE Help:        Display help text on menu selections
------
Main>
```

5. At the Main> prompt, enter FI to display the Firmware Menu. You will see a display similar to the following:

```
Main> FI

------- Firmware Commands ------------------------------------------------

        +-------------------------------------------------------+
        | NOTICE!!   A successful UPDATE will change the version |
        |            of firmware and hardboot the system.        |
        +-------------------------------------------------------+

        Values stored in Stable Storage:
            Update Path:             0/52.4.0.0.0.0.0

        Commands Available

         PA Path:        Change the update path (PA U  )
         VE Verify:      List firmware revisions
         UP Update:      Update inactive firmware from LIF (UP )

         HE Help:        Display help text on menu selections

-------
Firmware>
```

**NOTE** Anytime a FUT or PDC menu is not displayed, type a period (.) then press **Enter.**

6. Load the medium (CD-ROM, DDS/DAT, etc.) containing the firmware.

7. Check the **update path** displayed in the menu. (The update path is the shaded information in the previous screen.) The path should point to the device containing the medium.

   **If the update path is incorrect,** change the firmware update path with the command:

```
Firmware> PA U <new_path>
```

   If you are loading FUT firmware onto an SP card that contains T500 firmware (PDC Vers. 2.xx) or T520 firmware (PDC Vers. 3.xx), use the command:

```
Firmware> TOXIC_FORCE_UPDATE FWEUP4xx
```

   Be sure to spell the file name correctly! If you spell the file name incorrectly, you will have to wait several minutes for the program to discover the error. The full name of the FUT firmware is usually printed on the medium's label.

**NOTE** Remember, the UPDATE command replaces the firmware in the Alternate bank only, then automatically switches banks and reboots. The information that was in the Active bank is now in the Alternate bank.

The UP command performs several tasks one after another.

a. It loads the specified code into the alternate bank of firmware.

b. It switches the active and alternate banks of firmware.

c. It performs a hard reboot of the system using the active bank (FUT-specific firmware).

8. Wait until the update process completes (approximately 10 minutes).

   **Do NOT interrupt the update process.**

9. To verify that the correct version of firmware is on your system, **execute the FV command** at the SP> prompt.

   The screen that appears should look similar to the following.

```
Control-B                /* At the system console
CM> SP                   /* To access the SP> prompt
SP> FV                   /* To display the firmware versions

Active Firmware Versions:
        SP Bank 1: SP 2.10FUT, PSCM 1.5, Compiled 11/23/93 10:45am
        PDC Bank 0: 494
        PSCM Boot ROM: 2.2

Alternate Firmware Versions:
        SP Bank 0: SP 1.61, PSCM 1.5. Compiled 7/14/93 16:25 UT
        PDC Bank 1: T387
                              .
                              .
                              .
SP> CO                   /* Return to console mode
```

If the FUT is on the system, the version number will appear in the Active Firmware Versions section of the screen. (In the previous example, FUT version 494 is in the active bank and is shaded to make it easier to locate.)

For complete information about FUT and the update process, refer to *99x/T-Class Firmware Update Guide* (PN A1820-90002) that came with this upgrade kit.

## Installing New Hardware

Use the procedures in Chapter 5, “Installing New Hardware,” to install the new hardware required for the upgrade. After you install the hardware, return here to complete the upgrade.

## Powering Up the System

**To power up the system:**

1. Turn on power to the SPU cabinet by switching the circuit breaker at the bottom right rear of the cabinet to the "ON" position.
2. Turn the "Standby/Ready" switch on the control panel at the top front of the cabinet to "Ready".
3. Turn on power to the expansion cabinet (if one is attached to the SPU cabinet).

## Installing New SPU Firmware

Previously you loaded the Firmware Update Tool (FUT) firmware. Then you installed and verified the new T600 processors.

To install the new firmware, do the following:

1. If you have not already done so, boot the system. When you boot the system with FUT in the primary bank, the FUT firmware screen, which looks similar to the following, appears on the system console:

```
------------------------------------------------------------------------------
                        FUT - Firmware Update Tool
                               Version 6.xx
                        (c) Copyright 1990-1998
                       The Hewlett-Packard Company
                           All rights reserved
------------------------------------------------------------------------------

------- Firmware Commands ---------------------------------------------

        +-----------------------------------------------------------+
        | NOTICE!!   A successful UPDATE will change the version |
        |            of firmware and hardboot the system.        |
        +-----------------------------------------------------------+

        Values stored in Stable Storage:
            Update Path:           0/28/52.4.0.0.0

        Commands Available

        PA Path:        Change the update path (PA U )
        VE Verify:      List firmware revisions
        UP Update:      Update inactive firmware from LIF (UP )
        SC Scan IO:     Display IO devices

        HE Help:        Display help text on menu selections

-------
Firmware>
```

2. Change the update path for the firmware:

```
Firmware> pa u 0/28/0.1.0
```

3. Update the firmware using the command:

   ```
   Firmware> update fwejaxxx
   ```

   where "xxx" are the last three digits on the CD-ROM.

**NOTE** This command takes about 10 minutes to execute.

## Resetting the System Boot Device

This step must be performed after the hardware and firmware version are upgraded. If all steps are not performed correctly, the result may be a non-operational system.

1. Power up and boot the system. Once in the PDC code, verify that changes to the primary and alternate boot paths and console path have been made during the PDC upgrade. For example,

   ```
   boot> pa pri 0/28/28.0
   boot> pa alt 0/28/44.0
   boot> pa con 0/28/52.0
   ```

   The hardware paths should contain the number 28 preceded and followed by a slash, as shown above.

2. Ensure the boot paths in stable storage are set correctly. Change them if necessary.

3. If the boot disk is configured as a Whole Disk Partition, boot the system from the root disk and answer `NO` to the question, `Interact with ISL?` The remapping of `ioconfig` files is complete, and any further hardware system configuration and checks may be carried out.

   If the root disk is configured with LVM, continue to the next step.

4. If the root disk is configured as an LVM volume, boot the system to LVM Maintenance mode. To do this, boot from the root disk and answer `YES` to the question, `Interact with ISL?` For example:

   ```
   Continue with primary boot path? 0/28/28.0
   Interact with ISL (Y or N)?> Y
   Booting ...
   ISL>
   ```

   At the ISL prompt, invoke HP-UX in LVM maintenance mode:

   ```
   ISL > hpux -lm /stand/vmunix
   ```

5. When the system comes up, remap the internal kernel data structures, using the following commands and the information. For example,

   ```
   # vgchange -a r vg00
   # lvlnboot -R /dev/vg00
   ```

6. Reboot the system:

   ```
   # shutdown -r now
   ```

The remapping of `ioconfig` files is now complete, and any further hardware system configuration and checks may be carried out.

## Verifying the Upgrade

**To verify the upgrade:**

1. Check the control panel indicator to see that the correct number of processors is reported.
2. Enter the HC command at the SP prompt. You see a display similar to the following:

```
Control-B                  /* At the system console
CM> SP                    /* To access the SP> prompt
SP> HC                    /* To show the hardware configuration

Host Hardware Configuration:   (D = deconfigure; - = non-existent port)
-------------------------------------------------------------------
|      |                 | Deconfigured      | Ports to be decnf |
| PMB  |                 | Ports             | at next boot      |
| Slot | Board Type      |  0 |  1 |  2 |  3 |  0 |  1 |  2 |  3 |
|-----------------------------------------------------------------|
|   0  | Bus Converter   |    |  - |    |  - |    |  - |    |  - |
|   7  | Memory          |    |    |  - |  - |    |    |  - |  - |
|  15  | JADE Processor  |    |    |  - |  - |    |    |  - |  - |
-------------------------------------------------------------------

Enter the slot # of the module whose configuration is to be changed
(CR = exit):
```

   a. Verify that each new processor card has an entry in the HC display. For example, the above HC display has an entry for the processor card in PMB slot 15.

   b. Verify that the entry for each processor card has the correct number of ports configured. If a processor card has one processor module, one port will be configured. If a processor card has two processor modules, two ports will be configured.

      For example, the HC display for a processor card with two processor modules should show two modules present. Ports 0 and 1 in the table ( = modules 0 and 1) should be blank to indicate that they are present. Ports 2 and 3 in the table should have a hyphen ( - ) to indicate that they are non-existent.

   c. If a processor entry shows FOUR of the ports (modules) as present (if ports 0 - 3 all are blank in the table), there has been a configuration error.

      To fix a configuration error, turn the Standby/Ready switch to the Standby position and turn off the circuit breaker switch. Place one processor card into a new slot location. Power up.

## Other Recommended Verification

In addition to verifying the installation of processors and memory cards using the Service Processor HC command, it is recommended that you further verify the system by:

- Verifying that the initial PDC display reports the new number of processors and amount of memory.

- Booting the Offline Diagnostic Environment (ODE) from the alternate (ALT) boot device using the HP-PB Support Media and running—in the order listed—the following diagnostics:

| Run: | To Test and Diagnose: |
|---|---|
| UDIAG | 997/T600 processors |
| MEMTEST | memory cards |
| JAVADIAG | HP-HSC I/O Bus Converters |
| KEYDIAG | HP-PB I/O Bus Converters |
| ACMEDIAG | HP-PB I/O BC and the cards within the HP-PB I/O card cage |

  To run ODE:

  1. Insert the latest HP-PA Support Media into the ALT boot device.
  2. At the prompt "Boot from Primary Path (Y or N)?", type **N**.
  3. At the prompt "Boot from Alternate Path (Y or N)?", type **Y**.
  4. At the prompt "Interact with ISL (Y or N)?", type **Y**.
  5. At the ISL prompt, type **ODE**.
  6. At the ODE prompt, type **LS**.

     If you want help, type **help** at the ODE prompt.
  7. Type the name of the diagnostic you want to run.
  8. Type **run**.

- Running the MAPPER, IOTEST, and PERFVER utilities for mapping the physical layout of the SPU, and to test I/O cards and peripherals.
- You can experience false memory errors unless you have the latest diagnostic (12/97) OR the diagnostic patch AND the latest PDC (5.40 or higher) installed.

## Clearing the SPU Tombstone Logs

The SP card may contain obsolete SPU tombstone logs from the pre-upgrade system. These should be cleared to prevent misleading tombstone information from being displayed. Clear the logs at the SP> prompt:

```
SP> CL

Select the Log to be cleared :

    Activity Log            = a
    Error Logs              = e
    Activity and Error Logs = ae
    SPU Tombstone Log       = t

    Enter (a/e/ae/t/CR = exit) : t

    Clear the SPU Tombstone Log ? (y/[n]) : Y

The SPU Tombstone Log has been cleared
```

## Initializing Internal Values with SS_CONFIG

Use the SS_CONFIG utility to set the appropriate values for the system parameters.

## Adding Upgrade Labels

After completing the upgrade, three upgrade labels must be applied to the system to identify the system as an upgraded system.

- The Serial Number Label at the upper left of the rear door. See Figure 3-1.
- The System Information Label at the lower right of the rear door. See Figure 3-1.
- Board Loading Sequence labels on the inside of the cabinet at the top of the front and rear PMB card cage. See Figure 3-2.

There are two sets of upgrade labels. One set is marked "SET I" and the other "SET II." If this is the first upgrade of the system, use the labels marked SET I. If this is the second upgrade of the system (for example, an 890 has been upgraded to a T520 and is now being upgraded to a T600, use the labels marked SET II.

Apply each upgrade label over the existing label that corresponds to it. For example, apply the upgrade Serial Number Label over the existing Serial Number Label. The best way to align the labels is to position the HP logo on the new label over the HP logo on the existing label. The top two lines of the existing label (including the model number) should be covered. The serial number should NOT be covered.

**NOTE** Make sure that the original serial number on the existing label is NOT covered by the upgrade label. The original part number should remain visible.

**Figure 3-1 System Information Label Location**

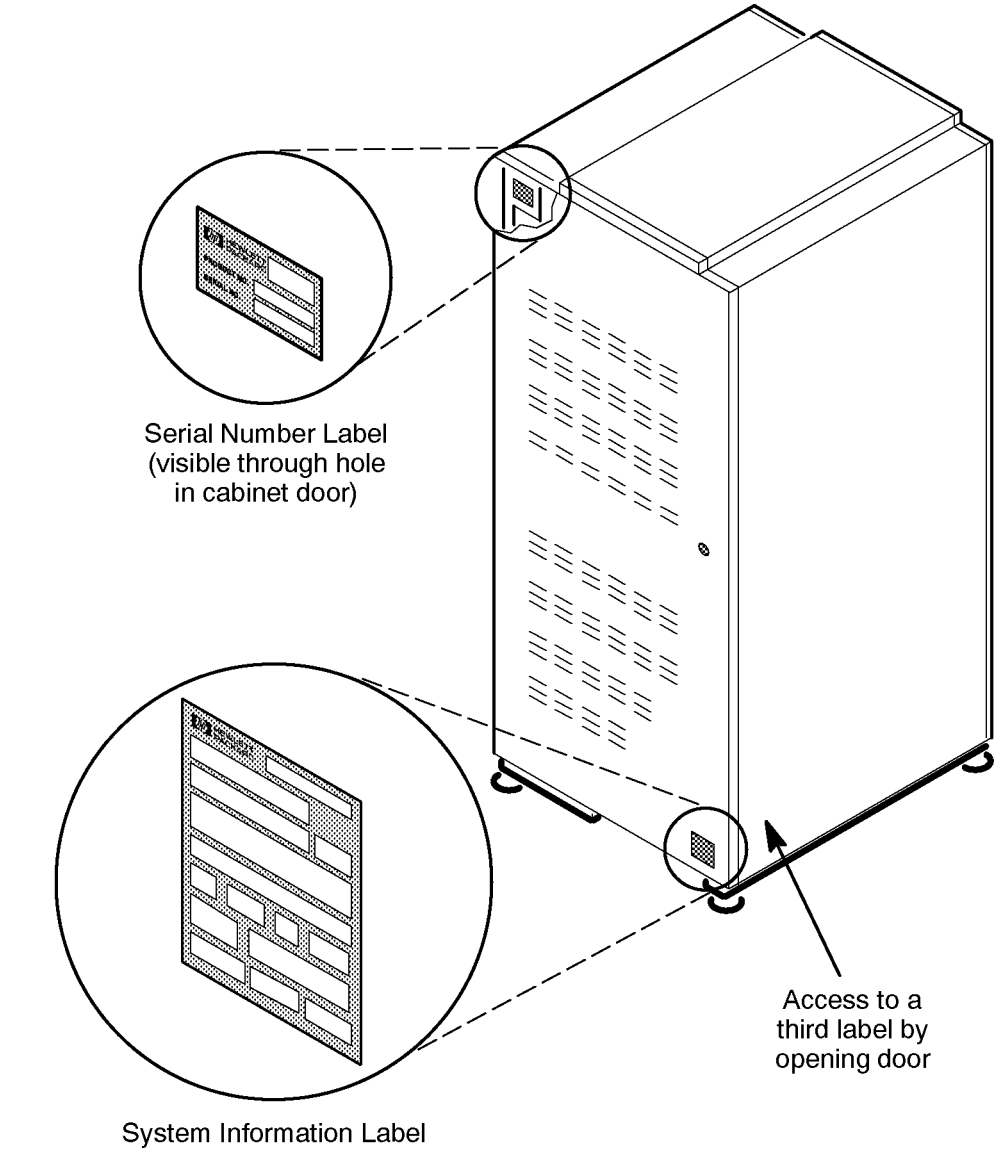
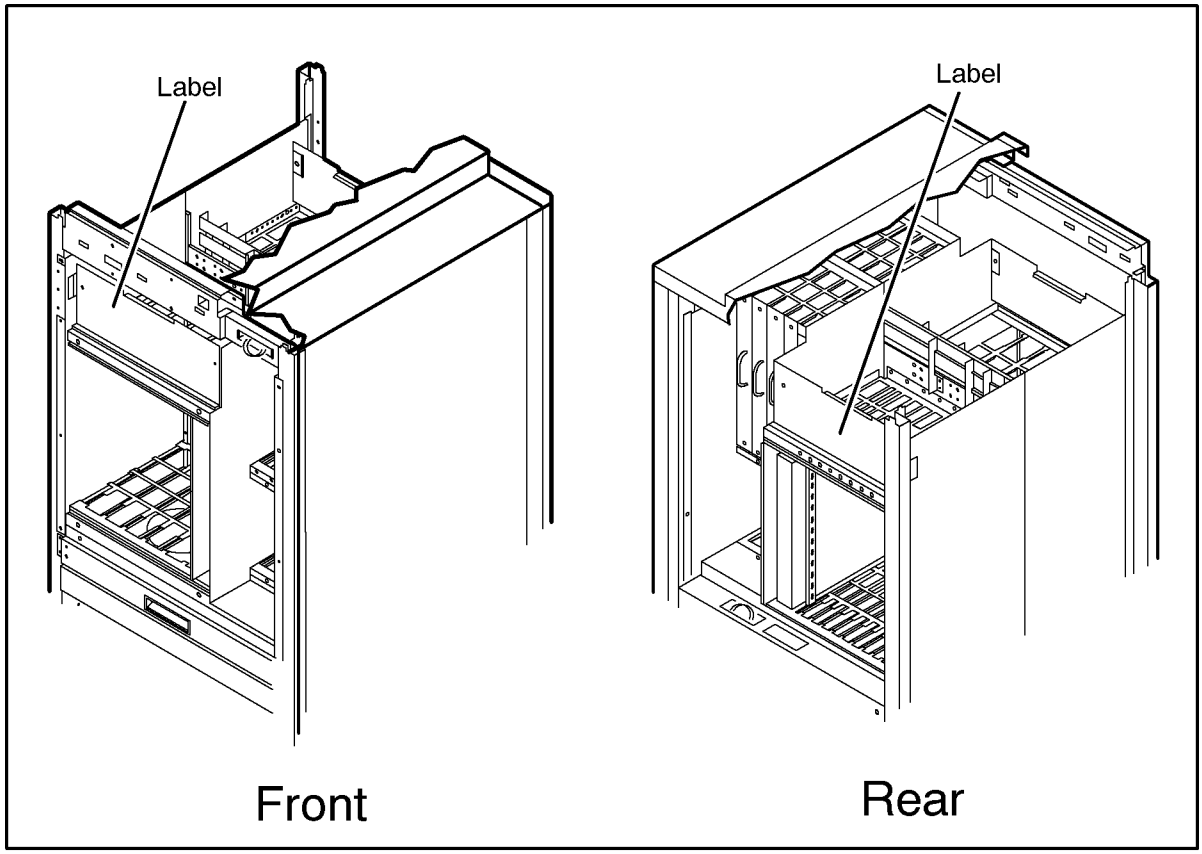


**Figure 3-2 Board Loading Sequence Label Locations**




LG200204_056a

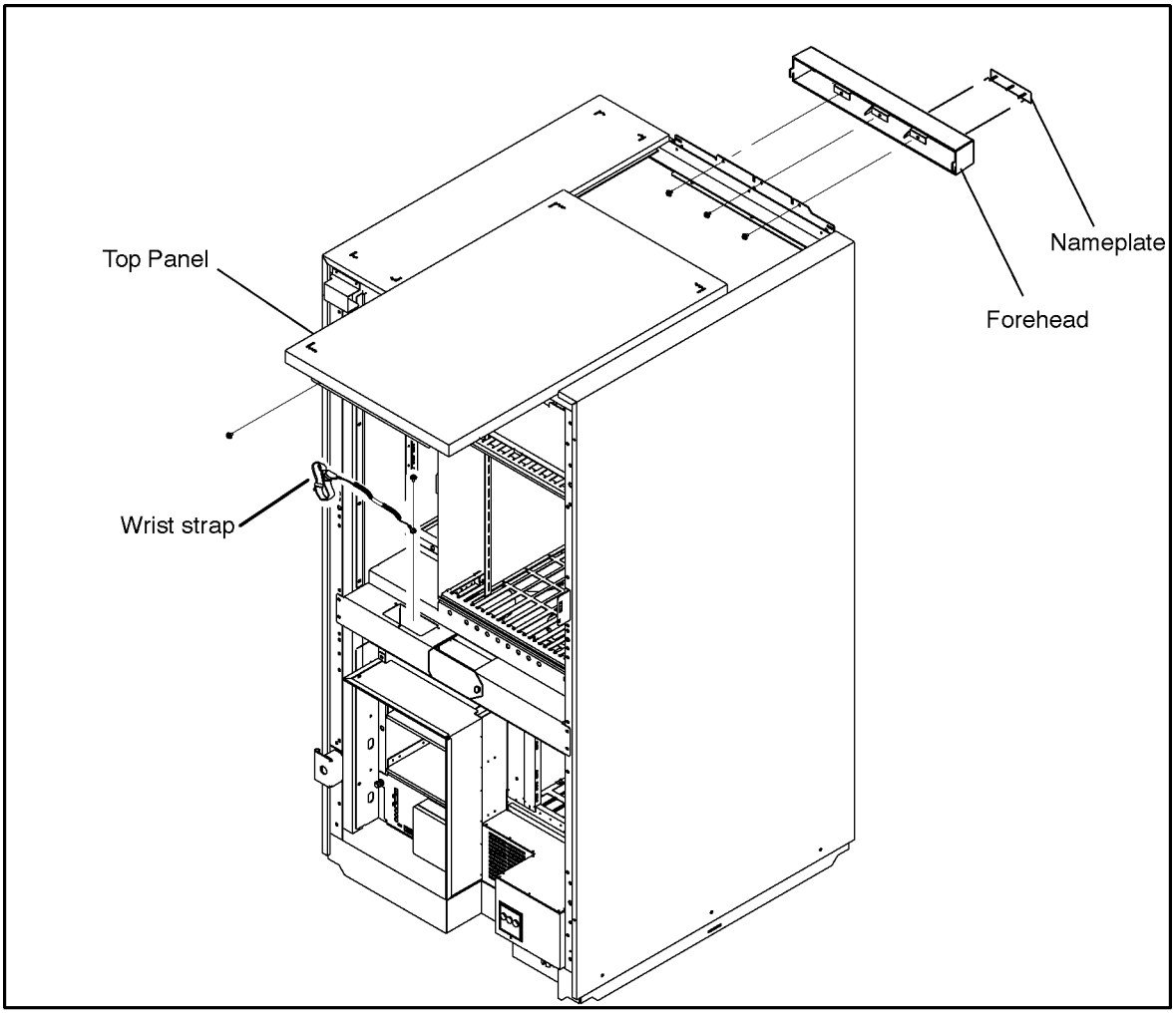
## Adding the T600 Nameplate

The upgraded system requires that you replace the nameplate in the upper left corner of the front of the SPU cabinet with a new T600 nameplate.

**To replace the nameplate:**

1. Using a #20 Torx driver, remove the two screws that hold the top panel in place. See Figure 3-3.

**Figure 3-3 SPU Cabinet Forehead and Top Panel**




2. Pull the top panel back about 20-30 cm.
3. Remove the three screws that hold the forehead assembly in place.
4. Lift the forehead assembly up and off of the SPU cabinet.
5. Using a pair of needle nose pliers, squeeze the post that secures the old nameplate to the forehead assembly and push it through the hole in the forehead assembly.
6. Repeat the last step for the other posts.
7. Attach the new nameplate.
8. Replace the forehead assembly and reattach the three screws that hold the forehead assembly in place.
9. Push the top panel back in place and reattach the two screws.

# 4 991/995/996 to 997 Upgrade

## Detailed Upgrade Procedure (MPE)

This sections describes in detail the 991/995/996 to 997 Upgrade. A checklist of these steps is available in “Upgrade Checklist (MPE)” on page 2-4.

### Verifying the Contents of the Kit

Verify that the upgrade kit contains:

- The flyer, *Readme Before Installing*.
- Card Cage labels.
- Upgrade labels.
- The manual, *99x/T-Class System Firmware Update Guide* (PN A1820-90002)
- *Firmware Update Quick Reference*
- *Update Return Instructions*
- Firmware Update Tool (FUT):

  The latest firmware part numbers and applications are specified in the Firmware Update Guide Errata Sheet (PN 5960-3790). This document is provided with the Firmware Update Kit.
- Processor cards:
  - 1-CPU upgrade: 1 processor motherboard with 1 processor daughterboard (module).
  - 2-CPU upgrade: 1 processor motherboard with 2 processor daughterboards (modules).
  - 3-CPU upgrade: 2 processor motherboards with 3 processor daughterboards (modules).
  - 4-CPU upgrade: 2 processor motherboards with 4 processor daughterboards (modules).
  - 5-CPU upgrade: 3 processor motherboards with 5 processor daughterboards (modules).
  - 6-CPU upgrade: 3 processor motherboards with 6 processor daughterboards (modules).
  - 8-CPU upgrade: 4 processor motherboards with 8 processor daughterboards (modules).
- Memory cards if ordered by customer.

- Power Factor Correcting (PFC) Module if upgraded system has more than two processors. (Or, if you ordered the power resiliency option, an additional PFC module for systems with two processors, and two additional PFCs for systems with more than two processors.)
- HP-PB I/O Bus Converters.
- HSC I/O cards if ordered by customer.
- HP-HSC I/O Bus Converter(s).
- Cable Management Bracket.
- Slot Shield (transitional cover for HP-HSC I/O Bus Converter).
- EMC Clip Extractor Tool.
- EMC Clips (14).
- Nameplate.
- Power Supplies.
  - 3.3V 130A Power Supplies
  - 5V 325W Power Supplies
- Optional 3.0 or 5.5 kVA PowerTrust UPS. (Instructions on how to install the UPS are included with the UPS and are not presented in this manual.)

## Updating the Operating System

To upgrade a 991/995/996 to a 997 you must perform the following steps:

1. Make sure the system has been backed up.
2. Make sure the operating system has been updated to MPE/iX Release 5.5 (VUF C.55.03) or higher.
3. Make a backup copy of the `CONFIG.SYS` group and the file `NMCONFIG.PUB.SYS`.
4. Convert the `SYSGEN` configuration files using the command file `IOCNVRT`.

   The command file `IOCNVRT.PUB.SYS` is used to convert the system `SYSGEN` I/O configuration from a pre-997 Corporate Business Server configuration to a 997 configuration, or vice versa. The syntax for the command is as follows:

   `:IOCNVRT {`*source group*`}, {`*target group*`}`

   where:

   *source group* is the name of a valid `SYSGEN` configuration group in the `SYS` account, containing the "source system" I/O configuration. This is a required parameter. The files in the *source group* will remain untouched unless the *target group* name is the same as the *source group*. The group must exist, and its files must be valid for `IOCNVRT` to work.

*target group* is the name of the SYSGEN configuration group in the SYS account into which the "target system" configuration files will be stored. This is a required parameter. If the group does not exist, it will be created by the program.

What follows are examples of this command:

```
:IOCNVRT CONFIG, CONFIG
```

This command converts a pre-997 configuration in the group CONFIG.SYS into a 997 configuration in the same group CONFIG.SYS.

```
:IOCNVRT CONFIG, NEWCONFG
```

This command converts a pre-997 configuration in the group CONFIG.SYS into a 997 configuration and places it into the group NEWCONFG.SYS.

IOCNVRT requires that its user has SM (System Manager) capability, as a safety measure to prevent unauthorized or inadvertent changes to the system configuration file groups.

IOCNVRT does not work for systems that include HyperChannel. This restriction will be lifted with version 2.0 of IOCNVRT.

5. Convert the file NMCONFIG.PUB.SYS using the tool JADETOOL.

   The JADETOOL utility is used to convert a pre-997 Corporate Business Server data communications configuration to a 997 data communications configuration. For example:

```
:JADETOOL
Jade Tool     Version A0000006

  W A R N I N G ! ! ! ! !
This program is only to be used after authorization from HP

In a failure situation, use of this program could corrupt
the configuration file which could result in a system abort

It is recommended that this program be only used on a copy
of the NMCONFIG configuration file

Do you understand and agree to the above warning? (Y/N) y

Enter file name to convert: nmconfig.pub.SYS
```

   JADETOOL does not automatically convert RJE link I/O paths. This means that any users of RJE must reconfigure those links manually in NMMGR.

6. If RJE links are used on the system, run NMMGR to update any RJE links.

## Loading FUT Firmware

Before loading FUT firmware, compare the FUT firmware version number in the alternate bank on the system with the FUT version number on the CD-ROM containing the firmware. To display the FUT version number:

1. Type Control-B.
2. At the CM> prompt, type SP.

3. At the SP> prompt, type FV.

   The FUT version will be listed in the Alternate Firmware Versions section of the screen.

   - If the FUT firmware version number in the alternate bank is not the latest version, continue.
   - If the FUT firmware version number in the alternate bank is the latest version:

     a. Make sure a system backup has been performed.

     b. Shutdown the operating system using the normal shutdown procedure.

     c. Type Control-B.

     d. At the SP prompt, type SW (to switch the FUT firmware in the alternate bank with the SPU-specific firmware in the primary bank).

     e. Go to “Installing New Hardware” on page 4-7.

Use the steps that follow to load the FUT firmware.

1. If you have not already done so, **use the normal shutdown procedure** for MPE/iX. Ensure that a system backup has been performed.
2. After the shutdown completes, execute the RS command at the SP> prompt to perform a hard reboot.

```
Control-B
CM> SP
SP> RS                    /* hard reboot (ReSet)
```

**NOTE** If the autoboot flag is set, you will see the message "Processor is starting the autoboot process." Press any key within 10 seconds.

3. At the PDC prompt "Continue with primary boot path?", press **N**.
4. At the PDC prompt "Continue with alternate boot path?", press **N** to enter the PDC user interface.

You should see a display like the following:

```
------- Main Commands ----------------------------------------------------

        Commands Available

         PR Primary:     Continue boot using primary boot path
         RE Restart:     Restart the system and activate new settings


        Menus Available

         BO Boot:        Perform boot tasks (menu)
         FI Firmware:    Update firmware (menu)
         SE Service:     Service the system (menu)
         TO Tomb:        Display HPMC troubleshooting information (menu)


         HE Help:        Display help text on menu selections
------
Main>
```

5. At the Main> prompt, enter FI to display the Firmware Menu. You will see a display similar to the following:

```
Main> FI

------- Firmware Commands ------------------------------------------------

        +-------------------------------------------------------+
        | NOTICE!!   A successful UPDATE will change the version |
        |            of firmware and hardboot the system.        |
        +-------------------------------------------------------+

        Values stored in Stable Storage:
            Update Path:             0/52.4.0.0.0.0.0

        Commands Available

         PA Path:        Change the update path (PA U  )
         VE Verify:      List firmware revisions
         UP Update:      Update inactive firmware from LIF (UP )

         HE Help:        Display help text on menu selections

-------
Firmware>
```

**NOTE** Anytime a FUT or PDC menu is not displayed, type a period (.) then press **Enter.**

6. Load the medium (CD-ROM, DDS/DAT, etc.) containing the firmware.

7. Check the **update path** displayed in the menu. (The update path is the shaded information in the previous screen.) The path should point to the device containing the medium.

   **If the update path is incorrect,** change the firmware update path with the command:

```
Firmware> PA U <new_path>
```

   If you are loading FUT firmware onto an SP card that contains 991/995/T500 firmware (PDC Vers. 2.xx) or 996/T520 firmware (PDC Vers. 3.xx), use the command:

```
Firmware> TOXIC_FORCE_UPDATE FWEUP4xx
```

   Be sure to spell the file name correctly! If you spell the file name incorrectly, you will have to wait several minutes for the program to discover the error. The full name of the FUT firmware is usually printed on the medium's label.

**NOTE** Remember, the UPDATE command replaces the firmware in the Alternate bank only, then automatically switches banks and reboots. The information that was in the Active bank is now in the Alternate bank.

   The UP command performs several tasks one after another.

   a. It loads the specified code into the alternate bank of firmware.

   b. It switches the active and alternate banks of firmware.

   c. It performs a hard reboot of the system using the active bank (FUT-specific firmware).

8. Wait until the update process completes (approximately 10 minutes).

   **Do NOT interrupt the update process.**

9. To verify that the correct version of firmware is on your system, **execute the FV command** at the SP> prompt.

The screen that appears should look similar to the following.

```
Control-B                /* At the system console
CM> SP                   /* To access the SP> prompt
SP> FV                   /* To display the firmware versions

Active Firmware Versions:
        SP Bank 1: SP 2.10FUT, PSCM 1.5, Compiled 11/23/93 10:45am
        PDC Bank 0: 494
        PSCM Boot ROM: 2.2

Alternate Firmware Versions:
        SP Bank 0: SP 1.61, PSCM 1.5. Compiled 7/14/93 16:25 UT
        PDC Bank 1: T387
                              .
                              .
                              .
SP> CO                   /* Return to console mode
```

If the FUT is on the system, the version number will appear in the Active Firmware Versions section of the screen. (In the previous example, FUT version 494 is in the active bank and is shaded to make it easier to locate.)

For complete information about FUT and the update process, refer to *99x/T-Class Firmware Update Guide* (PN A1820-90002) that came with this upgrade kit.

## Installing New Hardware

Install the new hardware using the procedures outlined in Chapter 5, “Installing New Hardware,” then return here.

## Powering Up the System

**To power up the system:**

1. Turn on power to the SPU cabinet by switching the circuit breaker at the bottom right rear of the cabinet to the "ON" position.
2. Turn the "Standby/Ready" switch on the control panel at the top front of the cabinet to "Ready".
3. Turn on power to the expansion cabinet (if one is attached to the SPU cabinet).

## Installing New SPU Firmware

Previously you loaded the Firmware Update Tool (FUT) firmware. Then you installed and verified the new 997 processors.

To install the new SPU firmware, do the following:

1. If you have not already done so, boot the system. When you boot the system with FUT in the primary bank, the FUT firmware screen, which looks similar to the following, appears on the system console:

```
------------------------------------------------------------------------------
                        FUT - Firmware Update Tool
                               Version 6.xx
                        (c) Copyright 1990-1998
                       The Hewlett-Packard Company
                           All rights reserved
------------------------------------------------------------------------------

------- Firmware Commands ---------------------------------------------

        +-------------------------------------------------------+
        | NOTICE!!   A successful UPDATE will change the version |
        |            of firmware and hardboot the system.        |
        +-------------------------------------------------------+

        Values stored in Stable Storage:
            Update Path:           0/28/52.4.0.0.0

        Commands Available

        PA Path:        Change the update path (PA U )
        VE Verify:      List firmware revisions
        UP Update:      Update inactive firmware from LIF (UP )
        SC Scan IO:     Display IO devices

        HE Help:        Display help text on menu selections

-------
Firmware>
```

2. Change the update path for the firmware:

   ```
   Firmware> pa u 0/28/0.1.0
   ```

3. Update the SPU-specific firmware using the command:

   ```
   Firmware> update fwejaxxx
   ```

   where "xxx" are the last three digits on the CD-ROM.

**NOTE** This command takes about 10 minutes to execute.

## Resetting the System Boot Device and Other Configuration Tasks

This step must be performed after the hardware and firmware version are upgraded. If all steps are not performed correctly, the result may be a non-operational system.

1. Power up and boot the system. Once in the PDC code, verify that changes to the primary and alternate boot paths and console path have been made during the PDC upgrade. For example,

```
boot> pa pri 0/28/28.0
boot> pa alt 0/28/44.0
boot> pa con 0/28/52.0
```

   The hardware paths should contain the number 28 preceded and followed by a slash, as shown above.

2. Ensure the boot paths in stable storage are set correctly. Change them if necessary.

```
Interact with ISL (Y or N)?> Y
Booting ...
ISL>
```

   At the ISL prompt, type:

```
ISL > start norecovery
```

## Verifying the Upgrade

**To verify the upgrade:**

1. Check the control panel indicator to see that the correct number of processors is reported.
2. Enter the HC command at the SP prompt. You see a display similar to the following:

```
Control-B                  /* At the system console
CM> SP                    /* To access the SP> prompt
SP> HC                    /* To show the hardware configuration

Host Hardware Configuration:   (D = deconfigure; - = non-existent port)
-------------------------------------------------------------------
|      |                 | Deconfigured      | Ports to be decnf |
| PMB  |                 | Ports             | at next boot      |
| Slot | Board Type      |  0 |  1 |  2 |  3 |  0 |  1 |  2 |  3 |
|-----------------------------------------------------------------|
|   0  | Bus Converter   |    |  - |    |  - |    |  - |    |  - |
|   7  | Memory          |    |    |  - |  - |    |    |  - |  - |
|  15  | JADE Processor  |    |    |  - |  - |    |    |  - |  - |
-------------------------------------------------------------------

Enter the slot # of the module whose configuration is to be changed
(CR = exit):
```

   a. Verify that each new processor card has an entry in the HC display. For example, the above HC display has an entry for the processor card in PMB slot 15.

   b. Verify that the entry for each processor card has the correct number of ports configured. If a processor card has one processor module, one port will be configured. If a processor card has two processor modules, two ports will be configured.

For example, the HC display for a processor card with two processor modules should show two modules present. Ports 0 and 1 in the table ( = modules 0 and 1) should be blank to indicate that they are present. Ports 2 and 3 in the table should have a hyphen ( - ) to indicate that they are non-existent.

c. If a processor entry shows FOUR of the ports (modules) as present (if ports 0 - 3 all are blank in the table), there has been a configuration error.

To fix a configuration error, turn the Standby/Ready switch to the Standby position and turn off the circuit breaker switch. Place one processor card into a new slot location. Power up.

## Other Recommended Verification

In addition to verifying the installation of processors and memory cards using the Service Processor HC command, it is recommended that you further verify the system by:

- Verifying that the initial PDC display reports the new number of processors and amount of memory.
- Booting the Offline Diagnostic Environment (ODE) from the alternate (ALT) boot device using the HP-PB Support Media and running—in the order listed—the following diagnostics:

| Run: | To Test and Diagnose: |
|---|---|
| UDIAG | 997/T600 processors |
| MEMTEST | memory cards |
| JAVADIAG | HP-HSC I/O Bus Converters |
| KEYDIAG | HP-PB I/O Bus Converters |
| ACMEDIAG | HP-PB I/O BC and the cards within the HP-PB I/O card cage |

To run ODE:

1. Insert the latest HP-PA Support Media into the ALT boot device.
2. At the prompt "Boot from Primary Path (Y or N)?", type **N**.
3. At the prompt "Boot from Alternate Path (Y or N)?", type **Y**.
4. At the prompt "Interact with ISL (Y or N)?", type **Y**.
5. At the ISL prompt, type **ODE**.
6. At the ODE prompt, type **LS**.

   If you want help, type **help** at the ODE prompt.
7. Type the name of the diagnostic you want to run.

8. Type **run**.

- Running the MAPPER, IOTEST, and PERFVER utilities for mapping the physical layout of the SPU, and to test I/O cards and peripherals.
- You can experience false memory errors unless you have the latest diagnostic (12/97) OR the diagnostic patch AND the latest PDC (5.40 or higher) installed.

## Clearing the SPU Tombstone Logs

The SP card may contain obsolete SPU tombstone logs from the pre-upgrade system. These should be cleared to prevent misleading tombstone information from being displayed. Clear the logs at the SP> prompt:

```
SP> CL

Select the Log to be cleared :

    Activity Log            = a
    Error Logs              = e
    Activity and Error Logs = ae
    SPU Tombstone Log       = t

    Enter (a/e/ae/t/CR = exit) : t

    Clear the SPU Tombstone Log ? (y/[n]) : Y

The SPU Tombstone Log has been cleared
```

## Initializing Internal Values with SS_CONFIG

Use the SS_CONFIG utility to set the appropriate values for the system parameters.

## Completing the Upgrade

Complete the upgrade by performing the following steps:

1. Reboot the system using the newly created configuration files.
2. If the 997 `SYSGEN` configuration files are not in the group `CONFIG.SYS`, copy them into the `CONFIG.SYS` group.
3. Run `NMMGR` and validate `DTS`.
4. Shut down and reboot the system.

## Adding Upgrade Labels

After completing the upgrade, three upgrade labels must be applied to the system to identify the system as an upgraded system.

- The Serial Number Label at the upper left of the rear door. See Figure 4-1.

- The System Information Label at the lower right of the rear door. See Figure 4-1.
- Board Loading Sequence labels on the inside of the cabinet at the top of the front and rear PMB card cage. See Figure 4-2.

There are two sets of upgrade labels. One set is marked "SET I" and the other "SET II." If this is the first upgrade of the system, use the labels marked SET I. If this is the second upgrade of the system (for example, a 990 (or 992) has been upgraded to a 995 and is now being upgraded to a 997), use the labels marked SET II.

Apply each upgrade label over the existing label that corresponds to it. For example, apply the upgrade Serial Number Label over the existing Serial Number Label. The best way to align the labels is to position the HP logo on the new label over the HP logo on the existing label. The top two lines of the existing label (including the model number) should be covered. The serial number should NOT be covered.

**NOTE** Make sure that the original serial number on the existing label is NOT covered by the upgrade label. The original part number should remain visible.

**Figure 4-1 System Information Label Location**

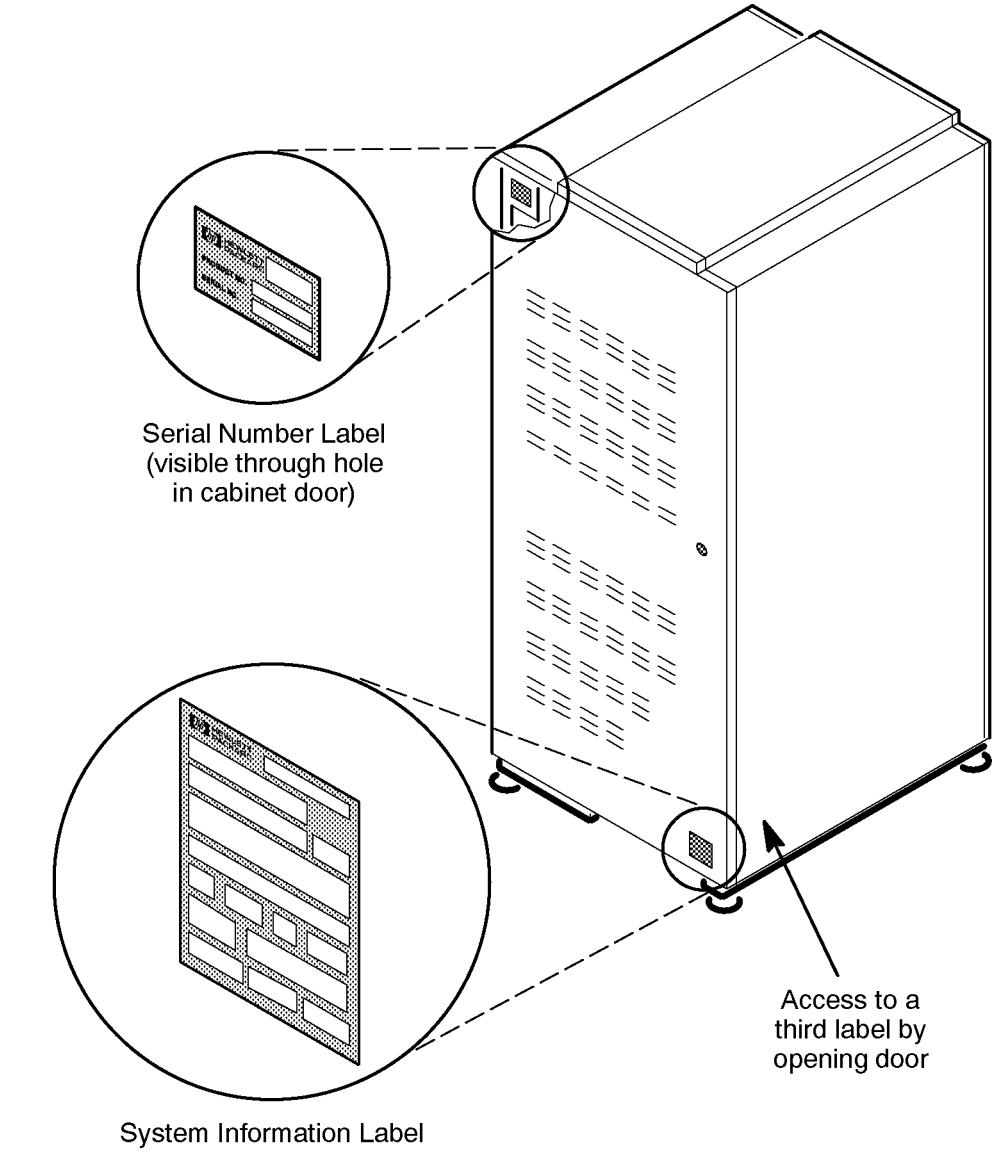
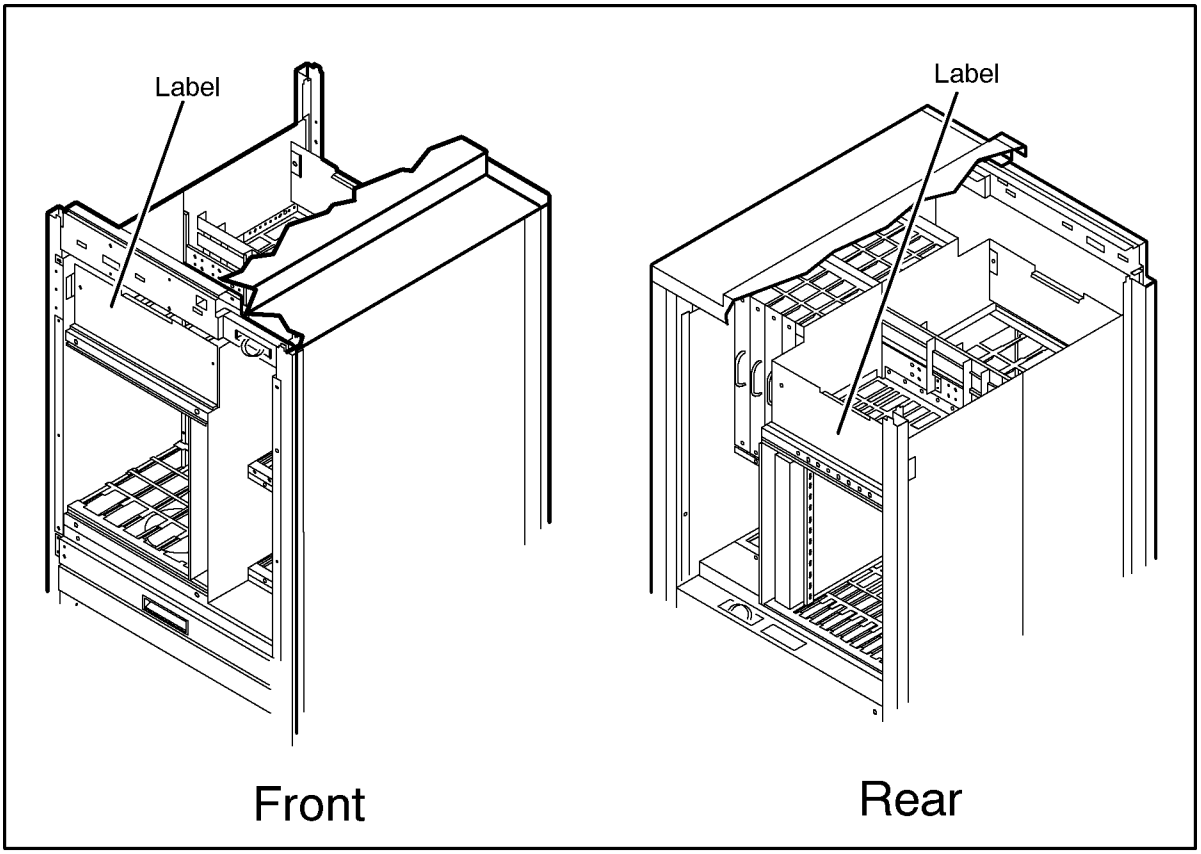


**Figure 4-2 Board Loading Sequence Label Locations**

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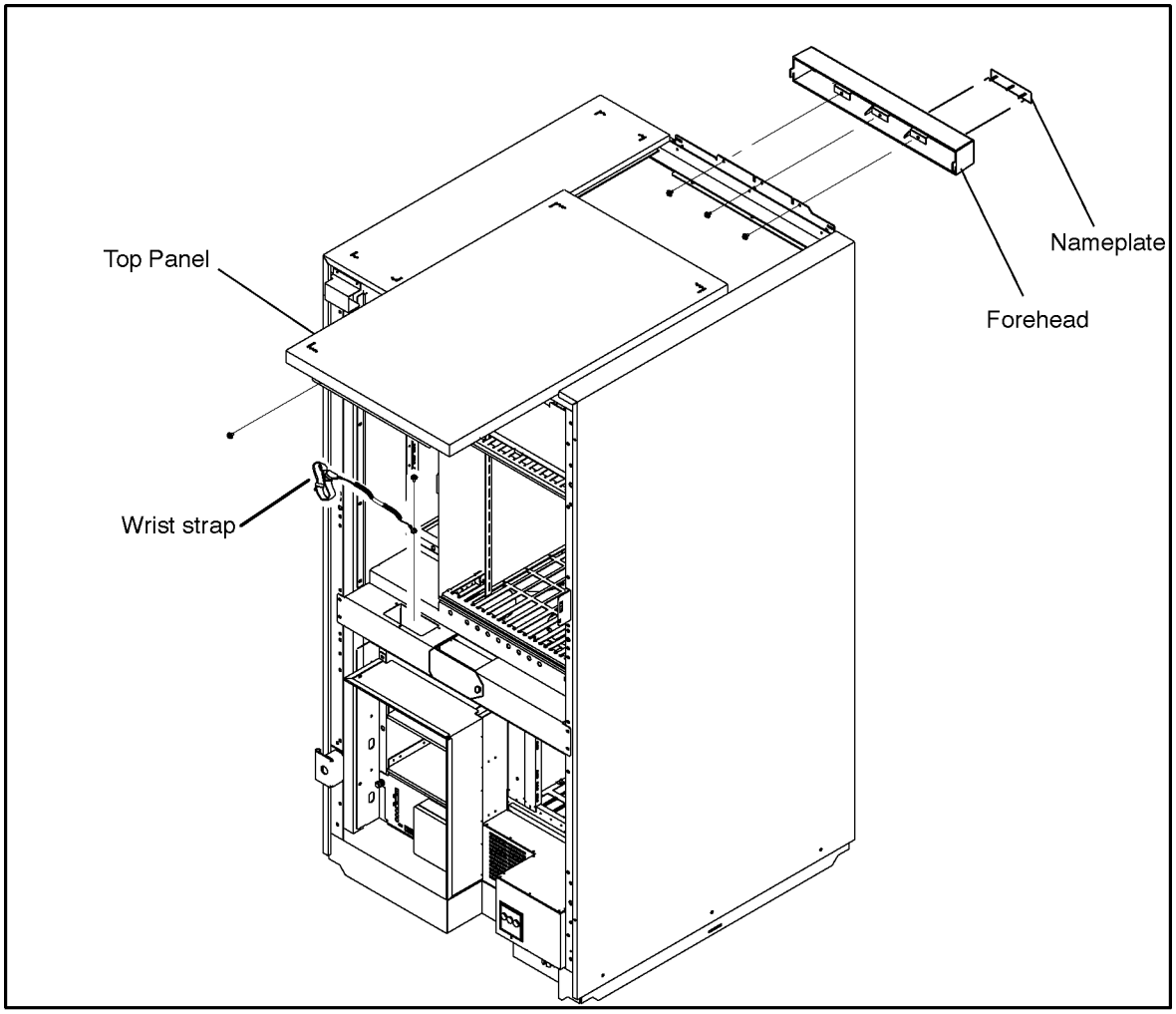
## Adding the 997 Nameplate

The upgraded system requires that you replace the nameplate in the upper left corner of the front of the SPU cabinet with a new 997 nameplate.

**To replace the nameplate:**

1. Using a #20 Torx driver, remove the two screws that hold the top panel in place. See Figure 4-3.

**Figure 4-3 SPU Cabinet Forehead and Top Panel**

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2. Pull the top panel back about 20-30 cm.
3. Remove the three screws that hold the forehead assembly in place.
4. Lift the forehead assembly up and off of the SPU cabinet.
5. Using a pair of needle nose pliers, squeeze the post that secures the old nameplate to the forehead assembly and push it through the hole in the forehead assembly.
6. Repeat the last step for the other posts.
7. Attach the new nameplate.
8. Replace the forehead assembly and reattach the three screws that hold the forehead assembly in place.
9. Push the top panel back in place and reattach the two screws.

# 5 Installing New Hardware

This section tells how to install the new hardware required for the upgrade.

**WARNING** **The following procedures, as well as all other service, cleaning, and maintenance, should be performed only by qualified service-trained Hewlett-Packard personnel.**

## Shutting Down the System

**WARNING** **Before starting any installation procedure, ensure that the System Administrator/System Manager has done a system backup and an operating system shutdown.**

**CAUTION** Due to the complexity of the hardware upgrade, do not install new peripheral devices until after successfully completing the T600 hardware upgrade.

Also, be sure the circuit breaker switch on the rear of the cabinet is turned OFF before you install new cards; otherwise, you may get error messages or long-term configuration problems.

Before you remove and replace cards and modules, be sure you have a grounding wriststrap attached to your wrist.

**To shut down the system:**

1. Turn the PMB card cage power OFF by setting the control panel "Standby/Ready" switch to "Standby." (The control panel is at the top front of the cabinet.)
2. Turn off power to the SPU cabinet by switching the circuit breaker at the bottom right rear of the cabinet to the "off" position.
3. Turn off the power to the expansion cabinet by setting the power switch to the "off" position. (The power switch is at the top front of the cabinet.)

**CAUTION** ESD protection requires the use of a grounding wriststrap when handling the cards. Failure to use the grounded strap may result in card component damage. There are two grounding wriststraps attached to the SPU cabinet, one in the front and one in the rear of the cabinet.

## Accessing the Card Cage

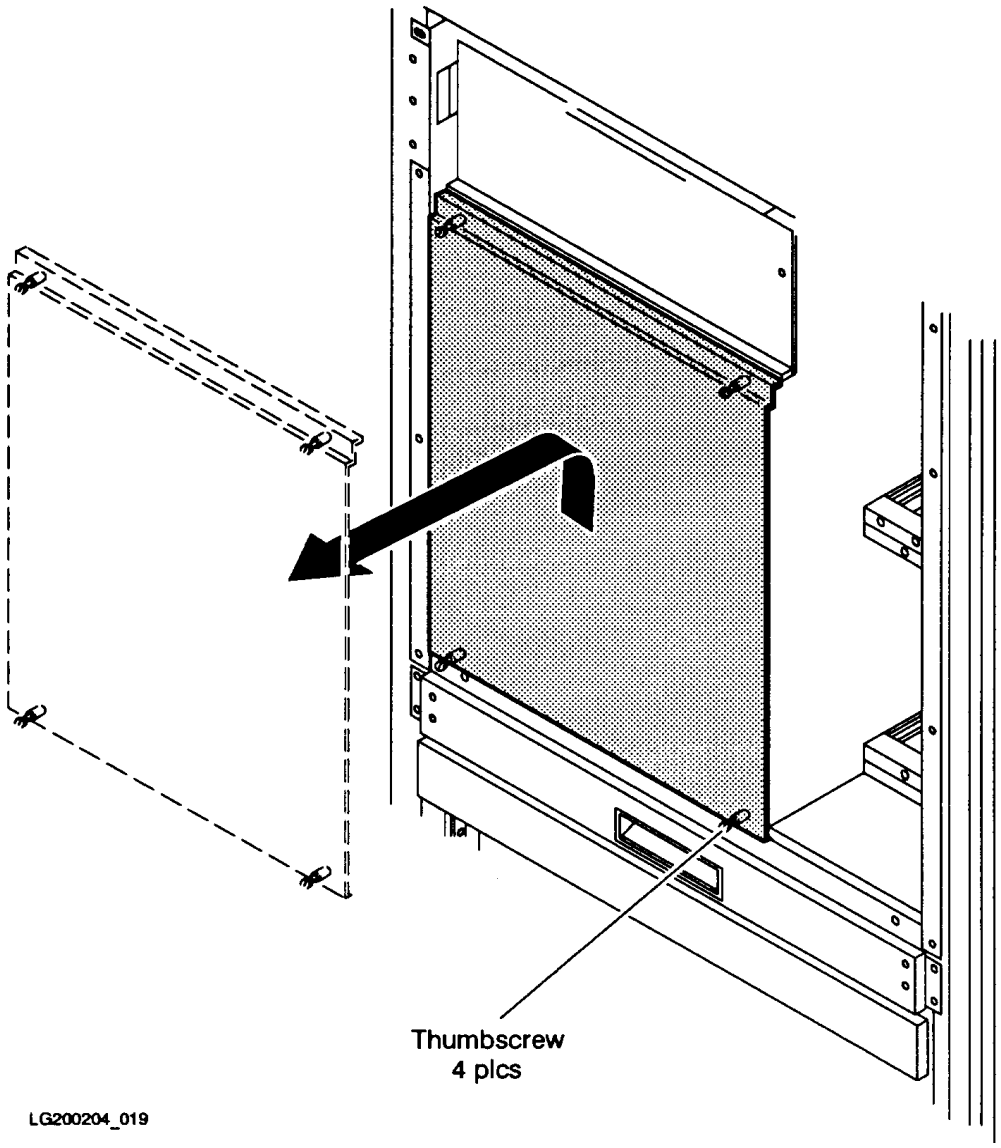
To open the front and rear cabinet doors:

1. Insert the hexagonal cabinet key into the black hexagonal hole on the right of the cabinet door.
2. Rotate the cabinet key about a quarter-turn counterclockwise.
3. Pull the door open.

## Accessing the Front PMB Card Cage Slots (10 - 15)

A metal plate covers the PMB cards in the front card cage (see Figure 5-1).

**Figure 5-1 Front PMB Card Cage Cover Plate (Cabinet Front)**




**To remove the cover plate from the front PMB card cage:**

1. Verify that power to the system is off (refer to "Shutting Down the System"). The rear cabinet circuit breaker should be set to "OFF" and the control panel switch set to "Standby."
2. Remove the card cage cover plate by loosening the four (4) thumbscrews (two each at the upper and lower edges) and lifting the cover plate up and out (see Figure 5-1).

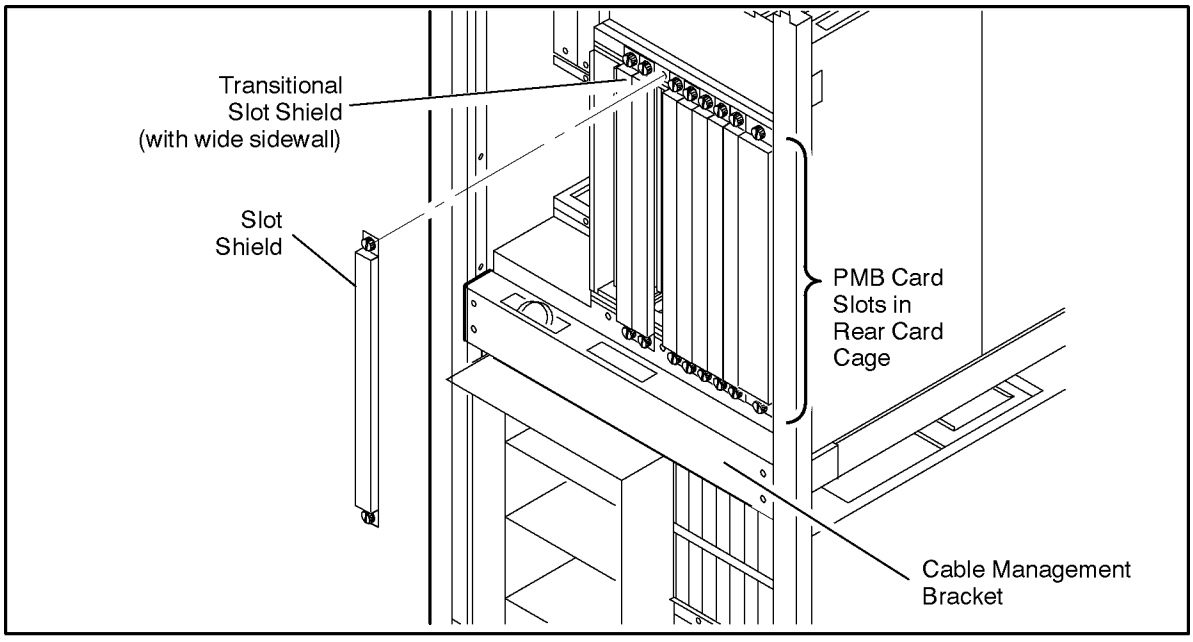
# Accessing the Rear PMB Card Cage Slots (1-9)

The rear card cage is not protected by a cover plate. However, individual slots are protected by a metal slot shield (see Figure 5-2).

**To remove a metal slot shield from the rear PMB card cage:**

1. Verify that power to the system has been removed (refer to "Shutting Down the System"). The rear cabinet circuit breaker should be set to "OFF" and the control panel switch set to "Standby."
2. Loosen the two (2) thumbscrews (one at the top edge and one at the bottom edge) on the shields that cover the BC cards.
3. Pull the metal slot shield away from the card cage.

**Figure 5-2 Rear PMB Card Cage**

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## Installing Processor Cards

New processor cards should be installed according to the following guidelines:

1. New processor cards should be installed in the following sequence: 15, 14, 13, 11, 10, 9. If memory modules are in these slots, they should be relocated to other valid memory slot locations.
2. Up to 6 processor cards (12 processor modules) can be installed on T600 Systems; up to 4 processor cards 8Z processor modules) can be installed on 997 Systems.

Do not intermix different processor cards in the same SPU.

**NOTE** Each 997/T600 processor card is designed to accommodate one or two processor daughterboards. The system is not designed to support two or more processor cards each with only one daughterboard.

**To install processor cards:**

1. Remove the existing cards by lifting the extractor handles out from the card. Gently slide the card out of the card cage along the slot guides. Insert the old card into an anti-static bag and return it to Hewlett-Packard. Materials to return cards are included in the upgrade kit.

**NOTE** All old cards MUST be returned to Hewlett-Packard. (By the terms of the upgrade purchase agreement, these items are the property of Hewlett-Packard and are no longer the property of the customer.)

2. Using the configuration guidelines discussed earlier in this section, place the new card (or cards) in the slot guides and carefully insert it into the backplane connector until it is firmly seated.

**CAUTION** Avoid touching the cooling fans on the processor daughterboard. Applying pressure to the fans may cause damage to the processor.

## Installing Power Supplies

Upgrades require replacing the 5V 130A power modules with 3.3V 130A power modules and the 5V 325W power modules with 5V 325W power modules. Use Table 5-1 to configure the 3.3V 130A power modules for systems that do not include the power resiliency option.

