Netra ft™ 1800
Software Installation Guide

Solaris 2.6 Update 01

THE NETWORK IS THE COMPUTER™

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Contents

Preface

This document describes the installation procedures for the software used in Solaris 2.6 Update 01 of the Netra ft™ 1800.

Who Should Use This Book

This guide is intended to be read by installation engineers and service personnel. It is not intended for the end user of the system.

How This Book Is Organized

This guide is arranged as follows:

- Chapter 1 provides space for you to record your own system-specific parameters.
- Chapter 2 describes the factors to consider prior to performing a system installation or upgrade.
- Chapter 3 describes how to perform a clean installation of the system software.
- Chapter 4 describes how to upgrade a system running a previous version of Solaris.
- Chapter 5 describes how firmware updates are implemented, and how to install/update those PCI Card drivers relevant to your system.
- Chapter 6 describes how to install and configure Sun Enterprise Volume Manager subsequent to a clean installation of Solaris 2.6 Update 01.

Related Books

- *Netra ft 1800 Compliance and Safety Manual* (part no. 805-7019-10)
- *Sun Enterprise Volume Manager 2.5 Installation Guide* (part no. 805-1604-10)
- *Sun Enterprise Volume Manager User's Guide* (part no. 805-1603-10)
- *Sun Enterprise Volume Manager 2.5 System Administrator's Guide* (part no. 805-1607-10)
- *Netra ft 1800 User's Guide* (part no. 805-4529-11)

SEVM – Change of Title

You will note that this manual contains references to both Sun Enterprise Volume Manager and Sun StorEdge Volume Manager. Both titles relate to the same software, Sun StorEdge Volume Manager being the current title.

Sun StorEdge/Enterprise Volume Manager will be abbreviated to SEVM in this Guide's text, except when referring to specific documentation with "Sun Enterprise Volume Manager" in the title.

What Typographic Changes Mean

The following table describes the typographic changes used in this book.

Typeface or Symbol	Meaning	Example
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `machine_name% You have mail.`
`AaBbCc123`	What you type, contrasted with on-screen computer output	`machine_name% su` `Password:`
AaBbCc123	Command-line placeholder: replace with a real name or value	To delete a file, type `rm` *filename.*
AaBbCc123	Book titles, new words or terms, or words to be emphasized	Read Chapter 6 in *User's Guide.* These are called *class* options. You *must* be root to do this.

Shell Prompts in Command Examples

The following table shows the default Open Boot PROM (OBP) prompt and the system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

Shell	Prompt
Open Boot PROM prompt	`ok`
C shell prompt	`machine_name%`
C shell superuser prompt	`machine_name#`
Bourne shell and Korn shell prompt	`$`
Bourne shell and Korn shell superuser prompt	`#`

Symbols

The following symbols mean:

Note – A note provides information which should be considered by the reader.

Caution – Cautions accompanied by this Attention icon carry information about procedures or events that, if not considered, may cause damage to the data or hardware of your system.

Caution – Cautions accompanied by this Hazard icon carry information about procedures that must be followed to reduce the risk of electric shock and danger to personal health. Follow all instructions carefully.

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CHAPTER 1

System Information Required for Installation or Upgrade

Use this chapter to note details of your system prior to installing, or upgrading to, the Netra ft 1800 Solaris 2.6 Update 01. You will be prompted for this information at different stages of the installation process.

Required Information

You will need to establish the following information before you attempt to install/upgrade the system software. Space is provided below for you to record these details.

- The system's IP address (see your system administrator):

- Volume Manager License Keys, one for each Host ID (obtainable using the License Key Request Card, Sun part no. 806-0926-11, which you can find in the System box):

Current Host ID	License Key

- The terminal type you will be using for the installation:

- The required subnet mask for your site:

- The domain name:

- The name service (for example, NIS or NIS+; see your system administrator):

- The partition layout you require (refer to FIGURE 3-1 on page 11).

Slice	Size (Kbytes)
/	
swap	
overlap	
/opt	
/var	

You must ensure that the initial layout that you specify while you install the operating environment meets the following requirements:

- There must be only one swap partition, with a minimum size of 512 Mbytes and a maximum size of 1.99 Gbytes.
- There must be two unused partitions for use by Volume Manager, preferably partitions 3 and 4. The disk layout screen should not show any space allocated to these partitions.
- There must be 1 Mbyte that is not assigned to any partition. That is, the disk layout screen must show 1 Mbyte of free space.
- There must be a `/var` partition with a minimum size of 500 Mbytes.
- The boot disk cannot extend beyond one physical disk. That is, the file systems required for boot must all be contained in one disk.

CHAPTER 2

Before You Start

This chapter provides details of what you should consider prior to installing or upgrading the Netra™ ft 1800 Solaris 2.6 Update 01.

Relevance of Chapters

This guide contains chapters specific to clean installation alone, and others specific to upgrading the system. Refer to the table below for details of which chapters are relevant to you, and the order in which they should be referred to.

TABLE 2-1 Relevance of Chapters to Clean Installation and/or Upgrade

Chapter	Clean Installation	Upgrade
Chapter 1, "System Information Required for Installation or Upgrade"	1	1
Chapter 2, "Before You Start"	2	2
Chapter 3, "Performing a Clean Installation"	3	Not applicable
Chapter 4, "Upgrading from a Previous Software Version"	Not applicable	3
Chapter 5, "PCI Card Driver Packages and Patches"	4	4
Chapter 6, "Installing and Configuring SEVM"	5	Not applicable

Each chapter describes how you should proceed at any given stage.

Hardware Considerations

Ensure that the system has been installed in accordance with the *Netra ft 1800 Hardware Installation Guide* (part no. 806-2689-10) instructions.

Checking the Netra ft 1800 Installation Media

The release software consists of the following:

- Solaris 2.6 Software for Netra ft 1800 Update 01 CD (part no. 704-7064-10) containing Solaris and Netra ft 1800 software
- Software Supplement for Solaris 2.6 for Netra ft 1800 Update 01 CD (part no. 704-7063-10), which contains PCI card drivers, SunVTS and other utilities
- Sun StorEdge Volume Manager 2.5 media kit and Sun StorEdge Volume Manager patches

Deciding on the Method of Installation

The Netra ft 1800 supports two types of installation / upgrade:

- *local*, from a local CD-ROM drive;
- or *network*, from a machine set up as a Solaris installation server.

The requirements for these two types of installation are described in the following subsections.

The local and network installation / upgrade procedures differ only in their initial steps. Otherwise, the procedure is the same for both methods.

Note – Inadvertent keyboard use during the installation process can abort the installation / upgrade.

Local Installation / Upgrade

To perform a local installation of the Netra ft 1800 software, you must have an RMM module that contains a CD-ROM drive in slot A-RMM or B-RMM of the Netra ft 1800 to be installed.

Local installation / upgrade involves booting the Netra ft 1800 from one of its CD-ROM drives while the installation CD-ROM is in the drive.

Note – The CD-ROM cannot be loaded into the CD-ROM drive unless the drive is powered on. Do not attempt to load the CD-ROM unless the module's *Power* LED is lit.

Network Installation / Upgrade

To perform a network installation of the Netra ft 1800 software, you must ensure the following:

- Access to a SPARC server on which the Netra ft 1800 software can be installed. A CD-ROM drive is required for the initial server installation / upgrade, but need not be present for the network installation / upgrade. In the following instructions, the SPARC server will simply be referred to as the *server*.
- The Netra ft 1800 system to be installed is on the same subnet as the server. In the following instructions, this will be simply referred to as the *client*.

