

Red Hat Linux 7.1

**The Official Red Hat Linux Itanium Installation
Guide**

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1 Introduction

Welcome to the *Official Red Hat Linux Itanium Installation Guide*.

The *Official Red Hat Linux Itanium Installation Guide* contains useful information to assist you during the installation of Red Hat Linux. From fundamental concepts such as installation preparation (gathering information about your current system) to the step-by-step installation procedure, this book will be a valuable resource as you install Red Hat Linux.

This manual will walk you through a typical installation using the Red Hat Linux CD-ROMs. Once you have completed the installation as outlined in this manual, you will have a fully functioning Red Hat Linux desktop system.

1.1 Documentation Conventions

When you read this manual, you will see that certain words are represented in different fonts, typefaces, sizes and weights. This highlighting is systematic; different words are represented in the same style to indicate their inclusion in a specific category. The types of words that are represented this way include the following:

command

Linux commands (and other operating system commands, when used) are represented this way. This style should indicate to you that you can type in the word or phrase on the command line and press [Enter] to invoke a command. Sometimes a command contains words that would be displayed in a different style on their own (like filenames). In these cases, they are considered to be part of the command, so the entire phrase will be displayed as a command. For example:

Use the `cat testfile` command to view the contents of a file, named `testfile`, in the current working directory.

filename

Filenames, directory names, paths, and RPM package names are represented this way. This style should indicate that a particular file or directory exists by that name on your Red Hat Linux system. Examples:

The `.bashrc` file in your home directory contains bash shell definitions and aliases for your own use.

The `/etc/fstab` file contains information about different system devices and filesystems.

The `/usr/share/doc` directory contains documentation for various programs.

Install the `webalizer` RPM if you want to use a Web server log file analysis program.

application

This style should indicate to you that the program named is an end-user application (as opposed to system software). For example:

Use Netscape Navigator to browse the Web.

[key]

A key on the keyboard is shown in this style. For example:

To use [Tab] completion, type in a character and then press the [Tab] key. Your terminal will display the list of files in the directory that start with that letter.

Combinations of keystrokes

A combination of keystrokes is represented like this: [key]-[key]. For example:

The [Ctrl]-[Alt]-[Backspace] key combination will restart the X Window System.

Sequences of commands in Graphical User Interface (GUI) menus

If you need to type in a sequence of commands from a GUI menu, they'll be shown similar to the following example:

Click on **Programs=>Applications=>Emacs** to start the Emacs text editor.

Additionally, we use several different strategies to draw your attention to certain pieces of information. In order of how critical the information is to your system, these items will be marked as a note, a caution, or a warning. For example:

Note

Remember that Linux is case sensitive. In other words, a rose is not a ROSE is not a rOsE.

**CAUTION**

Do not do routine tasks as root — use a regular user account unless you need to use the root account to administer your system.

WARNING

If you choose not to partition manually, a server-class installation will remove all existing partitions on all installed hard drives. Do not choose this installation class unless you are sure you have no data you need to save.

1.2 How to Use This Manual

This manual focuses on a CD-ROM based installation, so it is ideal for users (both new and old) who want a quick and simple installation solution. It will help you prepare your system, walk you through the installation, and assist you in the configuration of Red Hat Linux.

If you are an experienced user who wants to perform a Red Hat Linux CD-ROM installation, and you do not need a review of the basics, you can skip ahead to Chapter 4, *Installing Red Hat Linux* to begin the installation process.

Tip

Refer to the **Red Hat Frequently Asked Questions** for answers to questions and problems that may occur before, during, or after the installation. You will find the FAQ online at:

http://www.redhat.com/support/docs/faqs/rhl_general_faq/FAQ.html

1.2.1 We Need Feedback!

If you spot a typo in the *Official Red Hat Linux Itanium Installation Guide*, or if you have thought of a way to make this manual better, we would love to hear from you! Please submit a report in Bugzilla (<http://www.redhat.com/bugzilla/>) against the component *rhl-ig-itanium*.

Be sure to mention the manual's identifier:

```
rhl-ig-itanium(EN)-7.1-Print-RHI (2001-04-20T16:12-0400)
```

That way we will know exactly which version of the guide you have.

If you have a suggestion for improving the documentation, try to be as specific as possible when describing it. If you have found an error, please include the section number and some of the surrounding text so we can find it easily.

If you have a support question (for example, if you need help configuring X, or if you are not sure how to partition your hard drive[s]), please register your product at <http://www.redhat.com/apps/activate/> and use the online support system for those type of requests.

2 Steps to Get You Started

Before you install Red Hat Linux, you will need to perform the following steps:

2.1 Step 1 - Do You Have the Right Red Hat Linux Components?

If you have purchased the Official Red Hat Linux boxed set, you are ready to go! However, mistakes occasionally happen, so now is a good time to double-check the contents of your boxed set.

A black, red, and white Registration Information card is included in your boxed set. A list of the contents of your boxed set version is on the back of the card. Please read over the list and check to make sure that you have all the CDs and manuals that are included with the version of Red Hat Linux that you purchased.

If you have purchased the Official Red Hat Linux boxed set from Red Hat, Inc. (or one of its distributors), and you are missing one or more of the items listed, please let us know! Contact information is also available on the Registration Information card.

How to identify our official boxed set: The bottom of our box has an ISBN number next to one of the bar codes. That ISBN number should be in this form:

1-58569-x-y

(The *x* and *y* will be unique numbers.)

Red Hat partners with companies (international and domestic) so that we can make Red Hat Linux available to you in the most convenient form. Because of these partnerships, you might find that your Red Hat Linux boxed set may not have been actually produced by Red Hat.

If your box has a different ISBN number (or none at all), you will need to contact the company that produced your boxed set. Normally, third-party producers will include their logo and/or contact information on the outside of the box; an official Red Hat Linux boxed set lists only our name and contact information.

2.1.1 Where to Find Other Red Hat Linux Manuals

If your particular boxed set did not include all of the printed Red Hat Linux manuals, you can find them online or on the Red Hat Linux Documentation CD.

To find the manuals in both HTML and PDF formats online, visit <http://www.redhat.com/support/manuals>.

2.1.2 Why You Should Register Your Red Hat Linux Boxed Set

If you have purchased an official Red Hat Linux 7.1 boxed set, you should register your product. Registration offers many useful services, such as installation support, priority FTP access, and more.

To register your product, go to <http://www.redhat.com/apps/activate/>. You will find your *Product ID* on the Registration Information card in your Official Red Hat Linux boxed set. Once registered, you will have access to all the extras that Red Hat provides to its registered users.

For more information on registering and the scope of Red Hat's technical support offerings, see Appendix B, *Getting Technical Support*.

2.1.3 No Boxed Set? No Problem!

Of course, not everyone purchases a Red Hat Linux boxed set. It is entirely possible to install Red Hat Linux using a CD created by another company, or even via FTP. In these cases, you may need to create one or more diskettes to get started.

For information on downloading and installing Red Hat Linux, refer to http://www.redhat.com/download/howto_download.html.

For people installing Red Hat Linux from a CD-ROM not from Red Hat, you may need a boot disk. It may also be possible to start the installation directly from the CD. We will discuss this in more detail when we outline the various installation methods.

For information on making diskettes, see *Booting the Installation Program from an LS-120 Diskette* in Section 3.2.3.

2.2 Step 2 - Is Your Hardware Compatible?

Hardware compatibility is particularly important if you have an older system or a system that you built yourself. Red Hat Linux 7.1 should be compatible with most hardware in systems that were factory built within the last two years. However, hardware specifications change almost daily, so it is hard to guarantee that your hardware will be 100% compatible.

3 Before You Begin the Installation Process

3.1 Installation Overview

Installing Red Hat Linux on an Itanium system is different from installing Red Hat Linux on an x86 or Alpha machine. In general, the sequence of steps to a successful installation are the following:

1. Boot into the Extensible Firmware Interface (EFI) Shell.
2. If you can't boot from the CD-ROM, make an LS-120 diskette from the boot image file provided with Red Hat Linux.
3. Using the EFI Shell and the ELILO bootloader, load and run the kernel, and boot into the Red Hat Linux installation program.

3.1.1 Disk Space Requirements

Before you begin the installation, be aware that you'll need certain amounts of free disk space to install Red Hat Linux.

- At minimum, you'll need 512 MB of RAM and 1 GB of free hard disk space to install Red Hat Linux.
- You should have 1024 MB of RAM and 3 GB of free hard disk space on your machine for a full installation of Red Hat Linux.

Depending upon what type of installation you are performing, you may need an LS-120 diskette.

3.2 The EFI Shell

Before you start to install Red Hat Linux on an Itanium, you'll need a basic understanding of the EFI Shell, what it does, and the information it can provide.

The EFI Shell is a console interface used to launch applications (such as the Red Hat Linux installation program), load EFI protocols and device drivers, and execute simple scripts. It is similar to a DOS console and can only access media that is FAT16 formatted.

The EFI Shell also contains common utilities that can be used on the EFI system partition. These utilities include `edit`, `type`, `cp`, `rm`, and `mkdir`. To see a list of utilities and other commands, type `help` at the EFI Shell prompt.

The EFI Shell contains a bootloader called `elilo`. Additional information on EFI can be found at the following URL:

<http://developer.intel.com/technology/efi/index.htm>

3.2.1 EFI Device Names

The `map` command can be used to list all devices and filesystems that EFI can recognize. When your Itanium system boots into the EFI shell, it probes your system in the following order:

1. LS-120 drive (if it contains media)
2. IDE hard drives on the primary IDE interface
3. IDE hard drives on the secondary IDE interface
4. SCSI hard drives on the SCSI interface
5. CD-ROM drives on the IDE interface
6. CD-ROM drives on the SCSI interface

To view the results of this system poll, type the following command at the EFI Shell prompt:

```
Shell>map
```

The output is listed in the order the system was probed. So, all FAT16 filesystems are listed first, then IDE hard drives, then SCSI hard drives, then IDE CD-ROM drives, and finally SCSI CD-ROM drives.

