Sun Fire™ V60x and Sun Fire V65x Server Linux Operating System Installation Guide

Sun Microsystems, Inc.
www.sun.com

Part No. 817-1956-13
September 2003, Revision A

Submit comments about this document at: `http://www.sun.com/hwdocs/feedback`

Please
Recycle

Adobe PostScript

Contents

Preface

This document contains instructions for installing the Red Hat Linux operating system onto a Sun Fire™ V60x or Sun Fire V65x server. Instructions are included for installing the software from CDs, installing from the network, and building drivers for Linux distributions that are not covered in this document.

How This Book Is Organized

This document is organized into the following chapters:

Chapter 1 contains instructions for installing Red Hat Linux 7.3 software on Sun Fire V60x and V65x servers.

Chapter 2 contains instructions for installing Red Hat Enterprise Linux 2.1 software on Sun Fire V60x and V65x servers.

Chapter 3 contains instructions for installing Red Hat Linux 8.0 software on Sun Fire V60x and V65x servers.

Chapter 4 contains instructions for installing Red Hat Linux 9 software on Sun Fire V60x and V65x servers.

Appendix A explains how to preconfigure your network to support Preboot eXecution Environment (PXE) installation.

Appendix B contains information on using Linux distributions other than those covered in this manual with your Sun Fire V60x and V65x server.

Using UNIX Commands

This document might not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. See the following for this information:

- Software documentation that you received with your system
- Solaris™ operating environment documentation, which is at:

  `http://docs.sun.com`

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Typographic Conventions

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

* The settings on your browser might differ from these settings.

Related Documentation

Application	Title	Part Number
User Guide	*Sun Fire V60x and Sun Fire V65x Server User Guide*	817-2023-xx
Troubleshooting Guide	*Sun Fire V60x and Sun Fire V65x Server Troubleshooting Guide*	817-2024-xx
Server Management	*Sun Fire V60x and Sun Fire V65x Server: Server Management Guide*	817-2025-xx
Release Notes	*Sun Fire V60x and Sun Fire V65x Server Release Notes*	817-2026-xx

Accessing Sun Documentation

Documentation for Sun Fire V60x and V65x servers is available at:

`http://www.sun.com/products-n-solutions/hardware/docs/Servers/Workgroup_Servers/Sun_Fire_V60x-V65x/`

You can view, print, or purchase a broad selection of Sun documentation, including localized versions, at:

`http://www.sun.com/documentation`

Contacting Sun Technical Support

If you have technical questions about this product that are not answered in this document, go to:

`http://www.sun.com/service/contacting`

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. You can submit your comments by going to:

`http://www.sun.com/hwdocs/feedback`

Please include the title and part number of your document with your feedback:

Sun Fire V60x and Sun Fire V65x Server Linux Operating System Installation Guide, 817-1956-13

CHAPTER 1

Installing Red Hat Linux 7.3 Software on Sun Fire V60x and V65x Servers

Note – The system administration procedures in this document are intended for users with at least basic Linux administration experience.

This chapter is organized into the following sections.

Installing Red Hat Linux 7.3 Software From CDs

This procedure describes how to install Red Hat Linux 7.3 software from CDs. This procedure has been tested using the ISO distribution of the software that is available from Red Hat at the following site:

`ftp://ftp.redhat.com/pub/redhat/linux/7.3/en/iso/i386/`

If that site is busy or too slow, use a mirror that is closer to you from Red Hat's mirror list, which is available at the following address:

`http://www.redhat.com/mirrors`

Note – The server's USB ports are not enabled until Linux is booted and the USB drivers are installed. A PS/2 keyboard is required for initial bootup and configuration.

Required Items

The CD installation procedure requires the following items.

- A Sun Fire V60x or V65x server equipped with:
  - Diskette/CD-ROM combo module
  - PS/2 keyboard
- Monitor
- Red Hat Linux 7.3 Media CD Set
- One 1.44 MB 3.5-in. diskette (if you create an optional repair disk)
- Sun Fire V60x and Sun Fire V65x SCSI driver disk
- Sun Fire V60x and Sun Fire V65x Resource CD

Note – Do not connect a mouse for the installation.

Optional Item

- Sun Fire V60x and V65x Server Diagnostic CD (Sun part number 705-0602), if you want to install the service partition. Refer to the *Sun Fire V60x and V65x Server User Guide* (817-2023) for more information about the service partition.

Installing the Service Partition (Optional)

You can optionally install the service partition from the Diagnostics CD as the first step of the Red Hat Linux 7.3 software installation. The service partition has utilities that might be useful. Refer to the *Sun Fire V60x and Sun Fire V65x Server User Guide* for more information about the utilities provided by installing the service partition, and for instructions on installing it. If you want to install the service partition, it must be installed prior to installing Red Hat Linux 7.3 software.

Installing Red Hat Linux 7.3 Software

1. **Power on your Sun Fire V60x or V65x server, and insert the Red Hat Linux 7.3 CD 1 into its CD tray before the boot process begins.**

2. **When you are prompted in the Welcome to Red Hat screen, do *not* press Enter. Instead, instruct the server to use a driver disk by typing the following command:**

Note – You must type this command *before* the prompt times out.

```
# linux dd
```

The installation process begins and prompts you for a driver disk, which is required by the server's SCSI controller.

3. **Insert the Sun Fire V60x and Sun Fire V65x SCSI Driver Disk (shipped with your server) into the server's diskette drive, then follow the on-screen prompts to install the driver on the server.**

   If the supplied Driver Disk is not available, instructions for creating your own driver disk are included in "Creating a SCSI Driver Disk" on page 6.

Note – Loading install drivers from a diskette might cause the following error message, which you can ignore:

```
reading head error, cpio: read failed
```

---

4. **After the drivers are loaded, remove the SCSI Driver Disk from the server.**

5. **Continue with the Red Hat Linux 7.3 software installation by following the on-screen prompts.**

   Make the following selections when you are prompted during the installation:

   - Select Install Custom.
   - Select the Grub boot loader.
   - Select Software Development.
   - Select Kernel Development.
   - Select any other packages that you require.

Note – It is good practice to make a boot disk for emergency system recovery when prompted, but it is optional.

---

6. **When you are prompted, remove the current CD and insert the next requested CD, then select OK.**

   The installation software unmounts and mounts the CDs with no need for additional commands from the user. The CD requested by the installer software varies, depending on which installation selections you made in Step 5.

   Wait for the server to reboot at the end of the operating system installation.

7. **After the server restarts, log in to the server as the superuser.**

Note – When the Red Hat Linux 7.3 software boots, you can safely ignore the message:

```
kmod: failed to exec /sbin/modprobe -s -k scsi_hostadapter,
errno = 2
```

---

8. **Insert the Sun Fire V60x and Sun Fire V65x Resource CD (shipped with your server) into the server's CD tray and ensure that the CD ROM drive is mounted.**

   If it is not mounted, mount the CD by typing the following command:

   ```
   # mount /dev/cdrom /mnt/cdrom
   ```

9. **From the Resource CD, copy the `e1000` driver file to your server's `/tmp/` directory by typing the following commands:**

   ```
   # cd /mnt/cdrom/drivers/redhat/7.3/src/
   # cp e1000-4.4.19-rh73.src.rpm /tmp/
   # cd /
   ```

10. **On your server, install the source RPM file by typing the following command:**

    ```
    # rpm -ivh /tmp/e1000-4.4.19-rh73.src.rpm
    ```

11. **Compile the `e1000` driver by typing the following command:**

    ```
    # rpm -bb /usr/src/redhat/SPECS/e1000.spec
    ```

Note – During the driver compilation, you might see error messages about kernel version mismatches. You can safely ignore these messages.

---

12. **Install the `e1000` driver by typing the following command:**

    ```
    # rpm -ivh /usr/src/redhat/RPMS/i386/e1000-4.4.19-rh73.i386.rpm
    ```

13. **Remove the Resource CD from the server after you type the following command:**

    ```
    # umount /dev/cdrom
    ```

14. **Reboot the server by typing the following command:**

    ```
    # reboot
    ```

15. **Configure Network Devices using the Kudzu utility when prompted.**

Note – You must choose to enter the Kudzu utility when prompted.

Note – Red Hat Linux 7.3 software refers to network port 2, on the back of the server, as `eth0`. The network adapter for port 2 is the first adapter that you are prompted to configure. Ignore the prompt to configure a second network adapter.

---

16. **After the server restarts, log in to the server as superuser.**

17. **Update your server with any Red Hat Linux 7.3 software updates from the Red Hat Web site:**

    `http://www.redhat.com`

Note – You must upgrade to kernel version `2.4.18-24` or later for stable operation of your server. For your convenience, the Resource CD contains the recommended operating kernel and related files in the `/kernel/redhat/7.x/` directory.

---

18. **Insert the Resource CD into the server's CD tray and ensure that the CD-ROM drive is mounted.**

    If it is not mounted, mount the CD by typing the following command:

    # **mount /dev/cdrom /mnt/cdrom**

19. **From the Resource CD, copy the `aic79xx` driver to your server's `/tmp/` directory by typing the following commands:**

    # **cd /mnt/cdrom/drivers/redhat/7.3/src/**
    # **cp aic79xx* /tmp/**
    # **cd /**

20. **Install the source RPM file by typing the following command:**

    # **rpm -ivh /tmp/aic79xx*.rpm**

21. **Compile the `aic79xx` driver by typing the following command:**

    # **rpm -bb /usr/src/redhat/SPECS/aic79xx.spec**

22. **Install the `aic79xx` driver upgrade by typing the following commands:**

    # **rpm -Uvh /usr/src/redhat/RPMS/i686/aic79***

23. **Remove the Resource CD from the server after you type the following command:**

    # **umount /dev/cdrom**

24. **Reboot the server by typing the following command:**

    # **reboot**

Note – The Kudzu application starts automatically when the server restarts.

---

25. **To configure the Red Hat Linux 7.3 operating system for your server, refer to the documentation available at:**

    http://www.redhat.com/docs/manuals/linux/

Creating a SCSI Driver Disk

This procedure is optional and describes how to create a SCSI driver disk, in case you lose the Sun Fire V60x and Sun Fire V65x SCSI Driver Disk that is shipped with your server, or in case you want to make backup copies.

You need the following items to complete this procedure:

- A Linux server or workstation with a CD-ROM drive *and* a diskette drive
- One 3.5-inch formatted 1.44 MB diskette

1. **Power on a Linux server or workstation that is equipped with a diskette drive and log in to the server as the superuser.**
2. **Insert the Sun Fire V60x and Sun Fire V65x Resource CD (shipped with your server) into the server's CD tray, and mount the CD by typing the following command:**

    # **mount /dev/cdrom /mnt/cdrom**

Note – If the CD automounts, the mount command is not required. Refer to your server's documentation for mounting a CD-ROM if you require more information.

---

3. **Insert a formatted 1.44 MB diskette into the server's diskette drive.**
4. **Create the driver disk by typing the following commands:**

    # **cd /mnt/cdrom/images/redhat/7.3/**
    # **dd if=aic79xx-1.3.7-i686-rh73.img of=/dev/fd0**
    # **sync**
    # **cd /**

    The driver diskette creation might take several minutes.

5. **Remove the diskette from the server.**

6. **Remove the Resource CD from the server after you type the following command:**

```
# umount /dev/cdrom
```

Installing Red Hat Linux 7.3 From a Network

This section describes how to create a PXE install image on a Linux server, and how to initiate the request from the target Sun Fire V60x and V65x server to download the image through the PXE server. The PXE server then transfers the boot image file to the target server using TFTP. This boot image file is used to boot the target server.

The tasks for installing Red Hat Linux 7.3 software from a networked PXE server consist of the following procedures.

1. Configure your network to support PXE installation. See "Preconfiguring Your Network to Support PXE Installation" on page 65. These procedures apply for all Red Hat versions covered in this guide.
2. Create a PXE install image on a system that will be the PXE server, from which the operating system is downloaded to other systems (PXE clients). See "Creating a PXE Install Image on the PXE Server" on page 8.
3. Install the Red Hat Linux 7.3 software to the PXE clients from the PXE server. See "Installing Red Hat Linux 7.3 Software From a PXE Server" on page 12.

Note – The server's USB ports are not enabled until Linux is booted and the USB drivers are installed. A PS/2 keyboard is required for initial bootup and configuration.

Required Items

The CD installation procedure requires the following items.

- A Sun Fire V60x or V65x server equipped with:
  - Diskette/CD-ROM combo module
  - PS/2 keyboard
- A Linux server configured as shown in "Preconfiguring Your Network to Support PXE Installation" on page 65.

- Monitor
- Red Hat Linux 7.3 Media CD Set
- Sun Fire V60x and Sun Fire V65x Resource CD

Note – Do not connect a mouse for the installation.

Optional Item

- Sun Fire V60x and V65x Server Diagnostic CD (Sun part number 705-0602), if you want to install the service partition. Refer to the *Sun Fire V60x and V65x Server User Guide* (817-2023) for more information about the service partition.

Installing the Service Partition (Optional)

You can optionally install the service partition from the Diagnostics CD onto the Sun Fire V60x or V65x server as the first step of the Red Hat Linux 7.3 software installation. The service partition has utilities that might be useful. Refer to the *Sun Fire V60x and Sun Fire V65x Server User Guide* for more information about the utilities provided by installing the service partition, and for instructions on installing it. If you want to install the service partition, it must be installed prior to installing Red Hat Linux 7.3 software.