Note – You can only perform a network installation / upgrade through use of `a-net0`. Use of another network link will cause anomalies during the system installation / upgrade.

CHAPTER 3

Performing a Clean Installation

This chapter describes all the steps necessary to install a software and operating environment release for the Netra ft 1800. To perform the steps described here, you should be familiar with the Solaris Operating Environment.

Installation Summary

You should perform the installation steps in the following order:

1. **Confirm that the prerequisites are met (see “Confirming the Prerequisites” on page 8).**
2. **Install the Netra ft 1800 software (see “Installing the Netra ft 1800 Software” on page 9).**
3. **Install the software and patches for any required PCI card drivers (see “Installing the SAIP, HSIP, ATM Software and Patches” on page 32).**
4. **Install Sun StorEdge Volume Manager and apply the mandatory patch (see “Installing and Configuring SEVM” on page 37).**

Confirming the Prerequisites

1. **Check that no red** *Fault* **LEDs are visible.**

Note – Faults in modules should be rectified prior to continuing with the installation. Attempting to install a system containing faulty modules may abort the installation procedure.

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2. **Check that the motherboards and CPUsets are enabled.**

Caution – If either of these prerequisites is *not* met, consult your local Sun Enterprise Services representative.

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3. **Backup the current system.**

Caution – Clean installation will reformat the system disks. If data required after installation is already on the system, you will need to backup these files. Only recover these files once the installation is complete.

Installing the Netra ft 1800 Software

Note – You must install Solaris on only one hard disk.

▼ Installing the Software

4. **Physically disengage all the hard disk drive modules except the one in the location on which you wish to install the operating environment; preferably** `A-DSK0` **or** `B-DSK0`**.**

Note – You do not need to remove the disk modules from their slots completely.

5. **If the system is powered down, power on the system and wait for the OpenBoot™ PROM** `ok` **prompt to be displayed.**

   If the system boots into an existing version of the software, type the following to go to the prompt:

```
# init 0
```

6. **For Local installation, place the Solaris 2.6 Software for Netra ft 1800 Update 01 Installation CD-ROM (part no. 704-7064-10) in the relevant CD-ROM drive.**

   a. **If you inserted the installation CD in the CD-ROM drive on side A (at the top of the system), type:**

```
ok boot a-cdrom0
```

   b. **If you inserted the installation CD in the CD-ROM drive on side B (at the bottom of the system), type:**

```
ok boot b-cdrom0
```

Caution – Before inserting a CD-ROM disk into your system, read "Handling and Taking Care of your CD-ROM Disks" in the *Netra ft 1800 Compliance and Safety Manual*. In some circumstances, if your CD-ROM disk does not have a clean data surface, your system may fail to boot.

c. For network installation, go to the OpenBoot PROM `ok` **prompt and type:**

```
ok boot a-net0
```

The *Target* LED on one CPUset will flash rapidly, and the *Diag* LED on the other CPUset will flash at approximately half the speed.

Wait for booting to complete. The Netra ft 1800 software installation program then starts.

7. Proceed as for a normal Solaris installation.

Ensure that you select the option to manually reboot once the installation is completed. Complete this step through to Step 10 to ensure that you will be able to install Sun StorEdge Volume Manager. Failure to complete these steps may result in failure of the overall installation process.

Note – Refer to your preparation notes in "Required Information" on page 1 for details of your system-specific settings.

The root disk must be partitioned with two free partition slots to enable disk mirroring. The sample configuration in FIGURE 3-1 on page 11 shows the minimum sizes for the slices.

For recovery purposes, it is recommended that the `/usr` filesystem be assigned to the root partition.

You must ensure that the initial layout that you specify while you install the operating environment meets the following requirements:

- There must be only one swap partition, with a minimum size of 512 Mbytes and a maximum size of 1.99 Gbytes.
- The size of the overlap partition will vary slightly, depending on the manufacturer of the disk. This value should not be altered.
- There must be two unused partitions for use by Volume Manager.
- There must be 1 Mbyte that is not assigned to any partition. That is, the disk layout screen must show 1 Mbyte of free space.
- There must be a `/var` partition with a minimum size of 500 Mbytes, for system dumps and log files.

- The boot disk cannot extend beyond one physical disk. That is, the file systems required for boot must all be contained in one disk.
- Ignore rounding errors and warnings concerning unused disk space.

The example screen layout in FIGURE 3-1 on page 11 shows how you should input the manually defined settings.

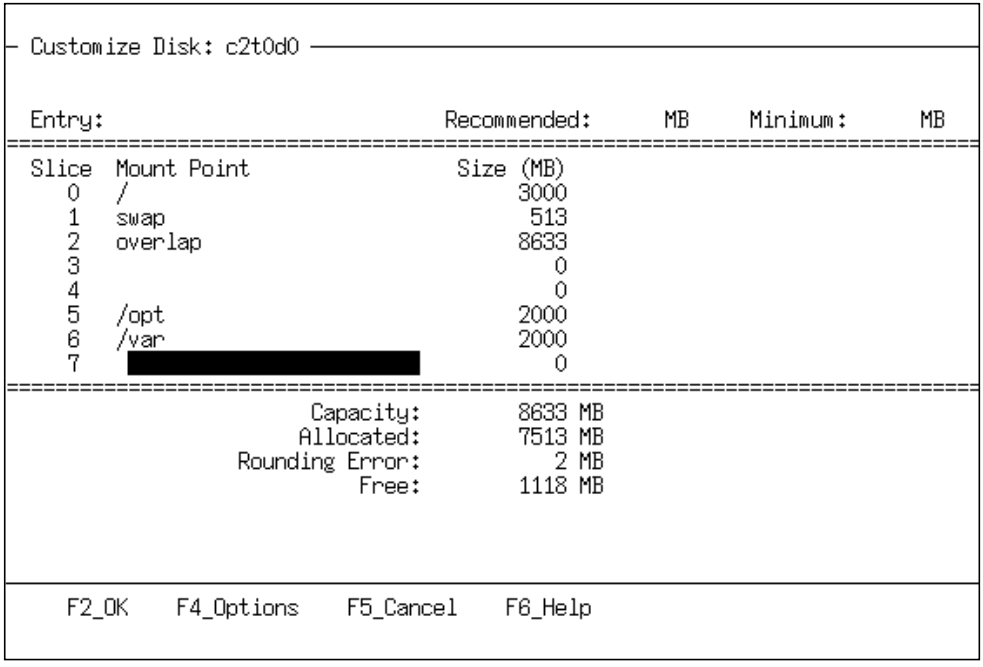

FIGURE 3-1 Example Disk Layout

Select Manual Layout when prompted for root disk layout options.

8. **Go to the OpenBoot PROM** ok **prompt after the installation is complete and type**:

```
# init 0
```

9. Permanently enable the OSdog:

a. Check the PROM version number:

```
ok .version
```

The system will respond with a message as follows.

```
----
Release 3.7 [PROTO-P1b-sd_st: Fusion-B2] Version 28.0 created
1999/10/26
10:32
OBP 3.7.28.0 1999/10/26 10:32
POST 6.0.6 1999/10/26 10:42
OBDIAG 3.9.26 1999/10/26 10:42
----
```

'Version 28.0' refers to version 28 of the prom.

a. If the PROM version is 21 or earlier, enable the OSdog using the following commands:

```
ok setenv auto-boot? false
ok reset-all
ok 4f set-conf-osdog-a
ok 4f set-conf-osdog-b
ok reset-all
ok setenv auto-boot? true
```

b. If the PROM is version 22 or later, enable the OSdog using the following commands:

```
ok setenv auto-boot? false
ok reset-all
ok 4f set-conf-osdog
ok reset-all
ok setenv auto-boot? true
```

10. **Set the default boot device.**

Note – The default boot device will not be set by the installation. If this has not been set previously, you will need to specify the path to the PROM before the next reboot.