For example, output of the `map` command might look like the following:

```
Device mapping table
fs0  : VenHw(Unknown Device:00)/HD(Part1,Sig00000000)
fs1  : VenHw(Unknown Device:80)/HD(Part1,Sig00000000)
fs2  : VenHw(Unknown Device:FF)/CDROM(Entry1)/HD(Part1,Sig00000000)
blk0 : VenHw(Unknown Device:00)
blk1 : VenHw(Unknown Device:00)/HD(Part1,Sig00000000)
blk2 : VenHw(Unknown Device:80)
blk3 : VenHw(Unknown Device:80)/HD(Part1,Sig00000000)
blk4 : VenHw(Unknown Device:80)/HD(Part2,Sig00000000)
blk5 : VenHw(Unknown Device:80)/HD(Part3,Sig00000000)
blk6 : VenHw(Unknown Device:80)/HD(Part3,Sig00000000)/HD(Part1,Sig725F7772)
blk7 : VenHw(Unknown Device:FF)
blk8 : VenHw(Unknown Device:FF)/CDROM(Entry1)
blk9 : VenHw(Unknown Device:FF)/CDROM(Entry1)/HD(Part1,Sig00000000)
```

In this example, there is an LS-120 diskette in the LS-120 drive as well as a CD-ROM in the CD-ROM drive. All the listings beginning with `fs` are FAT16 file systems that EFI can read. All the listings beginning with `blk` are block devices that EFI recognizes. Both the filesystems and block devices are

listed in the order they are probed. Therefore, `fs0` is the system partition on the LS-120, `fs1` is the system partition on the hard drive, and `fs2` is the system partition on the CD-ROM.

For additional information on how to determine which devices EFI recognizes, visit this website:

http://developer.intel.com/software/idap/tech/video/efi/efi_shell_3.htm

3.2.2 EFI System Partition

When partitioning your hard drive for Linux, you must create a system partition that is FAT16 (DOS) formatted and has a mount point of `/boot/efi`. This partition will contain the installed Linux kernel(s) as well as the `elilo` configuration file (`elilo.conf`). The `elilo.conf` file contains a list of kernels from which you can boot your system.

3.2.3 Booting the Installation Program

Your Itanium system will probably be able to boot the Red Hat Linux installation program directly from the Red Hat Linux CD 1. If your Itanium cannot boot the installation program from the CD-ROM (or if you want to perform a hard drive, NFS image, FTP, or HTTP installation) you'll need to boot from a diskette. See *Booting the Installation Program from an LS-120 Diskette* in Section 3.2.3 for more information on booting from a diskette.

Booting the Installation Program from the CD-ROM

To boot from Red Hat Linux CD 1 follow these steps:

1. Remove all media except Red Hat Linux CD 1.
2. From the **Boot Option** menu choose **EFI Shell**.
3. At the `Shell>` prompt, change to the filesystem on the CD-ROM. For example, in the above sample `map` output, the system partition on the CD-ROM is `fs1`. To change to the `fs1` filesystem, you would type `fs1:` at the prompt.
4. Type `elilo linux` to boot into the installation program.
5. Go to Chapter 4, *Installing Red Hat Linux* to begin the installation.

Booting the Installation Program from an LS-120 Diskette

If your Itanium won't boot from Red Hat Linux CD 1, you'll need to boot from an LS-120 diskette. If you want to perform a hard drive, NFS image, FTP, or HTTP installation, you'll need a boot LS-120 diskette.

You'll need to create an LS-120 boot image file diskette from the boot image file on CD 1: `images/boot.img`. To create this diskette in Linux, insert a blank LS-120 diskette and type the following command at a shell prompt:

```
dd if=boot.img of=/dev/hda bs=180k
```

Replace `boot.img` with the full path to the boot image file and `/dev/hda` with the correct device name for the LS-120 diskette drive.

If you aren't using the Red Hat Linux CD, the installation program will start in text mode. You will need to choose a few basic options for your system and then you will need to select which installation method you would like to use. See Section 4.2, *Selecting an Installation Method* for more information on the different installation methods.

If you are using the CD-ROM to load the installation program, follow the instructions contained in Chapter 4, *Installing Red Hat Linux* to install Red Hat Linux.

To boot from an LS-120 diskette follow these steps:

1. Insert the LS-120 diskette you made from the boot image file `boot.img`. If you are performing a local CD-ROM installation but booting off the LS-120 diskette, insert the Red Hat Linux CD 1 also. If you are performing a hard drive, NFS image, FTP, or HTTP installation, you do not need the CD-ROM.
2. From the **Boot Option** menu choose **EFI Shell**.
3. At the `Shell>` prompt, change the device to the LS-120 drive by typing the command `fs0:`, using the example `map` output above.
4. Type `elilo linux` to boot into the installation program.
5. Go to Chapter 4, *Installing Red Hat Linux* to begin the installation.

Boot Loader Options

To pass options to the boot loader, enter the following at the EFI Shell prompt:

```
Shell>elilo linux option
```

Acceptable options that can be passed to the installation program are as follows:

- `text` — use text mode installation program
 - `lowres` — use 640 x 480 resolution
 - `dd` — use a driver disk
 - `expert` — expert mode
-

4 Installing Red Hat Linux

This chapter explains how to install Red Hat Linux from the CD-ROM using the graphical, mouse-based installation program. The following topics will be discussed:

- Getting familiar with the installation program's user interface
- Starting the installation program
- Selecting an installation method
- Configuration steps during the installation (language, keyboard, mouse, etc.)
- Finishing the installation

4.1 The Installation Program User Interface

If you have used a **graphical user interface (GUI)** before, you will be familiar with this process. If not, simply use your mouse to navigate the screens, "click" buttons, or enter text fields. You can also navigate through the installation using the [Tab] and [Enter] keys.

Note

If you do not wish to use the GUI installation program, the text mode installation program is also available. To start the text mode installation program, type the following command at the EFI Shell prompt:

```
Shell> elilo linux text
```

4.1.1 A Note about Virtual Consoles

The Red Hat Linux installation program offers more than the dialog boxes of the installation process. Several different kinds of diagnostic messages are available to you, in addition to providing a way to enter commands from a shell prompt. The installation program displays these messages on five **virtual consoles**, among which you can switch using a single keystroke combination.

These virtual consoles can be helpful if you encounter a problem while installing Red Hat Linux. Messages displayed on the installation or system consoles can help pinpoint a problem. Please see Table 4-1, *Console, Keystrokes, and Contents* for a listing of the virtual consoles, keystrokes to switch to them, and their contents.

Table 4–1 Console, Keystrokes, and Contents

| Console | Keystrokes | Contents |
|---------|-------------------|--|
| 1 | [Ctrl]-[Alt]-[F1] | installation dialog |
| 2 | [Ctrl]-[Alt]-[F2] | shell prompt |
| 3 | [Ctrl]-[Alt]-[F3] | install log (messages from installation program) |
| 4 | [Ctrl]-[Alt]-[F4] | system-related messages |
| 5 | [Ctrl]-[Alt]-[F5] | other messages |
| 7 | [Ctrl]-[Alt]-[F7] | X graphical display |

Generally, there is no reason to leave the default console (virtual console #7) unless you are attempting to diagnose installation problems.

4.2 Selecting an Installation Method

You will be asked what type of installation method you wish to use. You can install Red Hat Linux using any of the following methods:

CD-ROM

If you have a CD-ROM drive and the Red Hat Linux CD-ROM, you can use this method. You will need a boot diskette or a bootable CD-ROM.

Hard drive

If you copied the Red Hat Linux files to a local hard drive, you can use this method. You will need a boot diskette.

NFS image

If you are installing from an NFS image server which is exporting the Red Hat Linux CD-ROMs or a mirror image of Red Hat Linux, use this method. You will need a boot diskette. Please note that NFS installations may also be performed in GUI mode.

FTP

If you are installing directly from an FTP server, use this method. You will need a boot diskette.

HTTP

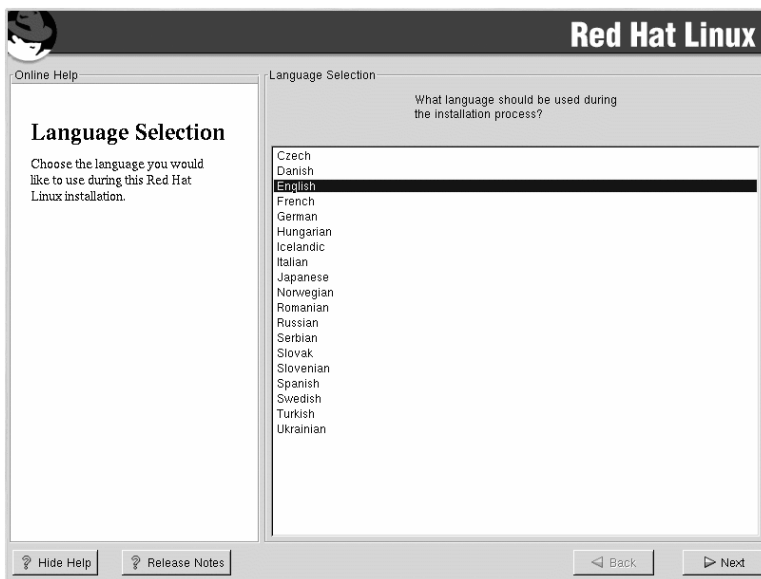
If you are installing directly from an Web (HTTP) server, use this method. You will need a boot diskette.

4.3 Language Selection

Using your mouse, select the language you would prefer to use for the installation and as the system default (see Figure 4–1, *Language Selection*).

Selecting the appropriate language will also help target your time zone configuration later in the installation. The installation program will try to define the appropriate time zone based on what you specify on this screen.

Figure 4–1 Language Selection



4.4 Keyboard Configuration

Choose the model of keyboard that best fits your system (see Figure 4–2, *Keyboard Configuration*). If you cannot find an exact match, choose the best **Generic** match for your keyboard type (for example, **Generic 101-key PC**).

Next, choose the correct layout type for your keyboard (for example, U.S. English).