Use Table 5-2 to configure the 3.3V 130A power modules for systems that do include the power resiliency option.

**NOTE** **Slot 12** is not used for processors for 997/T600 upgrades.

**Table 5-1 3.3V 130A Power Supply Configuration**

| Processor Card Slot # | 15 | | 14 | | 13 | | 11 | | 10 | | 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # of Processors | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Power Modules Required | 1 | | 2 | | | | 3 | | 4 | | | |
| 3.3V Power Module Slot # | P10 | | P9 | | | | P11 | | P1 | | | |

**Table 5-2 3.3V 130A Power Supply Configuration for Power Resiliency**

| Processor Card Slot # | 15 | | 14 | | 13 | | 11 | | 10 | | 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # of Processors | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Power Modules Required | 2 | | 3 | | | | 5 | | 6 | | | |
| 3.3V Power Module Slot # | P10, P9 | | P8 | | | | P11, P1 | | P2 | | | |
| PFCs | middle<br>bottom | | top<br>middle<br>bottom | | | | | | | | | |

All of the old 5V 325W power modules (HP P/N 0950-2230) should be replaced with the four new 5V 325W power modules (HP P/N 0950-3018). The new modules are installed in slots P5, P6, P7, and P13.

**To install power modules:**

1. Loosen the two (2) thumbscrews, one at the top and one at the bottom of the module.
2. Remove the module by pulling the extractor handle.
3. Repeat this process for each 3.3V 130A and 5V 325W power supply.

**NOTE** Power supplies cannot be mixed on the 997/T600 System—the 3.3V 130A power modules (HP P/N 0950-3017) cannot be mixed with the 5V 130A power modules (HP P/N 0950-2291) and the new 5V 325W power modules (HP P/N 0950-3018) cannot be mixed with the old 5V 325W power modules (HP P/N 0950-2230).

Insert each power module into an anti-static bag and return it to Hewlett-Packard. The old power modules can be put into the package used by the new power modules.

4. Using the configuration guidelines discussed in “Installing Power Supplies” on page 5-5, place the new power modules in their proper slots.
5. Carefully insert each power module into the backplane connector until it is firmly seated.
6. Apply the new label for power supplies.

# Installing a PFC Module

If you are upgrading the SPU to a T600 System with more than two processors, and the upgrade does not include the power resiliency option, you must install a second PFC module.

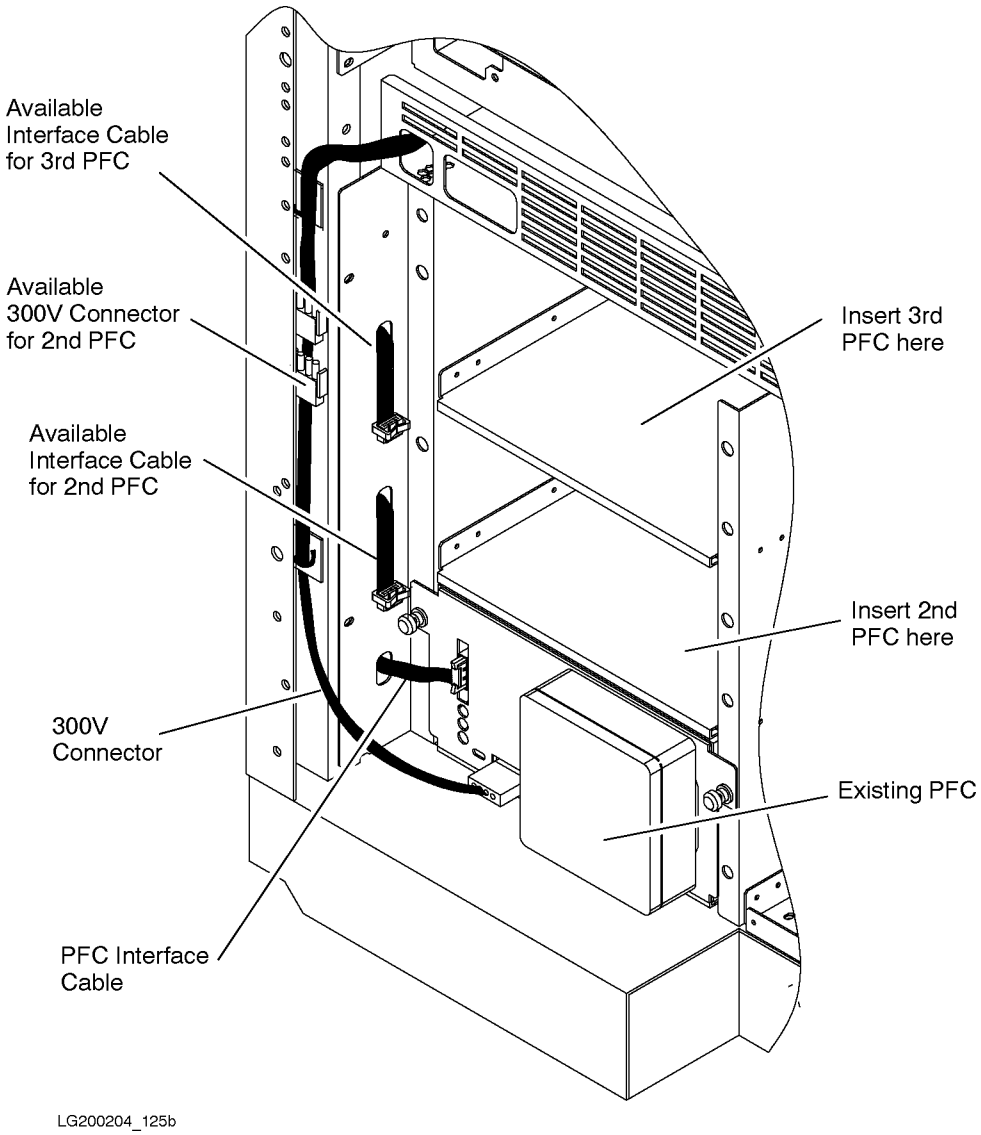
If you are upgrading the SPU to a T600 System with two processors or fewer, and the upgrade includes the power resiliency option, you must install a second PFC module.

If you are upgrading the SPU to a T600 System with more than two processors, and the upgrade includes the power resiliency option, you must install two additional (for a total of three) PFC modules.

Use the following procedure to install a second PFC module:

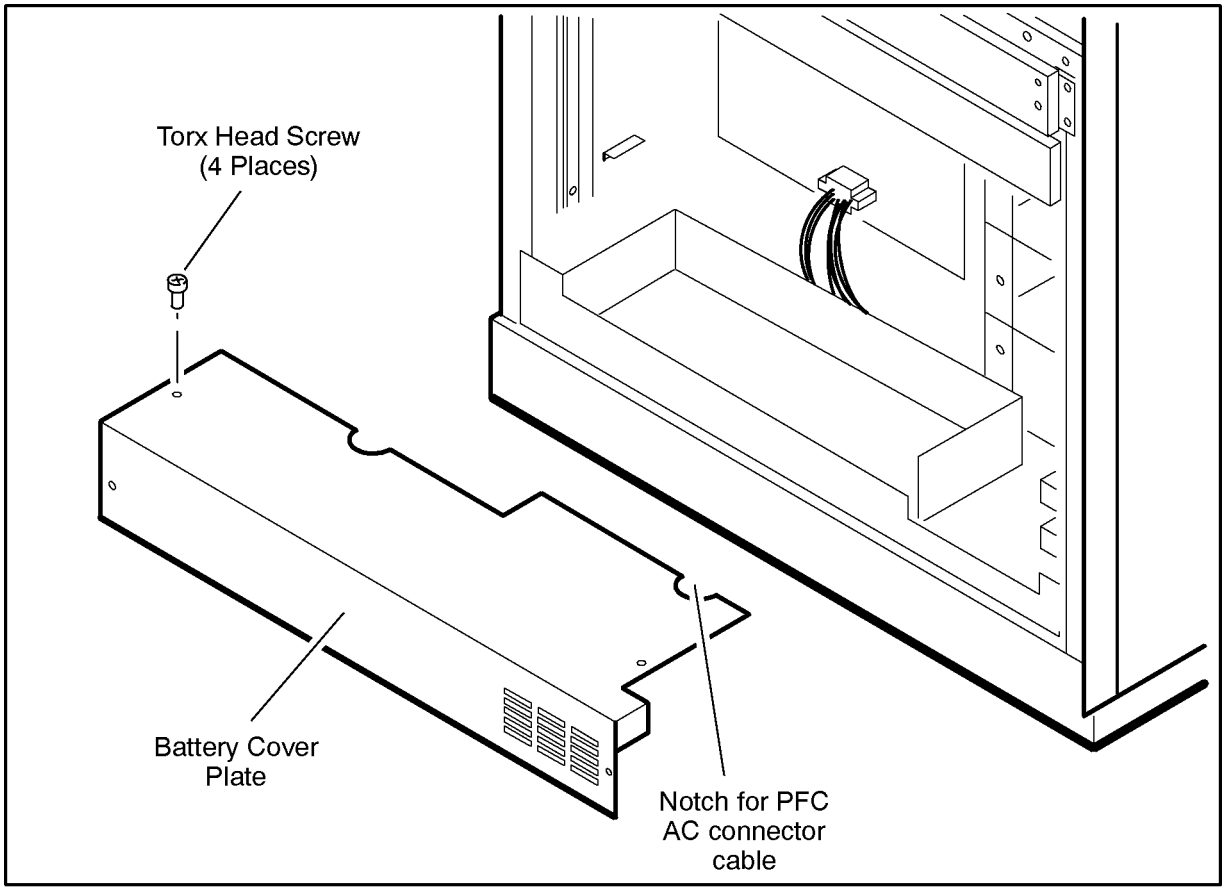
1. Locate the cage at the rear of the cabinet containing the existing PFC module. There should be two empty slots above the PFC. See Figure 5-3.

**Figure 5-3 PFC Module (Rear Cabinet)**




2. Push the new PFC module along its rails toward the front of the cabinet.
3. Attach the PFC interface cable and the 300V connector to the PFC module.
4. Tighten the captive screws on the left and right sides of the PFC module.
5. Using a #15 Torx driver, remove the four (4) screws holding the metal cover at the bottom front of the cabinet (see Figure 5-4).

**Figure 5-4 Sheetmetal Enclosure (Cabinet Front)**

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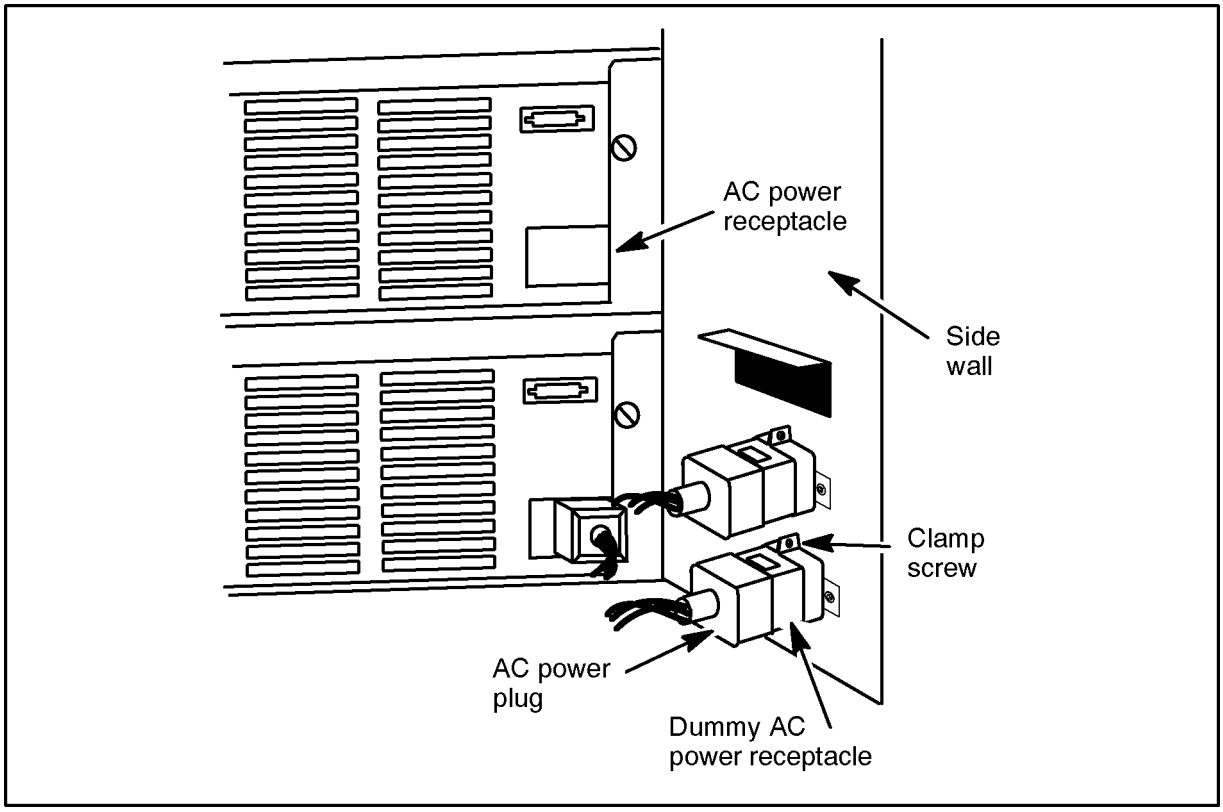
6. Remove the metal cover plate by tilting it up and lifting it slowly off the battery box.
7. Loosen the screw on the dummy AC power receptacle for the "Middle" PFC module AC plug. (See Figure 5-5.)

**Figure 5-5 AC Cables for PFC Module**




jdsu025

8. Detach the PFC module's AC plug from the clamp that holds it to the cabinet side wall.
9. Attach the PFC module's AC plug into the new PFC module AC power receptacle.

**NOTE** If the upgrade includes the power resiliency option and has more than two processors, repeat steps 2 through 9 for the PFC that should be installed in the top slot.

10. Replace the metal cover plate on the battery box making sure that the PFC module's AC cable goes through the notch at the back of the cover plate. See Figure 5-4.
11. Tighten the four (4) screws that secure the metal cover.
12. Tighten the thumb screws on the left and right sides of the PFC module.

# Replacing EMC Clips

Before you can install an HP-HSC I/O Bus Converter, you must perform the following tasks, you must remove the old EMC clips from the partition that separates the Service Processor from the BC cards and replace them with new (lower profile) EMC clips.

**CAUTION** Failure to complete this step may result in damage to the HP-HSC I/O Bus Converter when it is reinserted into the slot.

The steps required to complete each of these tasks follow.

**To replace the EMC clips on the PMB card cage partition:**

1. Disconnect the cables from the bus converter card in slot 0 and label them.
2. Remove the BC card in slot 0 by lifting the extractor handles out from the card.

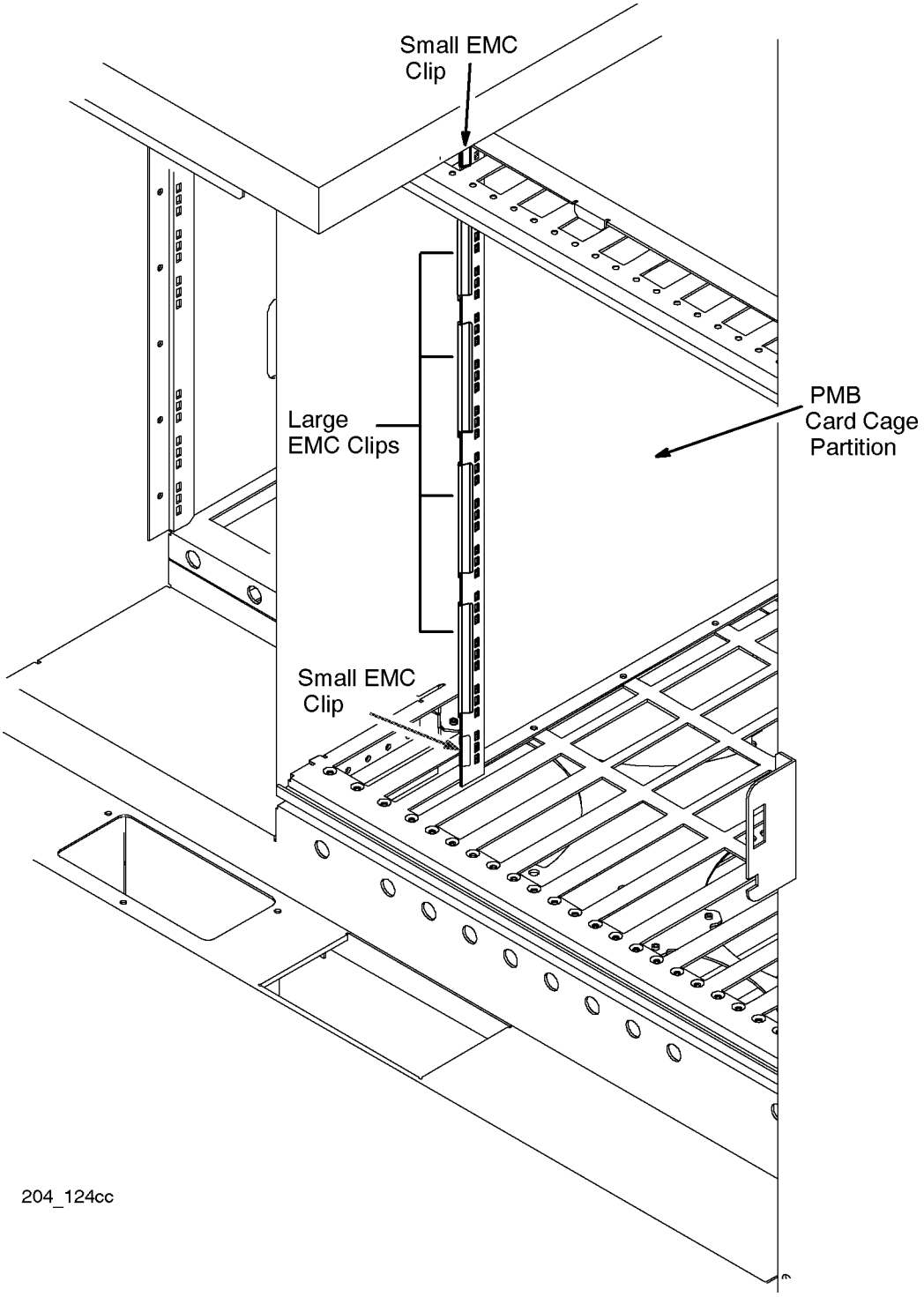
   Gently slide the card out of the card cage along the slot guides. Insert the old card into an anti-static bag and return it to Hewlett-Packard. Materials for returning the cards are included in the upgrade kit.

**NOTE** All old BC cards MUST be returned to Hewlett-Packard. By the terms of the upgrade purchase agreement, all old BC cards are the property of Hewlett-Packard and are no longer the property of the customer.

3. Remove the Support cable from the SP card.
4. Remove the SP card from the SPU.
5. Locate the EMC clips on the PMB partition. See Figure 5-6.

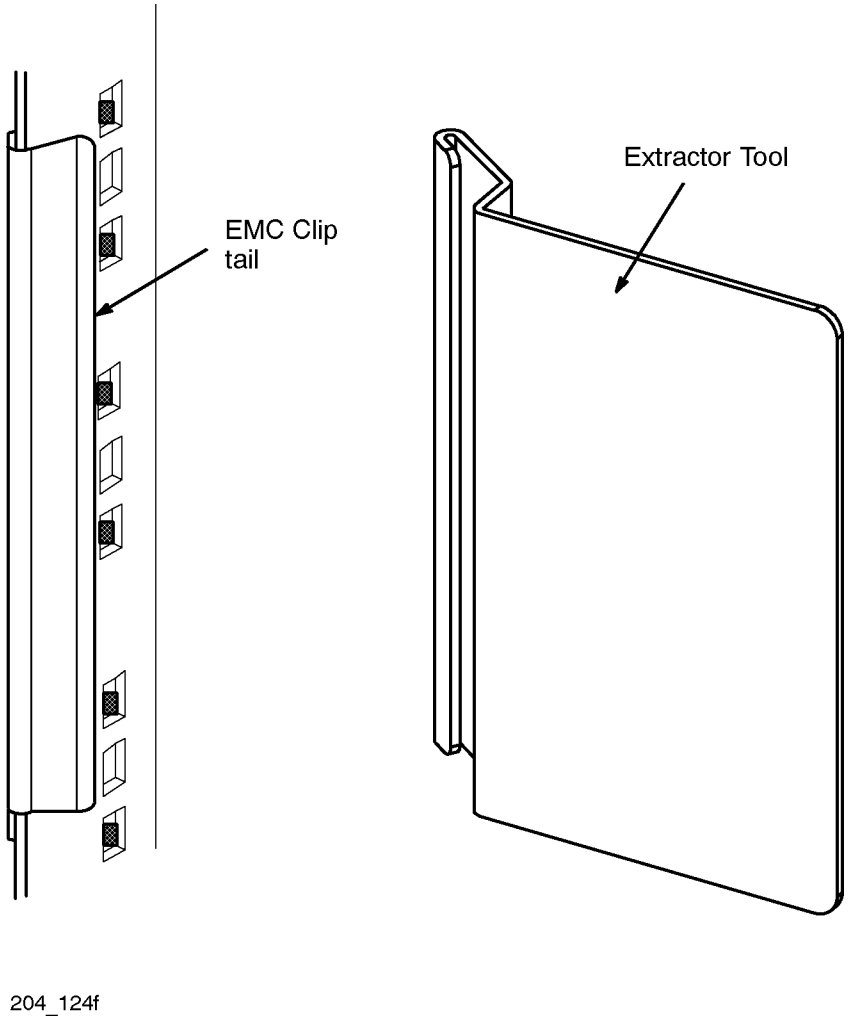
   There are small EMC clips at the top and bottom of the partition. Between these smaller clips are four larger ones. (If your system already contains 14 small clips, go to the next section.)

**Figure 5-6 PMB Partition**




6. Hook the EMC Clip Extractor Tool, which came with the kit, onto the "tail" of the clip.

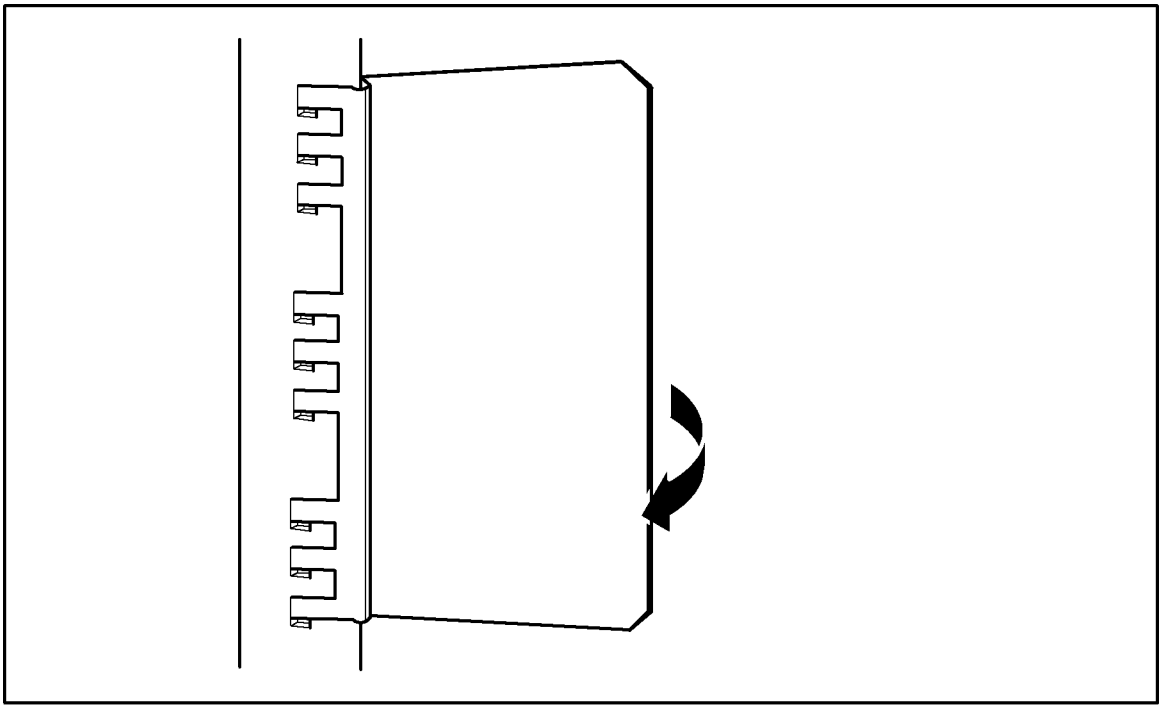
**Figure 5-7 EMC Clip and Extractor Tool**




7. To prevent the clip from falling into the system after you remove it, hold one hand under the clip. Then, using the other hand, pry the clip off by rotating the EMC Clip Extractor Tool clockwise horizontally.

   Don't worry about damaging the clip; it is not meant to be reused.

**Figure 5-8 Removing EMC Clip and Extractor Tool**



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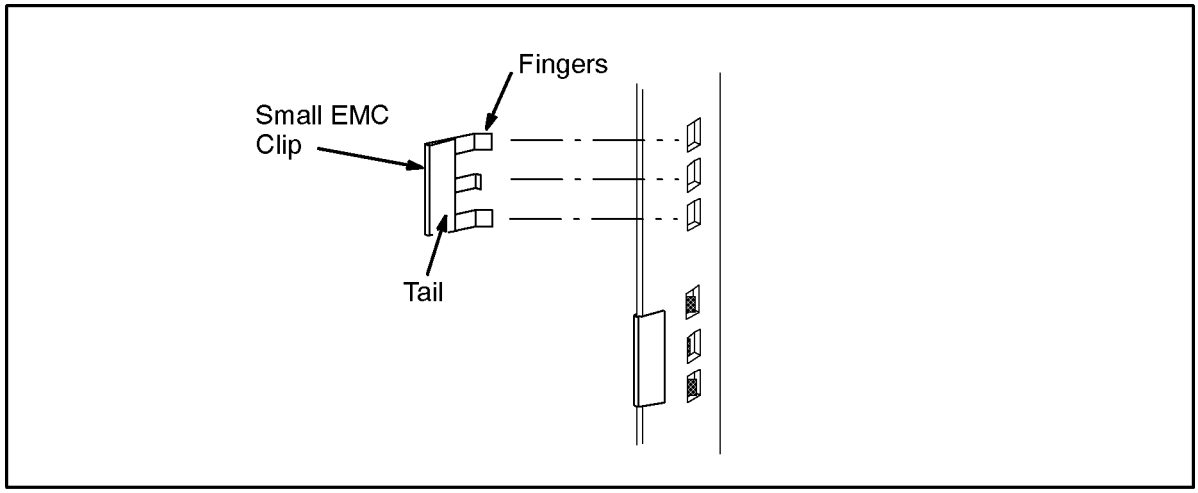
Once the clip is clear of the SPU, dispose of it.

8. Repeat step 5 for the remaining EMC clips.
9. Starting at the top of the PMB card cage partition, attach the 14 new EMC clips (that came with this Upgrade Kit) to the PMB card cage partition:
   a. Position the clip with the "fingers" to the left of the partition and the "tail" on the right.
   b. Match the three "fingers" on the clip with the top three holes in the partition. See Figure 5-9.

**Figure 5-9 New EMC Clip Installation**

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c. Press the clip onto the edge of the partition until it snaps into place.

d. Attach the next clip directly below the last. Do no leave any holes unfilled between clips.

e. Repeat the above procedure for the remaining clips.

   When you finish, there will be a single row of 14 clips from the top of the partition to the bottom.

# Installing HP-HSC I/O Bus Converters

On a 997/T600 System, an HP-HSC I/O Bus Converter with one or two HP-PB I/O Bus Converters attached to it is the functional equivalent of a Bus Converter card on a 996/T520 or 991/995/T500 System. In addition to HP-PB I/O Bus Converters, the HP-HSC I/O Bus Converter can also have HSC I/O cards such as ATM, Fibre Channel, and Fast/Wide SCSI cards mounted on it. The HP-PB I/O Bus Converter occupies two slots on HP-HSC I/O Bus Converter; the HSC I/O cards occupy only one slot.

Four slots on a HP-HSC I/O Bus Converter are available for HP-PB I/O Bus Converters and HSC I/O cards. The card can accommodate one or two HP-PB I/O Bus Converters (each HP-HSC I/O Bus Converter has two connectors), four HSC I/O cards, or a combination of HP-PB I/O Bus Converters and HSC I/O cards.

The following sections describe:

- Guidelines for attaching HP-PB I/O BC and HSC I/O cards to HP-HSC I/O BC cards.
- Mounting HP-PB I/O Bus Converters and HSC I/O cards to HP-HSC I/O Bus Converters.