This can be corrected before the subsequent reboot by typing the following:

- If you have installed the operating software on A-DSK0:

```
ok setenv boot-device a-dsk0
ok setenv diag-device a-dsk0
```

- If you have installed the operating software on B-DSK0:

```
ok setenv boot-device b-dsk0
ok setenv diag-device b-dsk0
```

11. **Re-engage the HDD modules that you disengaged at the start of the installation procedure.**

12. **Boot the system by typing:**

```
ok boot
```

After Reboot

The first time the system is rebooted, the automatic firmware upgrade utilities will be activated. The CPUset PROM and motherboard FPGAs will be upgraded as required, and the system power cycled and rebooted for the new firmware to come into effect.

Here is a sample of the typical output you will see on the console during the first reboot:

```
Configuring the /dev directory
Configuring the /dev directory (compatibility devices)
Checking system firmware compatibility
Auto upgrading side A using /usr/platform/SUNW,Ultra-4FT/SUNWftmu/lib/
prom/258-7354-14
Auto upgrading side A using /usr/platform/SUNW,Ultra-4FT/SUNWftmu/lib/
fpga/258-7771-07
Auto upgrading side B using /usr/platform/SUNW,Ultra-4FT/SUNWftmu/lib/
fpga/258-7771-07
System firmware upgraded - rebooting
syncing file systems... done
rebooting...
Resetting ...


Motherboard B is not consistent - forcing a download.
Motherboard A is not consistent - forcing a download.
This will result in a cpuset power-on reset.

Sun Ultra 4FT UPA/PCI(4 X UltraSPARC-II 296MHz), No keyboard
OpenBoot 3.7 [PROTO-P1b-sd_st: Fusion-B2], 4096 MB memory installed,
Serial #10827332.
Ethernet address 8:0:20:a5:36:44, Host ID: 80a53644.



Rebooting with command: boot
Running preboot tests:                  SUCCESS
Boot device: a-dsk0  File and args: kadb
kadb: kernel/unix
Size: 285009+68296+74596 Bytes
/platform/SUNW,Ultra-4FT/kernel/unix loaded - 0x9e000 bytes used
SunOS Release 5.6 Version 107548-06 [UNIX(R) System V Release 4.0]
Copyright (c) 1983-1997, Sun Microsystems, Inc.
NOTICE: Ultra-4FT DDI extensions installed
```

Note – The settings and version numbers in this example (and subsequent examples) may differ from those installed with your copy of Solaris 2.6 Update 01. No action is necessary if the version numbers installed do not match those in the examples. Continue the installation or upgrade.

Firmware Update the First Time a CPUset is Brought Into Sync

The CPUset that boots the system has its firmware upgraded at boot time. The CPUset that did not boot the system has its firmware upgraded the first time it is brought into sync:

```
Select: CPU 1

Item    Name                    Value                          Page 1 of 2
-------------------------------------------------------------------------
0       state                   busy
1       action                  enable
2       location                B-CPU
3       fault_acknowledged      no
4       description             CPUset FRU
5       user_label
6       part_number             5404009
7       serial_number           000116
8       faulty                  no
9       software_fault          no
10      present                 yes
11      info                    Auto upgrading prom
12      fan0_speed              normal
13      fan1_speed              normal
14      fan0_latent_fault       no
15      fan1_latent_fault       no
16      cpu0_temperature        normal

(H)elp, <Number> to modify, (S)elect, (P)age, (T)op or (Q)uit ?
```

Note – Item 11, the `Info` field, provides the PROM status.

13. **When requested, enter a root password.**

14. **Type** `no` **at the energy-saving prompt to prevent the system shutting down, then type** `y` **to confirm that the answer should be remembered:**

```
System identification is completed.

        ****************************************************************
        This system is configured to conserve energy.
        After 30 minutes without activity, the system state will be
        saved to disk and the system will be powered off automatically.

        A system that has been suspended in this way can be restored
        back to exactly where it was by pressing the power key.
        The definition of inactivity and the timeout are user
        configurable. The dtpower(1M) man page has more information.
        ****************************************************************

        Do you wish to accept this default configuration, allowing
        your system to save its state then power off automatically
        when it has been idle for 30 minutes?  (If this system is used
        as a server, answer n. By default autoshutdown is
        enabled.) [y,n,?]
```

15. **Wait for the system to boot up and come into sync.**

    When requested, log on as `root`.

    A few minutes after the system has rebooted to the system prompt, the *Sync* LEDs on the CPUsets will illuminate and remain steadily lit, indicating that the system is now running in synchronization.

    If you do not have physical access to the system, you can check if the system is in sync as follows:

    a. Start `cmsconfig`**:**

```
# cd /usr/platform/SUNW,Ultra-4FT/SUNWcms/sbin
# ./cmsconfig
```

    b. Select the item number for `ft_core`**.**

    c. Check that item 12 `op_status` **shows as** `in_sync`**.**

16. **Install the PCI card drivers with the relevant patches, where applicable. See Chapter 5, "PCI Card Driver Packages and Patches" on page 31 for further details.**

17. **Install and configure Sun StorEdge Volume Manager. See Chapter 6, "Installing and Configuring SEVM" on page 37 for further details.**

Caution – Ensure that you complete the installation and configuration instructions correctly. Failure to do so will compromise fault-tolerant operation of your system.

You have completed the clean installation of Netra ft 1800 Solaris 2.6 Update 01 for a new system.

CHAPTER 4

Upgrading from a Previous Software Version

This chapter describes all the steps necessary to install a software and operating environment release upgrade for the Netra ft 1800. To perform the steps described here, you should be familiar with the Solaris operating environment.

Upgrade Installation Summary

You should perform the upgrade installation steps in the following order:

1. **Confirm that the prerequisites are met (see “Confirming the Prerequisites” on page 20).**
2. **Check that SEVM is in the correct state (see “Checking that SEVM is in the Correct State” on page 21).**
3. **Upgrade the Netra ft 1800 software (see “To Upgrade the Netra ft 1800 Software” on page 23).**
4. **Install the software and patches for any required PCI card drivers (see “PCI Card Driver Packages and Patches” on page 31).**
5. **Re-enable Sun StorEdge Volume Manager (see “To Re-enable SEVM Control” on page 29).**

Confirming the Prerequisites

1. **Check that no red** *Fault* **LEDs are visible.**

   If there are, use the CMS to disable faulty modules.

Note – Faults in modules should be rectified prior to continuing with the upgrade. Attempting to upgrade a system containing faulty modules may abort the upgrade procedure.

---

2. **Check that the system is running in sync.**

Caution – If either of these prerequisites are *not* met, consult your local Sun Enterprise Services representative.

---

3. **Backup the current system.**

Note – Backing up a system prior to upgrade will enable you to roll back to the previous system version in the event of an upgrade failure.

---

4. **Back out any QFE Driver patches already on your system**:

```
# cd /var/sadm/patch
# ./10778-04/backoutpatch 10778-04
```

Caution – Failure to perform this step will result in failure of QFE functionality after the system upgrade. The QFE driver is automatically reinstalled as part of the upgrade process.

Checking that SEVM is in the Correct State

This section describes how to upgrade the Solaris operating environment in a system that has Sun StorEdge Volume Manager 2.5 already installed.