Creating special characters with multiple keystrokes (such as Ñ, Ô, and Ç) is done using "dead keys" (also known as compose key sequences). Dead keys are enabled by default. If you do not wish to use them, select **Disable dead keys**.

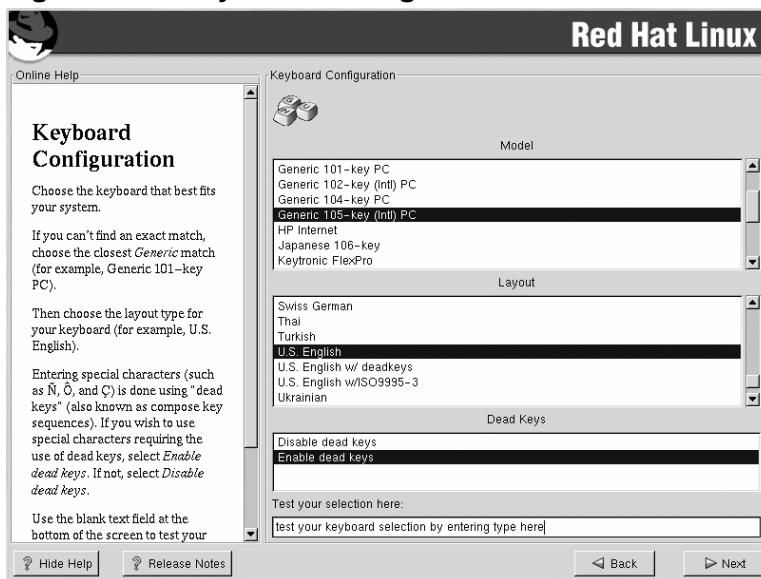
To test your keyboard configuration, use the blank text field at the bottom of the screen to enter text.

Tip

To change your keyboard type after you have installed Red Hat Linux, as root use the `/usr/sbin/kbdconfig` command. Alternatively, you can type `setup` at the root prompt.

To become root, type `su -` at the shell prompt in a terminal window and then press [Enter]. Then, enter the root password and press [Enter].

Figure 4–2 Keyboard Configuration



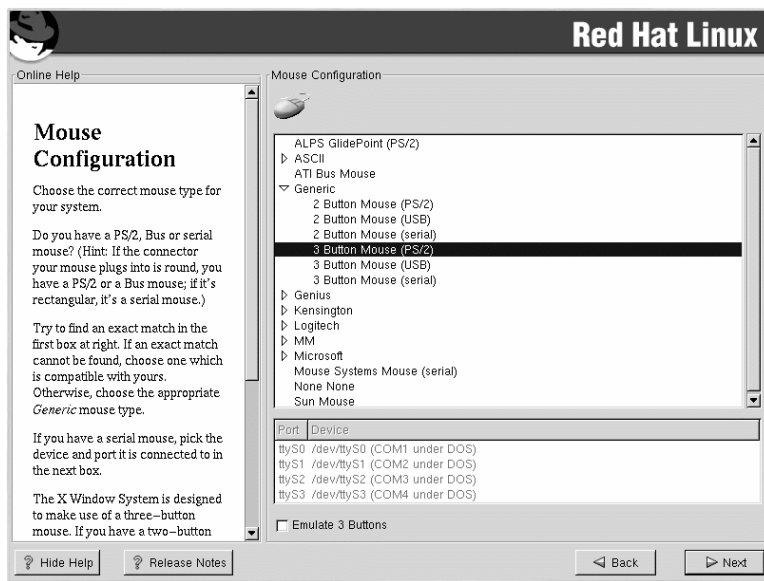
4.5 Mouse Configuration

Choose the correct mouse type for your system. If you cannot find an exact match, choose a mouse type that you are sure is compatible with your system (see Figure 4–3, *Mouse Configuration*).

To determine your mouse's interface, follow the mouse cable back to where it plugs into your system. If the connector at the end of the mouse cable plugs into a rectangular connector, you have a serial mouse; if the connector is round, you have a PS/2 mouse.

If you cannot find a mouse that you are sure is compatible with your system, select one of the **Generic** entries, based on your mouse's number of buttons, and its interface.

Figure 4–3 Mouse Configuration



If you have a PS/2 or a bus mouse, you do not need to pick a port and device. If you have a serial mouse, you should choose the correct port and device that your serial mouse is on.

The **Emulate 3 Buttons** checkbox allows you to use a two-button mouse as if it had three buttons. In general, the X Window System is easier to use with a three-button mouse. If you select this checkbox, you can emulate a third, "middle" button by pressing both mouse buttons simultaneously.

Tip

To change your mouse configuration after you have completed the installation of Red Hat Linux, become root. Then use the `/usr/sbin/mouseconfig` command from a shell prompt.

To configure your mouse to work as a left-handed mouse, reset the order of the mouse buttons. To do this, after you have booted your Red Hat Linux system, type `gpm -B 321` at the shell prompt.

4.6 Welcome to Red Hat Linux

The **Welcome** screen does not prompt you for any input. Please read over the help text in the left panel for additional instructions and information on where to register your Official Red Hat Linux product.

Please notice the **Hide Help** button at the bottom left corner of the screen. The help screen is open by default. If you do not want to view the help information, click on **Hide Help** to minimize the help portion of the screen.

Click on the **Next** button to continue.

4.7 Install Options

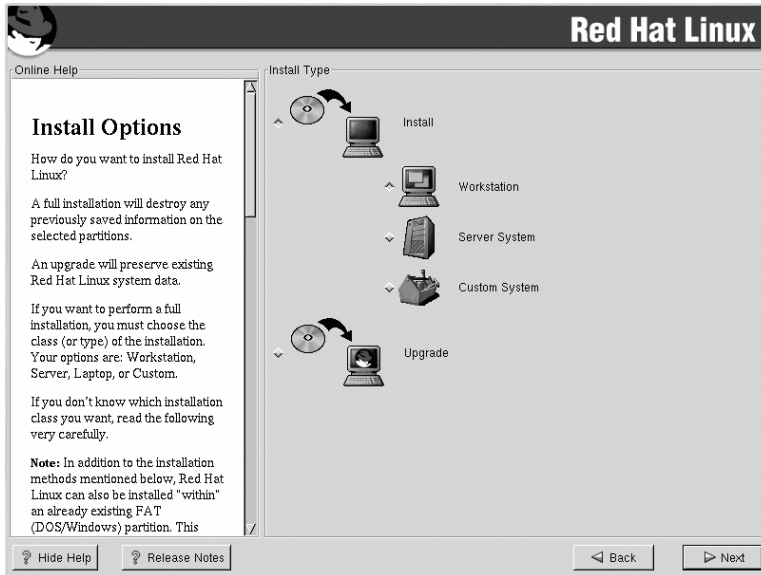
Choose whether you would like to perform a full installation or an upgrade (see Figure 4–4, *Choosing Install or Upgrade*).

WARNING

Upgrading from a beta version of Red Hat Linux for Itanium to Red Hat Linux 7.1 for Itanium is not officially supported. It may or may not work.

Red Hat Linux allows you to choose the installation type that best fits your needs. Your options are **Workstation**, **Server**, **Custom**, or **Upgrade**.

Figure 4–4 Choosing Install or Upgrade



4.8 Disk Partitioning

Automatic partitioning allows you to perform an installation without having to partition your drive(s) yourself. If you do not feel comfortable with partitioning your system, it is recommended that *do not* choose to partition manually and instead let the installation program partition for you.

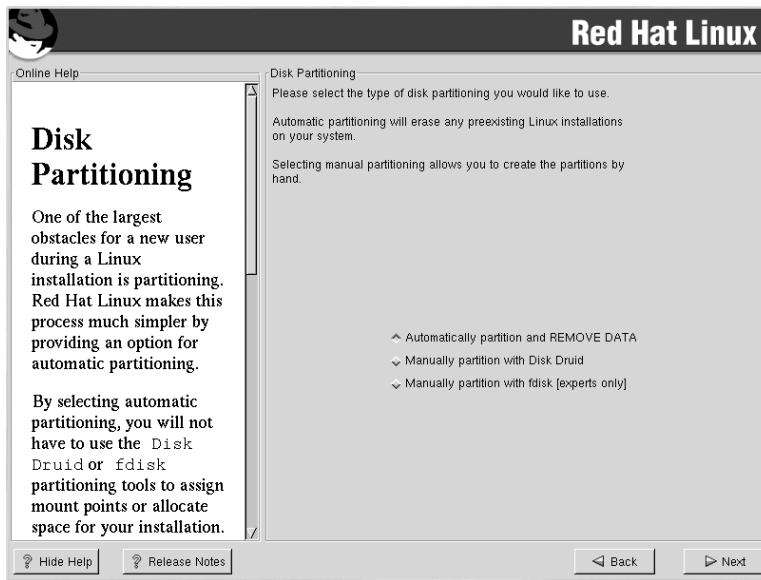
Note

If the **Automatic Partitioning** option does not appear, then you do not have enough free space available for this installation option. You can either exit out of the installation program and make space available, or you can partition manually.

In this screen, you can choose to perform automatic partitioning, to partition manually using Disk Druid, to partition manually using `fdisk`, or use the **Back** button to choose a different installation method (see Figure 4–5, *Disk Partitioning*).

If you do *not* want to lose some or all of your data, choose to partition manually or choose a different installation class.

Figure 4–5 Disk Partitioning



A workstation- or custom-class installation using automatic partitioning will remove all data on all currently existing Linux partitions.



A server-class installation using automatic partitioning will remove all data on all partitions of all hard drives.

If you are not sure how you want your system to be partitioned, please read *An Introduction to Disk Partitions* in the *Official Red Hat Linux Reference Guide*.

4.9 Partitioning Your System

If you chose **Automatic Partitioning**, please skip ahead to Section 4.12, *Network Configuration*.