Creating a PXE Install Image on the PXE Server

This procedure describes how to create a PXE install image on the same server that is your DHCP server so that it will also act as your PXE server. The PXE server provides the operating system files to your PXE client.

1. **Insert Red Hat Linux 7.3 CD 1 into your server and copy its contents to your PXE server, by typing the following commands:**

   You can use a different target directory than the `/home/pxeboot/rh7.3/` directory shown below in the examples.

   ```
   # mkdir -p /home/pxeboot/rh7.3/
   # mount /dev/cdrom /mnt/cdrom
   # cp -a /mnt/cdrom/RedHat /home/pxeboot/rh7.3/
   # cd /
   ```

2. **When the copy operation is finished, remove CD 1 from the server after you type the following command:**

   ```
   # umount /dev/cdrom
   ```

3. **Insert Red Hat Linux 7.3 CD 2 into your server and copy its contents to your PXE server, by typing the following commands:**

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/rh7.3/
# cd /
```

Note – If you are prompted about overwriting any existing files, type **y** to overwrite the files.

---

4. **Determine whether the** `anaconda-runtime` **package is already installed on the PXE server by typing the following command:**

```
# rpm -qa | grep anaconda-runtime
```

5. **If the** `anaconda-runtime` **package is not listed, install it from Red Hat Linux CD 2 by typing the following commands:**

   Use the CD 2 for the version of Red Hat Linux that is installed on the PXE server.

```
# mount /dev/cdrom /mnt/cdrom
# rpm -ivh /mnt/cdrom/RedHat/RPMS/anaconda-runtime*
```

6. **Remove CD 2 from the server after you type the following command:**

```
# umount /dev/cdrom
```

7. **Insert Red Hat Linux 7.3 CD 3 into your server and copy its contents to your PXE server, by typing the following commands:**

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/rh7.3/
# cd /
```

Note – If you are prompted about overwriting any existing files, type **y** to overwrite the files.

---

8. **Remove CD 3 from the server after you type the following command:**

```
# umount /dev/cdrom
```

9. **Insert the Sun Fire V60x and Sun Fire V65x Resource CD into the server and copy the** `aic79xx*` **RPM files to your PXE server by typing the following commands:**

```
# mount /dev/cdrom /mnt/cdrom
# cp /mnt/cdrom/drivers/redhat/7.3/aic79xx* \
/home/pxeboot/rh7.3/RedHat/RPMS/
```

10. **Edit the** `/home/pxeboot/rh7.3/RedHat/base/comps` **file to add the following entries to it (after the existing line that reads** `anacron`**).**

```
aic79xx
aic79xx-bigmem
aic79xx-smp
```

Save the file.

11. **Download any updates or patches to Red Hat Linux 7.3 software from the Red Hat Web site,** `http://www.redhat.com`**, to the** `/tmp/` **directory of your PXE server.**

12. **If you downloaded updated RPM files in Step 11, copy them to the directory shown in the following command:**

```
# cp /tmp/*.rpm /home/pxeboot/rh7.3/RedHat/RPMS/
```

13. **From the Resource CD, copy the script file** `newest.pl` **to your PXE server by typing the following command:**

```
# cp /mnt/cdrom/scripts/newest.pl \
/home/pxeboot/rh7.3/newest.pl
```

14. **Remove old kernels from the server by typing the following commands:**

```
# cd /home/pxeboot/rh7.3/RedHat/RPMS/
# rm -f kernel-2.4.18-*
# rm -f kernel-smp-2.4.18-*
# rm -f kernel-source-2.4.18-26.7.x.i386.rpm
# rm -f kernel-BOOT-2.4.18-26.7.x.i386.rpm
# rm -f kernel-bigmem-2.4.18-26.7.x.i686.rpm
# rm -f modutils-2.4.18-3.7x.i386.rpm
```

15. **From the Resource CD, copy new kernels to the server by typing the following command:**

```
# cp /mnt/cdrom/kernel/redhat/7.x/*.rpm ./
```

16. **On your PXE server, remove any old packages by typing the following commands:**

Note – The following `perl` command must be run from the `/home/pxeboot/rh7.3/RedHat/RPMS/` directory.

```
# cd /home/pxeboot/rh7.3/RedHat/RPMS/
# perl /home/pxeboot/rh7.3/newest.pl
```

17. **On your PXE server, update your disk drive list (**`hdlist`**) by typing the following commands:**

```
# /usr/lib/anaconda-runtime/genhdlist --withnumbers \
/home/pxeboot/rh7.3/
```

18. **From the Resource CD, copy the file** `initrd.img` **to your PXE server by typing the following commands:**

    # **cp /mnt/cdrom/pxeboot/redhat/7.3/initrd.img **
    /home/pxeboot/rh7.3/

19. **From the Resource CD, copy the file** `stage2.img` **to your PXE server by typing the following commands.**

    If you are prompted about overwriting an existing `stage2.img` file, select `Yes`:

    # **cp /mnt/cdrom/pxeboot/redhat/7.3/stage2.img **
    /home/pxeboot/rh7.3/RedHat/base/

20. **From the Resource CD, copy the file** `vmlinuz` **to your PXE server by typing the following commands:**

    # **cp /mnt/cdrom/pxeboot/redhat/7.3/vmlinuz **
    /home/pxeboot/rh7.3/

21. **From the Resource CD, copy the kickstart file** `ks.cfg` **to your PXE server by typing the following commands:**

    # **cp /mnt/cdrom/pxeboot/redhat/7.3/ks.cfg **
    /home/pxeboot/rh7.3/

22. **On your PXE server, edit and save the kickstart file** `/home/pxeboot/rh7.3/ks.cfg` **so that the** `nfs` **line is as follows.**

    nfs --server *n.n.n.n* **--dir /home/pxeboot/rh7.3/**

    Where *n.n.n.n* is the IP address of your PXE server.

23. **On your PXE server, modify and save the file** `/home/pxeboot/pxeboot.cfg/default` **to add the following entry to it:**

    You must type the text block from "`append ksdevice`" through "`ks.cfg`" as one continuous string with no returns.

    ```
    label rh7.3
    kernel rh7.3/vmlinuz
    append ksdevice=eth0 console=ttyS1,9600 console=tty0
    load_ramdisk=1 initrd=rh7.3/initrd.img network
    ks=nfs:n.n.n.n:/home/pxeboot/rh7.3/ks.cfg
    ```

    Where *n.n.n.n* is the IP address of your PXE server.

24. **Remove the Resource CD from the server after you type the following command:**

    # **umount /dev/cdrom**

Installing Red Hat Linux 7.3 Software From a PXE Server

This procedure describes how to initiate the request from the target Sun Fire V60 or V65x server to download the boot image file from the PXE/DHCP server and install the Red Hat Linux 7.3 software onto the target server.

Note – This procedure assumes that you have already preconfigured your network and PXE server install image as described in "Preconfiguring Your Network to Support PXE Installation" on page 65 and "Creating a PXE Install Image on the PXE Server" on page 8.

---

1. **Connect the PXE client to the same network as the PXE server, and power on the PXE client.**

   The PXE client is the target Sun Fire V60x and V65x server to which you are installing Red Hat Linux 7.3 software.

2. **When the PXE client prompts you for a network boot, press F12.**

   The PXE client connects to the PXE server and attempts to obtain an IP address from the DHCP server.

3. **Press F8 to begin downloading the PXE boot image.**

   The Red Hat Linux 7.3 software installation process begins. Follow the on-screen prompts to continue the installation.

   The installation completes on the PXE client the same as a regular CD-ROM installation.

4. **To configure the Red Hat Linux 7.3 operating system for your server, refer to the documentation available at:**

   `http://www.redhat.com/docs/manuals/linux/`

CHAPTER 2

Installing Red Hat Enterprise Linux 2.1 Software on Sun Fire V60x and V65x Servers

Note – The system administration procedures in this chapter are intended for users with at least basic Linux administration experience.

This chapter is organized into the following sections.

Installing Red Hat Enterprise Linux 2.1 Software From CDs

This section describes how to install Red Hat Enterprise Linux 2.1 software using supplemental drivers provided at: `http://www.sun.com`

This procedure has been tested with the Red Hat Enterprise Linux 2.1 distribution available for purchase from Sun Microsystems.

Note – The server's USB ports are not enabled until Linux is booted and the USB drivers are installed. A PS/2 keyboard is required for initial bootup and configuration.

Installing from CDs consists of the following procedures.

1. Download the SCSI driver disk image, SCSI driver RPMs, and Ethernet driver RPMs from the Sun Web site. See "Downloading Required Drivers and Support Files" on page 15.
2. Put the latest SCSI driver disk image onto a diskette. See "Creating a SCSI Driver Disk" on page 16.
3. Install Red Hat Enterprise Linux 2.1 software and several optional modules. See "Installing Red Hat Enterprise Linux 2.1 Software" on page 17.
4. Configure the network connection. See "Configuring the Network Connection" on page 20.

Required Items

The CD installation procedure requires the following items.

- A Sun Fire V60x or V65x server equipped with:
  - Diskette/CD-ROM combo module
  - PS/2 keyboard
- Monitor
- Red Hat Enterprise Linux Media CD Set (AS, ES, or WS version)
- Two 1.44 MB 3.5-in. diskettes (three diskettes if you create an optional repair disk)
- A second Linux server, with Internet access, and with the `dd` utility installed

Note – Do not connect a mouse for the installation.

Optional Item

- Sun Fire V60x and V65x Server Diagnostic CD (Sun part number 705-0602), if you want to install the service partition. Refer to the *Sun Fire V60x and V65x Server User Guide* (817-2023) for more information about the service partition.

Downloading Required Drivers and Support Files

This section describes how to download the required supplemental drivers and files that are needed to run Red Hat Enterprise Linux 2.1 software on the Sun Fire V60x and V65x servers.

1. **On a system running Linux, use a browser to go to the Sun download site for your server:**

   `http://www.sun.com/servers/entry/v60x/downloads.html`
   or
   `http://www.sun.com/servers/entry/v65x/downloads.html`

2. **Navigate to the download links for Red Hat Enterprise Linux 2.1 software and download the following three items to a `/tmp/` directory on the system.**
   - Adaptec SCSI Driver Disk Image file
   - Adaptec SCSI Driver RPMs tar file
   - Intel Ethernet Driver RPMs tar file

3. **Extract the contents of the two tar files into the `/tmp/` directory by typing the following command:**

   # **`tar -zxf /tmp/`***filename*

4. **Continue with "Creating a SCSI Driver Disk" on page 16.**

Creating a SCSI Driver Disk

The Red Hat Enterprise Linux 2.1 Media CD does not contain the correct driver for the SCSI controller installed on the server. An additional diskette, containing the driver source code, is required when installing the operating system onto the server's disk drive.

1. **Insert a formatted diskette to the system that you have downloaded the drivers to in "Downloading Required Drivers and Support Files" on page 15.**
2. **Log in as superuser.**
3. **Type the following command to write the disk image to the diskette:**

   # **dd if=/tmp/aic79xx-***version***.img of=/dev/fd0**

   Where *version* is the highest numeric file available, for example:

   `aic79xx-1.3.10-i686-rh72as.img`

   Note – The output device may vary depending on your server; `/dev/fd0` is typical.

4. **When the operation is complete, eject the diskette.**
5. **Continue with "Installing Red Hat Enterprise Linux 2.1 Software" on page 17.**

Installing the Service Partition (Optional)

You can optionally install the service partition from the Diagnostics CD as the first step of the Red Hat Enterprise Linux 2.1 software installation. The service partition has utilities that might be useful. Refer to the *Sun Fire V60x and Sun Fire V65x Server User Guide* for more information about the utilities provided by installing the service partition, and for instructions on installing it. If you want to install the service partition, it must be installed prior to installing Red Hat Enterprise Linux 2.1 software.

Installing Red Hat Enterprise Linux 2.1 Software

1. **Connect the keyboard and monitor to the appropriate connectors on the Sun Fire V60x or V65x server.**

Note – Do not connect a mouse for the installation.

---

2. **Power on the server and insert Red Hat Enterprise Linux 2.1 CD 1 into the CD tray before the boot process begins.**

3. **When you are prompted in the Welcome to Red Hat screen, do *not* press Enter. Instead, instruct the server to use a driver disk:**

Note – You must type this command *before* the prompt times out.

```
# linux dd
```

The installation process begins and prompts you for a driver disk, which is required by the server's SCSI controller.

4. **When you are prompted for whether you have a driver disk, select Yes.**

5. **When you are prompted for the driver disk, insert the SCSI driver diskette you created in "Creating a SCSI Driver Disk" on page 16 and select OK when you are prompted to continue.**

   This will take a few moments as the `aic79xx` driver is loaded.

6. **When prompted for whether you want to provide mouse information or choose text mode installation, choose text mode installation.**

   The installer does not search for a mouse. No mouse is required and a mouse should not be connected.

7. **Make the following selections when prompted:**
   - Select the appropriate language.
   - Select your keyboard type.
   - Select None-None for mouse type.

8. **When the dialog box about Red Hat Linux and registration appears, read it, then select OK.**

9. **When prompted for the Installation Type, choose Custom.**

10. **When prompted for disk partitioning, select Autopartition.**

    A dialog box appears, prompting you to choose whether you want to keep the existing partitions.