▼ To Check the SEVM State

5. **Log in as `root` on your system.**

6. **Insert the Sun StorEdge Volume Manager 2.5 CD.**

7. **Change to the following directory:**

```
# cd /cdrom/sun_sevm_2_5_sparc/Tools
```

8. **If you are not currently using SEVM with encapsulated root, skip to Step 10.**

9. **If any of the file systems `/`, `/usr`, `/var`, or `/opt` are defined on volumes, make sure that at least one mirror for each of those volumes is formed from a single subdisk that begins on a cylinder boundary.**

   This is necessary because part of the upgrade process involves temporarily converting file systems on volumes back to using direct disk partitions, and Solaris requires that disk partitions start on cylindar boundaries.

Note – The upgrade scripts automatically convert file systems on volumes back to using regular disk partitions, as necessary. If the upgrade scripts detect any problems (such as lack of cylinder alignment), they display an explanation of the problem and the upgrade does not proceed.

---

10. **Follow the steps below to close any volumes on the system that are running on SEVM.**

    a. **Use** `vxprint -vt` **at the command prompt for a list of the system volumes and their current state. You will be presented with a list similar to the example below:**

```
# vxprint -vt
Disk group: rootdg

V  NAME         USETYPE      KSTATE   STATE    LENGTH   READPOL   PREFPLEX

v  opt          fsgen        ENABLED  ACTIVE   4097331  ROUND     -
v  rootvol      root         ENABLED  ACTIVE   4097331  ROUND     -
v  swapvol      swap         ENABLED  ACTIVE   1052163  ROUND     -
v  usr          fsgen        ENABLED  ACTIVE   4097331  ROUND     -
v  var          fsgen        ENABLED  ACTIVE   4097331  ROUND     -
#
```

    a. **Stop all processes (database or other applications) that are accessing Volume Manager volumes except** `rootvol`, `swapvol`, `/opt` **and** `/var`.

    b. **Unmount all file systems mounted on Volume Manager volumes except** `/`, `swap`, `/opt` **and** `/var`.

    c. **Save a copy of the** `/etc/vfstab` **file.**

    d. **Comment out all references to VM volumes in the** `/etc/vfstab` **file, with the exception of** `rootvol`, `swapvol`, `/opt` **and** `/var`.

11. **Begin the upgrade of the Volume Manager:**

```
# ./scripts/upgrade_start
```

12. **Return to** `root` **and eject the Sun StorEdge Volume Manager 2.5 CD from the CD-ROM drive.**

```
# cd /
# eject
```

▼ To Upgrade the Netra ft 1800 Software

13. **Go to the OpenBoot™ PROM** ok **prompt:**

```
# init 0
```

14. **Physically disengage all the hard disk drive modules except the one in the location on which you wish to install the operating environment upgrade.**

Note – You do not need to remove the disk modules from their slots completely. Ensure that the module you leave enabled is the one on which the existing operating system is installed.

---

15. **For Local upgrade installation, place the Solaris 2.6 Software for Netra ft 1800 Update 01 Installation CD-ROM (part no. 704-7064-10) in the relevant CD-ROM drive.**

    a. **If you inserted the installation CD in the CD-ROM drive on side A (at the top of the system), type:**

```
ok boot a-cdrom0
```

    b. **If you inserted the installation CD in the CD-ROM drive on side B (at the bottom of the system), type:**

```
ok boot b-cdrom0
```

Caution – Before inserting a CD-ROM disk into your system read “Handling and Taking Care of your CD-ROM Disks” in the *Netra ft 1800 Compliance and Safety Manual*. In some circumstances, if your CD-ROM disk does not have a clean data surface, your system may fail to boot.

---

c. For network installation, go to the OpenBoot PROM ok **prompt and type:**

```
ok boot a-net0
```

The *Target* LED on one CPUset will flash rapidly, and the *Diag* LED on the other CPUset will flash at approximately half the speed.

Wait for booting to complete. The Netra ft 1800 software upgrade program then starts.

16. Proceed as for a normal Solaris upgrade. Ensure that you select the upgrade option, as opposed to the initialize option, which will perform a clean installation.

Also check that you select the option to reboot manually once the upgrade is completed.

Note – The default boot device will not be set by the upgrade. If this has not been set previously, you will need to specify the path to the PROM before the next reboot.

17. When the upgrade has been completed, go to the OpenBoot PROM ok **prompt:**

```
# init 0
```

18. Permanently enable the OSdog:

a. Check the PROM version number by typing:

```
ok .version
```

The system will respond with a message as follows.

```
----
Release 3.7 [PROTO-P1b-sd_st: Fusion-B2] Version 28.0 created
1999/10/26
10:32
OBP 3.7.28.0 1999/10/26 10:32
POST 6.0.6 1999/10/26 10:42
OBDIAG 3.9.26 1999/10/26 10:42
----
```

'Version 28.0' refers to version 28 of the PROM.

b. If the PROM version is 21 or earlier, enable the OSdog using the following commands:

```
ok setenv auto-boot? false
ok reset-all
ok 4f set-conf-osdog-a
ok 4f set-conf-osdog-b
ok reset-all
ok setenv auto-boot? true
```

c. If the PROM is version 22 or later, enable the OSdog using the following commands:

```
ok setenv auto-boot? false
ok reset-all
ok 4f set-conf-osdog
ok reset-all
ok setenv auto-boot? true
```

19. **Set the default boot device.**

Note – The default boot device will not be set by the upgrade. If this has not been set previously, you will need to specify the path to the PROM before the next reboot.

This can be corrected before the subsequent reboot by typing the following:

- If you have installed the operating software on `A-DSK0`:

```
ok setenv boot-device a-dsk0
ok setenv diag-device a-dsk0
```

- If you have installed the operating software on `B-DSK0`:

```
ok setenv boot-device b-dsk0
ok setenv diag-device b-dsk0
```

20. **Re-engage the HDD modules which you disengaged at the start of the upgrade procedure.**

21. **Boot the system by typing**:

```
ok boot
```

After Reboot

The first time the system is rebooted, the automatic firmware upgrade utilities will be activated. The CPUset PROM and motherboard FPGAs will be upgraded as required, and the system power cycled and rebooted for the new firmware to come into effect.

Here is a sample of the typical output you will see on the console during the first reboot:

```
Configuring the /dev directory
Configuring the /dev directory (compatibility devices)
Checking system firmware compatibility
Auto upgrading side A using /usr/platform/SUNW,Ultra-4FT/SUNWftmu/lib/
prom/258-7354-14
Auto upgrading side A using /usr/platform/SUNW,Ultra-4FT/SUNWftmu/lib/
fpga/258-7771-07
Auto upgrading side B using /usr/platform/SUNW,Ultra-4FT/SUNWftmu/lib/
fpga/258-7771-07
System firmware upgraded - rebooting
syncing file systems... done
rebooting...
Resetting ...


Motherboard B is not consistent - forcing a download.
Motherboard A is not consistent - forcing a download.
This will result in a cpuset power-on reset.

Sun Ultra 4FT UPA/PCI(4 X UltraSPARC-II 296MHz), No keyboard
OpenBoot 3.7 [PROTO-P1b-sd_st: Fusion-B2], 4096 MB memory installed,
Serial #10827332.
Ethernet address 8:0:20:a5:36:44, Host ID: 80a53644.



Rebooting with command: boot
Running preboot tests:                  SUCCESS
Boot device: a-dsk0  File and args: kadb
kadb: kernel/unix
Size: 285009+68296+74596 Bytes
/platform/SUNW,Ultra-4FT/kernel/unix loaded - 0x9e000 bytes used
SunOS Release 5.6 Version 107548-06 [UNIX(R) System V Release 4.0]
Copyright (c) 1983-1997, Sun Microsystems, Inc.
NOTICE: Ultra-4FT DDI extensions installed
```

Note – The settings and version numbers in this example (and subsequent examples) may differ from those installed with your copy of Solaris 2.6 Update 01. No action is necessary if the version numbers installed do not match those in the examples. Continue the upgrade.