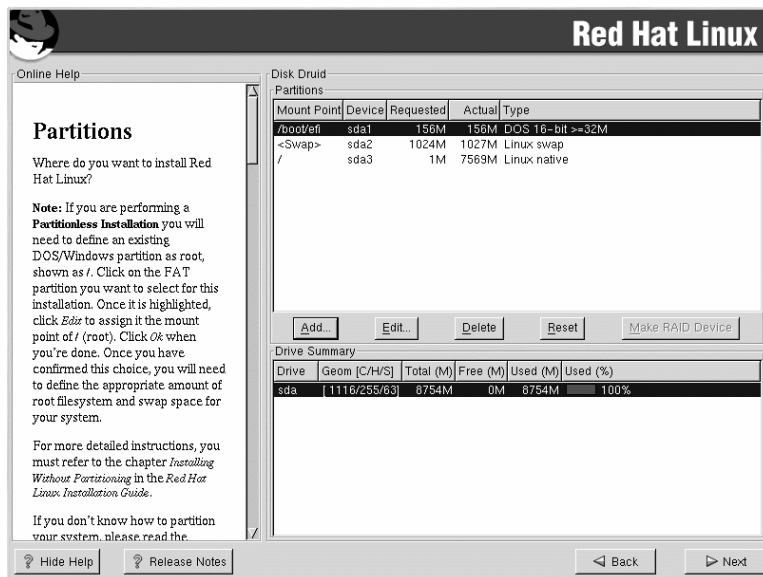
If you chose **Manually partition with fdisk**, please skip ahead to Section 4.10, *Partitioning with fdisk*.

At this point, you must tell the installation program where to install Red Hat Linux. This is done by defining mount points for one or more disk partitions in which Red Hat Linux will be installed. You may also need to create and/or delete partitions at this time (refer to Figure 4–6, *Partitioning with Disk Druid*).

Note

If you have not yet planned how you will set up your partitions, refer to the partitioning appendix in the *Official Red Hat Linux Reference Guide*. As a bare minimum, you will need a `/boot/efi` partition of approximately 128 MB and of type DOS, a swap partition of at least 256 MB, and an appropriately-sized root (`/`) partition.

Figure 4–6 Partitioning with Disk Druid



The partitioning tool used in Red Hat Linux 7.1 is **Disk Druid**. With the exception of certain esoteric situations, **Disk Druid** can handle the partitioning requirements for a typical Red Hat Linux installation.

4.9.1 Partition Fields

Each line in the **Partitions** section represents a disk partition. Each line in this section has five different fields:

- **Mount Point:** A mount point is the location within the directory hierarchy at which a volume exists; the volume is "mounted" at this location. This field indicates where the partition will be mounted. If a partition exists, but is not set, then you need to define its mount point. Double-click on the partition or click the **Edit** button.
- **Device:** This field displays the partition's device name.
- **Requested:** This field shows the partition's original size. To redefine the size of a partition, you must delete the current partition and recreate it using the **Add** button.
- **Actual:** This field shows the space currently allocated to the partition.
- **Type:** This field shows the partition's type (for example, Linux Native or DOS).

4.9.2 Recommended Partitioning Scheme

Unless you have a reason for doing otherwise, we recommend that you create the following partitions:

- A `/boot/efi` partition (128 MB) — the partition mounted on `/boot/efi` contains all the installed kernels, the `initrd` images, and `ELILO` configuration files. In **Disk Druid**, the partition field for `/boot/efi` should look similar to:

```
/boot/efi hda1 128M 128M DOS
```

WARNING

You must create a `/boot/efi` partition of type `DOS` and 128 MB in size as the first primary partition.

- A swap partition (at least 128 MB) — swap partitions are used to support virtual memory. In other words, data is written to a swap partition when there is not enough RAM to store the data your system is processing. Even if you have more memory, a swap partition is still recommended.
-

The minimum size of your swap partition should be equal to your computer's RAM, or 16 MB (whichever is larger). In Disk Druid, the partition field for `swap` should look similar to:

```
<Swap> hda2 128M 128M Linux swap
```

- A `root` partition (900 MB-3.0 GB) — this is where `/` (the root directory) is located. In this setup, all files (except those stored in `/boot`) are on the root partition. In Disk Druid, the partition field for `/` should look similar to:

```
/ hda3 1M 3669M Linux native
```

4.9.3 Problems When Adding a Partition

If you attempt to add a partition and Disk Druid cannot handle your request, you will see a dialog box listing partitions that are currently unallocated, along with the reason they could not be allocated. Unallocated partition(s) are also displayed on Disk Druid's main screen (though you may have to scroll through the **Partitions** section to see them).

As you scroll through the **Partitions** section, you might see an **Unallocated Requested Partition** message in red text, followed by one or more partitions. A common reason for this is a lack of sufficient free space for the partition. In any case, the reason the partition remains unallocated will be displayed after the partition's requested mount point.

To fix an unallocated requested partition, you must move the partition to another drive which has the available space, resize the partition to fit on the current drive, or delete the partition entirely. Make changes using the **Edit** button or by double-clicking on the partition.

4.9.4 Drive Summaries

Each line in the **Drive Summaries** section represents a hard disk on your system. Each line has the following fields:

- **Drive:** This field shows the hard disk's device name.
 - **Geom [C/H/S]:** This field shows the hard disk's geometry. The geometry consists of three numbers representing the number of cylinders, heads, and sectors as reported by the hard disk.
 - **Total:** This field shows the total available space on the hard disk in megabytes.
 - **Free:** This field shows how much of the hard disk's space is still unallocated, in megabytes.
 - **Used:** These fields show how much of the hard disk's space is currently allocated to partitions, in megabytes and percentage.
-

The **Drive Summaries** section is displayed only to indicate your computer's disk configuration. It is not meant to be used as a means of specifying the target hard drive for a given partition; to do that, use the **Allowable Drives** field in Section 4.9.6, *Adding Partitions*.

4.9.5 Disk Druid's Buttons

These buttons control Disk Druid's actions. They are used to add and delete partitions, and to change partition attributes. Buttons on this screen are also used to accept the changes you have made, or to exit Disk Druid. For further explanation, take a look at each button in order.

- **Add:** Used to request a new partition. When selected, a dialog box will appear containing fields (such as mount point and size) that must be filled in.
- **Edit:** Used to modify attributes of the partition currently selected in the **Partitions** section. Selecting **Edit** will open up a dialog box. Some or all of the fields can be edited, depending on whether the partition information has already been written to disk.
- **Delete:** Used to remove the partition currently highlighted in the **Current Disk Partitions** section. You will be asked to confirm the deletion of any partition.
- **Reset:** Used to restore Disk Druid to its original state. All changes made will be lost if you **Reset** the partitions.
- **Make RAID Device:** **Make RAID Device** can be used if you want to provide redundancy to any or all disk partitions. *It should only be used if you have experience using RAID.* To read more about RAID, please refer to *RAID (Redundant Array of Independent Disks)* in the *Official Red Hat Linux Reference Guide*.

4.9.6 Adding Partitions

To add a new partition, select the **Add** button. A dialog box will appear.

Note

You will need to dedicate at least one partition to Red Hat Linux, and optionally more. This is discussed more completely in *An Introduction to Disk Partitions* in the *Official Red Hat Linux Reference Guide*.

- **Mount Point:** Highlight and enter the partition's mount point. For example, if this partition should be the root partition, enter `/`; enter `/boot` for the `/boot` partition, and so on. You can also use the pulldown menu to choose the correct mount point for your partition.
 - **Size (Megs):** Enter the size (in megabytes) of the partition. Note this field starts with a "1" in it; unless changed you will end up with a 1 MB partition.
-

- **Use remaining space:** This checkbox indicates whether the size you entered in the previous field is to be considered the partition's exact size, or its minimum size. When selected, the partition will grow to fill all available space on the hard disk. The partition's size will increase and decrease as other partitions are modified. You can make multiple partitions growable; if you do, the additional free space will be shared among all growable partitions.
- **Partition Type:** This field contains a list of different partition types (such as Linux Native or DOS). Select the appropriate partition type by using the mouse.
- **Allowable Drives:** This field contains a list of the hard disks installed on your system. If a hard disk's box is highlighted, then a desired partition can be created on that hard disk. If the box is *not* checked, then the partition will *never* be created on that hard disk. By using different checkbox settings, you can have Disk Druid place partitions as you see fit, or let Disk Druid decide where partitions should go.
- **Ok:** Select **Ok** once you are satisfied with the settings and wish to create the partition.
- **Cancel:** Select **Cancel** if you do not want to create the partition.

4.9.7 Editing Partitions

To edit a partition, select the **Edit** button or double-click on the existing partition.

Note

If the partition already existed on your hard disk, you will only be able to change the partition's mount point. If you want to make any other changes, you will need to delete the partition and recreate it.

4.9.8 Deleting a Partition

To delete a partition, highlight it in the **Partitions** section and click the **Delete** button. You will be asked to confirm the deletion.

Skip to Section 4.11, *Formatting Partitions* for further installation instructions.

4.10 Partitioning with fdisk

This section applies only if you chose to use `fdisk` to partition your system. If are not using `fdisk`, please skip to Section 4.8, *Disk Partitioning* for automatic partitioning or Section 4.9, *Partitioning Your System* for partitioning with Disk Druid.



Unless you have previously used `fdisk` and understand how it works, we do not recommend that you use it.

Disk Druid is easier to understand than `fdisk`. To exit `fdisk`, click **Back** to return to the previous screen, deselect `fdisk`, and then click **Next**.

If you have chosen to use `fdisk`, the next screen will prompt you to select a drive to partition using `fdisk`.

Once you have chosen which drive to partition, you will be presented with the `fdisk` command screen. If you do not know what command to use, type `[m]` at the prompt for help.

You must create a `/boot/efi` partition of type DOS as the first primary partition with the size of 128 MB.

When you are finished making partitions, type `[w]` to save your changes and quit. You will be taken back to the original `fdisk` screen where you can choose to partition another drive or continue with your installation.

Please Note

None of the changes you make take effect until you save them and exit `fdisk` using the `w` command. You can quit `fdisk` at any time without saving changes using the `q` command.

After you have partitioned your drive(s), click **Next**. Then you will need to use Disk Druid to assign mount points to the partitions you just created with `fdisk`.