- Guidelines for installing HP-HSC I/O Bus Converters in the PMB card cage.
- Installing HP-HSC I/O Bus Converters in the PMB card cage.

## Guidelines for Attaching HP-PB I/O BC and HSC I/O Cards to BC Cards

1. Attach one HP-PB I/O Bus Converter per HP-HSC I/O Bus Converter in the slot designated *Module 0* until you have attached all of the HP-PB I/O Bus Converters.
2. If you have more HP-PB I/O Bus Converters than HP-HSC I/O Bus Converters, attach a second HP-PB I/O Bus Converter to each HP-HSC I/O Bus Converter in the slot designated *Module 2* until you have installed all of the HP-PB I/O Bus Converters.
3. Attach HSC I/O cards to the HP-HSC I/O Bus Converters, one per HP-HSC I/O Bus Converter. (HSC I/O cards include such cards as ATM, Fibre Channel, and F/W SCSI cards.) If there are more HSC I/O cards than HP-HSC I/O Bus Converters, attach a second HSC I/O card to each HP-HSC I/O Bus Converter.
4. Repeat the previous step until you have attached all of the HSC I/O cards.

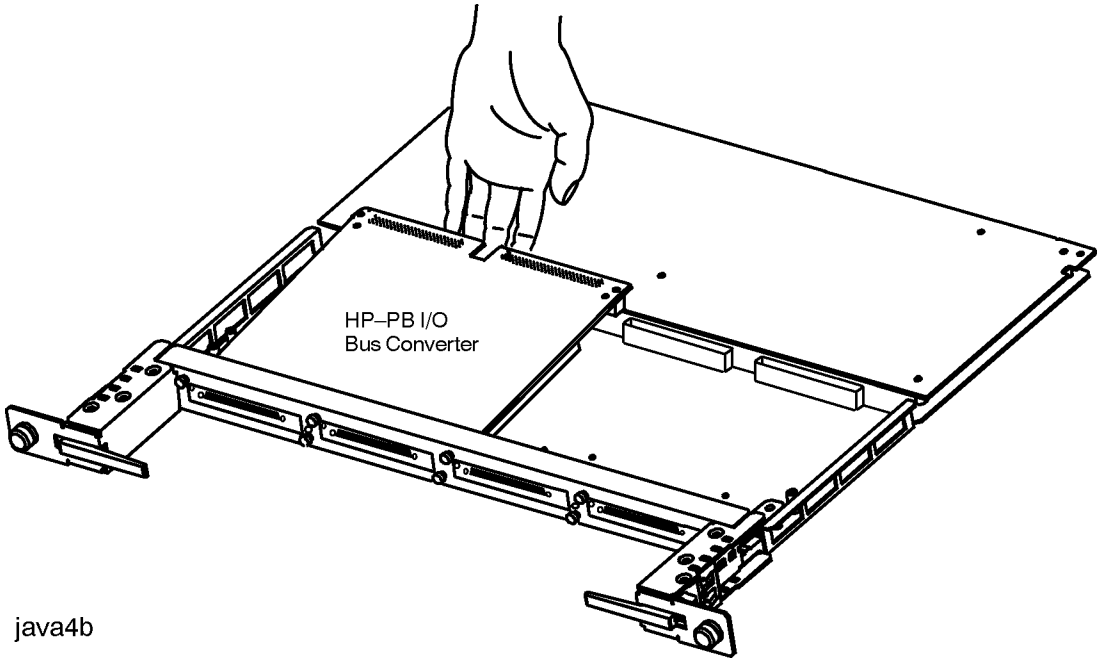
## Attaching Cards to HP-HSC I/O Bus Converters

To attach cards to HP-HC I/O Bus Converters:

1. Review the guidelines for installing HSC I/O cards in the previous section.
2. Using a #10 TORX driver, remove the cover blank from the slot (or slots) you want to use on the HP-HSC I/O BC card.

   The screws that secure the cover blanks are spring loaded. When removing the screws, apply slight inward pressure to prevent the screw from separating from the spring. When the screw no longer moves outward, it is detached from the cover plate.
3. Orient the card so that the connector at the back of the card faces the connector on the HP-HSC I/O BC card.
4. Using light pressure at the back of the card, press it against the bulkhead of the HP-HSC I/O BC card. See Figure 5-10.

**Figure 5-10 Attaching an HSC I/O card to an HP-HSC I/O Bus Converter**

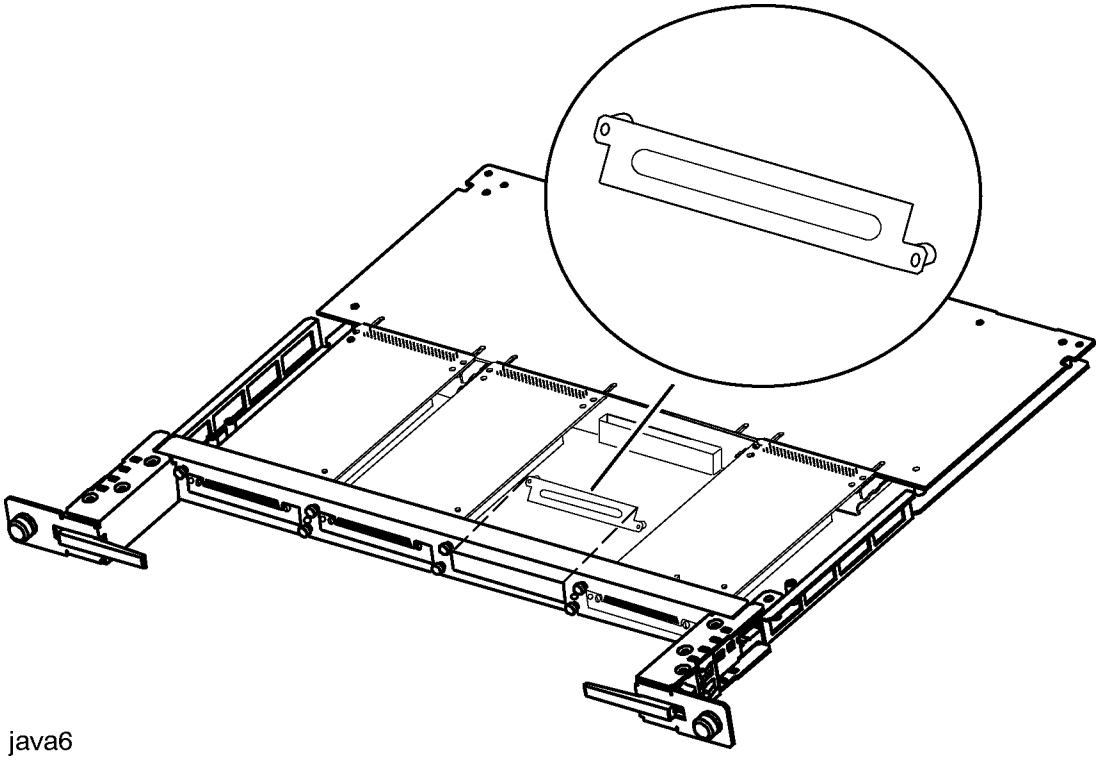



5. While holding the connectors about 1 millimeter apart, tighten the captive screws on the bulkhead.
6. To avoid damage to the connectors, verify that the connectors on the boards are aligned properly, then press them together securely by applying even force across the length of the HSC I/O card connector.
7. Attach cover blanks to any openings in the HP-HSC I/O Bus Converter.

   Openings in the bulkhead occur where an HSC I/O card has not been mounted on an HP-HSC I/O Bus Converter. Cover blanks must be attached to satisfy EMC requirements.
8. Tighten the captive screws on the bulkhead to the cover blank. See Figure 5-11.

   Screw in the first screw about halfway, tighten the other screw completely, then tighten the first screw completely.

**Figure 5-11 Attaching a Cover Blank**



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## Guidelines for Installing HP-HSC I/O Bus Converters in the PMB Card Cage

1. HP-HSC I/O Bus Converters may occupy slots 0-5. Up to six HP-HSC I/O Bus Converters can be installed on a 997/T600 System.
2. HP-HSC I/O Bus Converters must be installed according to the following rules:
   a. The first HP-HSC I/O Bus Converters must be installed in PMB card slot 0.
   b. Additional cards must be installed in slots 1, 2, 3, 4, and 5 (in that order).

      If a memory card is in one of these slots, move it to the next available slot to the right of the HP-HSC I/O Bus Converter.

### Attaching HP-HSC I/O Bus Converters in the PMB Card Cage

To install an HP-HSC I/O Bus Converter in the PMB card cage:

**CAUTION** Verify that the EMC clips have been changed in slot 0. There should be 14 small clips attached to the PMB card cage partition. Failure to change the clips could result is damage to the HP-HSC I/O Bus Converter when you install it.

1. Replace the BC cards one at a time.
   a. Remove the existing bus converter card in PMB slot 0 and label the cables.
   b. Install the new BC card in PMB slot 0.

      Do not reattach the cables at this time.
   c. Remove the next bus converter card, if there is one, making sure to label the cables.
   d. Install the new BC card in the same slot from which you removed the old bus converter card.
   e. Repeat steps c and d for the remaining BC cards.
2. Place each card in the slot guides.
3. While holding the insertion tab in the up position, carefully, but firmly, insert the card into the backplane connector until it is seated.
4. Install the SP card in the SP slot.

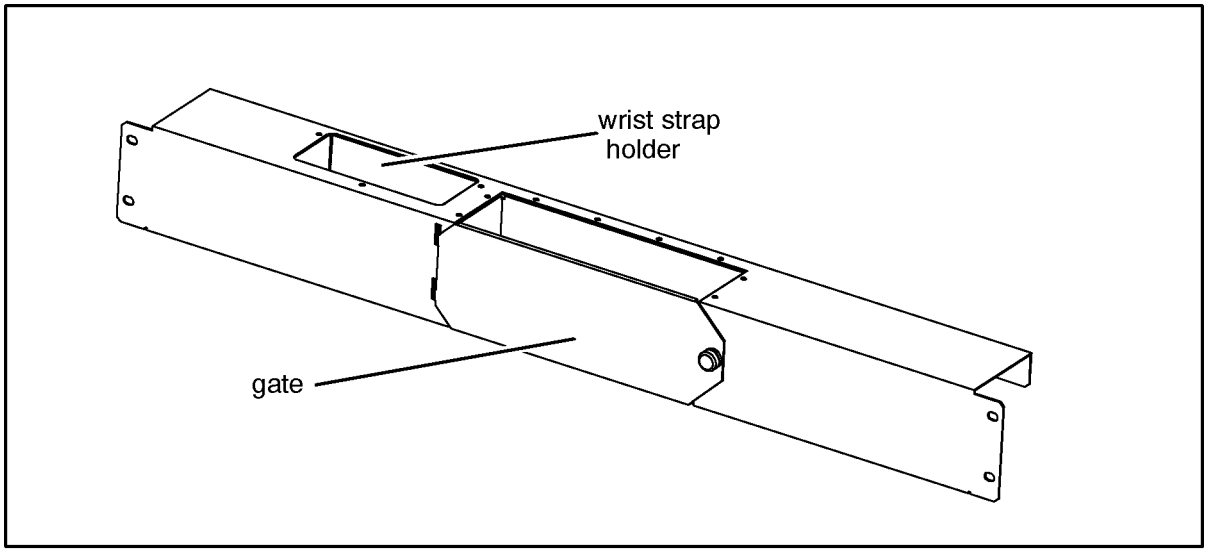
## Installing the Cable Management Bracket

Before you reattach the cables, remove and replace the cable management bracket located just below the rear PMB card cage. See Figure 5-2.

**To remove and replace the cable management bracket:**

1. Loosen and remove the four screws at each corner of the cable management bracket and set them aside for reuse.
2. Position the new bracket in place making sure the wrist strap holder faces up and the cable "gate" faces out. See Figure 5-12.

**Figure 5-12 Cable Management Bracket**

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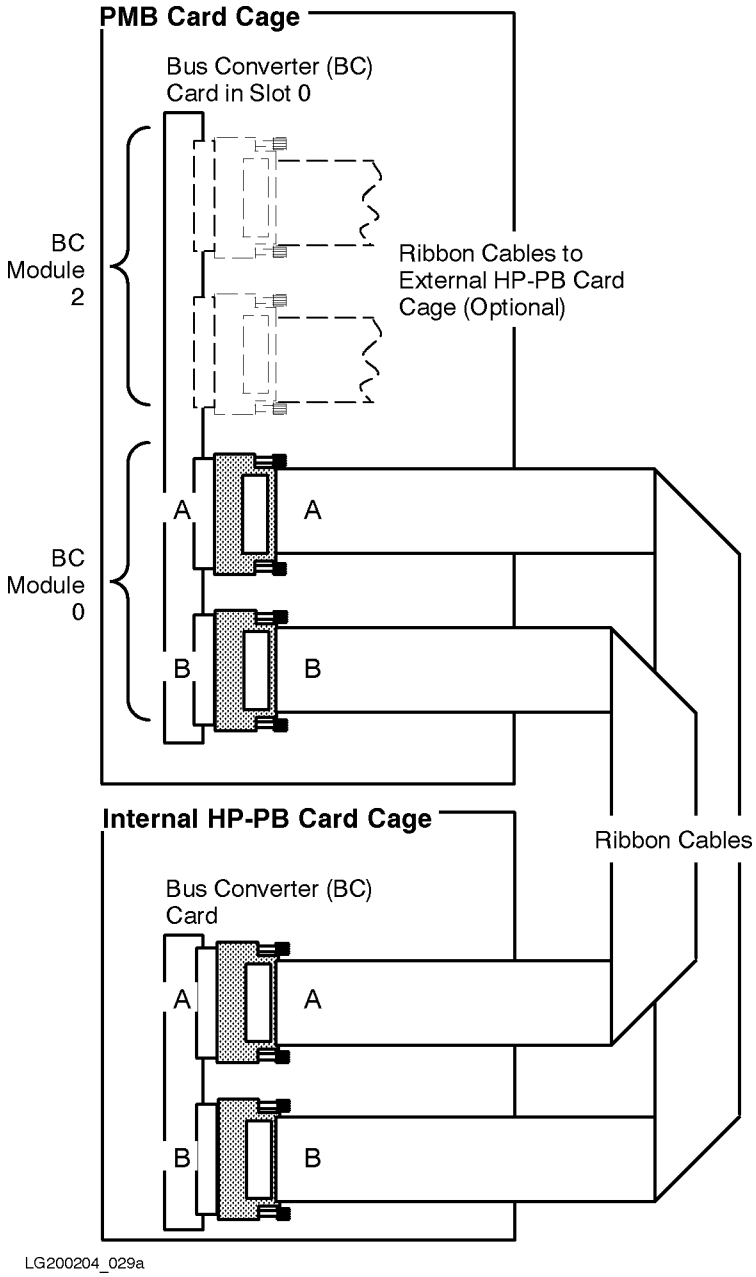
3. Replace and tighten the screws at each corner of the bracket.

## Completing the Cable Installation

After you have installed the upgrade cards, use the following steps to complete the installation:

1. Open the gate in the cable management bracket (see Figure 5-12) by unscrewing the thumbscrew on the right side of the gate.
2. Reattach the flat ribbon cables from the internal and external HP-PB card cages to the newly installed BC cards and tighten the cable screws. See Figure 5-13.

**Figure 5-13 Flat Ribbon Cables Connecting the BC Cards**




3. Reattach the Support cable to the SP card.
4. Gather the cables coming from the PMB card cage and position them inside the bracket gate.
5. Close the bracket gate and tighten the gate thumbscrew.
6. Reattach the cover plate to the front PMB card cage:
   a. Place the card cage cover plate lip over the raised edge of the cabinet frame.

b. Tighten the four thumbscrews on the card cage cover plate with a screwdriver so that they are slightly more than finger-tight.

7. For the rear PMB card cage, attach the metal slot shields.

a. Install the transitional slot shield that came with the kit to the slot immediately to the right of the rightmost HP-HSC I/O Bus Converter. Refer to Figure 5-2. The side wall should be positioned to the left, against the last HP-HSC I/O Bus Converter.

b. Tighten the thumbscrews on the metal slot shield so that they are slightly more than finger tight.

c. Attach regular slot shields to any other slots of cards you replaced.

---

**NOTE** The card cage cover plate and metal slot shields are required for RFI and EMI emissions control and for proper airflow and cooling.

All rear PMB card cage slots must have a metal slot shield covering the slot, even if the slot has no card installed.

---

1. Place the metal slot shield over the card (or the empty slot) so that the thumbscrews are aligned with the holes in the card cage.
2. Tighten the thumbscrews on the metal slot shield so that they are slightly more than finger tight.

## Installing Memory Cards

The procedure to install memory cards varies depending on the kind of memory board that has been ordered. Up to 8 single-wide, 4 double-wide (8 GB), or a combination of single-wide and double-wide PMB memory cards may occupy PMB card slots 1-14.

Memory cards must be installed after processor and bus converter cards, respectively and in the following sequence and according to the following rules:

1. Load 8 GB memory boards in the following sequence: 8, 12, 9, 10, 6, 4. If a slot is occupied with an 8 GB memory board, use the next available slot.

---

**NOTE** If there is a single wide memory board (64, 128, 256, 512 or 768 MB) in a double-wide slot, you will have to relocate it to another slot.

---

2. Load all other memory cards in the following sequence: 4, 6, 8, 9, 10, 11, 12, 13, 14, 7, 5, 3, 2, and 1. If a slot is occupied, use the next available slot.

For more information about installing memory boards, refer to *Add-on Memory Card Installation Guide*, (P/N A1809-90005).

**To install memory cards:**

1. Remove the existing cards by lifting the extractor handles out from the card. Gently slide the card out of the card cage along the slot guides. Insert the old card into an anti-static bag and return it to Hewlett-Packard. Materials to return cards are included in the upgrade kit.