Firmware Update the First Time a CPUset is Brought Into Sync

The CPUset that boots the system has its firmware upgraded at boot time. The CPUset that did not boot the system has its firmware upgraded the first time it is brought into sync:

```
Select: CPU 1

Item    Name                    Value                         Page 1 of 2
-------------------------------------------------------------------------
0       state                   busy
1       action                  enable
2       location                B-CPU
3       fault_acknowledged      no
4       description             CPUset FRU
5       user_label
6       part_number             5404009
7       serial_number           000116
8       faulty                  no
9       software_fault          no
10      present                 yes
11      info                    Auto upgrading prom
12      fan0_speed              normal
13      fan1_speed              normal
14      fan0_latent_fault       no
15      fan1_latent_fault       no
16      cpu0_temperature        normal

(H)elp, <Number> to modify, (S)elect, (P)age, (T)op or (Q)uit ?
```

Note – Item 11, the `Info` field, provides the PROM status.

22. Check that the system has come into sync.

When requested, log on as `root`.

A few minutes after the system has rebooted to the system prompt, the *Sync* LEDs on the CPUsets will illuminate and remain steadily lit, indicating that the system is now running in synchronization.

If you do not have physical access to the system, you can check if the system is in sync as follows:

a. Start `cmsconfig`**:**

```
# cd /usr/platform/SUNW,Ultra-4FT/SUNWcms/sbin
# ./cmsconfig
```

b. Select the item number for `ft_core`**.**

c. Check that item 12 `op_status` **shows as** `in_sync`**.**

23. Install those PCI card driver patches applicable to your system. See "PCI Card Driver Packages and Patches" on page 31 for further details.

You have completed the upgrade to the Netra ft 1800 Solaris 2.6 Update 01. Continue from "To Re-enable SEVM Control" on page 29 to complete the overall upgrade of your system.

▼ To Re-enable SEVM Control

24. Log in as `root`**.**

25. Insert the Sun StorEdge Volume Manager 2.5 CD in the drive.

- If the CD is mounted automatically, continue from Step 27.
- If the CD is not mounted automatically, type:

```
# cd /cdrom/sun_sevm_2_5_sparc/Tools
```

26. Complete the upgrade:

```
# ./scripts/upgrade_finish
```

Follow the on-screen prompts to complete the SEVM upgrade.

27. Restore the `/etc/vfstab` **file you saved in Step 10 on page 22.**

28. Install the Veritas patch.

a. Place the supplemental CD (part number 704-7063-10) in the drive.

b. Include patch 105463-07 (or later version, if available) from the supplemental CD. Type:

```
# cd /cdrom/s2_6_qu_1_netra_ft1800_suppcd/Patches
# patchadd 105463-07
```

Caution – Patch 105463-08 will be available on SunSolve, but must only be applied after application of patch 105463-07.

29. Reboot your system:

```
# reboot
```

Note – You have successfully completed the system upgrade. Your system should be ready for use once the system has rebooted.

CHAPTER 5

PCI Card Driver Packages and Patches

This chapter provides details of the packages and patches applicable to each type of PCI card driver, and the associated documentation changes as a result of application of a given package or patch.

Quad FastEthernet Package and Patch

The QFE package and patch 107778-04 are automatically installed as part of the Solaris 2.6 Update 01 installation / upgrade.

PCI Card Driver Patches

No patches are required at the time of writing this document. It is recommended that you check SunSolve for any applicable patches prior to installing the PCI card drivers.

Installing the SAIP, HSIP, ATM Software and Patches

Follow the steps in the following sections to install the relevant PCI card drivers and associated patches for your system.

▼ To Install the Driver for a PCI Carrier with 8-Port Async Card

Once you have booted from disk, wait for the CMS to fully configure, then:

1. **Place the supplemental CD (part no. 704-7063-10) in the drive.**

2. **Type the following commands**:

```
# cd /cdrom/s2_6_qu_1_netra_ft1800_suppcd/Product
# pkgadd -d . SUNWsaip SUNWsaipu
```

3. **It is recommended that you run the card in non-interrupt mode. However, if you want to enable interrupt mode, wait for the prompt then type the following command**:

```
# /etc/opt/SUNWconn/bin/saipconfig
```

4. **Disable the PCI CMS objects for the SAI/P card(s), then re-enable them.**

Documentation Changes

The following changes apply to the *SunSAI/P User's Guide* (part no. 805-6947-10) when the card is used in a Netra ft 1800 system.

Page 1, *Components*: The following items are shipped:

- SunSAI/P card mounted in a hotplug PCI carrier
- Connector assembly

Pages 3–4, *Installing the Board*: This section does not apply. Refer to the *Netra ft 1800 User's Guide* (part no. 805-4529-11) for details of how to install the PCI card carrier.

Pages 19–22: The following sections do not apply:

- *Rebooting the System*
- *Automatic Configuration*
- *Manual Configuration*

Page 22, *Creating New Devices*: The device driver will support up to 16 SunSAI/P adapters.

▼ To Install the Driver for a PCI Carrier with High Speed Serial Interface Card

Once you have booted from disk, wait for the CMS to fully configure, then:

1. **Place the supplemental CD (part no. 704-7063-10) in the drive.**

2. **Type the following commands:**

```
# cd /cdrom/s2_6_qu_1_netra_ft1800_suppcd/Product
# pkgadd -d . SUNWhsip SUNWhsipu SUNWhsipm
```

3. **Disable the PCI CMS objects for the HSI/P card(s), then re-enable them.**

Documentation Changes

The following changes apply to the *SunHSI/P User's Guide* (part no. 805-6943-10) when the card is used in a Netra ft 1800 system.

Chapter 2, *Hardware Installation*: This chapter does not apply. Refer to the *Netra ft 1800 User's Guide* (part no. 805-4529-11) for details of how to install the PCI card carrier.

▼ To Install the Driver for a PCI Carrier with ATM Card

Once you have booted from disk, wait for the CMS to configure fully, then:

1. **Place the supplemental CD (part no. 704-7063-10) in the drive.**

2. **Type the following commands**:

```
# cd /cdrom/s2_6_qu_1_netra_ft1800_suppcd/Product
# pkgadd -d . SUNWatm SUNWatmu SUNWatma
```

When prompted, type **`all`** to install all the SunATM packages.

3. **Disable the PCI CMS objects for the ATM card(s), then re-enable them.**

Documentation Changes

The following changes apply to the *SunATM Installation and User's Guide* (part no. 805-6522-10) when the card is used in a Netra ft 1800 system.

Chapter 4, Section 4.1.2 *Required Patches*: This section, which describes patches required when operating under different operating environments, does not apply. `a_dozerocopy` is automatically set to zero when SunATM is run on the Netra ft 1800.

Installing SunVTS

The following procedure describes how to install the optional SunVTS diagnostic tools.