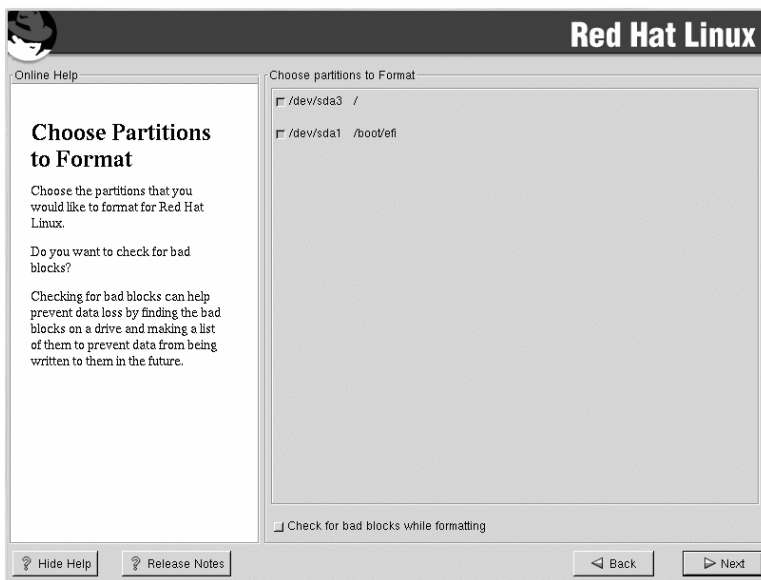
You will not be able to add new partitions using Disk Druid, but you will be able to edit mount points for the partitions you have already created.

For each partition you created with `fdisk`, click on the **Edit** button, choose the appropriate mount point for that partition from the pull-down menu, and click on **OK**.

4.11 Formatting Partitions

After you have created partitions, you will need to format them. Choose the partitions that you would like to format. All newly created partitions should be formatted. In addition, any existing partitions that contain data you no longer need should be formatted. However, partitions such as `/home` or `/usr/local` must not be formatted if they contain data you wish to keep (see Figure 4–7, *Choosing Partitions to Format*).

Figure 4–7 Choosing Partitions to Format



If you wish to check for bad blocks while formatting each filesystem, please make sure to select the **Check for bad blocks while formatting** checkbox. Checking for bad blocks can help prevent data loss by locating the bad blocks on a drive and making a list of them to prevent using them in the future.

Note

Selecting **Check for bad blocks while formatting** may dramatically increase your total installation time. Since most newer hard drives are quite large in size, checking for bad blocks may take a long time; the length of time depends on the size of your hard drive. If you choose to check for bad blocks, you can monitor your progress on virtual console #6.

4.12 Network Configuration

If you do not have a network card, you will not see this screen. Please skip ahead to the next section, Section 4.15, *Time Zone Configuration*.

If you have a network card and you have not already configured your networking, you now have the opportunity (as shown in Figure 4–8, *Network Configuration*).

If you have multiple devices, you will see a tab for each device. You may switch between devices (for example, between eth0 and eth1) and the information you provide on each tab will be specific to each device.

Choose whether you would like to configure your IP address using DHCP (Dynamic Host Configuration Protocol). If you select **Activate on boot**, your network interface will be started when you boot. If you do not have DHCP client access or you are unsure what to provide here, please contact your network administrator.

Next enter, where applicable, the **IP Address**, **Netmask**, **Network**, and **Broadcast** addresses. If you are unsure about any of these, please contact your network administrator.

Figure 4–8 Network Configuration

Red Hat Linux

Online Help

Network Configuration

Choose your network card and whether you would like to configure using DHCP. If you have multiple Ethernet devices, each device will have its own configuration screen. You can switch between device screens, (for example eth0 and eth1); the information you give will be specific to each screen. If you select *Activate on boot*, your network card will be started when you boot.

If you do not have DHCP client access or are unsure as to what this information is, please contact your Network Administrator.

Next enter, where applicable, the IP Address, Netmask, Network, and Broadcast addresses. If you are unsure about any of these

Network Configuration

eth0

Configure using DHCP

Activate on boot

IP Address: 192.168.0.1

Netmask: 255.255.255.0

Network: 192.168.0.254

Broadcast: 192.168.0.1

Hostname: sparky.redhat.com

Gateway: 192.168.0.1

Primary DNS: 207.175.42.153

Secondary DNS:

Tertiary DNS:

? Hide Help ? Release Notes < Back > Next

If you have a fully qualified domain name for the network device, enter it in the **Hostname** field.

Tip

Even if your computer is not part of a network, you can enter a hostname for your system. If you do not take this opportunity to enter in a name, your system will be known as `localhost`.

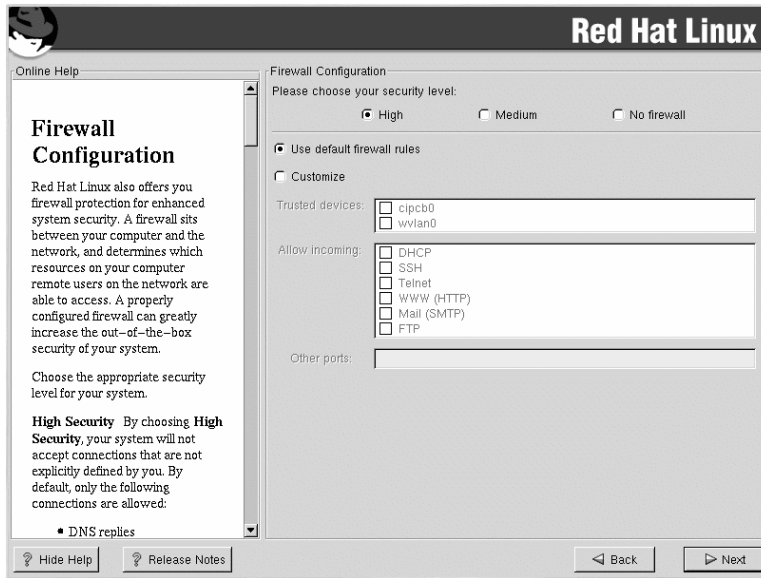
Finally, enter the **Gateway** and **Primary DNS** (and if applicable the **Secondary DNS** and **Tertiary DNS**) addresses.

4.13 Firewall Configuration

Red Hat Linux also offers you firewall protection for enhanced system security. A firewall exists between your computer and the network, and determines which resources on your computer remote users on the network can access. A properly configured firewall can greatly increase the security of your system.

Choose the appropriate security level for your system.

Figure 4–9 Firewall Configuration



High

If you choose **High**, your system will not accept connections (other than the default settings) that are not explicitly defined by you. By default, only the following connections are allowed:

- DNS replies
- DHCP — so any network interfaces that use DHCP can be properly configured

If you choose **High**, your firewall will not allow the following:

- Active mode FTP (passive mode FTP, used by default in most clients, should still work)
- IRC DCC file transfers
- RealAudio™
- Remote X Window System clients

If you are connecting your system to the Internet, but do not plan to run a server, this is the safest choice. If additional services are needed, you can choose **Customize** to allow specific services through the firewall.

Medium

If you choose **Medium**, your firewall will not allow remote machines to have access to certain resources on your system. By default, access to the following resources are not allowed:

- Ports lower than 1023 — the standard reserved ports, used by most system services, such as FTP, SSH, telnet, and HTTP
- The NFS server port (2049)
- The local X Window System display for remote X clients
- The X Font server port (by default, `xfs` does not listen on the network, it is disabled in the font server)

If you want to allow resources such as RealAudio™, while still blocking access to normal system services, choose **Medium**. You can select **Customize** to allow specific services through the firewall.

No Firewall

No firewall provides complete access to your system and does no security checking. Security checking is the disabling of access to certain services. It is recommended that this only be selected if you are running on a trusted network (not the Internet), or if you plan to do more detailed firewall configuration later.

Choose **Customize** to add trusted devices or to allow additional incoming services.

Trusted Devices

Selecting any of the **Trusted Devices** allows access to your system for all traffic from that device; it is excluded from the firewall rules. For example, if you are running a local network, but are connected to the Internet via a PPP dialup, you can check `eth0` and any traffic coming from your local network will be allowed. Selecting `eth0` as trusted means all traffic over the Ethernet is allowed, but the `ppp0` interface is still firewalled. If you want to restrict traffic on an interface, leave it unchecked.

It is not recommended that you make any device that is connected to public networks, such as the Internet, a **Trusted Device**.

Allow Incoming

Enabling these options allow the specified services to pass through the firewall. Note, during a workstation-class installation, the majority of these services are *not* installed on the system.

DHCP

If you allow incoming DHCP queries and replies, you allow any network interface that uses DHCP to determine its IP address. DHCP is normally enabled. If DHCP is not enabled, your computer can no longer get an IP address.

SSH

Secure *SHell* (SSH) is a suite of tools for logging into and executing commands on a remote machine. If you plan to use SSH tools to access your machine through a firewall, enable this option. You need to have the `openssh-server` package installed in order to access your machine remotely, using SSH tools.

Telnet

Telnet is a protocol for logging into remote machines. Telnet communications are unencrypted, and provide no security from network snooping. Allowing incoming Telnet access is not recommended. If you do want to allow inbound Telnet access, you will need to install the `telnet-server` package.

WWW (HTTP)

The HTTP protocol is used by Apache (and by other Web servers) to serve Web pages. If you plan on making your Web server publicly available, enable this option. This option is not required for viewing pages locally or for developing Web pages. You will need to install the `apache` package if you want to serve Web pages.

Mail (SMTP)

If you want to allow incoming mail delivery through your firewall, so that remote hosts can connect directly to your machine to deliver mail, enable this option. You do not need to enable this if you collect your mail from your ISP's server using POP3 or IMAP, or if you use a tool such as `fetchmail`. Note that an improperly configured SMTP server can allow remote machines to use your server to send spam.

FTP

The FTP protocol is used to transfer files between machines on a network. If you plan on making your FTP server publicly available, enable this option. You need to install the `wu-ftpd` (and possibly the `anonftp`) package for this option to be useful.