    Your choice depends on whether you installed the service partition earlier (see "Installing the Service Partition (Optional)" on page 16).

    - If you installed the service partition, select the option Keep all partitions and use existing free space.
    - If you did not install the service partition, choose Remove all partitions on this server.

    If you chose Remove all partitions on this server a warning about data being removed from the drives is displayed. Select Yes.

11. **On the Partitioning screen, tab to OK and press Enter.**

12. **Select a boot manager of your choice, then choose OK.**

    For example, if you choose LILO, use the arrow keys to move the cursor into the check box for LILO. Then press the spacebar to select LILO, select OK, and press Enter.

13. **Make the following selections when prompted:**
    - Select MBR for the boot loader configuration.
    - Select OK, then press Enter at the Boot Loader Configuration screen.
    - Select the default option when prompted for which operating environments to boot.
    - Select the firewall configuration that matches your preferred environment (high, medium, or no firewall).
    - Select any other additional languages you need to install.
    - Select the appropriate time zone.

14. **Enter the superuser password of your choice.**

    Note – Ensure that you remember the password. If you forget it, you may have to reinstall the operating system.

    ---

15. **Add an additional user, if necessary.**

    `admin` is a recommended user to add to the server by default. Enter all the appropriate information.

16. **You may add additional users in the User Account Setup screen, or choose OK.**

    Passwords must be at least six characters.

17. **Select the Authentication Configuration for your environment.**

18. **In the Package Group Selection setup screen, check the following options, in addition to any other software features that you want.**
    - Utilities
    - Legacy Application Support

    Use the arrow keys to move the cursor, then press the spacebar to check selections.

19. **When prompted, select the default video interface detected by the installer.**

20. **Read the dialog box about the installation log, then choose OK.**

    This installation of the RPMs will take about 10 minutes, depending on what you selected for installation. When you are prompted to switch the CD, the installer automatically ejects the CD. Insert the requested CD and press OK. You might not need CD 3, depending on which options you selected for installation.

21. **When prompted about creating a repair disk, choose whether you want to create one.**

    Note – It is good practice to make a repair disk for emergency system recovery when prompted, but it is optional.

    ---

22. **Identify the connected monitor and select the best match in the installer.**

23. **At the X-Customization screen, select Text Interface.**

24. **Select OK in the Complete dialog box.**

    Be sure to remove the repair diskette from the diskette drive, if you created one.

25. **Continue with "Configuring the Network Connection" on page 20.**

Installing the Kernel Source (Optional)

This procedure is provided for reference, but is not required.

Check to see if the kernel source is installed by typing:

```
rpm -q kernel-source
```

- If the result shows that kernel source `2.4.9-e.3` is installed, proceed to "Configuring the Network Connection" on page 20.
- If not, install the kernel source from `CD2/RedHat/RPMS/`. Type the following commands:

```
# mount /mnt/cdrom
# rpm -ivh /mnt/cdrom/RedHat/RPMS/ \
kernel-source-2.4.9-e.3.i386.rpm
# umount /mnt/cdrom
```

Configuring the Network Connection

1. **Log in as superuser on the Sun Fire V60x or V65x target server to which you are installing Red Hat Enterprise Linux 2.1 software.**
2. **Determine the kernel level installed on the target server by typing the following command:**

   ```
   # uname -a
   ```

3. **Insert a formatted diskette in the system that you have downloaded the drivers to in "Downloading Required Drivers and Support Files" on page 15.**
4. **Mount the diskette by typing the following command:**

   ```
   # mount /dev/fd0 /mnt/floppy
   ```

5. **Copy the `e1000` network drivers from the `/tmp/` location where you downloaded them to the diskette by typing the following command:**

   ```
   # cp /tmp/as-e1000/e1000-version.rpm /mnt/floppy
   ```

   Where *version* is the RPM version that corresponds to the kernel version you are using, as determined in Step 2.

6. **When the operation is complete, remove the diskette from the server after you type the following command:**

   ```
   # umount /dev/fd0
   ```

7. **Insert the diskette with the `e1000` network drivers into this target server and mount the diskette by typing the following command:**

   # **mount /dev/fd0 /mnt/floppy**

8. **Copy the `e1000` network drivers from the diskette to the target server by typing the following command:**

   # **cp /mnt/floppy/e1000-***version***.rpm /tmp/**

9. **Install the network driver RPMs by typing the following command:**

   # **rpm -Uvh --nodeps /tmp/e1000-***version***.rpm**

10. **Remove the diskette from the server after you type the following command:**

    # **umount /dev/fd0**

11. **Reboot the server.**

12. **Configure Network Devices using the Kudzu utility when prompted.**

Note – You must choose to enter the Kudzu utility when prompted.

Note – Red Hat Enterprise Linux refers to network port 2 on the back of the server as `eth0`. The network adapter for port 2 is the first adapter that you are prompted to configure. Ignore the prompt to configure a second network adapter.

---

13. **Continue with "Upgrading the Kernel" on page 27 to check for more optimal kernel upgrades available.**

Installing Red Hat Enterprise Linux 2.1 Software From a Network

This section describes how to create a PXE install image on a Linux server, and how to initiate the request from the target Sun Fire V60x and V65x server to download the image through the PXE server. The PXE server then transfers the boot image file to the target server using TFTP. This boot image file is used to boot the target server.

The tasks for installing Red Hat Enterprise Linux 2.1 software from a networked PXE server consist of the following procedures.

1. Configure your network to support PXE installation. See "Preconfiguring Your Network to Support PXE Installation" on page 65. These procedures apply for all Red Hat versions covered in this guide.
2. Create a PXE install image on a system that will be the PXE server, from which the software is downloaded to other systems (PXE clients). See "Creating a PXE Install Image on the PXE Server" on page 23.
3. Install the Red Hat software to the PXE clients from the PXE server. See "Installing Red Hat Enterprise Linux 2.1 Software From a PXE Server" on page 26.

Required Items

The PXE network installation procedure requires the following items.

- A Sun Fire V60x or V65x server equipped with:
  - Diskette/CD-ROM combo module
  - PS/2 keyboard
- Monitor
- Red Hat Enterprise Linux Media CD Set (AS, ES, or WS version)
- A Linux server configured as shown in "Preconfiguring Your Network to Support PXE Installation" on page 65.

Note – Do not connect a mouse for the installation.

Optional Item

- Sun Fire V60x and V65x Server Diagnostic CD (Sun part number 705-0602), if you want to install the service partition. Refer to the *Sun Fire V60x and V65x Server User Guide* (817-2023) for more information about the service partition.

Installing the Service Partition (Optional)

You can optionally install the service partition from the Diagnostics CD to the Sun Fire V60x or V65x server onto the Sun Fire V60x and V65x server as the first step of the Red Hat Enterprise Linux 2.1 software installation. The service partition has utilities that might be useful. Refer to the *Sun Fire V60x and Sun Fire V65x Server User Guide* for more information about the utilities provided by installing the service partition, and for instructions on installing it. If you want to install the service partition, it must be installed prior to installing Red Hat Enterprise Linux 2.1 software.

Creating a PXE Install Image on the PXE Server

This procedure describes how to create a PXE install image on the same server that is your DHCP server, so that it will also act as your PXE server. The PXE server provides the operating system files to your PXE client.

Note – Before you start this procedure, verify that your network has been configured to support PXE installation, as described in "Preconfiguring Your Network to Support PXE Installation" on page 65.

---

1. **Insert Red Hat Enterprise Linux 2.1 CD 1 into your server and copy its contents to your PXE server by typing the following commands:**

Note – You can use a different target directory than the `/home/pxeboot/SunFire_as2.1/` directory shown below. The examples in this procedure use this directory.

```
# mkdir -p /home/pxeboot/SunFire_as2.1/
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/SunFire_as2.1/
```

2. **Remove CD 1 from the server after you type the following command:**

```
# umount /dev/cdrom
```

3. **Insert Red Hat Enterprise Linux 2.1 CD 2 into your server and copy its contents to your PXE server, by typing the following commands:**

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/SunFire_as2.1/
```

Note – If you are prompted whether to overwrite any existing files, type **`y`** to overwrite the files.

---

4. **Remove CD 2 from the server after you type the following command:**

```
# umount /dev/cdrom
```

5. **Insert Red Hat Enterprise Linux 2.1 CD 3 into your server and copy its contents to your PXE server, by typing the following commands:**

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/SunFire_as2.1/
```

Note – If you are prompted whether to overwrite any existing files, type **y** to overwrite the files.

6. **Remove CD 3 from the server after you type the following command:**

   # **umount /dev/cdrom**

7. **On your PXE server, determine whether the** `anaconda-runtime` **package is already installed on the server by typing the following command:**

   # **rpm -qa | grep anaconda-runtime**

8. **If the** `anaconda-runtime` **package is not listed, install it from Red Hat Enterprise Linux CD 2 by typing the following commands:**

   Use the CD 2 for the version of Red Hat Linux that is installed on the PXE server.

   # **mount /dev/cdrom /mnt/cdrom**

   # **rpm -ivh /mnt/cdrom/RedHat/RPMS/anaconda-runtime***

9. **Remove CD 2 from the server after you type the following command:**

   # **umount /dev/cdrom**

10. **Copy the SCSI and network drivers from the temporary directory to the directory shown below:**

    # **cp /tmp/as-pxefiles/aic79xx* **
    /home/pxeboot/SunFire_as2.1/RedHat/RPMS/

    # **cp /tmp/as-pxefiles/e1000* **
    /home/pxeboot/SunFire_as2.1/RedHat/RPMS/

    The temporary directory `/tmp/as-pxefiles/` was created during the procedure in "Downloading the Required Support Files" on page 66, when you preconfigured your PXE server.

11. **Add the following entries to the** `/home/pxeboot/SunFire_as2.1/RedHat/base/comps` **file (after the existing line that reads** `anacron`**):**

    aic79xx

    aic79xx-enterprise

    aic79xx-smp

    Save the file.

12. **Extract and copy the script file** `newest.pl` **to your PXE server by typing the following commands:**

    ```
    # cd /tmp/as-pxefiles
    # tar -zxf /tmp/as-pxefiles/newest.tar.gz
    # cp /tmp/as-pxefiles/newest.pl \
    /home/pxeboot/SunFire_as2.1/newest.pl
    ```

13. **On your PXE server, run the** `newest.pl` **script to remove any old packages by typing the following commands:**

    Note – The following Perl command must be run from the `/home/pxeboot/SunFire_as2.1/RedHat/RPMS/` directory.

    ```
    # cd /home/pxeboot/SunFire_as2.1/RedHat/RPMS/
    # perl /home/pxeboot/SunFire_as2.1/newest.pl
    ```

14. **On your PXE server, run the** `genhdlist` **script to update your disk drive list (**`hdlist`**) by typing the following command:**

    ```
    # /usr/lib/anaconda-runtime/genhdlist --withnumbers \
    /home/pxeboot/SunFire_as2.1/
    ```

15. **Copy the** `initrd.img` **file to your PXE server by typing the following command:**

    ```
    # cp /tmp/as-pxefiles/initrd.img /home/pxeboot/SunFire_as2.1/
    ```

16. **Copy the** `stage2.img` **file to your PXE server by typing the following command:**

    If you are prompted whether to overwrite an existing `stage2.img` file, select Yes.

    ```
    # cp /tmp/as-pxefiles/stage2.img \
    /home/pxeboot/SunFire_as2.1/RedHat/base/
    ```

17. **Copy the** `vmlinuz` **file to your PXE server by typing the following command:**

    ```
    # cp /tmp/as-pxefiles/vmlinuz /home/pxeboot/SunFire_as2.1/
    ```

18. **Copy the kickstart file** `ks.cfg` **to your PXE server by typing the following command:**

    ```
    # cp /tmp/as-pxefiles/ks.cfg /home/pxeboot/SunFire_as2.1/
    ```

19. **On your PXE server, edit and save the kickstart file** `/home/pxeboot/SunFire_as2.1/ks.cfg` **so that the** `nfs` **line is as follows:**

    `nfs --server` *n.n.n.n* **`--dir /home/pxeboot/SunFire_as2.1/`**

    Where *n.n.n.n* is the IP address of your PXE server. Double check that the location at `--dir` is pointing to the top level of your image.

20. **On your PXE server, modify and save the file `/home/pxeboot/pxelinux.cfg/default` to add the following entry to it:**

    Note that you should type the text block from "`append ksdevice`" through "`ks.cfg`" as one continuous string with no returns.

```
default SunFire_as2.1
label SunFire_as2.1
kernel SunFire_as2.1/vmlinuz
append ksdevice=eth0 console=ttyS1,9600 console=tty0
load_ramdisk=1 initrd=SunFire_as2.1/initrd.img network
ks=nfs:n.n.n.n:/home/pxeboot/SunFire_as2.1/ks.cfg
```

    Where *n.n.n.n* is the IP address of your PXE server.

Installing Red Hat Enterprise Linux 2.1 Software From a PXE Server

This procedure describes how to initiate the request from the target Sun Fire V60x or V65x server to download the boot image file from the PXE/DHCP server and to install the Red Hat Enterprise Linux 2.1 software onto the target server.

Note – This procedure assumes that you have already preconfigured your network and PXE server install image as described in "Preconfiguring Your Network to Support PXE Installation" on page 65 and "Creating a PXE Install Image on the PXE Server" on page 23.