1. **Place the supplemental CD (part no. 704-7063-10) in the drive.**

2. **Type the following commands:**

```
cd /cdrom/s2_6_qu_1_netra_ft1800_suppcd/Product
# pkgadd -d . SUNWvts SUNWvtsmn
```

How to Proceed

- If you are performing a system upgrade, then continue from “To Re-enable SEVM Control” on page 29.
- If you are performing a clean installation, then continue from Chapter 6, "Installing and Configuring SEVM".

CHAPTER 6

Installing and Configuring SEVM

This chapter contains guidelines for installing SEVM to provide fault tolerant mass storage on the Netra ft 1800 system.

This chapter is only applicable if you are performing a clean installation of the Netra ft 1800 Solaris 2.6 Update 01 software.

The main steps involved are:

1. **Using `pkgadd` to load the SEVM packages, and install any required patches.**
2. **Configuring the SEVM software as described in "To Identify and Set up the Volume Manager Environment" on page 39.**
3. **Initializing the SEVM disk storage as described in "Initializing the Volume Manager" on page 43.**

Refer to the SEVM documentation for full information about installing and using SEVM, and to the *Netra ft 1800 User's Guide* for information about using the `cmsconfig` utility. You use `cmsconfig` to obtain the device name of the root disk when you add disks to your server.

You perform all of the steps in this chapter as `root`.

Before Installing SEVM

SEVM is installed on the Netra ft 1800 system in the same way as other applications.

You should install the SEVM software after the Netra ft 1800 software and any required patches, and before other applications. You should also configure the Volume Manager volumes before you install other applications.

1. **Before you install SEVM, copy the file** `/etc/vfstab` **to** `/etc/vfstab.prevm`**:**

```
# cp -p /etc/vfstab /etc/vfstab.prevm
```

This standard practice helps Sun support engineers to recover a system in the very rare event of serious system failure.

Caution – Failures during the SEVM boot disk encapsulation process could result in loss of data on the root file system.

Caution – Encapsulation of the boot disk will require that the installed system is shutdown and rebooted several times.

Installing the SEVM Software

This section describes the special requirements when you install the SEVM software on the Netra ft 1800. You must install SEVM and the patches specified in the *Release Notes*.

See the *Sun Enterprise Volume Manager 2.5 Installation Guide* for full details of the SEVM installation.

▼ To Run the Installation

Follow the instructions in the *Sun Enterprise Volume Manager 2.5 Installation Guide* and any instructions in the SEVM and Netra ft 1800 R*elease Notes* to run the installation.

1. **Load the standard set of packages for SEVM.**

   Insert the Sun Enterprise Volume Manager 2.5 CD into the drive and type:

```
# cd /cdrom/sun_sevm_2_5_sparc/Product
# pkgadd -d .
# cd /
# eject
```

2. **Remove the CD from the drive.**

3. **Install the appropriate patches for your configuration. Include patch 105463-07 from the supplemental CD (part no. 704-7063-10).**

   Insert the supplemental CD and type the following commands:

```
# cd /cdrom/s2_6_qu_1_netra_ft1800_suppcd/Patches
# patchadd 105463-07
```

▼ To Identify and Set up the Volume Manager Environment

In the following procedure, you use `cmsconfig` to obtain the `Disk` attribute of the HDD module and the `Funct_0` attribute of the CD-ROM drive (plus `Funct_1` if you have an additional drive).

To identify the device name of the root disk:

4. **Start** `cmsconfig`:

```
# /usr/platform/SUNW,Ultra-4FT/SUNWcms/sbin/cmsconfig
```

5. **Locate the HDD modules in the list.**

   You can press **p** to page down to see second and subsequent pages, and **pp** to page up.

6. **For each HDD module in the list:**

   a. **Enter the number next to the module.**

      The attributes of the module are displayed.

   b. **Note the `Disk` attribute of the module.**

      This is a normal Solaris device name, which you can note below:

Side	HDD0 / A-DSK0	HDD1 / A-DSK1	HDD2 / A-DSK2	HDD3 / A-DSK3	HDD4 / A-DSK4	HDD5 / A-DSK5
A						
B						
	HDD6 / B-DSK0	**HDD7 / B-DSK1**	**HDD8 / B-DSK2**	**HDD9 / B-DSK3**	**HDD10 / B-DSK4**	**HDD11 / B-DSK5**

7. **For each HDD module in the list:**

   a. **Enter the number next to the module.**

      The attributes of the module are displayed.

   b. **Note the `Disk` attribute of the module.**

      This is a normal Solaris device name.

   c. **Press `q` to return to the list of modules**

8. **For each RMM module in the list:**

   a. **Enter the number next to the module.**

      The attributes of the module are displayed.

   b. **Note the `Funct_0` attribute of the module.**

      This is the device name of the CD-ROM drive. It is a normal Solaris device name.

      If there is a second CD-ROM drive in the module, note the `Funct_1` attribute. This is the device name of the second CD-ROM drive. It is a normal Solaris device name.

Side	RMM
A	
B	

c. Press `q` **twice to exit** `cmsconfig`**.**

You will need this information when you initialize the Volume Manager. It can be useful for other purposes, so you may wish to keep it.

When you have loaded the Volume Manager software, and before you run `vxinstall` to initialize it, you must configure the software to run as required on the Netra ft 1800. This involves:

- Setting default volume creation to mirror disks by default when they are created.
- Configuring the Volume Manager to deal with stale boot disks.
- Configuring the Volume Manager's recovery behavior when a physical disk fails.
- Enabling boot disk detection.

Setting Default Volume Creation

Note – Disk mirroring in Volume Manager provides the fault tolerance for the disk storage of the Netra ft 1800. This step is essential to ensure that all disks are mirrored.

9. To mirror disks by default when they are created, type the following:

```
$ echo "mirror=yes" > /etc/default/vxassist
```

Note – If the `vxassist` file already exists, resolve any differences between the contents of the file and the line `mirror=yes`. The resulting file must contain the line `mirror=yes`.

The preceding command creates the `/etc/default/vxassist` file with the required line in it. This sets the tunable parameters used by the Volume Manager `vxva` GUI. (These parameters can be overriden via the command line.) See the SEVM documentation for full details.

Dealing with Stale Boot Disks

10. To prevent the system from stopping when it encounters a stale boot plex during the boot sequence, type the following:

```
# mkdir -p /etc/vx/sbin
# echo '/sbin/uadmin 2 1 "stale"' > /etc/vx/sbin/vxaltstale
# chmod +x /etc/vx/sbin/vxaltstale
```

These commands create a startup script that enables the Volume Manager to exit back to the OpenBoot PROM upon encountering a stale boot plex, allowing the Volume Manager to try alternative boot disks.

Enabling Recovery Behavior and Boot Disk Detection

11. To enable correct recovery behavior and boot disk detection, make the following changes to the startup file `/etc/rc2.d/S95vxvm-recover`:

```
# vxrelocd root &  commenting out this line enables correct recovery behavior
# start the boot disk utility  the following line enables boot disk detection
/usr/platform/SUNW,Ultra-4FT/SUNWcms/lib/vxbootcheck &
```

Make the edits exactly as shown, commenting out the `vxrelocd` line and with the complete path to `vxbootcheck`. Be sure to append an ampersand to the `vxbootcheck` line.

The default behavior of SEVM when a physical disk fails is not compatible with the hot plug of HDD modules on the Netra ft 1800. By default, when the Volume Manager detects I/O failure on mirrored volumes, it restores redundancy by relocating the objects to spare disks. This is called *hot relocation*. You need to disable this default behavior. By commenting out the `vxrelocd` line, as shown above, you prevent hot relocation.

You must repeat all these modifications after system upgrades.