Other ports

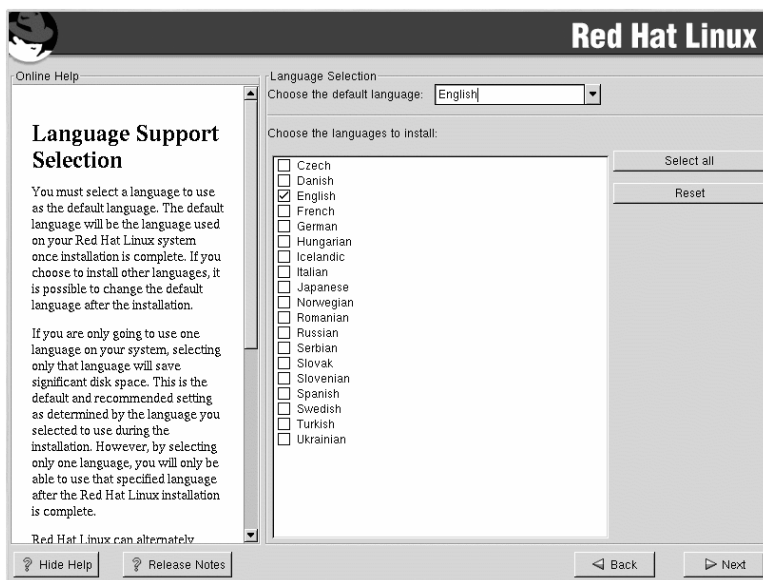
You can allow access to ports which are not listed here, by listing them in **Other ports** field. Use the following format: **port:protocol**. For example, if you want to allow IMAP access through your firewall, you can specify **imap:tcp**. You can also explicitly specify numeric ports; to allow UDP packets on port 1234 through the firewall, enter **1234:udp**. To specify multiple ports, separate them with commas.

4.14 Language Support Selection

Red Hat Linux can install and support multiple languages for use on your system.

You must select a language to use as the default language. The default language will be used on your Red Hat Linux system once installation is complete. If you choose to install other languages, you can change your default language after the installation.

Figure 4–10 Language Support Selection



If you are only going to use one language on your system, selecting only that language will save significant disk space. The default language is the language you selected to use during the installation. However, if you select only one language, you will only be able to use that specified language after the Red Hat Linux installation is complete.

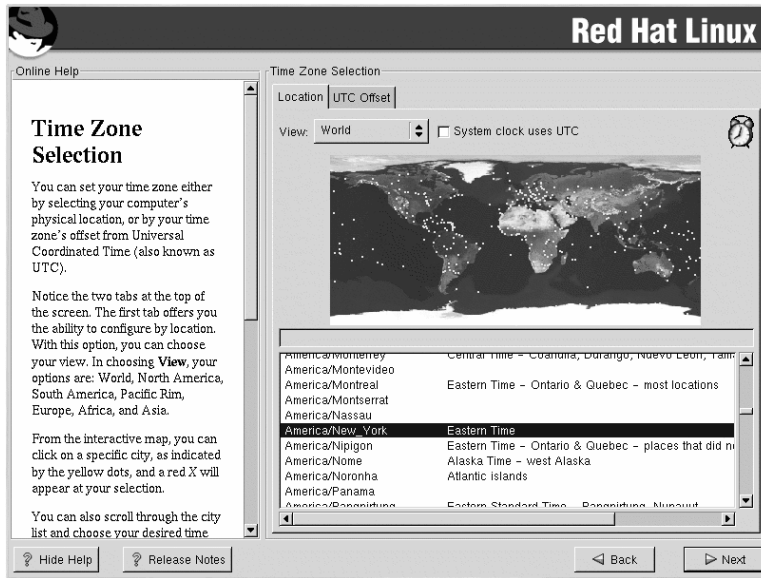
To use more than one language on your system, choose specific languages to be installed or select all languages to have all available languages installed on your Red Hat Linux system.

Use the **Reset** button to cancel your selections. Resetting will revert to the default; only the language you selected for use during the installation will be installed.

4.15 Time Zone Configuration

You can set your time zone either by selecting your computer's physical location, or by specifying your time zone's offset from Coordinated Universal Time (UTC).

Figure 4–11 Configuring the Time Zone



Notice the two tabs at the top of the screen (see Figure 4–11, *Configuring the Time Zone*). The first tab allows you to configure your time zone by your location. You can specify different areas to view: **World, North America, South America, Pacific Rim, Europe, Africa, and Asia.**

On the interactive map, you can also click on a specific city, which is marked by a yellow dot; a red **X** will appear indicating your selection. You can also scroll through a list and choose a time zone.

The second tab allows you to specify a UTC offset. The tab displays a list of offsets to choose from, as well as an option to set daylight saving time.

On both tabs, you can select **System Clock uses UTC**. Please select this if you know that your system is set to UTC.

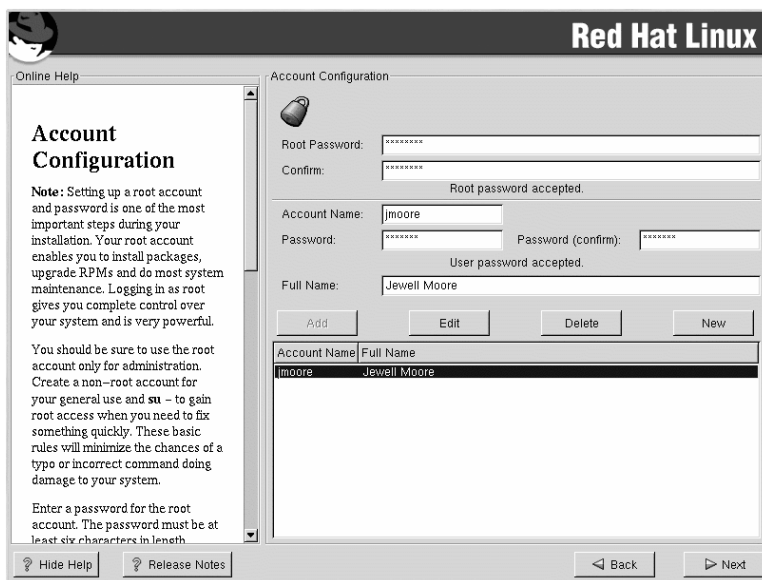
Tip

If you wish to change your time zone configuration after you have booted your Red Hat Linux system, become root and use the `/usr/sbin/time-config` command.

4.16 Account Configuration

The **Account Configuration** screen allows you to set your root password. Additionally, you can set up user accounts for you to log in to once the installation is complete (see Figure 4–12, *Account Creation*).

Figure 4–12 Account Creation



4.16.1 Setting the Root Password

Setting up a root account and password is one of the most important steps during your installation. Your root account is similar to the administrator account used on Windows NT machines. The root account is used to install packages, upgrade RPMs and perform most system maintenance. Logging in as root gives you complete control over your system.

Use the root account only for system administration. Create a non-root account for your general use and `su -` to root when you need to fix something quickly. These basic rules will minimize the chances of a typo or an incorrect command doing damage to your system.

The installation program will prompt you to set a root password¹ for your system. You must enter a root password. The installation program will not let you proceed to the next section without entering a root password.

The root password must be at least six characters long; the password you type is not echoed to the screen. You must enter the password twice; if the two passwords do not match, the installation program will ask you to enter them again.

You should make the root password something you can remember, but not something that is easy for someone else to guess. Your name, your phone number, **qwerty**, **password**, **root**, **123456**, and **anteater** are all examples of bad passwords. Good passwords mix numerals with upper and lower case letters and do not contain dictionary words: **Aard387vark** or **420BMttNT**, for example. Remember that the password is case-sensitive. If you write down your password, keep it in a secure place. However, it is recommended that you do not write down this or any password you create.

Note

Do not use one of the example passwords offered in this manual. Using one of these passwords could be considered a security risk.

Note

The root user (also known as the superuser) has complete access to the entire system; for this reason, logging in as the root user is best done *only* to perform system maintenance or administration.

4.16.2 Setting Up User Accounts

If you choose to create a user account now, you will have an account to log in to once the installation has completed. This allows you to safely and easily log into your computer without having to be root to create your user account.

¹ A root password is the administrative password for your Red Hat Linux system. You should only log in as root when needed for system maintenance. The root account does not operate within the restrictions placed on normal user accounts, so changes made as root can have implications for your entire system.

Enter an account name. Then enter and confirm a password for that user account. Enter the full name of the account user and press **Add**. Your account information will be added to the account list, and the user account fields will be cleared so that you can add another user.

You can also choose **New** to add a new user. Enter the user's information and use the **Add** button to add the user to the account list.

You can also **Edit** or **Delete** the user accounts you have created and no longer want.

4.17 Authentication Configuration

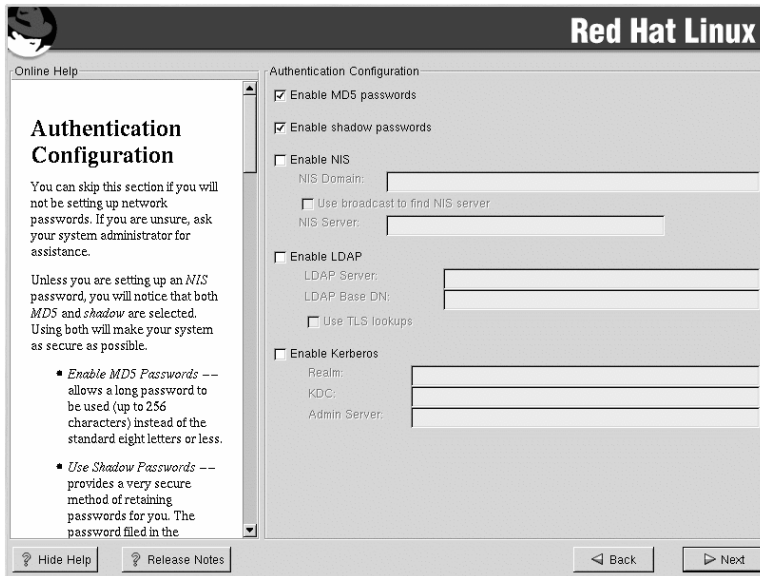
If you are performing a workstation-, server, or laptop-class installation, please skip ahead to Section 4.18, *Package Group Selection*.