---

1. **Connect the PXE client to the same network as the PXE server, and power on the PXE client.**

   The PXE client is the target Sun Fire V60x and V65x server to which you are installing Red Hat Enterprise Linux 2.1 software.

2. **When the PXE client prompts you for a network boot, press the F12 key.**

   The PXE client connects to the PXE server and attempts to obtain an IP address from the DHCP server.

3. **Press the F8 key to begin the downloading of the PXE boot image.**

4. **When you are prompted at the `boot:` prompt, type in the label you gave the image during Step 20 of "Creating a PXE Install Image on the PXE Server" on page 23.**

   The Red Hat Enterprise Linux 2.1 install image downloads onto the target Sun Fire V60x or V65x server.

5. **To configure the Linux operating system for your server, refer to the manual that is shipped with your Red Hat Enterprise Linux 2.1 media kit.**
6. **Continue with "Upgrading the Kernel" on page 27.**

Upgrading the Kernel

The kernel that ships with Red Hat Enterprise Linux 2.1 software is not as optimally tuned as a later kernel that is provided through an update.

- The kernel installed by default for Red Hat Enterprise Linux is `2.4.9-e.3`.
- The kernel that works best with the server is `2.4.9-e.12` or later. To obtain this kernel, you must use the Red Hat Network to access the upgrade.

Note – The updated kernel is obtained by running the up2date program provided with the distribution. You must register and set up the up2date program before proceeding with these instructions. Refer to the Red Hat manual included with your Red Hat Enterprise Linux 2.1 media kit for information about setting up the up2date program. When running up2date, select the kernel packages on the available package updates section. After up2date has completed, reboot the server.

Once the new kernel is installed, the SCSI driver and Ethernet driver should also be reinstalled, because the versions that ship with the `e.12` kernel do not provide optimal system performance. See "SCSI and Network Driver Upgrades" on page 27.

SCSI and Network Driver Upgrades

The latest kernel update might downgrade the drivers that were installed during the initial installation of the operating environment. Updating the drivers ensures proper system performance.

You can use the drivers that you already downloaded, as described in "Downloading Required Drivers and Support Files" on page 15. Use the procedure in "Copying Driver Upgrade Files" on page 27 to copy the RPMs to the target server.

Copying Driver Upgrade Files

1. **Insert a formatted diskette to the system that you have downloaded the drivers to in "Downloading Required Drivers and Support Files" on page 15.**
2. **Log in as superuser.**

3. **Mount the diskette by typing the following command:**

   # **mount /dev/fd0 /mnt/floppy/**

4. **Copy the drivers that correspond to your new kernel version onto the diskette by typing the following commands:**

   # **cp /tmp/aic79xx-***version***.rpm /mnt/floppy/**

   # **cp /tmp/e1000-***version***.rpm /mnt/floppy/**

   Copy the RPMs that correspond to your new kernel version. For example, if you are running the `e.12` kernel, copy the following SCSI drivers and network drivers (these examples are current at the time of this publishing):

   - `aic79xx-1.3.10_2.4.9_e.12-rh21as_1.i686.rpm`
   - `aic79xx-enterprise-1.3.10_2.4.9_e.12-rh21as_1.i686.rpm`
   - `aic79xx-smp-1.3.10_2.4.9_e.12-rh21as_1.i686.rpm`
   - `e1000-4.4.19_2.4.9_e.12-rh21as_1.i686.rpm`
   - `e1000-enterprise-4.4.19_2.4.9_e.12-rh21as_1.i686.rpm`
   - `e1000-smp-4.4.19_2.4.9_e.12-rh21as_1.i686.rpm`

5. **When the operation is complete, remove the diskette from the server after you type the following command:**

   # **umount /dev/fd0**

6. **Log in as superuser on the target server.**

7. **Insert the diskette with the drivers into the target server and mount the diskette by typing the following command:**

   # **mount /dev/fd0 /mnt/floppy**

8. **Create a directory on the target server by typing the following command:**

   # **mkdir /tmp/e12/**

9. **Copy the RPMs from the diskette to the target server by typing the following command:**

   # **cp /mnt/floppy/*.rpm /tmp/e12/**

10. **When the operation is complete, remove the diskette from the server after you type the following command:**

    # **umount /dev/fd0**

11. **Change directories by typing the following command:**

    # **cd /tmp/e12/**

12. **Install the drivers to the target server with the following commands.**

    - To install SCSI drivers, type the following command:

      # **rpm -Uvh aic79xx***

- To install network drivers, type the following command:

  # **rpm -Uvh e1000***

13. **Reboot the target server by typing the following command:**

    # **reboot**

CHAPTER 3

Installing Red Hat Linux 8.0 Software on Sun Fire V60x and V65x Servers

Note – The system administration procedures in this chapter are intended for users with at least basic Linux administration experience.

This chapter is organized into the following sections.

Installing Red Hat Linux 8.0 Software From CDs

This section describes how to install Red Hat Linux 8.0 software using supplemental drivers provided at: `http://www.sun.com`

This procedure has been tested using the ISO distribution of the software that is available from Red Hat at the following site:

`ftp://ftp.redhat.com/pub/redhat/linux/8.0/en/iso/i386/`

If that site is busy or too slow, use a mirror that is closer to you from Red Hat's mirror list, which is available at the following address:

`http://www.redhat.com/mirrors`

Note – The server's USB ports are not enabled until Linux is booted and the USB drivers are installed. A PS/2 keyboard is required for initial bootup and configuration.

Installing from CD consists of the following procedures.

1. Download the SCSI driver disk image, SCSI driver RPMs, and Ethernet driver RPMs from the Sun Web site. See "Downloading Required Drivers and Support Files" on page 33.
2. Put the latest SCSI driver disk image onto a diskette. See "Creating a SCSI Driver Disk" on page 34.
3. Install Red Hat Linux 8.0 and several optional modules. See "Installing Red Hat Linux 8.0 Software" on page 35.
4. Configure the network connection. See "Configuring the Network Connection" on page 39.

Required Items

The CD installation procedure requires the following items.

- A Sun Fire V60x or V65x server equipped with:
  - Diskette/CD-ROM combo module
  - PS/2 keyboard

- Monitor
- Red Hat Linux 8.0 Media CD Set
- Two 1.44 MB 3.5-in. diskettes
- A second Linux server, with Internet access, and with the `dd` utility installed

---

Note – Do not connect a mouse for the installation.

Optional Item

- Sun Fire V60x and V65x Server Diagnostic CD (Sun part number 705-0602), if you want to install the service partition. Refer to the *Sun Fire V60x and V65x Server User Guide* (817-2023) for more information about the service partition.

Downloading Required Drivers and Support Files

This section describes how to download the required supplemental drivers and files that are needed to run Red Hat Linux 8.0 software on the Sun Fire V60x and V65x servers.

1. **On a system running Linux, use a browser to go to the Sun download site for Sun Fire V60x and V65x servers:**

   `http://www.sun.com/servers/entry/v60x/downloads.html`
   or
   `http://www.sun.com/servers/entry/v65x/downloads.html`

2. **Navigate to the download links for Red Hat Linux 8.0 software and download the following three items to a `/tmp/` directory on the system:**
   - Adaptec SCSI Driver Disk Image file
   - Adaptec SCSI Driver RPMs tar file
   - Intel Ethernet Driver RPMs tar file

3. **Extract the contents of the two tar files into the `/tmp/` directory by typing the following command:**

   `# tar -zxf /tmp/`*filename*

4. **Continue with "Creating a SCSI Driver Disk" on page 34.**

Creating a SCSI Driver Disk

The Red Hat Linux 8.0 Media CD does not contain the correct driver for the SCSI controller installed on the server. An additional diskette, containing the driver source code, is required when installing the operating system onto the server's disk drive.

1. **Insert a formatted diskette unto the system that you have downloaded the drivers to in "Downloading Required Drivers and Support Files" on page 33.**
2. **Log in as superuser.**
3. **Type the following command to write the disk image to the diskette:**

   # **dd if=/tmp/aic79xx-***version***.img of=/dev/fd0**

   Where *version* is the highest numeric file available, for example:

   `aic79xx-1.3.10-i686-rh80.img`

   Note – The output device may vary depending on your server; `/dev/fd0` is typical.

4. **When the operation is complete, eject the diskette.**
5. **Continue with "Installing Red Hat Linux 8.0 Software" on page 35.**

Installing the Service Partition (Optional)

You can optionally install the service partition from the Diagnostics CD as the first step of the Red Hat Linux 8.0 software installation. The service partition has utilities that might be useful. Refer to the *Sun Fire V60x and Sun Fire V65x Server User Guide* for more information about the utilities provided by installing the service partition, and for instructions on installing it. If you want to install the service partition, it must be installed prior to installing Red Hat Linux 8.0 software.

Installing Red Hat Linux 8.0 Software

1. **Connect the keyboard and monitor to the appropriate connectors on the Sun Fire V60x or V65x target server.**

Note – Do not connect a mouse for the installation.

---

2. **Power on the server and insert Red Hat Linux 8.0 CD 1 into the CD tray before the boot process begins.**

Note – You must complete the following step *before* the prompt times out.

---

3. **When you are prompted in the initial Red Hat screen, do *not* press Enter. Instead, instruct the server to use a driver disk by typing the following at the** `boot:` **prompt.**

   ```
   # linux dd
   ```

   The installation process begins and prompts you for a driver disk, which is required by the server's SCSI controller.

4. **When you are prompted for whether you have a driver disk, select Yes.**

5. **When you are prompted for the driver disk, insert the SCSI driver diskette you created in "Creating a SCSI Driver Disk" on page 34 and select OK when you are prompted to continue.**

   This will take a few moments as the `aic79xx` driver is loaded.

6. **After the driver is loaded and the installer prompts you to test the CD media, choose Skip or OK, depending on your preference.**

7. **When prompted for whether you want to provide mouse information or choose text mode installation, choose Use text mode.**

   The installer does not search for a mouse. No mouse is required and a mouse should not be connected.

8. **Read the Welcome screen and choose OK to continue.**

9. **Make the following selections when prompted:**
   - Select the appropriate language
   - Select the appropriate keyboard type
   - Select No-mouse for mouse type

10. **When prompted for the Installation Type, choose Custom or the appropriate type for your system.**

11. **When prompted for disk partitioning, select Autopartition.**

    A dialog box appears, prompting you to choose whether you want to keep the existing partitions.

    Your choice depends on whether you installed the service partition earlier. See "Installing the Service Partition (Optional)" on page 34.

    - If you installed the service partition, select the option Keep all partitions and use existing free space.
    - If you did not install the service partition, choose Remove all partitions on this server.

    If you chose Remove all partitions on this server, a warning about data being removed from the drives is displayed. Select Yes.

12. **On the Partitioning screen, tab to OK and press Enter.**

13. **Select a boot manager of your choice, then choose OK.**

    For example, if you choose LILO, use the arrow keys to move the cursor into the check box for LILO. Then press the spacebar to select LILO, select OK, and press Enter.

14. **Add any additional arguments that you want to pass to the kernel in the Boot Loader Configuration screen.**

    Most users can choose OK.

15. **If prompted, you can choose to add a password to the boot loader.**

    The boot loader configuration attempts to identify what other operating systems exist on the system.

16. **Edit the labels for the operating system or just choose OK.**

17. **Select MBR for the boot loader configuration.**

    A network configuration screen for eth0 displays.

18. **If you are using the eth0 port for network access, select the Activate on Boot option and do one of the following:**

    - If you are using DHCP, make sure the DHCP option is selected and choose OK.
    - If you are not using DHCP, you will need to fill out the network information for the eth0 port, then choose OK.

    A network configuration screen for eth1 displays.

19. **If you are using the eth1 port for network access, select the Activate on Boot option and do one of the following:**
    - If you are using DHCP, make sure the DHCP option is selected and choose OK.
    - If you are not using DHCP, you will need to fill out the network information for the eth1 port, then choose OK.
20. **Make the following selections when prompted:**
    - Select the firewall configuration that matches your preferred environment (high, medium, or no firewall).
    - Select any other additional languages you need to install.
    - Select the appropriate time zone.
21. **Enter the superuser password of your choice.**

Note – Make sure that you remember the password. If you forget the password, you might need to reinstall the operating system.

---

22. **Add an additional user, if necessary.**

    `admin` is a recommended user to add to the server by default. Enter all the appropriate information.
23. **Add additional users in the User Account Setup screen, or choose OK.**

    Passwords must be at least six characters.
24. **Select the Authentication Configuration for your environment.**

    This screen will only display if you are doing a custom installation. If you don't know what to enter for authentication configuration, choose the defaults.
25. **In the Package Group Selection setup screen, add and remove package groups if you have different system needs than the default.**

    Use the arrow keys to move the cursor, then press Spacebar to check selections.

Note – If you want to install or update the kernel source at a later time, you will need to install the Development Tools package in this screen. This package contains the gcc compiler, which is necessary for compiling the kernel source.

---

26. **Read the dialog box about the installation log, then choose OK.**

    This installation of the RPMs takes about 10 minutes, depending on what you selected for installation. When you are prompted to switch the CD, the installer automatically ejects the CD. Insert the requested CD and press OK. You might not need CD 3, depending on which options you selected for installation.

27. **When prompted about creating a repair disk, choose not to create one.**

Note – The Red Hat Linux 8.0 software image, including the drivers needed to support the Sun Fire V60x and V65x server, is too large to fit onto a standard diskette.