Initializing the Volume Manager

When you have loaded the SEVM, run `vxinstall` as described in the *Sun Enterprise Volume Manager 2.5 Installation Guide* (part no. 805-1604-10). This section describes the special actions you must take to initialize the Volume Manager for the Netra ft 1800.

Note – SEVM mirroring provides the fault tolerance for disk storage on the Netra ft 1800. This is provided by default when you add a disk to the Volume Manager provided you have added the required line to `/etc/default/vxassist` as described in "Setting Default Volume Creation" on page 41.

▼ To Set up Boot Disks

You must encapsulate the boot disk for SEVM to be able to mirror it. You are strongly recommended to do the following to ensure that the boot disk is configured for the Netra ft 1800:

1. **Assuming that `A-DSK0` is the Solaris install disk, you should have entered the command shown below at the end of the Solaris installation. See `eeprom` (1) for details on using `eeprom` command to change the boot device.**

```
# eeprom boot-device=a-dsk0 diag-device=a-dsk0
```

2. **Encapsulate the boot disk when the `vxinstall` process asks whether you want to do so.**

   The `vxinstall` process proposes the `rootdg` disk group by default. Accept this to add the boot disk to this group.

3. **Type**:

```
# vxinstall
```

When prompted enter each of the three Volume Manager keys, including spaces.

The `vxinstall` program then examines all controllers that it finds attached to the system and lists them:

```
Generating list of attached controllers....

Volume Manager Installation
Menu: VolumeManager/Install

The Volume Manager names disks on your system using the
controller and disk number of the disk, substituting them into
the following pattern:

    c<controller>t<disk>d<disk>

If the Multipathing driver is installed on the system then for the
disk devices with multiple access paths, the controller number
represents a multipath pseudo controller number. For example, if a
disk has 2 paths from controllers c0 and c1, then the Volume Manager
displays only one of them such as c0 to represent both the
controllers.

Some examples would be:

    c0t0d0 - first controller, first target, first disk
    c1t0d0 - second controller, first target, first disk
    c1t1d0 - second controller, second target, first disk

The Volume Manager has detected the following controllers on
your system:

    c0:

Hit RETURN to continue.
```

Press Return to continue.

Next, `vxinstall` displays a brief introduction to the installation process:

```
Volume Manager Installation
Menu: VolumeManager/Install

    You will now be asked if you wish to use Quick Installation or
    Custom Installation. Custom Installation allows you to select
    how the Volume Manager will handle the installation of each disk
    attached to your system.

    Quick Installation examines each disk attached to your system
    and attempts to create volumes to cover all disk partitions that
    might be used for file systems or for other similar purposes.

    If you do not wish to use some disks with the Volume Manager,
    or if you wish to reinitialize some disks, use the Custom
    Installation option. Otherwise, we suggest that you use the
    Quick Installation option.
Hit RETURN to continue.
```

Press Return to continue.

`vxinstall` then displays a menu with the following options:

```
1  Quick Installation
2  Custom Installation

?  Display help about menu
?? Display help about menuing system
q  Exit from menus

Select an operation to perform:
```

4. Select menu item 2 (Custom Installation).

`vxinstall` will ask you a series of questions for each controller and disk it finds connected to your system. When a default response is displayed in parentheses, you can simply press Return to accept that default. At any of the `vxinstall` prompts, you can type `q` to abandon the initialization completely and then start again.

Note – All disks are encapsulated or initialized (according to your instructions) at the end of the `vxinstall` procedure. If you quit `vxinstall` before it enters its final phase of actually initializing or encapsulating the disks, all disks will be left as they were before `vxinstall` started.

---

5. **Information about the boot disk will now be displayed**

```
The c0t0d0 disk is your Boot Disk. You can not add it as a new
disk. If you encapsulate it, you will make your root file system
and other system areas on the Boot Disk into volumes. This is
required if you wish to mirror your root file system or system swap
area.

Encapsulate Boot Disk [y,n,q,?] (default: n) y
```

Type **y** to proceed with encapsulation. This example assumes your boot disk is named `c0t0d0`. Check that the name of the disk on which you installed the Netra ft 1800 software is displayed correctly.

6. **You will be asked to name the boot disk:**

```
Enter disk name for c0t0d0 [<name>,q,?] (default: rootdisk)
```

Press Return to accept the default disk name `rootdisk`.

`vxinstall` now encapsulates your root file system as a volume, along with your swap device and all other disk partitions found on your boot disk. `/opt`, `/var` and any other file systems on your boot disk are also encapsulated.

`vxinstall` now goes through each controller and asks you how to handle the disks contained on that controller. `vxinstall` begins this process for each controller by identifying the controller and generating a list of its disks:

```
Generating list of attached disks on c1....
The Volume Manager has detected the following disks on controller

c1t0d0

 Hit RETURN to continue.
```

Press Return to continue.

7. **The following prompt will appear a number of times:**

```
Installation options for controller c1
Menu: VolumeManager/Install/Custom/c1

 1  Install all disks as pre-existing disks. (encapsulate)
 2  Install all disks as new disks.(discards data on disks!)
 3  Install one disk at a time.
 4  Leave these disks alone.

 ?  Display help about menu
 ?? Display help about the menuing system
 q  Exit from menus

Select an operation to perform:
```

At each prompt, type **4** to leave the disks alone.

No changes will be made to the disks and they will not be placed under Volume Manager control. When all of the disks on the current controller have been named, press Return to move on to the next controller if there is one.

When you have completed the `vxinstall` procedure for all controllers on your system, `vxinstall` displays a summary of the disks you have designated for initialization (`New Disk`) or encapsulation (`Encapsulate`) on each controller.

8. **A summary of your choices will be displayed:**

```
The following is a summary of your choices.

    c0t0d0  Encapsulate

Is this correct [y,n,q,?] (default: y)
```

Type **y** to confirm that it is correct.

`vxinstall` proceeds to encapsulate the disk listed with `Encapsulate`.

9. **You will now be asked if you want to shutdown and reboot the system:**

```
The system now must be shut down and rebooted in order to continue
the reconfiguration.

Shutdown and reboot now [y,n,q,?] (default: n)
```

Type **y** to confirm.

`vxinstall` begins an immediate shutdown.

Note – During the next one or more reboots, you may be asked several times if you wish to continue an operation. Press the Return key at all of these prompts to accept the default answer. If you select a different answer from the default for any of these prompts or press `q`, the initialization may fail.

When the `vxinstall` process is complete, use the `vxdiskadm` utility to make a new disk a mirror of the boot disk, for example, make `b-dsk0` a mirror of `a-dsk0`, and bring other disks under Volume Manager control.