**NOTE** All old cards MUST be returned to Hewlett-Packard. (By the terms of the upgrade purchase agreement, these items are the property of Hewlett-Packard and are no longer the property of the customer.)

2. Using the configuration guidelines discussed earlier in this section, place the new card (or cards) in the slot guides and carefully insert it into the backplane connector until it is firmly seated.

**CAUTION** Use extreme care when inserting PMB cards into the backplane. The connectors can be damaged if cards are forcibly inserted into place.

## Installing the PowerTrust UPS

If the customer ordered an optional PowerTrust UPS, install it using the procedures outlined in the *PowerTrust System Guide* that came with the UPS.

**NOTE** The UPS comes in two sizes: a 3 kVA and a 5.5 kVA. Before you install the UPS, *size* the load to confirm that the UPS is capable of sustaining power to the system should the AC power fail. The procedure for sizing the load is described in the *PowerTrust System Guide*.

# 6 Upgrading an Existing 997/T600 System

This chapter describes how to upgrade an existing HP 9000 T600 or a HP 3000 997 System. The procedures in this chapter are similar to the upgrade process described in the previous chapter, except that there is no need to load new firmware.

**Chapter Contents**

The chapter is organized as follows:

- Upgrade Checklist.
- Detailed Upgrade Procedure.
  - Verifying the Contents of the Kit.
  - Installing New Hardware.
  - Initializing Internal Values with SS_CONFIG.
  - Adding Upgrade Labels.

# Upgrade Overview

The following is a summary of the steps required to add processors and memory to an *existing* 997/T600.

1. Verify the contents of the upgrade kit.
2. Shut down the system.
3. Access the PMB card cage.
4. If the upgrade kit contains a new processor daughterboard to add to an existing processor card:
   a. Remove the processor card which currently has only one daughterboard attached.
   b. Install the daughterboard onto the processor card.
   c. Install two L2 Cache Modules.
5. Install the processor card into the proper PMB card slot.

**NOTE** A processor board cannot be installed in slot 12.

6. Install power supplies if required.
7. If appropriate, add upgrade memory cards in the appropriate PMB slots.
8. If appropriate, install a new Power Factor Correcting Module (PFC).
9. Power up the system by turning the Standby/Ready switch to the Ready position and turning the rear circuit breaker switch to ON.
10. Verify the installation of processor and memory cards:
    a. Verify that the control panel reports the new number of processors.
    b. Verify that the initial PDC display reports the new number of processors and amount of memory.
    c. Verify the proper configuration of processors by executing the HC command at the SP> prompt. A maximum of two modules per card should be reported as present.
    d. (Recommended) Boot the Offline Diagnostic Environment (ODE) from the alternate (ALT) boot device using the HP-PB Support Media and run the diagnostics to test and verify the 997/T600 processors (UDIAG).

       If you installed new memory cards, run MEMTEST at the PDC interface.
11. Use the SS_CONFIG utility to set the appropriate values for the system parameters.
12. Add upgrade labels to the SPU.

# Detailed Upgrade Procedure

The remainder of this chapter provides detailed steps on how to add processors and memory to an *existing* 997/T600 System.

## Verifying the Contents of the Kit

Verify that the upgrade kit contains:

- Processor cards and daughterboards:

  The number of processor cards and daughterboards you receive is dependent upon the number of processors that are currently installed and how many were ordered. For example:

  - If you are upgrading from an odd to an even-numbered processor configuration, you will receive one daughterboard, two L2 Cache assemblies, and (n-1)/2 processor cards (each with two daughterboards and four L2 Cache assemblies attached), where *n* is the total number of processors you are adding.
  - If you are upgrading from an even to an odd-numbered processor configuration, you will receive one processor card (with one daughterboard and two L2 Cache assemblies attached), and (n-1)/2 processor cards (each with two daughterboards and four L2 Cache assemblies attached), where *n* is the total number of processors you are adding).
  - If you are upgrading from an even to an even or from an odd to an odd-numbered processor configuration, you will receive n/2 processor cards (each with two daughterboards and four L2 Cache assemblies attached), where *n* is the total number of processors you are adding).

- 3.3V 130A power supplies:

  If the upgrade does not include the power resiliency option, the kit will include one 3.3V power supply for every three processors in the final upgrade configuration. If the upgrade includes the power resiliency option, the kit will include an additional one or two 3.3V power supplies, depending on the number of processors being added. Refer to Table 5-2 on page 6.

- PFC modules:

  If the upgrade does not include the power resiliency option and the system is being upgraded to more than two processors, the kit will include one PFC module. If the upgrade includes the power resiliency option, the kit will include one or two PFCs. Refer to Table 5-2 on page 6.

- Memory cards if ordered by customer.
- Upgrade labels.
- Firmware Update Tool (FUT) kits:
  - CD Kit or DAT format (PN 5063-3775).

# Installing New Hardware

This section tells how to install the new hardware required for the upgrade.

## Shutting Down the System

**WARNING** **Before starting any installation procedure, ensure that the System Administrator/System Manager has done a system backup and an operating system shutdown.**

**To shut down the system:**

1. Turn PMB card cage power OFF by setting the control panel power switch to "Standby" (the control panel is at the top front of the cabinet).

   Hazardous voltage and energy are still present in the cabinet with the control panel switch in the "Standby" position. To completely remove AC power to the system, switch the circuit breaker at the bottom right rear of the cabinet to the "OFF" position.

2. Turn expansion cabinet power off by setting the power switch to the "off" position (the power switch is at the top front of the cabinet). If the expansion cabinet does not have a power switch, turn the UPS Output switch to "OFF."

**CAUTION** ESD protection requires the use of a grounding wriststrap when handling the cards. Failure to use the grounded strap may result in card component damage. There are two grounding wriststraps attached to the SPU cabinet (one in the front and one in the rear of the cabinet).

## Accessing the Card Cage

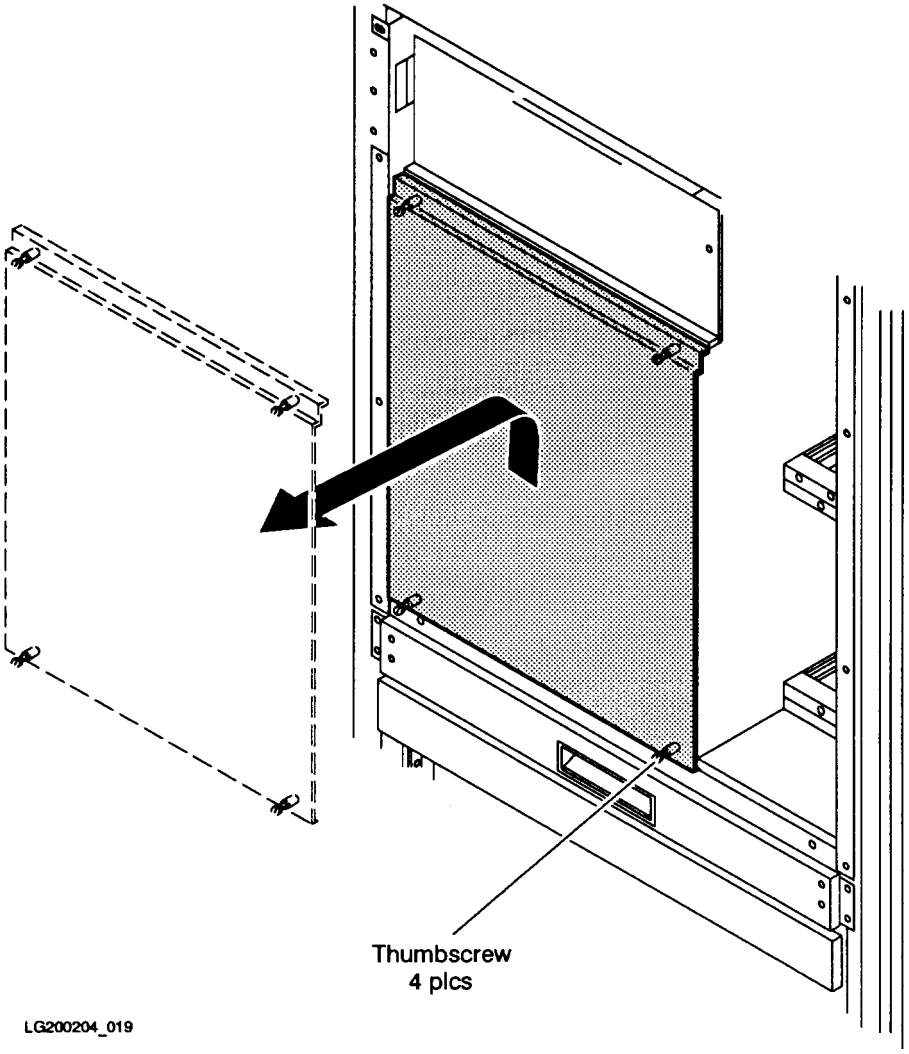
To open the front and rear cabinet doors:

1. Insert the hexagonal cabinet key into the black hexagonal hole on the right of the cabinet door.
2. Rotate the cabinet key about a quarter-turn counter-clockwise.
3. Pull the door open.

## Accessing the Front PMB Card Cage Slots (10 - 15)

A metal plate covers the PMB cards in the front card cage (see Figure 6-1).

**Figure 6-1 Front PMB Card Cage Cover Plate (Cabinet Front)**




**To remove the cover plate from the front PMB card cage:**

1. Verify that power to the system has been removed (refer to "Shutting Down the System"). The rear cabinet circuit breaker should be set to "OFF" and the control panel switch set to "Standby."
2. Remove the card cage cover plate by loosening the four (4) thumbscrews (two each at the upper and lower edges) and lifting the cover plate up and out (see Figure 6-1).

**To replace the cover plate:**

1. Place the card cage cover plate lip over the raised edge of the cabinet frame.
2. Tighten the four thumbscrews on the card cage cover plate with a screwdriver so that they are more than finger-tight. (The torque specification for the thumbscrews is 24 in-lb.)

## Accessing the Rear PMB Card Cage Slots (1-9)

The rear card cage is not protected by a cover plate. However, individual slots are protected by a metal slot shield (see Figure 6-2).

**To remove a metal slot shield from the rear PMB card cage:**

1. Verify that power to the system has been removed (refer to "Shutting Down the System"). The rear cabinet circuit breaker should be set to "OFF" and the control panel switch set to "Standby."
2. Loosen the two (2) thumbscrews (one at the top edge and one at the bottom edge) of the shield.
3. Pull the metal slot shield away from the card cage.

**To replace a metal slot shield:**

1. Place the metal slot shield over the card (or the empty slot) so that the thumbscrews are aligned with the holes in the card cage.