---

28. **When prompted, select the default video interface detected by the installer.**
29. **Identify the connected monitor and select the best match in the installer. Choose text for the default login type.**
30. **Connect the Sun Fire V60x or V65x server to a DHCP server if you choose DHCP for your network interface.**

    Make sure to connect the Ethernet cable(s) to the port(s) that you set up in Step 18 or Step 19.

31. **Select OK in the Complete dialog box.**

    The system automatically reboots.

32. **Remove any diskettes that are in the diskette drive before the system begins rebooting.**
33. **Continue with "Configuring the Network Connection" on page 39.**

Installing the Kernel Source (Optional)

In order to build the Ethernet and SCSI drivers from source, the kernel-source RPM for the current kernel version must be installed. Also, the gcc compiler needs to be installed in order to build the Ethernet and SCSI drivers from source. (See Step 25 in "Installing Red Hat Linux 8.0 Software" on page 35).

If you are using the kernel version that is part of the Red Hat Linux 8.0 media kit, check to see if the kernel source is installed by typing:

```
# rpm -q kernel-source
```

- If the result shows that kernel source `2.4.18-14` is installed, proceed to "Configuring the Network Connection" on page 39.
- If not, install the kernel source from `CD2/RedHat/RPMS/`. Type the following commands:

```
# mount /mnt/cdrom
# rpm -ivh /mnt/cdrom/RedHat/RPMS/ \
kernel-source-2.4.18-14.i386.rpm
# umount /mnt/cdrom
```

If you have updated your kernel from what is available on the Red Hat Linux 8.0 CD media, you will need to download the kernel-source RPM from the Red Hat Web site that corresponds to the updated kernel.

Configuring the Network Connection

1. **Log in as superuser on the target Sun Fire V60x or V65x target server to which you are installing Red Hat Linux 8.0 software.**
2. **Determine the kernel level installed on the target server by typing the following command:**

   # **uname -a**
3. **Insert the formatted diskette into the system that you have downloaded the drivers to.**

   See "Downloading Required Drivers and Support Files" on page 33.
4. **Mount the diskette by typing the following command:**

   # **mount /dev/fd0 /mnt/floppy**
5. **Copy the `e1000` network drivers from the `/tmp/` location where you downloaded them to the diskette by typing the following command:**

   # **cp /tmp/e1000-***version***.rpm /mnt/floppy**

   Where *version* is the RPM version that corresponds to the kernel version you are using, as determined in Step 2.
6. **When the operation is complete, remove the diskette from the drive after you type the following command:**

   # **umount /dev/fd0**
7. **Insert the diskette with the `e1000` network drivers into this target server and mount the diskette by typing the following command:**

   # **mount /dev/fd0 /mnt/floppy**
8. **Copy the `e1000` network drivers from the diskette to the target server by typing the following command:**

   # **cp /mnt/floppy/e1000* /tmp/**
9. **Install the network driver RPMs by typing the following command:**

   # **rpm -Uvh --nodeps /tmp/e1000***
10. **Remove the diskette from the drive after you type the following command:**

    # **umount /dev/fd0**

11. **Reboot the server.**
12. **Log in as superuser.**
13. **Open the Network Configuration screen as follows:**
    - To configure eth0 (network port labelled 2), type:

    # **netconfig**

    - To configure eth1 (network port labelled 1), type:

    # **netconfig --device=eth1**
14. **In the Network Configuration screen, select Yes.**
15. **In the Configure TCP/IP screen, do one of the following:**
    - If you are using DHCP, select Use dynamic IP configuration (BOOTP/DHCP).
    - If you are not using DHCP, fill in the network information for the appropriate port.
16. **Exit out of the Network Configuration tool.**
17. **Restart the network by typing:**

    # **sh /etc/init.d/network restart**

Installing Red Hat Linux 8.0 Software From a Network

This section describes how to create a PXE install image on a Linux server and initiate the request from the target Sun Fire V60x and V65x server to download the image through the PXE server. The PXE server then transfers the boot image file to the target server using TFTP. This boot image file is used to boot the target server.

The tasks for installing Red Hat Linux 8.0 software from a networked PXE server consist of the following procedures.

1. Configure your network to support PXE installation. See "Preconfiguring Your Network to Support PXE Installation" on page 65. These procedures apply for all Red Hat versions covered in this guide.
2. Create a PXE install image on a system that will be the PXE server, from which the software is downloaded to other systems (PXE clients). See "Creating a PXE Install Image on the PXE Server" on page 41.

3. Install the Red Hat software to the PXE clients from the PXE server. See "Installing Red Hat Linux 8.0 Software From a PXE Server" on page 45.

Required Items

The PXE network installation procedure requires the following items.

- A Sun Fire V60x or V65x server equipped with:
  - Diskette/CD-ROM combo module
  - PS/2 keyboard
- A Linux server configured as shown in "Preconfiguring Your Network to Support PXE Installation" on page 65.
- Monitor
- Red Hat Linux 8.0 Media CD Set

Note – Do not connect a mouse for the installation.

Optional Item

- Sun Fire V60x and V65x Server Diagnostic CD (Sun part number 705-0602), if you want to install the service partition. Refer to the *Sun Fire V60x and V65x Server User Guide* (817-2023) for more information about the service partition.

Installing the Service Partition (Optional)

You can optionally install the service partition from the Diagnostics CD onto the Sun Fire V60x or V65x server as the first step of the Red Hat Linux 8.0 software installation. The service partition has utilities that might be useful. Refer to the *Sun Fire V60x and Sun Fire V65x Server User Guide* for more information about the utilities provided by installing the service partition, and for instructions on installing it. If you want to install the service partition, it must be installed prior to installing Red Hat Linux 8.0 software.

Creating a PXE Install Image on the PXE Server

Note – Before you start this procedure, verify that your network has been configured to support PXE installation, as described in "Preconfiguring Your Network to Support PXE Installation" on page 65.

This procedure describes how to create a PXE install image on the same system that is your DHCP server, so that it will also act as your PXE server. The PXE server provides the operating system files to your PXE client.

1. **Insert Red Hat Linux 8.0 CD 1 into your server and copy its contents to your PXE server, by typing the following commands:**

Note – You can use a different target directory than the `/home/pxeboot/SunFire_8.0/` directory shown below. The examples in this procedure use this directory.

```
# mkdir -p /home/pxeboot/SunFire_8.0/
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/SunFire_8.0/
```

2. **Remove CD 1 from the server after you type the following command:**

```
# umount /dev/cdrom
```

3. **Insert Red Hat Linux 8.0 CD 2 into your server and copy its contents to your PXE server, by typing the following commands:**

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/SunFire_8.0/
```

Note – If you are prompted whether to overwrite any existing files, type **y** to overwrite the files.

---

4. **Remove CD 2 from the server after you type the following command:**

```
# umount /dev/cdrom
```

5. **Insert Red Hat Linux 8.0 CD 3 into your server and copy its contents to your PXE server, by typing the following commands:**

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/SunFire_8.0/
```

Note – If you are prompted whether to overwrite any existing files, type **y** to overwrite the files.

---

6. **Remove CD 3 from the server after you type the following command:**

```
# umount /dev/cdrom
```

7. **On your PXE server, determine whether the `anaconda-runtime` package is already installed on the server by typing the following command:**

   ```
   # rpm -qa | grep anaconda-runtime
   ```

   If the `anaconda-runtime` package is listed, go to Step 8. If the package is not listed, perform the following steps:

   a. **Install the package from Red Hat Linux CD 2 by typing the following commands:**

      Use the CD 2 for the version of Red Hat Linux that is installed on the PXE server.

      ```
      # mount /dev/cdrom /mnt/cdrom
      # rpm -ivh /mnt/cdrom/RedHat/RPMS/anaconda-runtime*
      ```

   b. **Remove CD 2 from the server after you type the following command:**

      ```
      # umount /dev/cdrom
      ```

8. **Copy the SCSI and network drivers from the temporary directory to the directory shown below:**

   ```
   # cp /tmp/rh80-pxefiles/aic79xx* \
   /home/pxeboot/SunFire_8.0/RedHat/RPMS/
   # cp /tmp/rh80-pxefiles/e1000* \
   /home/pxeboot/SunFire_8.0/RedHat/RPMS/
   ```

   The temporary directory `/tmp/rh80-pxefiles/` was created during the procedure in "Downloading the Required Support Files" on page 66, when you preconfigured your PXE server.

9. **Check for and download any updates or patches to Red Hat 8.0 software from the Red Hat Web site, `http://www.redhat.com`**

   Download any files to the `/tmp/` directory of your PXE server.

10. **If you downloaded updated RPM files from the previous step, copy them to the directory where you have chosen to place your PXE image.**

    In this example, it would be:

    ```
    # cp /tmp/*.rpm /home/pxeboot/SunFire_8.0/RedHat/RPMS/
    ```

11. **Copy the script file `newest.pl` from the temporary directory to the directory shown below:**

    ```
    # cp /tmp/rh80-pxefiles/newest.pl \
    /home/pxeboot/SunFire_8.0/newest.pl
    ```

12. **On your PXE server, run the `newest.pl` script to remove any old packages by typing the following commands:**

    # **cd /home/pxeboot/SunFire_8.0/RedHat/RPMS/**

    # **perl /home/pxeboot/SunFire_8.0/newest.pl**

    You might see warnings about signatures. This is normal.

13. **Copy the `initrd.img` file from the temporary directory to the following directory:**

    # **cp /tmp/rh80-pxefiles/initrd.img /home/pxeboot/SunFire_8.0/**

14. **Copy the `stage2.img` file from the temporary directory to the following directory:**

    # **cp /tmp/rh80-pxefiles/stage2.img **
    /home/pxeboot/SunFire_8.0/RedHat/base/

15. **Copy the `vmlinuz` file from the temporary directory to the following directory:**

    # **cp /tmp/rh80-pxefiles/vmlinuz /home/pxeboot/SunFire_8.0/**

16. **Copy the kickstart file `ks.cfg` from the temporary directory to the following directory:**

    # **cp /tmp/rh80-pxefiles/ks.cfg /home/pxeboot/SunFire_8.0/**

17. **On your PXE server, edit and save the kickstart file `/home/pxeboot/SunFire_8.0/ks.cfg` so that the `nfs` line is as follows:**

    nfs --server *n.n.n.n* **--dir /home/pxeboot/SunFire_8.0/**

    Where *n.n.n.n* is the IP address of your PXE server. Ensure that the location at `--dir` is pointing to the top level of your image.

18. **Run the following command so that the installation knows about the SCSI and Network drivers:**

    # **/usr/lib/anaconda-runtime/genhdlist /home/pxeboot/SunFire_8.0/**

    This command generates the `hdlist` file. This is accomplished through the program `genhdlist`.

19. **On your PXE server, modify and save the file `/home/pxeboot/pxelinux.cfg/default` by adding the following entry to it:**

    Note that you should type the text block from "`append ksdevice`" through "`ks.cfg`" as one continuous string with no returns.

Note – If the first three lines are already in the file, you do not need to add these lines. The remaining lines must added to the default file.

```
display motd
prompt 1
default SunFire_8.0

label SunFire_8.0
kernel SunFire_8.0/vmlinuz
append ksdevice=eth0 console=ttyS1,9600 console=tty0
load_ramdisk=1 initrd=SunFire_8.0/initrd.img network
ks=nfs:n.n.n.n:/home/pxeboot/SunFire_8.0/ks.cfg
```

Where *n.n.n.n* is the IP address of your PXE server.

20. **On your PXE server, modify and save the file** `/home/pxeboot/motd` **by adding the following entry to it:**

```
PXE Server:
Please report any problems with these images to PXE SERVER
ADMIN <admin@domain.com>

Current Default is: SunFire_8.0

Builds:
SunFire_8.0 - RH 8.0 2.4.18-14 Kernel, 1.3.10 aic, 4.4.19_4
e1000
```

Installing Red Hat Linux 8.0 Software From a PXE Server

This procedure describes how to initiate the request from the target Sun Fire V60x or V65x server to download the boot image file from the PXE/DHCP server and install the Red Hat Linux 8.0 software onto the target server.

Note – This procedure assumes that you have already preconfigured your network and PXE server install image as described in "Preconfiguring Your Network to Support PXE Installation" on page 65 and "Creating a PXE Install Image on the PXE Server" on page 41.

1. **Connect the PXE client to the same network as the PXE server, and power on the PXE client.**

   The PXE server is the target server to which you are installing Red Hat Linux 8.0 software.

2. **When the PXE client prompts you for a network boot, press the F12 key.**

   The PXE client connects to the PXE server and attempts to obtain an IP address from the DHCP server.

3. **Press the F8 key.**

   The text that you used for the label value in Step 6 of "Installing and Configuring the `neopxe` Boot Server Daemon" on page 70 displays.

4. **Select the displayed Linux option.**

5. **When you are prompted at the `boot:` prompt, press Enter.**

   The Red Hat Linux 8.0 install image downloads onto the target Sun Fire V60x or V65x server.

6. **To configure the Red Hat 8.0 software operating system for your server, refer to the documentation available at the following site:**

   `http://www.redhat.com/docs/manuals/linux`

7. **Continue with "SCSI and Network Driver Upgrades" on page 46, if needed.**

SCSI and Network Driver Upgrades

The latest kernel update might downgrade the drivers that were installed during the initial installation of the operating environment. Updating the drivers ensures proper system performance.