▼ To Add the Root Disk Mirror

10. **Insert the HDD module physically.**

    a. **Insert the HDD module in an empty HDD slot in the opposite disk chassis to the root disk.**

       Note the location of the disk from the label next to its slot on the chassis.

    b. **When the lever engages with the chassis, raise it to push the module fully home.**

    c. **Move the slide in the lever into the engaged position.**

11. **Start** `cmsconfig`:

```
# /usr/platform/SUNW,Ultra-4FT/SUNWcms/sbin
# ./cmsconfig
```

12. **Include a new HDD module:**

```
i HDD
```

13. **Configure the HDD module:**

a. **Enter the number next to the module.**

b. **Enter the item number for the `location` attribute.**

c. **Select the location of the disk by entering the corresponding item number.**

14. **Enable the disk:**

    a. **Enter the item number for the `action` attribute.**

    `cmsconfig` displays the possible values for the `action` attribute.

    b. **Select `enable` by entering the corresponding item number.**

    c. **Press `t` to return to the top level menu.**

15. **Press `q` to exit `cmsconfig`.**

16. **Check that the disk you have chosen to be the root disk mirror is visible to the Volume Manager:**

```
# vxdisk list
```

If the disk is not present in the resulting list, type:

```
# vxdctl enable
```

17. **Identify the disk to be used as the mirror, and note its location from the label next to its slot on the chassis. Start `vxdiskadm`:**

```
# vxdiskadm
```

18. **Select menu item 1 (Add or initialize one or more disks) from the `vxdiskadm` main menu.**

19. The Add or Initialize Disks menu will be displayed:

```
Add or initialize disks
Menu: VolumeManager/Disk/AddDisks

Use this operation to add one or more disks to a disk group. You can add the
selected disks to an existing disk group or to a new disk group that will be
created as a part of the operation. The selected disks may also be added to a
disk group as spares. The selected disks may also be initialized without adding
them to a disk group leaving the disks available for use as replacement disks.

More than one disk or pattern may be entered at the prompt. Here are some disk
selection examples:

all:              all disks
c3 c4t2:          all disks on both controller 3 and controller 4, target 2
c3t4d0:           a single disk

Select disk devices to add:
[<pattern-list>,all,list,q,?] c1t0d0
```

Type the name of the disk to be added to Volume Manager control.

In this example, the disk `c1t0d0` is added. It is now under the control of Volume Manager, and is available to be used as the mirror boot disk.

If you do not know the device name of the disk to be added, type **`list`** at the prompt for a complete listing of available disks. If you have followed this procedure as written, only the boot disk and the disk you have just inserted will be present.

20. You will be asked for confirmation:

```
Here are the disks selected.  Output format: [Device_Name]

c1t0d0

Continue operation? [y,n,q,?] (default: y) y
```

To continue the operation, type `y` or press Return.

21. **You can now choose the group to which you want to add the disk:**

```
You can choose to add these disks to an existing disk group, anew
disk group, or you can leave these disks available for use
by future add or replacement operations.  To create a new disk
group, select a disk group name that does not yet exist.  To
leave the disks available for future use, specify a disk group
name of “none”.

Which disk group [<group>,none,list,q,?] (default: rootdg)
```

Press Return to add the disk to the default group `rootdg`.

22. **You can now choose a name for the disk:**

```
Use default disk names for these disks? [y,n,q,?] (default: y) n
```

Type **n** or Return to choose your own names, or press **y** to use the default names.

23. **You can now decide whether you want the disks to be used as hot-relocation spares:**

```
Add disks as spare disks for rootdg? [y,n,q,?] (default: n) n
```

Type **n** to indicate that the disk should not be used as a hot-relocation spare.

24. **You will now be asked for confirmation:**

```
The selected disks will be added to the disk group rootdg with
disk names that you will specify interactively.

c1t0d0

Continue with operation? [y,n,q,?] (default: y) y
```

To continue with the operation, type **y** or press Return.

25. **If the disk has been previously installed with Solaris, or used under Volume Manager control, you will be prompted as follows:**

```
The following disk has a valid VTOC encapsulate this device?
```

You should answer **n**. When asked if the disk should be initialized, answer **y**.

26. **You can now enter a name for the disk:**

```
Enter disk name for c1t0d0 [<name>,q,?] (default: disk01) rootbdsk0

Adding disk device c1t0d0 to disk group rootdg with disk
name root2disk.
```

Type **root*bdsk0***, where ***bdsk0*** denotes the disk onto which the system will mirror `root`.

`vxdiskadm` now confirms those disks that are being initialized and added to Volume Manager control with messages similar to the following:

```
Initializing device c1t0d0.

Adding disk device c1t0d0 to disk group rootdg with disk
name root2disk.
```

27. **At the following prompt, type `n` to return to the `vxdiskadm` main menu:**

```
Add or initialize other disks? [y,n,q,?] (default: n)
```

28. **Select option 6, (Mirror volumes on a disk) from the `vxdiskadm` main menu.**

29. You will be asked for the name of the boot disk:

```
Mirror volumes on a disk
Menu: VolumeManager/Disk/Mirror

This operation can be used to mirror volumes on a disk. These
volumes can be mirrored onto another disk or onto any
available disk space. Volumes will not be mirrored if they are
already mirrored. Also, volumes that are comprised of more than
one subdisk will not be mirrored.

Mirroring volumes from the boot disk will produce a disk that can
be used as an alternate boot disk.

Enter disk name [<disk>,list,q,?] rootdisk
```

Type **rootdisk**.

30. Now you can specify the disk to which you want to mirror:

```
You can choose to mirror volumes from disk rootdg onto any
available disk space, or you can choose to mirror onto a specific
disk. To mirror to a specific disk, select the name of that disk.
To mirror to any available disk space, select "any".

Enter destination disk [<disk>,list,q,?] (default: any) rootbdsk0
```

Type the target disk name. This is the name of the disk you have just inserted and intend to use as the mirror.

Note – Be sure always to specify the destination disk when you are creating an alternate root disk. Otherwise, the Volume Manager will select a disk to be the alternate root disk; however, your system may not be able to boot from that disk.

---

31. You will now be asked for confirmation:

```
The requested operation is to mirror all volumes on disk rootdisk
in disk group rootdg onto available disk space on disk root2disk.

NOTE: This operation can take a long time to complete.

Continue with operation? [y,n,q,?] (default: y)
```

Press Return to continue to make the mirror.

`vxdiskadm` displays the status of the mirroring operation:

```
Mirror volume rootvol ...
.
.
.
Mirroring of disk rootdisk is complete.
```

32. You will be asked if you want to repeat the process:

```
Mirror volumes on another disk? [y,n,q,?] (default: n)
```

Type **n** to exit.

Note – You have completed the installation and configuration of Sun StorEdge Manager.

Boot Disk Aliases

SEVM boot disk aliases are not automatically updated when a disk is physically relocated. You must update boot aliases manually using the `eeprom` command when you relocate an HDD module.

You might prefer to use the aliases defined by the PROM, for example, `a-dsk1`. These aliases, however, reflect the location of disks, rather than the specific virtual disk. See the *OpenBoot 3.x Command Reference Manual* (part no.802-5837-10) for details.

Setting up Other Disks

Use `vxdiskadm` to add disks other than the boot disks to the system as new Volume Manager disks after the `vxinstall` process is complete. Select option 1, Add or initialize disks.

See the *Sun Enterprise Volume Manager 2.5 System Administrator's Guide* for full details of using `vxdiskadm`.

See the *Netra ft 1800 User's Guide* for details of adding disks that are not already in the system.

Note – You should plan to store all non-boot data on disks in groups other than `rootdg`.

▼ To Add a New Disk

1. **Use the `cmsconfig` utility to check that the disk is enabled.**

   The disk must be physically present and enabled.

2. **Check that the disk is known to the Volume Manager:**

```
# vxdisk list
```

3. **Add the disk to a disk group.**

   See the *Sun Enterprise Volume Manager 2.5 User's Guide* for details of creating and adding disks to disk groups.

   Create new disk groups for user data with names other than `rootdg`.

Note – If the new disk is not visible to the Volume Manager, enter the command: `vxdctl enable`

Configuring Storage

Once a disk belongs to a disk group, you can allocate storage using any of the methods described in the *Sun Enterprise Volume Manager 2.5 User's Guide* or the *Sun Enterprise Volume Manager 2.5 System Administrator's Guide*.