You may skip this section if you will not be setting up network passwords. If you do not know whether you should do this, please ask your system administrator for assistance.

Unless you are setting up **NIS** authentication, you will notice that only **MD5** and **shadow** passwords are selected (see Figure 4–13, *Authentication Configuration*). We recommend you use both to make your machine as secure as possible.

To configure the NIS option, you must be connected to an NIS network. If you are not sure whether you are connected to an NIS network, please ask your system administrator.

Figure 4–13 Authentication Configuration



- **Enable MD5 passwords** allows a long password to be used (up to 256 characters), instead of the standard eight letters or less.
- **Enable shadow passwords** provides a secure method for retaining passwords. The passwords are stored in `/etc/shadow`, which can only be read by root.
- **Enable NIS** allows you to run a group of computers in the same Network Information Service domain with a common password and group file. You can choose from the following two options:
 - **NIS Domain** allows you to specify the domain or group of computers your system belongs to.
 - **Use broadcast to find NIS server** allows you to broadcast a message to your local area network to find an available NIS server.
 - **NIS Server** causes your computer to use a specific NIS server, rather than broadcasting a message to the local area network asking for any available server to host your system.
- **Enable LDAP** tells your computer to use LDAP for some or all authentication. LDAP consolidates certain types of information within your organization. For example, all of the different lists of users within your organization can be merged into one LDAP directory. For more information about LDAP, refer to *Official Red Hat Linux Reference Guide, Lightweight Directory Access Protocol (LDAP)*. You can choose from the following options:

- **LDAP Server** — allows you to access a specified server (by providing an IP address) running the LDAP protocol.
- **LDAP Base DN** — allows you to look up user information by its Distinguished Name (DN).
- **Use TLS (Transport Layer Security) lookups** — this option allows LDAP to send encrypted user names and passwords to an LDAP server before authentication.
- **Enable Kerberos** — Kerberos is a secure system for providing network authentication services. For more information about Kerberos, see *Using Kerberos 5 on Red Hat Linux* in the *Official Red Hat Linux Reference Guide*. There are three options to choose from here:
 - **Realm** — this option allows you to access a network that uses Kerberos, composed of one or a few servers (also known as KDCs) and a potentially large number of clients.
 - **KDC** — this option allows you access to the Key Distribution Center (KDC), a machine that issues Kerberos tickets (sometimes called a Ticket Granting Server or TGS).
 - **Admin Server** — this option allows you to access a server running kadmind.

4.18 Package Group Selection

After your partitions have been selected and configured for formatting, you are ready to select packages for installation.

Note

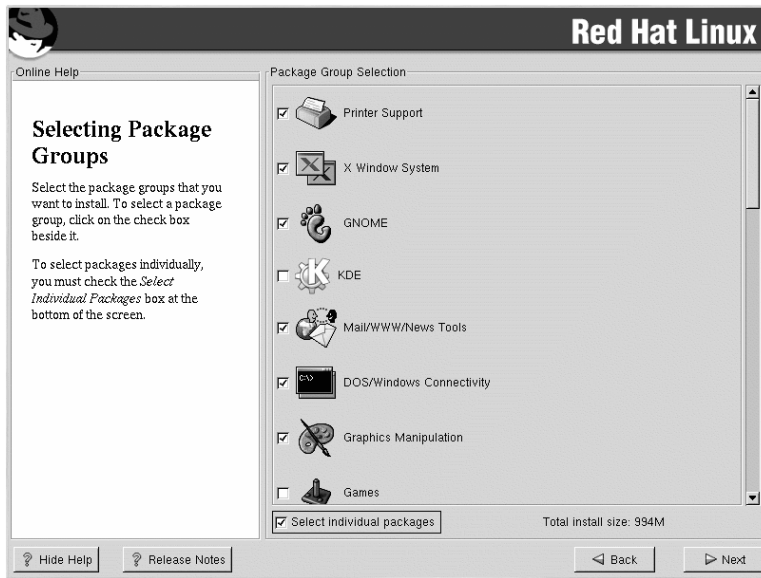
Unless you choose a custom-class installation, the installation program will automatically choose most packages for you. However, you must select either GNOME or KDE (or both) to install a graphical environment.

GNOME and KDE are both graphical desktop environments² that handle the overall look and feel of your system. You must choose one of these to have a default graphical setup, but you can also install both to determine for yourself which you prefer.

You can select components, which group packages together according to function (for example, **C Development**, **Networked Workstation**, or **Web Server**), individual packages, or a combination of the two.

To select a component, click on the checkbox beside it (see Figure 4–14, *Package Group Selection*).

² A desktop environment in Linux is similar to the environment you might see in other operating systems. However, environments differ in their look and feel and are easily customized for your individual needs.

Figure 4–14 Package Group Selection

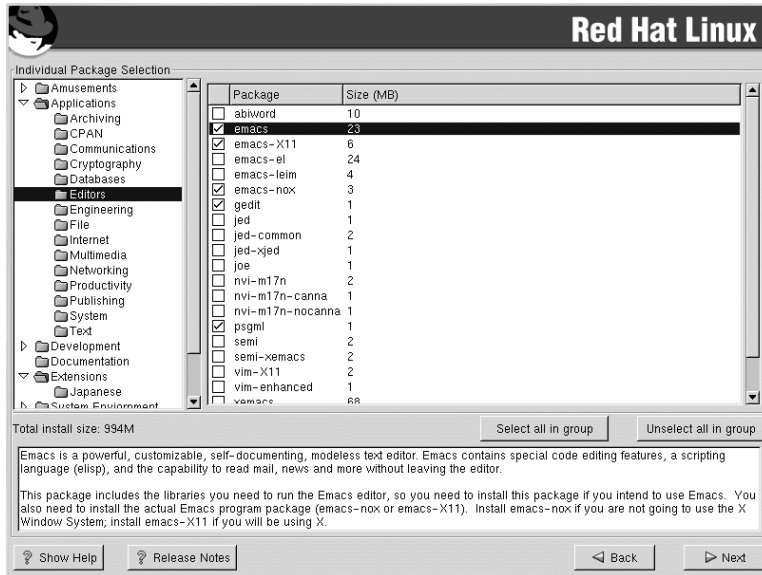
Select each component you wish to install. Selecting **Everything** (at the end of the component list) during a custom-class installation installs all packages included with Red Hat Linux. If you select every package, you will need approximately 1.7 GB of free disk space.

To select packages individually, check the **Select Individual Packages** box at the bottom of the screen.

4.18.1 Selecting Individual Packages

After selecting the components you wish to install, you can select or deselect individual packages. You can select or deselect packages using your mouse (see Figure 4–15, *Selecting Individual Packages*).

Figure 4–15 Selecting Individual Packages



On the left side of the screen you will see a directory listing of various package groups. When you expand a directory (double-click to select it) and click on a single directory, the list of packages available for installation will appear in the panel on the right.

To select an individual package, double-click the checkbox beside the package name. A check mark in the box means that a package has been selected.

For more information about a specific package, click on the individual package name. The package information will appear at the bottom of the screen.

You can also select or deselect all packages listed within a particular group, by clicking on the **Select all in group** or **Unselect all in group** buttons.

Note

Some packages (such as the kernel and certain libraries) are required for every Red Hat Linux system and are not available to select or deselect. These base packages are selected by default.

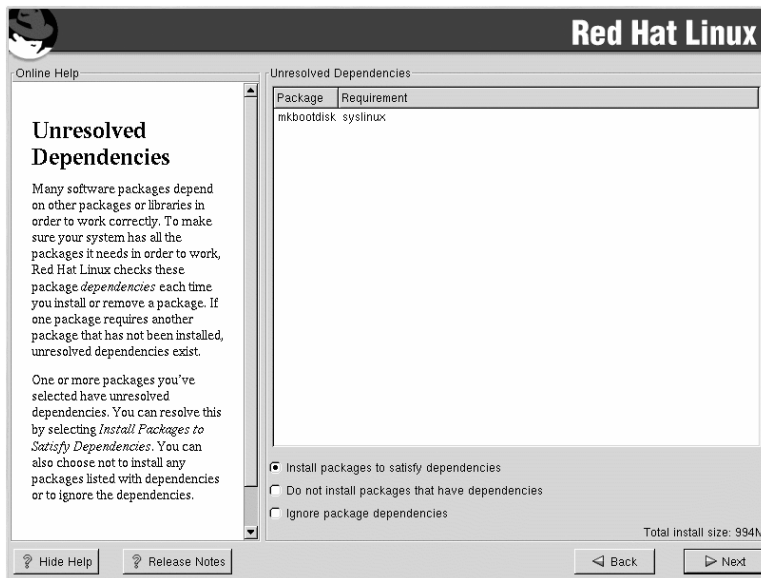
4.18.2 Unresolved Dependencies

Many software packages, in order to work correctly, depend on other software packages that must be installed on your system. For example, many of the graphical Red Hat system administration tools require the `python` and `pythonlib` packages. To make sure your system has all the packages it needs in order to be fully functional, Red Hat Linux checks these package **dependencies** each time you install or remove software packages.

If any package requires another package which you have not selected to install, the program presents a list of these unresolved dependencies and gives you the opportunity to resolve them (see Figure 4–16, *Unresolved Dependencies*).

The **Unresolved Dependencies** screen will only appear if you are missing packages that are needed by the packages you have selected. At the bottom of the screen, under the list of missing packages, an **Install packages to satisfy dependencies** checkbox is selected by default. If you leave this checked, the installation program will resolve package dependencies automatically by adding all required packages to the list of selected packages.