You can use the drivers that you already downloaded, as described in "Downloading Required Drivers and Support Files" on page 33. Use the procedure in "Copying Driver Upgrade Files" on page 46 to copy the RPMs to the target server.

Copying Driver Upgrade Files

1. **Insert a formatted diskette to the system that you have downloaded the drivers to in "Downloading Required Drivers and Support Files" on page 33.**

2. **Log in as superuser.**

3. **Mount the diskette by typing the following command:**

   ```
   # mount /dev/fd0 /mnt/floppy/
   ```

4. **Copy the drivers that correspond to your new kernel version onto the diskette by typing the following commands:**

   # **cp /tmp/aic79xx-***version***.rpm /mnt/floppy/**

   # **cp /tmp/e1000-***version***.rpm /mnt/floppy/**

   You need to copy the following RPM files that correspond to your kernel version:

   - aic79xx-*version*.rpm
   - aic79xx-bigmem-*version*.rpm
   - aic79xx-smp-*version*.rpm
   - e1000-*version*.rpm
   - e1000-bigmem-*version*.rpm
   - e1000-smp-*version*.rpm

   Where *version* corresponds the driver version, kernel version, and operating system version.

   For example with the e1000-bigmem version 4.4.19, kernel version 2.4.18-14, and Red Hat Linux 8.0 software, the driver name would be:

   e1000-bigmem-4.4.19_2.4.18_14-rh80_4.i686.rpm

5. **When the operation is complete, remove the diskette from the server after you type the following command:**

   # **umount /dev/fd0**

6. **Log in as superuser onto the target server.**

7. **Insert the diskette with the drivers into the target server and mount the diskette by typing the following command:**

   # **mount /dev/fd0 /mnt/floppy**

8. **Create a directory on the target server by typing the following command:**

   # **mkdir /tmp/**

9. **Copy the RPMs from the diskette to the target server by typing the following command:**

   # **cp /mnt/floppy/*.rpm /tmp/**

10. **When the operation is complete, remove the diskette from the server after you type the following command:**

    # **umount /dev/fd0**

11. **Change directories by typing the following command:**

    # **cd /tmp/**

12. **Install the drivers to the target server with the following commands:**
    - To install SCSI drivers, type the following command:

      # **rpm -Uvh aic79xx***
    - To install network drivers, type the following command:

      # **rpm -Uvh e1000***
13. **Reboot the target server by typing the following command:**

    # **reboot**

CHAPTER 4

Installing Red Hat Linux 9 Software on Sun Fire V60x and V65x Servers

Note – The system administration procedures in this chapter are intended for users with at least basic Linux administration experience.

This chapter is organized into the following sections.

Installing Red Hat Linux 9 Software From CDs

This section describes how to install Red Hat Linux 9 software using supplemental drivers provided at: `http://www.sun.com`

This procedure has been tested using the ISO distribution of the software that is available from Red Hat's ftp site at the following location:

`ftp://ftp.redhat.com/pub/redhat/linux/9/en/iso/i386/`

If that site is busy or too slow, use a mirror that is closer to you from Red Hat's mirror list, which is available at the following address:

`http://www.redhat.com/mirrors`

Note – The server's USB ports are not enabled until Linux is booted and the USB drivers are installed. A PS/2 keyboard is required for initial bootup and configuration.

Installing from CD consists of the following procedures.

1. Install Red Hat Linux 9 and several optional modules. See "Installing Red Hat Linux 9 Software" on page 51.
2. Download the SCSI driver RPMs from the Sun Web site and update the SCSI drivers. See "Downloading and Updating Required Drivers" on page 55
3. Configure the network connection. See "Configuring the Network Connection" on page 56.

Required Items

The CD installation procedure requires the following items.

- A Sun Fire V60x or V65x server equipped with:
  - Diskette/CD-ROM combo module
  - PS/2 keyboard
- Monitor
- Red Hat Linux 9 Media CD Set
- One 1.44 MB 3.5-in. diskette if you want to create a repair diskette

- (Optional) A second Linux server, with Internet access. This second server is needed to download SCSI drivers if the Sun Fire V60x or V65x server is not set up with Internet access.

Note – Do not connect a mouse for the installation.

Optional Item

- Sun Fire V60x and V65x Server Diagnostic CD (Sun part number 705-0602), if you want to install the service partition. Refer to the *Sun Fire V60x and V65x Server User Guide* (817-2023) for more information about the service partition.

Installing the Service Partition (Optional)

You can optionally install the service partition from the Diagnostics CD as the first step of the Red Hat Linux 9 software installation. The service partition has utilities that might be useful. Refer to the *Sun Fire V60x and Sun Fire V65x Server User Guide* for more information about the utilities provided by installing the service partition, and for instructions on installing it. If you want to install the service partition, it must be installed prior to installing Red Hat Linux 9 software.

Installing Red Hat Linux 9 Software

1. **Connect the keyboard and monitor to the appropriate connectors on the Sun Fire V60x or V65x target server.**

Note – Do not connect a mouse for the installation.

---

2. **Power on the server and insert Red Hat Linux 9 CD 1 into the CD tray before the boot process begins.**

Note – You must complete the following step *before* the prompt times out.

---

3. **When you are prompted in the initial Red Hat screen, do *not* press Enter. Instead, instruct the installer to use text mode by typing the following at the** `boot:` **prompt.**

   `boot:` **`linux text`**

4. **After the SCSI driver is loaded, and the installer prompts you to test the CD media, choose Skip or OK, depending on your preference.**

5. **Read the Welcome screen and choose OK to continue.**

6. **Make the following selections when prompted:**
   - Select the appropriate language
   - Select the appropriate keyboard type
   - Select No-mouse for mouse type

7. **If you already have a version of Red Hat installed on your server, you will be prompted to reinstall the operating system or upgrade the operating system.**
   - If you do not have Red Hat already installed on your system, you will not see this prompt. You can proceed to Step 8.
   - If you already have a version of Red Hat installed on your server and wish to continue a new installation of Red Hat Linux 9 software, choose the option to reinstall the operating system, then proceed to Step 8.
   - If you wish to upgrade the operating system rather than to install a new version, refer to the Red Hat Linux 9 installation instructions at `www.redhat.com`

8. **When prompted for the Installation Type, choose Custom or the appropriate type for your system.**

9. **When prompted for disk partitioning in the Disk Partitioning Setup screen, select Autopartition.**

   The Auto Partitioning dialog box appears, prompting you to choose whether you want to keep the existing partitions.

   Your choice depends on whether you installed the service partition earlier. See "Installing the Service Partition (Optional)" on page 51.
   - If you installed the service partition, select the option Keep all partitions and use existing free space.
   - If you did not install the service partition, choose Remove all partitions on this system.

   If you chose Remove all partitions on this system, a warning about data being removed from the drives is displayed. Select Yes.

10. **In the Partitioning screen, tab to OK and press Enter.**

11. **In the first Boot Loader Configuration screen, select a boot manager of your choice, then choose OK.**

    For example, if you choose LILO, use the arrow keys to move the cursor into the check box for LILO. Then press the spacebar to select LILO, select OK, and press Enter.

12. **In the second Boot Loader Configuration screen, add any additional arguments that you want to pass to the kernel or choose OK.**

13. **If prompted, you can choose to add a password to the boot loader.**

    The boot loader configuration attempts to identify what other operating systems exist on the system.

14. **In the third Boot Loader Configuration screen, edit the labels for the operating system or just choose OK.**

15. **In the fourth Boot Loader Configuration screen, select Master Boot Record (MBR) for the boot loader configuration.**

    A network configuration screen for eth0 displays.

16. **If you are using the eth0 port for network access, select the Activate on Boot option and take one of the following actions:**

    - If you are using DHCP, ensure that the bootp/dhcp option is selected and choose OK.
    - If you are not using DHCP, fill out the network information for the eth0 port, then choose OK.

    A network configuration screen for eth1 displays.

17. **If you are using the eth1 port for network access, select the Activate on Boot option and take one of the following actions:**

    - If you are using DHCP, ensure that the bootp/dhcp option is selected and choose OK.
    - If you are not using DHCP, fill out the network information for the eth1 port, then choose OK.

18. **Make the following selections when prompted:**

    - Select the firewall configuration that matches your preferred environment (high, medium, or no firewall).
    - Select any other additional languages you need to install.
    - Select the appropriate time zone.

19. **Enter the superuser password of your choice.**

    Note – Ensure that you remember the password. If you forget it, you may have to reinstall the operating system.

    ---

20. **Select the Authentication Configuration for your environment.**

    This screen will only display if you are doing a custom installation. If you don't know what to enter for authentication configuration, choose the defaults.

21. **In the Package Group Selection setup screen, add and remove package groups if you have different system needs than the default.**

    Use the arrow keys to move the cursor, then press the Spacebar to check selections.

Note – If you want to install or update the kernel source at a later time, you will need to install the Development Tools package in this screen. This package contains the gcc compiler, which is necessary for compiling the kernel source.

---

22. **Read the dialog box about the installation log, then choose OK.**

    This installation of the RPMs takes about 10 minutes, depending on what you selected for installation. When you are prompted to switch the CD, the installer automatically ejects the CD. Insert the requested CD and press OK.

    You might not need CD 3, depending on which options you selected for installation.

23. **When prompted to create a boot diskette, insert a diskette into the drive and choose Yes.**

    Follow the instructions on the screen to create the boot diskette.

24. **If prompted, select the default video interface detected by the installer.**

25. **If prompted, identify the connected monitor and select the best match in the installer. Choose text for the default login type.**

26. **If prompted, select the resolution and color depth that matches the requirements of the X configuration.**

27. **Connect the Sun Fire V60x or V65x server to a DHCP server, if you choose DHCP for your network interface.**

    Connect the Ethernet cable(s) to the port(s) that you set up in Step 16 or Step 17.

28. **Remove any diskettes that are in the diskette drive before the system begins rebooting.**

29. **Select OK in the Complete dialog box.**

    The system automatically reboots.

30. **Continue with "Downloading and Updating Required Drivers" on page 55.**

Downloading and Updating Required Drivers

This section describes how to download and update the server with the required supplemental drivers that are needed to run Red Hat Linux 9 software on the Sun Fire V60x and V65x servers.

This procedure assumes that you have configured the server to have Internet access. If the server does not have Internet access, download the files to a computer that does have Internet access and copy the files to the Sun Fire V60x or V65x server.

1. **On the newly installed system, use a browser to go to the Sun download site for Sun Fire V60x and V65x servers:**

   `http://www.sun.com/servers/entry/v60x/downloads.html`
   or
   `http://www.sun.com/servers/entry/v65x/downloads.html`

2. **Navigate to the download links for Red Hat Linux 9 software and download the Adaptec SCSI Driver RPMs tar file to a `/tmp/` directory on the system.**

3. **Extract the contents of the tar file into the `/tmp/` directory by typing the following command:**

   # **`tar -zxf /tmp/`***filename*

4. **Determine the kernel level installed on the target server by typing the following command:**

   # **`uname -a`**

5. **Install the SCSI driver RPMs to the target server by typing the following commands:**

   # **`rpm -Uvh --nodeps /tmp/rh9-aic79xx/aic79xx-1.3.10_ \`**
   kernel-version **`-rh9_1.i686.rpm`**

   # **`rpm -Uvh --nodeps /tmp/rh9-aic79xx/aic79xx-smp-1.3.10_ \`**
   kernel-version`-rh9_1.i686.rpm`

   # **`rpm -Uvh --nodeps /tmp/rh9-aic79xx/aic79xx-bigmem-1.3.10_ \`**
   kernel-version`-rh9_1.i686.rpm`

   Where *kernel-version* is the version determined in Step 4.

6. **Reboot the target server by typing the following command:**

   # **`reboot`**

7. **Continue with "Configuring the Network Connection" on page 56.**

Configuring the Network Connection

1. **Log in as superuser.**
2. **Open the Network Configuration screen as follows:**
   - To configure eth0 (network port labelled 2), type:

     # **`netconfig`**
   - To configure eth1 (network port labelled 1), type:

     # **`netconfig --device=eth1`**
3. **In the Network Configuration screen, select Yes.**
4. **In the Configure TCP/IP screen, take one of the following actions:**
   - If you are using DHCP, select Use dynamic IP configuration (BOOTP/DHCP).
   - If you are not using DHCP, fill in the network information for the appropriate port.
5. **Select OK to exit the Network Configuration tool.**
6. **Restart the network by typing:**

   # **`sh /etc/init.d/network restart`**

   Your Red Hat Linux 9 software installation is complete.

Installing Red Hat Linux 9 Software From a Network

This section describes how to create a PXE install image on a Linux server and initiate the request from the target Sun Fire V60x and V65x server to download the image through the PXE server. The PXE server then transfers the boot image file to the target server using TFTP. This boot image file is used to boot the target server.

The tasks for installing Red Hat Linux 9 software from a networked PXE server consist of the following procedures.

1. Configure your network to support PXE installation. See "Preconfiguring Your Network to Support PXE Installation" on page 65. These procedures apply to all Red Hat versions covered in this guide.

2. Create a PXE install image on a system that will be the PXE server. You will download the software to other systems (PXE clients). See "Creating a PXE Install Image on the PXE Server" on page 58.
3. Install the Red Hat software to the PXE clients from the PXE server. See "Installing Red Hat Linux 9 Software From a PXE Server" on page 61.
4. Install the correct SCSI drivers, if necessary. See "SCSI Driver Upgrades" on page 62.