2. Tighten the thumbscrews on the metal slot shield slightly more than finger tight (or to a torque specification of 24 in-lb).

---

**NOTE** The card cage cover plate and metal slot shields are required for RFI and EMI emissions control and for proper airflow and cooling.

All rear PMB card cage slots must have a metal slot shield covering the slot, even if the slot has no card installed.

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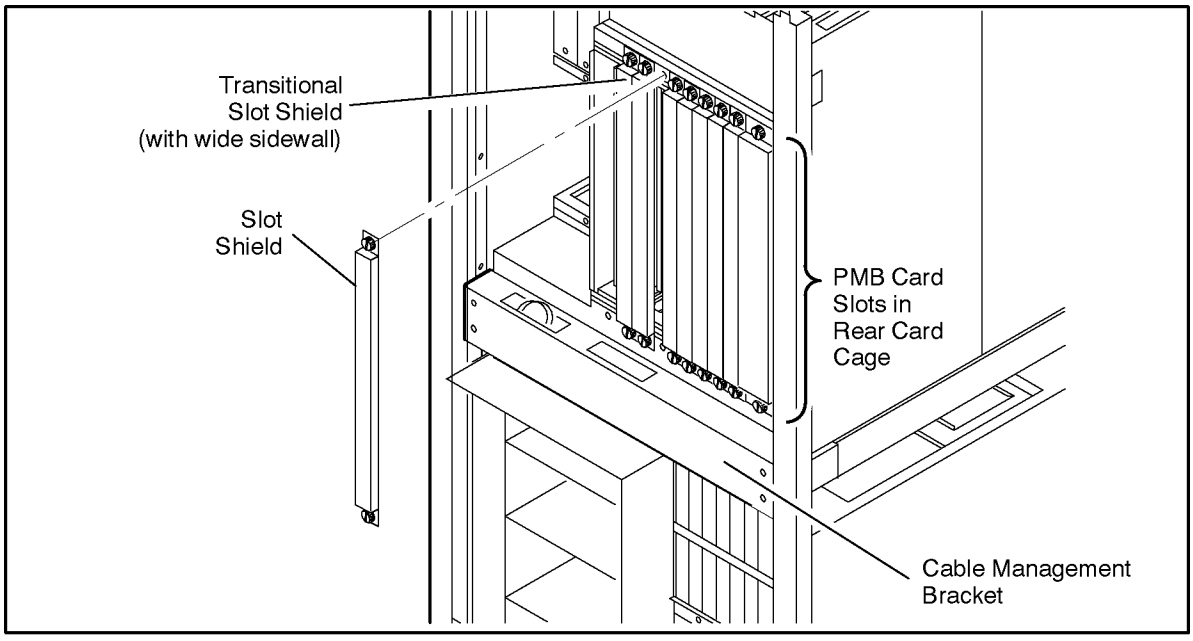
**Figure 6-2 Rear PMB Card Cage Metal Slot Shields (Cabinet Rear)**

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## Mounting Processor Daughterboard and Installing L2 Cache Modules

If the customer ordered an upgrade from an odd number of processors to an even number of processors, you have to mount the processor daughterboard in the upgrade kit to an existing processor card.

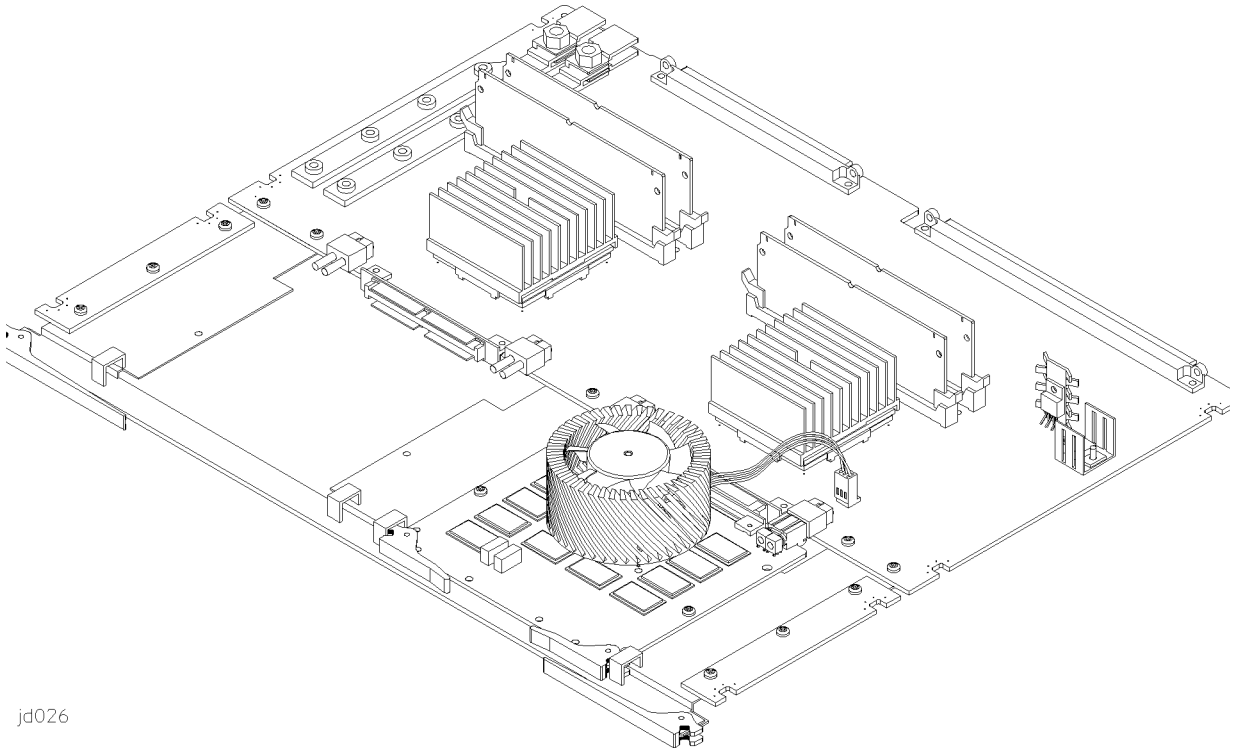
For T600 upgrades, options #102, #104, #106, #108, #110, and #112 correspond to upgrades to 2, 4, 6, 8, 10, and 12 processors, respectively.

For 997 upgrades, options #802 and #804 correspond to upgrades to 2 and 4 processors, respectively.

**To mount a processor daughterboard (module) and install L2 Cache:**

1. Verify that power has been removed from the system. See “Shutting Down the System” on page 5-1.
2. Remove the cover plate (front card cage) or metal slot shields (rear card cage), as previously described.
3. Make sure you are wearing an grounding wriststrap.
4. Look in the PMB card cage to find the processor card with only one processor daughterboard. See Figure 6-3.

**Figure 6-3. 997/T600 Processor Card with One Daughterboard**



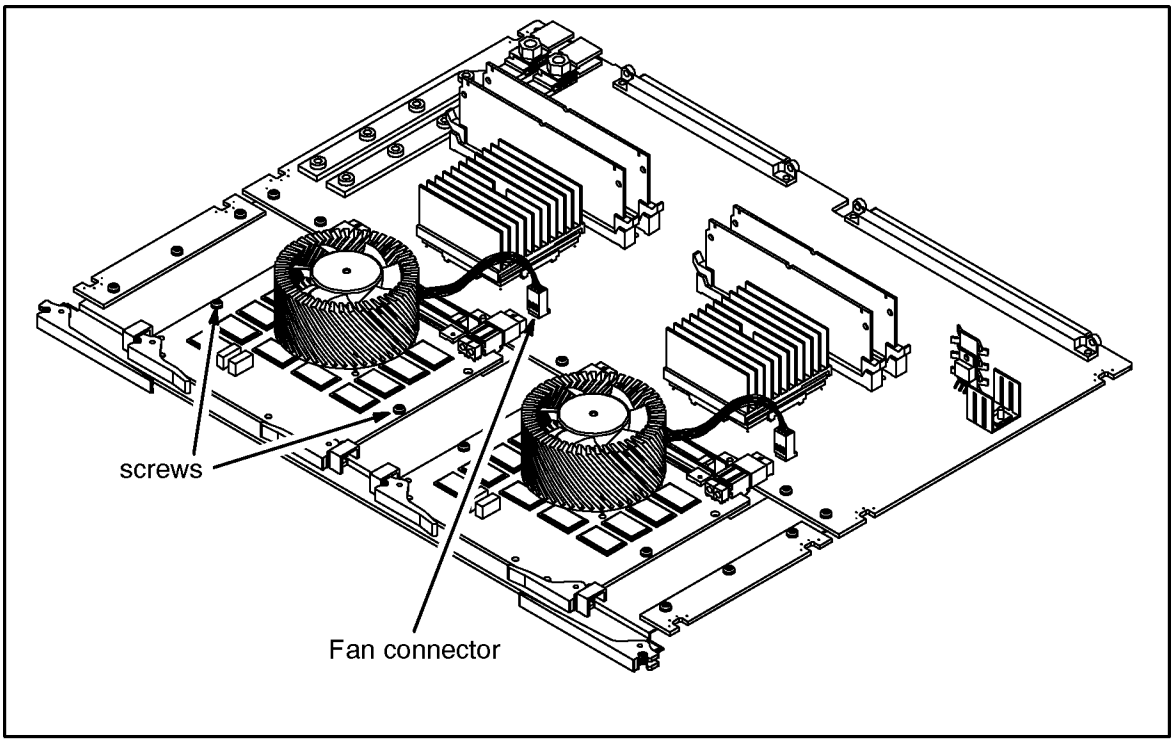

5. Remove the processor card that has only one processor daughterboard:
   - Remove the card from the backplane by lifting the extractor handles out from the card.

- Slide the card gently out of the card cage along the slot guides.
- Place the card on an anti-static surface.

**CAUTION** Do not handle the processor card or daughterboard by the cooling fans. Applying pressure to these fans may cause the ceramic to crack.

6. Carefully align, then mate the edge connectors on the processor daughterboard to the connectors on the processor card.
7. Close the extractor handles on the processor daughterboard.
8. Secure the processor daughterboard to the processor card with the two screws that accompany the daugherboard. Tighten the screws finger-tight (10 in-lb). (The two screws are M3x6mm, PN 0515-0430). See Figure 6-4.
9. Attach the fan connector on the daughterboard to the connector on the motherboard.

**Figure 6-4 997/T600 Processor Card Screw and Fan Connector Locations**

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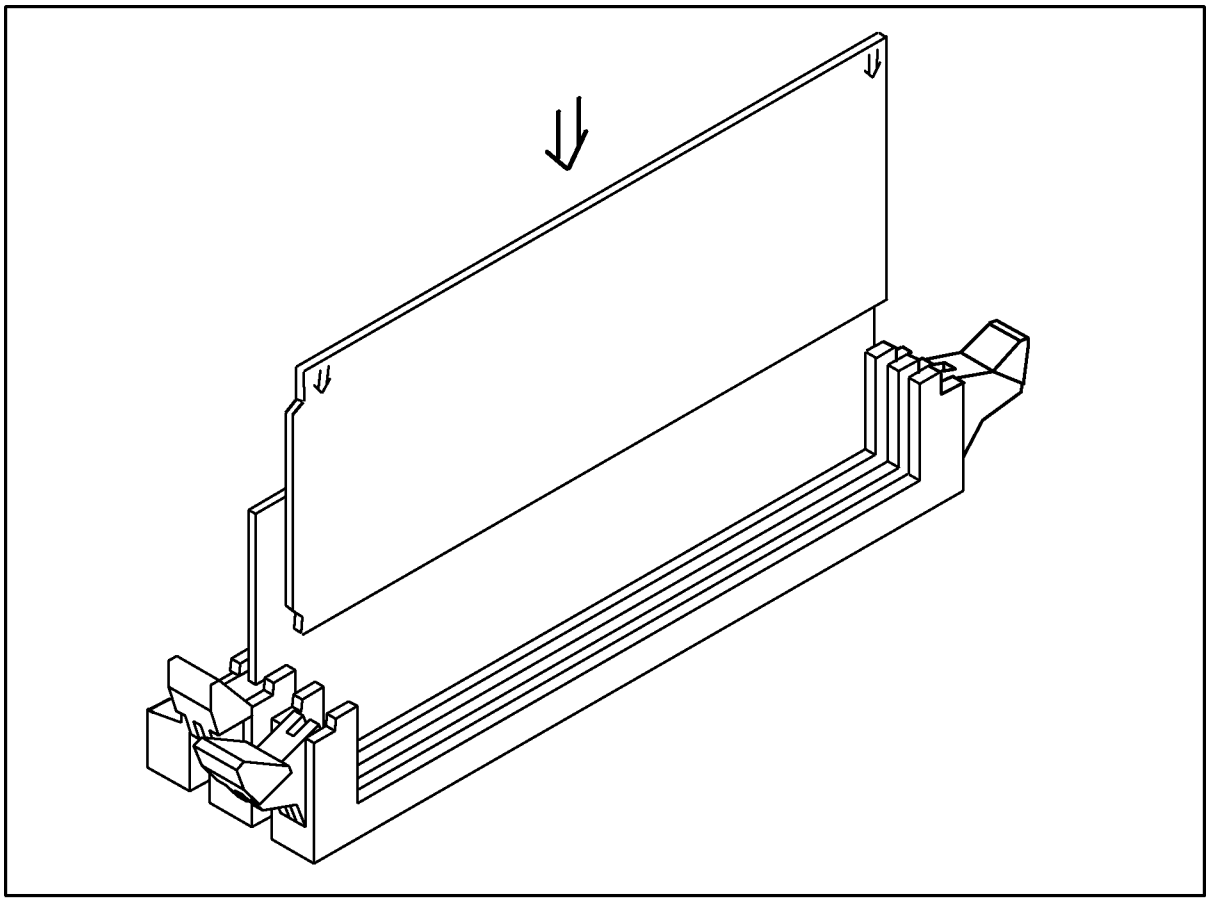
10. Each processor motherboard has four carrier connectors for L2 Cache, two for each daughterboard. Install the L2 Cache Modules for the new processor daughterboard:
    a. Locate the L2 Cache Modules on the motherboard. See Figure 1-1 on page 3.
    b. Make sure the clips on each side of the carrier connector are open. See Figure 6-5.

c. Position the module so that the arrows (printed at each corner of the module) are pointing down and are facing toward the processor daughterboards (the front of the processor board).

**Figure 6-5 Installing an L2 Cache Module**



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d. Slide the module into the channel on the clips at the sides of the carrier connector.

e. Using your thumbs, press down on both corners of the module at the same time until the module is fully seated into the carrier connector.

The clips will close partially as you press the module into the connector.

11. Replace the processor card in the PMB card cage as described in the section "Installing the Cards" later in this chapter.

12. Finish the installation by closing the clips completely.

**CAUTION** On processor cards with only one processor daughterboard (module), the daughterboard must occupy the position marked "Module 0" on the card. The lower position is defined as the bottom-most position when the processor card is installed in the card cage.

Processor cards shipped from the factory should have the processor daughterboards already installed in the correct position.

## Processor Card Configuration

The guidelines for installing processor cards in T600/997 Systems are discussed in "Installing Processor Cards" on page 5-5.

## Configuration Limits for 997/T600 Computers with 4+ CPUs

If more than 4 CPUs are configured for a T600 computer, the number of memory and HP-HSC Bus Converters must be reduced due to PMB slot limitations. Refer to Table 6-1 for configuration combinations.

The table shows the maximum number of CPUs that can be configured in the T600 cabinet for a given number of memory cards and BC cards. (The term *BC Card* in column 1 refers to the HP-HSC I/O Bus Converter.)

**Table 6-1 997/T600 System Configuration Limits for CPU, Memory, and BC Cards**

| # of BC Cards | # of Memory Cards | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs |
| 2 | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs |
| 3 | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 10 CPUs |
| 4 | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 12 CPUs | 10 CPUs | 8 CPUs |
| 5 | 11 CPUs | 11 CPUs | 11 CPUs | 11 CPUs | 11 CPUs | 10 CPUs | 8 CPUs | 6 CPUs |
| 6 | 10 CPUs | 10 CPUs | 10 CPUs | 10 CPUs | 10 CPUs | 8 CPUs | 6 CPUs | 4 CPUs |

**NOTE** 997 systems do not support 10-way or 12-way processors.

## Memory Card Configuration

If the upgrade contains memory cards, refer to *Add-On Memory Card Installation Guide* (PN A1809-90005) for complete instructions on how to install them.

## Installing the Cards

Once you determine the proper configuration for the new processor and memory cards, install the cards using the following procedure.

**CAUTION** Be sure the circuit breaker switch on the rear of the cabinet is turned OFF before you install new cards. Otherwise you may encounter error messages or long-term configuration problems.

**To install cards:**

1. Verify that power has been removed from the system, as previously described.
2. Remove the cover plate (front card cage) or metal slot shields (rear card cage), as previously described.
3. Be sure you have a grounding wriststrap attached to your wrist.

**CAUTION** Do not handle the processor card or daughterboard by the cooling fans. Applying pressure to these fans may cause the ceramic to crack.

4. Place the new card in the slot guides, and carefully insert the card into the backplane connector until it is firmly seated. A processor card cannot be installed in slot 12.

**CAUTION** Use extreme care when inserting PMB cards into the backplane. The connectors can be damaged if cards are forcibly inserted into place.

5. Close the extractor handles on the processor card.
6. At the front PMB card cage, reattach the cover plate:
   a. Place the card cage cover plate lip over the raised edge of the cabinet frame.
   b. Tighten the four thumbscrews on the card cage cover plate with a screwdriver so that they are more than finger-tight. (The torque specification for the thumbscrews is 24 in-lb.)
7. At the rear PMB card cage, reattach the metal slot shields:
   a. Place the metal slot shield over the card (or the empty slot) so that the thumbscrews are aligned with the holes in the card cage.
   b. Tighten the thumbscrews on the metal slot shield to slightly more than finger tight (or to a torque specification of 24 in-lb).

**NOTE** The card cage cover plate and metal slot shields are required for RFI and EMI emissions control and for proper airflow and cooling.

All rear PMB card cage slots must have a metal slot shield covering the slot, even if the slot has no card installed.

## Installing Power Supplies

Install any new power supplies using the guidelines given in “Installing Power Supplies” on page 5-5.

## Installing the PFC Module

Depending on the number of processors you are adding and whether the upgrade includes the power resiliency option, you may need to install one or two PFCs. For complete information on how to install a PFC module, see “Installing a PFC Module” on page 5-7.

## Verifying the Upgrade

**To verify the upgrade:**

1. Power up the system by turning the rear circuit breaker switch to ON and the Standby/Ready switch to "Ready."
2. Check the control panel indicator to see if the correct number of processors is reported.
3. After several minutes, the initial PDC screen will be displayed on the system console:

```
------------------------------------------------------------------------------
                      PDC - Processor Dependent Code
                              Version x.xx
                        (c) Copyright 1990-1998
                       The Hewlett-Packard Company
                           All rights reserved
------------------------------------------------------------------------------
              Total Memory:        256 MB
              Total Bus Converters: 2
              Total Processors:    2

              Primary Boot Path:     0/28/52.0.0.0
                                        0 means BC 0 in PMB slot 0
                                       52 means I/O card in HP-PB slot 13
                                        0 means device ID of 0

              Alternate Boot Path:    0/28/36.1.0.0
              Console/Keyboard Path:  0/28/44.0.0.0.0
------------------------------------------------------------------------------
```

4. Look at the "Total Memory" and "Total Processors" fields to see if the system recognizes the processor and memory you added. These fields are shaded in the above example.
5. Enter the HC command at the SP prompt. You see a display similar to the following:

```
Control-B                  /* At the system console
CM> SP                    /* To access the SP> prompt
SP> HC                    /* To show the hardware configuration

Host Hardware Configuration:   (D = deconfigure; - = non-existent port)
-------------------------------------------------------------------
|      |                 | Deconfigured      | Ports to be decnf |
| PMB  |                 | Ports             | at next boot      |
| Slot | Board Type      |  0 |  1 |  2 |  3 |  0 |  1 |  2 |  3 |
|-----------------------------------------------------------------|
|   0  | Bus Converter   |    |  - |    |  - |    |  - |    |  - |
|   7  | Memory          |    |    |  - |  - |    |    |  - |  - |
|  15  | JADE Processor  |    |    |  - |  - |    |    |  - |  - |
-------------------------------------------------------------------

Enter the slot # of the module whose configuration is to be changed
(CR = exit):
```

   a. Verify that each new processor card has an entry in the HC display. For example, the above HC display has an entry for the processor card in PMB slot 15.

b. Verify that the entry for each processor card has the correct number of ports configured. If a processor card has one processor module, one port will be configured. If a processor card has two processor modules, two ports will be configured.

   For example, the HC display for a processor card with two processor modules should show two modules present. Ports 0 and 1 in the table ( = modules 0 and 1) should be blank to indicate that they are present. Ports 2 and 3 in the table should have a hyphen ( - ) to indicate that they are non-existent.

c. If a processor entry shows FOUR of the ports (modules) as present (if ports 0 - 3 all are blank in the table), there has been a configuration error.

   To fix a configuration error, turn the Standby/Ready switch to the Standby position and turn off circuit breaker switch. Place one processor card into a new slot location. Power up.

6. Recommended: Boot the Offline Diagnostic Environment (ODE) from the alternate (ALT) boot device using the HP-PB Support Media and run the diagnostics, UDIAG and MEMTEST.

   To run ODE:

   a. Insert the latest HP-PA Support Media into the ALT boot device.

   b. At the prompt "Boot from Primary Path (Y or N)?", type **N**.

   c. At the prompt "Boot from Alternate Path (Y or N)?", type **Y**.

   d. At the prompt "Interact with IPL (Y or N)?", type **Y**.

   e. At the ISL prompt, type **ODE**.

   f. At the ODE prompt, type **LS**.

      If you want help, type **help** at the ODE prompt.

   g. Type **UDIAG (or MEMTEST)**.

      You can experience false memory errors unless you have the latest diagnostic (12/97) OR the diagnostic patch AND the latest PDC (5.40 or higher) installed.

   h. Type **run**.

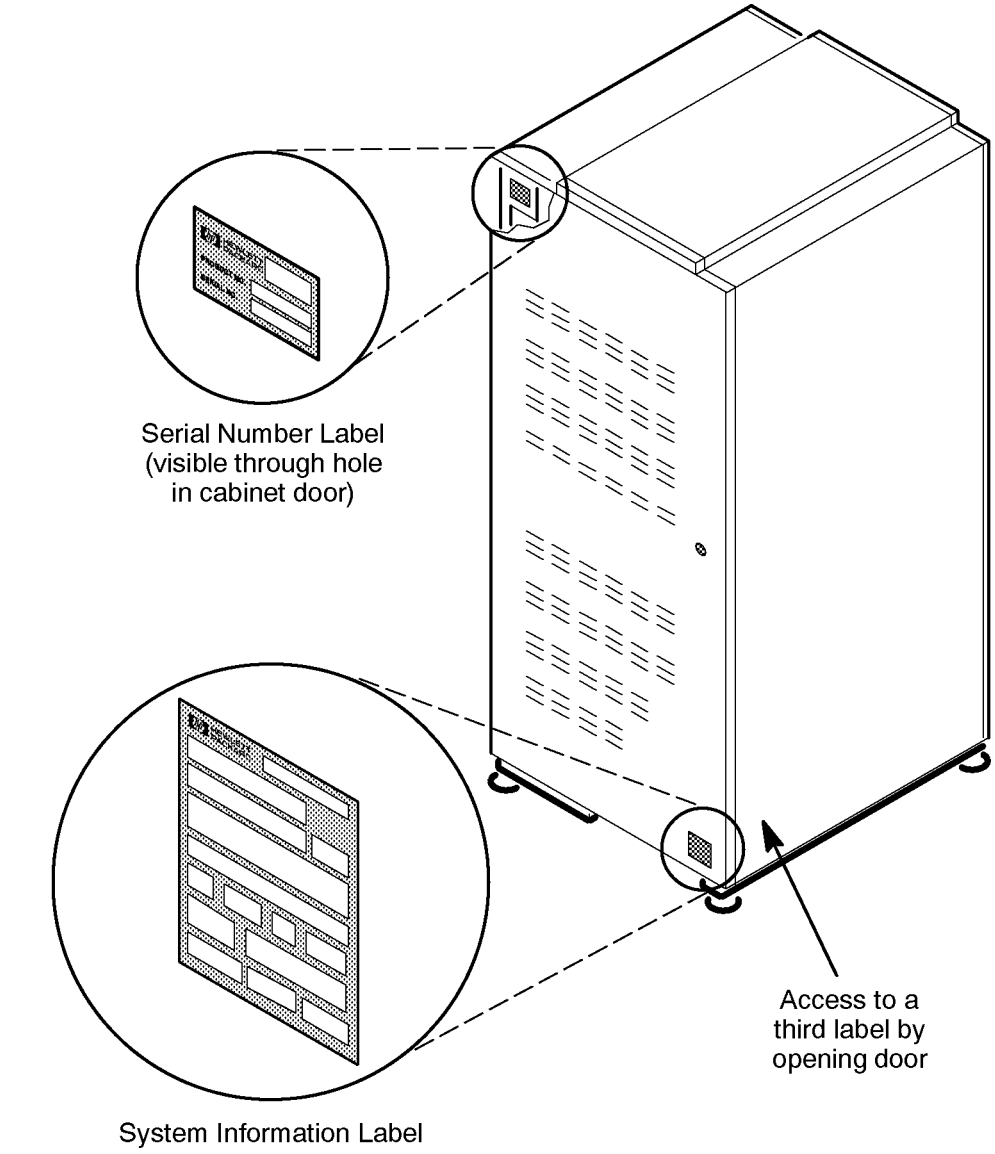
## Initializing Internal Values with SS_CONFIG

Use the current version of the SS_CONFIG utility to set the appropriate values for the system parameters. (This is usually not necessary for the T600, but it may be necessary in some cases for the 997.)

## Adding Upgrade Labels

If labels are supplied with the upgrade kit, apply them now. See Figure 6-6. To apply the labels, use the procedure described in “Adding Upgrade Labels” on page 3-17.

**Figure 6-6 System Information Label Location**



# A Cold Installation

This section summarizes the cold install procedure of HP-UX 10.20 Hardware Extensions. For more details on performing a cold install, consult *Installing and Updating HP-UX 10x*.

## Preparations

Record the following hardware and networking information before you begin:

Hardware path to the CD-ROM drive _____

System hostname _____

IP address of the host _____

Default routing IP address _____

Subnet mask _____

IP address of the Install Server system _____

Develop a clear configuration plan, including the following:

- Fileset sizes
- Swap space size
- Dump device
- Disk and file-system parameters
- Mirroring information

If installing application programs, consider vendor size recommendations. For planning disk space, refer to the HP-UX System Administration Tasks manual and Disk and File Management Tasks on HP-UX, by Tom Madell (Prentice-Hall Hewlett-Packard Professional Books, 1997).

To do a cold installation, which overwrites everything on the target disk:

1. Turn on system (and drive, if external).
2. Insert the 10.20 Hardware Extensions CD-ROM into the drive.
3. Boot from the hardware path of the CD drive.
4. When asked, Interact with ISL? answer NO. The install kernel will load and the system will display the HP-UX installation welcome screen.
5. You will see the Install program interface. Choose Install HP-UX.

6. If your system is connected to a network,

   a. Answer YES to the question, Enable Networking?

   b. Select a LAN interface.

7. Select system root disk, if you have more than one target disk.

8. Select whole-system configuration, to choose the file-system layout (non-LVM, LVM, or LVM with VxFS).

9. Using your prepared configuration plan, view/modify the basic configuration.

   To load only HP-UX 10.20 (and not the ONC+ Networking Enhancements), leave the value “false” for the question, “Load ONC+ Networking Enhancements”.

10. You are given a change to set advanced configuration options. If your prepared configuration plan calls for this, you may do so now.

11. After the configuration has been checked, you are asked, `Interact with SD-UX?` Answer `NO`.

12. The system will now configure the disk(s) and load a minimum set of commands. When this is finished, software installation begins. Allow the system to load the contents of Hardware Extensions and then reboot.

13. Eject the CD-ROM disc.

14. Log in to the system.

# B Returning the ioconfig Files to their Original State

If something unforeseen (such as hardware failure or compatibility issues during your upgrading process) forces you to abandon the upgrade, you must return the system to its previous state. Here is how to do so:

1. Return the hardware to its original state and boot the system in single-user mode, as follows:

   a. Power on the system and interrupt the autoboot sequence (if necessary) to get the boot prompt. Boot from the root disk and answer YES to the question, Interact with ISL? For example:

   ```
   Continue with primary boot path? 0/28/28.0
   Interact with ISL (Y or N)?> Y
   Booting ...
   ISL>
   ```

   b. At the ISL prompt, invoke HP-UX in single user mode:

   ```
   ISL > hpux -is
   ```

   The system will take about five minutes to boot and display messages similar to the following:

   ```
   Boot
   : disc3(0/28/28.0)/stand/vmunix
   3199900 + 307200 + 294336 start 0x1754e8
   ... (Kernel Startup messages omitted)
   INIT: Overriding default level with level `s'
   INIT: SINGLE USER MODE
   WARNING:  YOU ARE SUPERUSER !!
   #
   ```

2. Mount filesystems and find the backup `ioconfig` files in /etc and /stand.

   Mount the filesystems from the root disk to ensure that certain commands are available:

   ```
   # mount -a
   ```

   HP-UX 10 has two `ioconfig` files — `/etc/ioconfig` and `/stand/ioconfig`. Both ioconfig files must be in sync for the system to boot correctly. When the appropriate `proc_upgrade.*` script is run, backup copies of the ioconfig files are made. The backup files are named `/etc/ioconfig.BAK.####` and `/stand/ioconfig.BAK.####` where the #### refers to a unique number created when the script runs. The unique number will be identical for both files and is not restricted to four digits.

   Find the `ioconfig` backup copies by using the ls command. For example:

   ```
   # ls /etc/ioconfig* /stand/ioconfig*

   /etc/ioconfig           /stand/ioconfig
   /etc/ioconfig.BAK.3746  /stand/ioconfig.BAK.3746
   ```

If you find more than one `.BAK` file in each directory, choose the earliest dated pair of files. Use `ls -lrt` to display file creation dates and times in reverse chronological order.

3. Copy the `ioconfig` backup files to their original locations.

   a. Copy the `/etc/ioconfig.BAK.####` to `/etc/ioconfig`.

      For example:

      ```
      # cp /etc/ioconfig.BAK.3746  /etc/ioconfig
      ```

      If the `cp` command is unsuccessful, use the `mv` command.

   b. Copy the `/stand/ioconfig.BAK.####` to `/stand/ioconfig`.

      For example:

      ```
      # cp /stand/ioconfig.BAK.3746  /stand/ioconfig
      ```

      If the `cp` command is unsuccessful, use the `mv` command.

4. Remove the check file and reboot the system:

   ```
   # rm /etc/ProcessorUpgrade
   ```

   ```
   # shutdown -r 0
   ```

Once the system returns a login prompt, the `ioconfig` files will be back to their original state.

# C Regulatory Information

For your protection, this product has been tested to various national and international regulations and standards. The scope of this regulatory testing includes electrical/mechanical safety, radio frequency interference, ergonomic, acoustic, and hazardous materials. Where required, approvals obtained from third-party test agencies are shown on the product label. In addition, various regulatory bodies require some of the information under the following headings.

## USA Radio Frequency Interference

The United States Federal Communications Commission (in 47 CFR Subpart B, of Part 15) has specified that the following notice be brought to the attention of the users of this product:

| | |
|---|---|
| WARNING | **This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.** |

## Japanese Radio Frequency Interference

The following notice is for users of this product in Japan:

**Japanese Radio Frequency Notice**

この装置は，第一種情報装置(商工業地域において使用されるべき情報装置)で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）基準に適合しております。

従って，住宅地域またはその隣接した地域で使用すると，ラジオ，テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

## EMI Statement (European Union Only)

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.

## Digital Apparatus Statement (Canada)

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus”, ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur : “Appareils Numériques”, NMB-003 édictée par le ministre des Communications.

## United Kingdom General Approval

The HP3000 99x and the HP9000 T-Class computers are approved under Approval No. NS/G/1234/J/100003 for indirect connection to public telecommunication systems within the United Kingdom.

## Acoustics (Germany)

Laermangabe (Schalldruckpegel $L_pA$) gemessen am fiktiver Arbeitsplatz bei normalem Betrieb nach DIN 45635, Teil 19: $L_pA$ = 61 dB.

Acoustic Noise (A-weighted Sound Pressure Level $L_pA$) measured at the bystander position, normal operation, to ISO 7779: $L_pA$ = 61 dB.

## Battery Notices

**WARNING** **This product may contain sealed, lead acid batteries. Replace only with the same type and part number. Recycle used batteries or send them to the following address for disposal:**

**Hewlett Packard Co.**
**Environmental Health and Safety Department**
**8000 Foothills Boulevard**
**Roseville, Ca. 95678**
**ATTN: Battery Disposal Coordinator.**

**WARNING** **Fire, explosion, and severe burn hazard! Do not crush, disassemble, heat, incinerate, or expose the batteries to water.**

## IT Power System

**WARNING** **This product has not been evaluated for connection to an IT power system (an AC distribution system having no direct connection to earth according to IEC 950).**

## High Leakage Current

**WARNING** **To reduce the risk of electric shock, never operate the product with the ground conductor disconnected. An earth connection is essential before connecting the supply. Reliable ground circuit continuity is vital for safe operation of this product.**

# Installation Conditions (U.S.)

**WARNING** **Please note the following conditions of installation:**

**An insulated earthing conductor that is identical in size, insulation material, and thickness to the earthed and unearthed branch-circuit supply conductors except that it is green with or without one or more yellow stripes is to be installed as part of the branch circuit that supplies the unit or system. The earthing conductor described is to be connected to earth at the service equipment or, if supplied by a separately derived system, at the supply transformer or motor-generator set.**

**The attachment-plug receptacles in the vicinity of the unit or system are all to be of an earthing type, and the earthing conductors serving these receptacles are to be connected to earth at the service equipment.**