Required Items

The PXE network installation procedure requires the following items.

- A Sun Fire V60x or V65x server equipped with:
  - Diskette/CD-ROM combo module
  - PS/2 keyboard
- A Linux server configured as shown in "Preconfiguring Your Network to Support PXE Installation" on page 65.
- Monitor
- Red Hat Linux 9 Media CD Set

Note – Do not connect a mouse for the installation.

Optional Item

- Sun Fire V60x and V65x Server Diagnostic CD (Sun part number 705-0602), if you want to install the service partition. Refer to the *Sun Fire V60x and V65x Server User Guide* (817-2023) for more information about the service partition.

Installing the Service Partition (Optional)

You can optionally install the service partition from the Diagnostics CD onto the Sun Fire V60x or V65x server as the first step of the Red Hat Linux 9 software installation. The service partition has utilities that might be useful. Refer to the *Sun Fire V60x and Sun Fire V65x Server User Guide* for more information about the utilities provided by installing the service partition, and for instructions on installing it. If you want to install the service partition, it must be installed prior to installing Red Hat Linux 9 software.

Creating a PXE Install Image on the PXE Server

Note – Before you start this procedure, verify that your network has been configured to support PXE installation, as described in "Preconfiguring Your Network to Support PXE Installation" on page 65.

This procedure describes how to create a PXE install image on the same system that is your DHCP server, so that it will also act as your PXE server. The PXE server provides the operating system files to your PXE client.

1. **Insert Red Hat Linux 9 CD 1 into your server and copy its contents to your PXE server, by typing the following commands:**

Note – You can use a different target directory than the `/home/pxeboot/SunFire_9/` directory shown below. The examples in this procedure use this directory.

```
# mkdir -p /home/pxeboot/SunFire_9/
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/SunFire_9/
```

2. **Remove CD 1 from the server after you type the following command:**

```
# umount /dev/cdrom
```

3. **Insert Red Hat Linux 9 CD 2 into your server and copy its contents to your PXE server, by typing the following commands:**

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/SunFire_9/
```

Note – If you are prompted whether to overwrite any existing files, type **y** to overwrite the files.

---

4. **Remove CD 2 from the server after you type the following command:**

```
# umount /dev/cdrom
```

5. **Insert Red Hat Linux 9 CD 3 into your server and copy its contents to your PXE server, by typing the following commands:**

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/RedHat /home/pxeboot/SunFire_9/
```

Note – If you are prompted whether to overwrite any existing files, type **y** to overwrite the files.

6. **Remove CD 3 from the server after you type the following command:**

7. **# umount /dev/cdrom On your PXE server, determine whether the** `anaconda-runtime` **package is already installed on the server by typing the following command:**

   # rpm -qa | grep anaconda-runtime

   If the `anaconda-runtime` package is listed, go to Step 8. If the package is not listed, perform the following steps:

   a. **Install the package from Red Hat Linux CD 2 by typing the following commands:**

      Use CD 2 for the version of Red Hat Linux that is installed on the PXE server.

      # mount /dev/cdrom /mnt/cdrom

      # rpm -ivh /mnt/cdrom/RedHat/RPMS/anaconda-runtime*

   b. **Remove CD 2 from the server after you type the following command:**

      # umount /dev/cdrom

8. **Copy the SCSI drivers from the temporary directory to the directory shown below:**

   **# cp /tmp/rh9-pxefiles/aic79xx* **
   /home/pxeboot/SunFire_9/RedHat/RPMS/

   The temporary directory `/tmp/rh9-pxefiles/` is the one that was created during the procedure in "Downloading the Required Support Files" on page 66, when you preconfigured your PXE server.

9. **Place Red Hat Linux 9 CD 1 into the CD drive, and copy the following files to the PXE image with the commands shown below:**

   # mount /dev/cdrom /mnt/cdrom

   # cp /mnt/cdrom/isolinux/initrd.img /home/pxeboot/SunFire_9/

   # cp /mnt/cdrom/isolinux/vmlinuz /home/pxeboot/SunFire_9/

   # umount /dev/cdrom

10. **Copy the kickstart file** `ks.cfg` **from the temporary directory to the following directory:**

    # cp /tmp/rh9-pxefiles/ks.cfg /home/pxeboot/SunFire_9/

11. **On your PXE server, edit and save the kickstart file** `/home/pxeboot/SunFire_9/ks.cfg` **so that the** `nfs` **line reads as follows:**

    `nfs --server` *n.n.n.n* **`--dir /home/pxeboot/SunFire_9/`**

    Where *n.n.n.n* is the IP address of your PXE server. Double check that the location at `--dir` is pointing to the top level of your image.

12. **Run the following command so that the installation knows about the SCSI and Network drivers:**

    `#` **`/usr/lib/anaconda-runtime/genhdlist /home/pxeboot/SunFire_9/`**

    This command generates the `hdlist` file. This is accomplished through the program `genhdlist`.

13. **On your PXE server, modify and save the file** `/home/pxeboot/pxelinux.cfg/default` **to add the following entry to it:**

    Note that you should type the text block from "`append ksdevice`" through "`ks.cfg`" as one continuous string with no returns.

Note – If the first three lines are already in the file, you do not need to add these lines. The remaining lines must added to the default file.

```
display motd
prompt 1
default SunFire_9

label SunFire_9
kernel SunFire_9/vmlinuz
append ksdevice=eth0 console=ttyS1,9600 console=tty0
load_ramdisk=1 initrd=SunFire_9/initrd.img network
ks=nfs:n.n.n.n:/home/pxeboot/SunFire_9/ks.cfg
```

Where *n.n.n.n* is the IP address of your PXE server.

14. **On your PXE server, modify and save the file** `/home/pxeboot/motd` **to add the following entry to it:**

```
PXE Server: Please report any problems with these images to PXE
SERVER ADMIN <admin@domain.com>

Current Default is: SunFire_9

Builds:
SunFire_9 - RH 9 - 2.4.20-8 kernel, 1.3.10 aic driver
```

Installing Red Hat Linux 9 Software From a PXE Server

This procedure describes how to initiate the request from the target Sun Fire V60x or V65x server to download the boot image file from the PXE/DHCP server, and to install the Red Hat Linux 9 software onto the target server.

Note – This procedure assumes that you have already preconfigured your network and PXE server install image as described in "Preconfiguring Your Network to Support PXE Installation" on page 65 and "Creating a PXE Install Image on the PXE Server" on page 58.

---

1. **Connect the PXE client (the target server to which you are installing Red Hat Linux 9 software) to the same network as the PXE server, and power on the PXE client.**
2. **When the PXE client prompts you for a network boot, press the F12 key.**

   The PXE client connects to the PXE server and attempts to obtain an IP address from the DHCP server.
3. **Press the F8 key.**

   The text that you used for the label value in Step 6 of "Installing and Configuring the `neopxe` Boot Server Daemon" on page 70 displays.
4. **Select the displayed Linux option.**
5. **When you are prompted at the `boot:` prompt, press Enter.**

   The Red Hat Linux 9 install image downloads onto the target Sun Fire V60x or V65x server.
6. **To configure the Red Hat Linux 9 operating system for your server, refer to the documentation available at the following site:**

   `http://www.redhat.com/docs/manuals/linux`
7. **Continue with "SCSI Driver Upgrades" on page 62, if needed.**

SCSI Driver Upgrades

This section applies for both PXE and CD media installations.

If you install the latest Red Hat Linux 9 software kernel upgrade, the kernel update might downgrade the drivers that were installed during the initial installation of the operating environment. Updating the drivers ensures proper system performance.

1. **Log in as superuser to the Sun Fire V60x or V65x target server on which you have installed Red Hat Linux 9.**

2. **Use a browser to go to the Sun download site for the Sun Fire V60x and V65x servers:**

   `http://www.sun.com/servers/entry/v60x/downloads.html`

   or

   `http://www.sun.com/servers/entry/v65x/downloads.html`

Note – If your server does not have Internet access, you will need to download the files to a computer that does have Internet access and copy the files to the Sun Fire V60x or V65x target server.

---

3. **Navigate to the download link for the Red Hat Linux 9 SCSI driver and download the SCSI driver bundle to the `/tmp/` directory on the target system.**

4. **Uncompress the download file with the following command:**

   # **`tar -zxf /tmp/`***filename*

5. **Determine the kernel level installed on the target server by typing the following command:**

   # **`uname -a`**

   Use the kernel version shown to determine which driver version to use for the commands in Step 6.

6. **Install the SCSI driver RPMs to the target server by typing the following commands:**

   # **`rpm -Uvh /tmp/rh9-aic79xx/aic79xx-`***version***`.rpm`**

   # **`rpm -Uvh /tmp/rh9-aic79xx/aic79xx-smp-`***version***`.rpm`**

   # **`rpm -Uvh /tmp/rh9-aic79xx/aic79xx-bigmem-`***version***`.rpm`**

   For example, with the aic79xx-bigmem version 1.3.10, kernel version 2.4.20-8, and Red Hat Linux 9, the driver name would be:

   `aic79xx-bigmem-1.3.10_2.4.20_8-rh9_1.i686.rpm`

7. **Reboot the target server by typing the following command:**

```
# reboot
```

APPENDIX **A**

Preconfiguring Your Network to Support PXE Installation

The procedures provided in this appendix describe how to preconfigure your Linux network to support PXE installation of Linux software.

Note – These procedures assume that you already have a bootable server that is running the Red Hat Linux operating system. Make sure to follow the instructions specific to the Red Hat Linux version that is installed on your server.

Note – Some of the following procedures might not be necessary if you confirm that the server packages are already in place and configured.

This task includes the following procedures:

Downloading the Required Support Files

If you are using the Sun Fire V60x and Sun Fire V65x Resource CD or have already downloaded the NeoPXE support files to the DHCP/PXE server, you can skip this section.

Note – For Red Hat Linux 7.3 software, you need to use the NeoPXE support files from the Resource CD. The downloadable files are not available at this time.

---

1. **To download the NeoPXE support files, navigate to the downloads page for the appropriate Red Hat version from the following URL:**

   `http://sun.com/servers/entry/v60x/downloads.html`

   or

   `http://sun.com/servers/entry/v60x/downloads.html`

   Note – If your server does not have Internet access, you will need to download the files to a computer that does have Internet access and copy the files to the system that will be your DHCP/PXE server.

   ---

2. **Download the NeoPXE support file to a `/tmp/` directory on the system that will serve as your DHCP and PXE server.**

3. **Uncompress and extract the contents of the tar file into the `/tmp/` directory by typing the following command:**

   `#` **`tar -zxf /tmp/`***`filename`*

   When you extract the file, a directory with all required files is created at `/tmp/`*`version`*`-pxefiles/` where *version* is `as` for Red Hat Enterprise Linux 2.1 software, `rh80` for Red Hat Linux 8.0 software, and `rh9` for Red Hat 9 software.

   Some of these files in this directory will be needed in the procedures described in the following sections.

Configuring a DHCP Server

Complete the following steps on the server that will be your DHCP server:

1. **Power on the server and log in as superuser.**
2. **Determine whether the DHCP server package is already installed on the server by typing the following command:**

   # **rpm -qa | grep dhcp-**

3. **If the DHCP server package is not listed, or is less than version 3, download the DHCP package for your Red Hat version:**

   - For Red Hat Linux 7.3 or Red Hat Enterprise Linux 2.1, go to the following URL and download the DHCP package.

     `ftp://ftp.redhat.com/pub/redhat/linux/8.0/en/os/i386/RedHat/RPMS`

Note – Although the path above includes the string `8.0`, it is the correct path for Red Hat Linux 7.3 and Red Hat Enterprise Linux 2.1 software also. If this site is too busy, you can check `http://www.redhat.com/mirrors` for alternate download sites.

     Install the package by typing the following command:

     # **rpm -Uvh /tmp/dhcp-***version***.rpm**

   - For Red Hat Linux 8.0 or Red Hat Linux 9, insert CD 2 and type the following commands*:*

     # **mount /dev/cdrom /mnt/cdrom**

     # **cd /mnt/cdrom/RedHat/RPMS**

     # **rpm -Uvh dhcp-***version***.rpm**

     # **cd /**

4. **Set up your DHCP configuration file so that only PXEClient requests receive PXEClient responses.**

   Add the following entry to the DHCP configuration file (for example, `/etc/dhcpd.conf`**)**. Refer to the `dhcp.conf` man page for more information.

```
class "PXE" {match if substring(option vendor-class-identifier,
0, 9) ="PXEClient"; option vendor-class-identifier
"PXEClient";}
```

Note – You can start with a sample DHCP configuration file that is on the Sun Fire V60x and Sun Fire V65x Resource CD, at the following directory: `/mnt/cdrom/pxeboot/redhat/7.3`

If you downloaded the NeoPXE support for Red Hat Linux 8.0 or Red Hat Linux 9 software, the sample `dhcpd.conf` file is located in the `/tmp/rh80-pxefiles` or `/tmp/rh9-pxefiles` directory.

5. **Start the DHCP service by typing the following command:**

   # **service dhcpd start**

6. **Configure the server to always start DHCP by typing the following command:**

   # **chkconfig dhcpd on**

Installing Portmap

Complete the following steps on your DHCP server:

1. **Determine whether the portmap server package is already installed on the server by typing the following command:**

   # **rpm -qa | grep portmap**

2. **If portmap is not listed, insert the Red Hat CD 1 and type the following commands to install the package from the CD:**

   The package is contained in CD 1 for Red Hat Linux versions 7.3, 8.0, and 9 software and Red Hat Enterprise Linux 2.1 software.

   # **mount /dev/cdrom /mnt/cdrom**

   # **cd /mnt/cdrom/RedHat/RPMS/**

   # **rpm -ivh portmap-***version***.rpm**

   # **cd /**

3. **Remove CD 1 from the server after you type the following command:**

   # **umount /dev/cdrom**

Configuring the TFTP Service

Complete the following steps on your DHCP server:

1. **Determine whether the TFTP server package is already installed on the server by typing the following command:**

   # **rpm -qa | grep tftp-server**

2. **If the TFTP server package is not listed, insert the Red Hat Linux CD that contains the package and type the following commands to install the package from the CD:**

   The package is contained in CD 3 for Red Hat Linux versions 7.3, 8.0, and 9 software, and in CD 2 for Red Hat Enterprise Linux 2.1 software.

   # **mount /dev/cdrom /mnt/cdrom**

   # **cd /mnt/cdrom/RedHat/RPMS/**

   # **rpm -ivh tftp-server-***version***.rpm**

   # **cd /**

3. **Remove the CD from the server after you type the following command:**

   # **umount /dev/cdrom**

4. **Edit and save the** `/etc/xinetd.d/tftp` **file to make the following changes:**

   a. **Change the** `-s /tftpboot` **entry to** `-s /home/pxeboot`**.**

   b. **Change the disable attribute to** `no`**.**

5. **Restart the** `xinetd` **service by typing the following command:**

   # **service xinetd restart**

Installing and Configuring the neopxe Boot Server Daemon

Complete the following steps on your DHCP server:

Note – The neopxe server is designed for use with a DHCP server that is running on the same system.

---

1. **Perform one of the following to install the neopxe boot server daemon on your system that is your DHCP server:**

   - If you are using the Sun Fire V60x and Sun Fire V65x Resource CD (shipped with your system), insert the CD and install the NeoPXE files to the system by typing the following commands:

     ```
     # mount /dev/cdrom /mnt/cdrom
     # cd /tmp/
     # tar -xzf /mnt/cdrom/pxeboot/neopxe/neopxe-0.2.0.tar.gz
     # cd neopxe-0.2.0/
     # ./configure
     # make
     # make install
     ```

   - If you have downloaded the NeoPXE support files for Red Hat Enterprise Linux 2.1 software (see "Downloading the Required Support Files" on page 66), install the NeoPXE files to your system by typing the following commands:

     ```
     # cd /tmp/
     # tar -xzf /tmp/as-pxefiles/neopxe-0.2.0.tar.gz
     # cd neopxe-0.2.0/
     # ./configure
     # make
     # make install
     ```

   - If you have downloaded the NeoPXE support files for Red Hat Linux 8.0 software (as instructed in "Downloading the Required Support Files" on page 66), install the NeoPXE files to your system by typing the following commands:

     ```
     # cd /tmp/rh80-pxefiles/neopxe-0.2.0/
     # ./configure
     # make
     # make install
     ```

- If you have downloaded the NeoPXE support files for Red Hat Linux 9 software (as instructed in "Downloading the Required Support Files" on page 66), install the NeoPXE files to your system by typing the following commands:

```
# cd /tmp/rh9-pxefiles/neopxe-0.2.0/
# ./configure
# make
# make install
```

2. **Append the path** `/usr/local/sbin/neopxe` **to the** `rc.local` **file by typing the following command, making sure to use two greater-than signs:**

```
# echo "/usr/local/sbin/neopxe" >> /etc/rc.d/rc.local
```

3. **Copy the PXE Linux image to your system by one of the following methods:**

   - If you are using the Sun Fire V60x and Sun Fire V65x Resource CD, copy the PXE Linux image by typing:

```
# mkdir /home/pxeboot
# cp /mnt/cdrom/pxeboot/pxelinux.0 /home/pxeboot
```

   - If you have downloaded the NeoPXE support files (see "Downloading the Required Support Files" on page 66), copy the PXE Linux image by typing:

```
# mkdir /home/pxeboot
# cp /tmp/version-pxefiles/pxelinux.0 /home/pxeboot
```

   Where *version* is `as` for Red Hat Enterprise Linux 2.1 software, `rh80` for Red Hat Linux 8.0 software, and `rh9` for Red Hat Linux 9 software.

4. **Configure the PXE Linux image by typing the following commands:**

```
# mkdir /home/pxeboot/pxelinux.cfg/
# touch /home/pxeboot/pxelinux.cfg/default
```

5. **(If needed) Remove the Resource CD from the system after you type the following command:**

```
# umount /dev/cdrom
```

6. **Edit the** `/usr/local/etc/neopxe.conf` **configuration file, which is read by** `neopxe` **at startup.**

   If the `neopxe.conf` file is not at this location, you can copy it from `/tmp/`*version*`-pxefiles/neopxe-0.2.0/` if you downloaded the files as shown in "Downloading the Required Support Files" on page 66.

   Where version is `as` for Red Hat Enterprise Linux 2.1 software, `rh80` for Red Hat Linux 8.0 software, and `rh9` for Red Hat 9 Linux software.

Note – If you are using the Resource CD, the `neopxe.conf` file is contained in the `/mnt/cdrom/pxeboot/neopxe/neopxe-0.2.0.tar.gz` file.

Refer to the `neopxe.conf` man page and the sample `neopxe.conf` configuration file that are installed in Step 1.

A valid configuration file must have entries for each of the following lines, including at least one service line.

ip_addr=*n.n.n.n*

prompt=*boot-prompt-string*

prompt_timeout=*timeout*

service=*service-number,boot-server,boot-file,label*

Where:

- *n.n.n.n* is the IP address of your PXE server.
- *boot-prompt-string* is the character string displayed during a network boot that prompts the user to press the F8 key for a boot menu.
- *timeout* is the number of seconds the prompt is displayed before the server defaults to the first service for booting.
- *service-number* is an integer in the range from 1 to 254 that identifies the boot service.
- *boot-server* is the IP address of the boot server for that boot service.
- *boot-file* is the name of the boot file that is read from your `/tftpboot` directory.
- *label* is the text string that is displayed when the boot menu is invoked by pressing the F8 key.

For example:

```
ip_addr=192.168.0.1
prompt=Press [F8] for menu...
prompt_timeout=10
service=1,192.168.0.1,pxelinux.0,Linux
service=2,192.169.0.1,nbp.unknown,Solaris
```

Configuring the NFS Service

Complete the following steps on your DHCP server:

1. **Determine whether the NFS service package is already installed on the server by typing the following command:**

   # **rpm -qa | grep nfs-utils**

2. **If the NFS server package is not listed, insert the appropriate Red Hat Linux CD, and type the following commands to mount the CD and install the package from the CD:**

   The package is contained in CD 2 for Red Hat Linux 7.3 software and CD 1 for Red Hat Linux versions 8.0 and 9, and Red Hat Enterprise Linux 2.1 software.

   ```
   # mount /dev/cdrom /mnt/cdrom
   # cd /mnt/cdrom/RedHat/RPMS/
   # rpm -ivh nfs-utils-version.rpm
   # cd /
   ```

3. **Remove the CD from the server after you type the following command:**

   ```
   # umount /dev/cdrom
   ```

4. **Add the following line to the** `/etc/exports` **file and save it:**

   ```
   /home/pxeboot *(no_root_squash,no_subtree_check,insecure)
   ```

5. **Start the NFS service by typing the following command:**

   ```
   # service nfs start
   ```

6. **Configure the server to always start the NFS service by typing the following command:**

   ```
   # chkconfig nfs on
   ```

Note – If you are using a DNS server, ensure that DNS entries exist for each address in the range of addresses defined in the PXE subnet `dynamic-bootp` entry in the `dhcpd.conf` file.

If you are not using a DNS server, edit the `/etc/hosts` file to add each address in the range of host addresses found in the PXE subnet `dynamic-bootp` entry in the `dhcpd.conf` file.

Disabling the Firewall

If you selected Medium or High firewall security when you installed Red Hat software on the system that will be your PXE server, complete the following steps to disable the firewall so that PXE clients can download from the server:

Note – When you disable the firewall protection on the system that is your PXE server, the security of the data on that server cannot be assured. If this server is networked outside of your local intranet, be sure to re-enable the firewall after downloading software to PXE clients.

1. **Stop the `ipchains` service by typing the following command:**

   ```
   # service ipchains stop
   ```

2. **Stop the `iptables` service by typing the following command:**

   ```
   # service iptables stop
   ```

3. **Stop the `ipchains` service from starting when you restart the server by typing the following command:**

   ```
   # chkconfig ipchains off
   ```

4. **Stop the `iptables` service from starting when you restart the server by typing the following command:**

   ```
   # chkconfig iptables off
   ```

Note – You might encounter error messages if the `ipchains` service is not installed on the server. You can safely ignore these messages.

Installing Red Hat Linux

1. **Reboot the server when you have finished all of the configuration steps.**
2. **Refer to the section in the following list that corresponds with the version of Red Hat Linux that you are installing.**
   - "Installing Red Hat Linux 7.3 Software From a PXE Server" on page 12
   - "Installing Red Hat Enterprise Linux 2.1 Software From a PXE Server" on page 26
   - "Installing Red Hat Linux 8.0 Software From a PXE Server" on page 45
   - "Installing Red Hat Linux 9 Software From a PXE Server" on page 61

APPENDIX **B**

Using Other Linux Distributions With Your Sun Fire V60x or V65x Server

This appendix contains information and guidelines that describe how system administrators can build the drivers that are needed to support distributions of Linux other than the officially supported version(s) described in this document. This information is for knowledgeable users who are familiar with Linux and with building drivers. It can also be useful for building custom kernels on a distribution, as well as to provide the necessary support for a kernel update.

Many older, and some more recent, Linux distributions cannot be installed on the Sun Fire V60x or V65x server. Frequently, drivers for both the Adaptec U320 AIC7902A SCSI Controller (`aic79`*`xx`*) and the Intel Etherpro 1000 Network Device (`e1000`) must be updated to support the Linux distribution.

The Sun Fire V60x and V65x servers currently support Red Hat Linux 7.3, Red Hat Linux 8.0, Red Hat Linux 9, and Red Hat Enterprise Linux 2.1 software.

To determine which new Linux distributions are officially supported on the Sun Fire V60x and V65x servers, check the Sun Fire V60x Web site at:

`http://www.sun.com/servers/entry/v60x`

The following sections provide guidelines for building the drivers that might be needed:

- "Adaptec SCSI Controller (`aic79xx`)" on page 76
- "Intel PRO/1000 Network Interface Controller (`e1000`)" on page 77

Adaptec SCSI Controller (aic79xx)

The Sun Fire V60x or V65x server has an Ultra™ 320 SCSI controller that is supported by only the most recent distributions. At present, the latest drivers can be downloaded from:

```
http://people.freebsd.org/~gibbs/linux/
```

If your Linux distribution includes a driver for Adaptec 79*xx* devices, use that driver. Otherwise, you must build the driver yourself, using the source from the preceding location. Because distributions can vary widely, detailed instructions for installing those drivers are beyond the scope of this document.

You can check your current version of the driver by using the `cat` command, as shown in the following example.

```
# cat /proc/scsi/aic79xx/0 | grep Adaptec
Adaptec AIC79xx driver version: 1.3.7
Adaptec AIC7902 Ultra320 SCSI adapter
```

Building an Adaptec Driver

If you want to build the driver for yourself, take the following steps:

1. **Set** `CONFIG_AIC79XX_CMDS_PER_DEVICE` **to** `32` **and disable** `CONFIG_AIC79XX_ENABLE_RD_STRM`**.**

   These options can cause issues with certain disks if set otherwise.

2. **Make a backup copy of your desired kernel and ensure that the** `VERSION`**,** `PATCHLEVEL`**,** `SUBLEVEL`**, and** `EXTRAVERSION` **options in the kernel Makefile match the kernel you want to use.**

3. **Untar the source into your backup copy of the kernel source, configure the kernel with whatever method you want.**

   Use the distributor's configuration, if available. Remember to set the options mentioned in the previous two bullets.

4. **If you want to build only the module itself, use the following command:**

   ```
   # make SUBDIRS=drivers/scsi/aic7xxx modules
   ```

   With `2.4.`*x* kernels, you must use the `make dep` command to make the dependencies.

5. **Once the process is complete, copy the resulting** `/scsi/aic7xxx/aic79xx.o` **driver into the appropriate directory under the** `/lib/modules` **directory.**

6. **Add the driver to the initial root disk (**`initrd`**) for boot-time.**

   Building and packaging for a specific distribution can vary. Refer to your distribution's documentation for further details.

Intel PRO/1000 Network Interface Controller (`e1000`)

The Sun Fire V60x or V65x server has a Gigabit Ethernet controller that might only be supported by the most recent driver distributions. At present, the latest drivers can be downloaded from Intel's Web site.

You can check your current version of the driver by using the `cat` command, as shown in the following example:

```
# cat /proc/net/PRO_LAN_Adapters/eth0/Driver_Version 4.4.19
```

Check the README file in the `e1000` source tar file for further instructions on building and installing the driver.

Also see Appendix A of this document for information about setting up your network for installation from a PXE server.

Index

P

R

S

T