Figure 4–16 Unresolved Dependencies



4.19 GUI X Configuration Tool

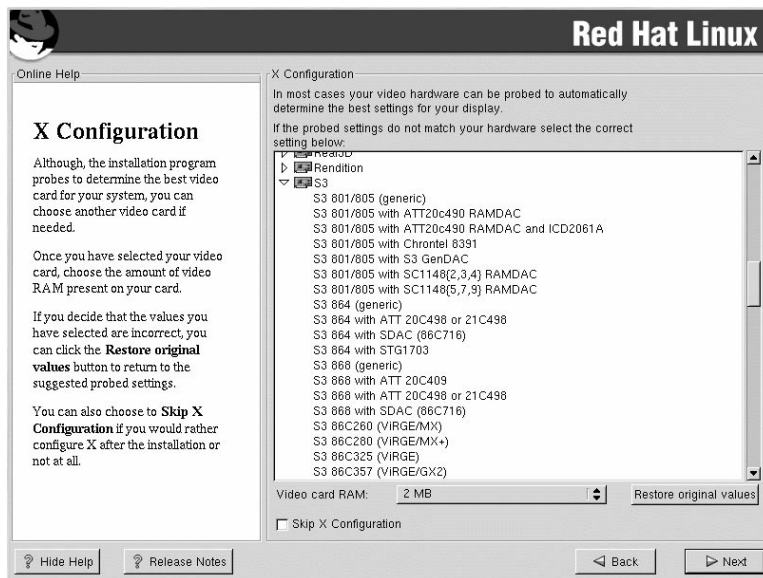
If you decided to install the X Window System packages, you now have the opportunity to configure an X server for your system. If you did not choose to install the X Window System packages, skip ahead to Section 4.21, *Installing Packages*.

4.19.1 Video Card Configuration

Xconfigurator will now present a list of video cards for you to choose from.

If your video card does not appear on the list (see Figure 4–17, *Video Card Setup*), X may not support it. However, if you have technical knowledge about your card, you may choose **Unlisted Card** and attempt to configure it by matching your card's video chipset with one of the available X servers.

Figure 4–17 Video Card Setup



Next, enter the amount of video memory installed on your video card. If you are not sure, please consult the documentation accompanying your video card. You will not damage your video card by choosing more memory than is available, but the X server may not start correctly if you do.

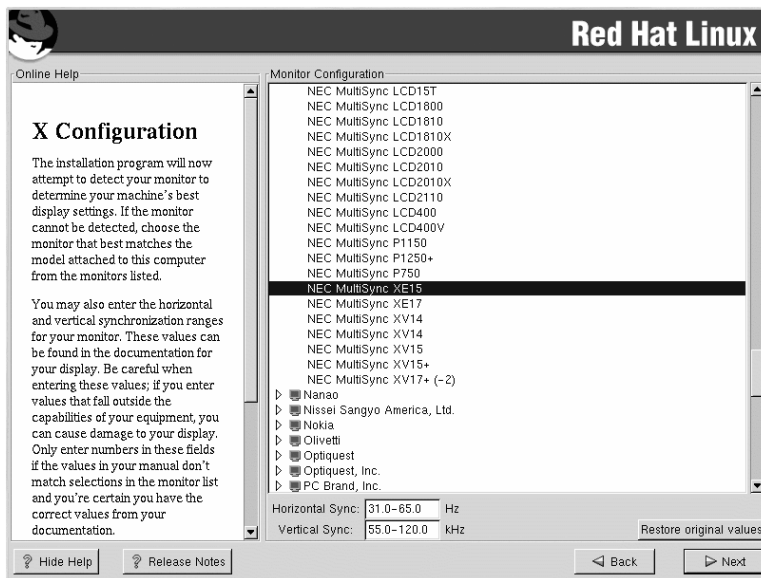
If you decide that the values you have selected are incorrect, you can click the **Restore original values** button to return to the suggested settings.

You can also select **Skip X Configuration** if you would rather configure X after the installation or not at all.

4.19.2 Configuring Your Monitor

Xconfigurator, the X Window System configuration tool, presents a list of monitors for you to choose from. In the list, you can either use the monitor that is autodetected for you, or choose another monitor.

Figure 4–18 Monitor Selection



If your monitor does not appear on the list, select the most appropriate **Generic** model available. If you do select a **Generic** monitor, Xconfigurator will suggest horizontal and vertical sync ranges. These values are generally available in the documentation which accompanies your monitor, or from your monitor's vendor or manufacturer; please check your documentation to make sure these values are set correctly.



Do not select a monitor *similar* to your monitor unless you are certain that the monitor you are selecting does not exceed the capabilities of your monitor. Doing so may overclock your monitor and damage or destroy it.

The horizontal and vertical ranges that Xconfigurator suggests for your monitor are also displayed on this screen.

If you decide that the values you have selected are incorrect, you can click the **Restore original values** button to return to the suggested settings.

Click **Next** when you have finished configuring your monitor.

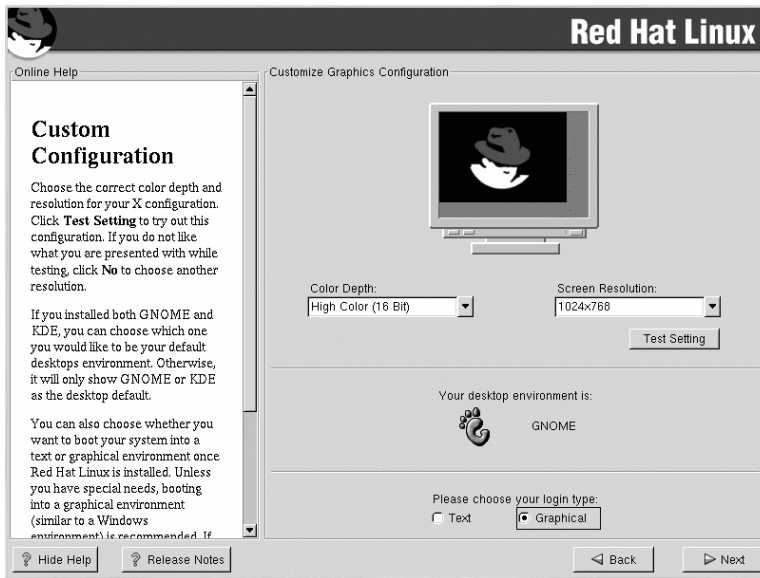
4.19.3 Custom Configuration

Choose the correct color depth and resolution for your X configuration. Click **Test Setting** to try out this configuration. If you do not like what you see during the test, click **No** to choose another resolution.

We recommend that you test your configuration, to make sure the resolution and color settings are usable.

If you installed both GNOME and KDE, you can choose which one to use as your default desktop environment. If you installed one or the other, it will only show GNOME or KDE as the desktop default.

Figure 4–19 X Customization



You can also choose whether you want to boot your system into a text or graphical environment once Red Hat Linux is installed. Unless you have special needs, booting into a graphical environment (similar to a Windows environment) is recommended. If you choose to boot into a text environment, you will be presented with a command prompt (similar to a DOS environment).

4.20 Preparing to Install

You will now see a screen preparing you for the installation of Red Hat Linux.

WARNING

If, for some reason, you would rather not continue with the installation process, this is your last opportunity to safely cancel the process and reboot your machine. Once you press the Next button, partitions will be written and packages will be installed. If you wish to abort the installation, you should reboot now before your hard drive(s) are rewritten.

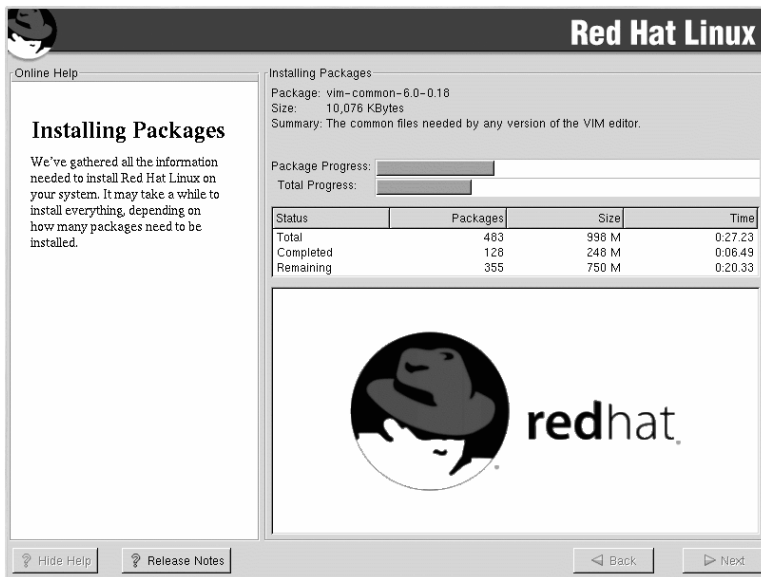
To cancel this installation process, press your computer's Reset button or use the [Control]-[Alt]-[Delete] key combination to restart your machine.

For your reference, a complete log of your installation can be found in `/tmp/install.log` once you reboot your system.

4.21 Installing Packages

At this point there is nothing left for you to do until all the packages have been installed (see Figure 4–20, *Installing Packages*). How quickly this happens depends on the number of packages you have selected and your computer's speed.

Figure 4–20 Installing Packages



4.22 Installation Complete

Congratulations! Your Red Hat Linux 7.1 installation is now complete!

The installation program will prompt you to prepare your system for reboot. Do not forget to remove any diskette in the diskette drive or CD in the CD-ROM drive.

4.23 Booting Your Machine and Post-Installation Setup

This section describes how to boot your Itanium into Red Hat Linux and how to set your EFI console variables so that Red Hat Linux is automatically booted when the machine is powered on.

After you reboot your system at the end of the installation program, type the following command to boot into Red Hat Linux:

```
Shell>elilo
```

After you type `elilo`, the default kernel listed in the `/boot/efi/elilo.conf` configuration file is loaded. (The first kernel listed in the file is the default.)

If you want to load a different kernel, type the label name of the kernel from the file `/boot/efi/elilo.conf`. After `elilo`. For example, to load the kernel named `linux-up` for the uni-processor kernel, type

```
Shell>elilo linux-up
```

If you do not know the names of the installed kernels, you can view the `/boot/efi/elilo.conf` file in EFI with the following instructions:

1. At the `Shell>` prompt, change devices to the system partition (mounted as `/boot/efi` in Linux). For example, if `fs0` is the system boot partition, type `fs0:` at the EFI Shell prompt.
2. Type `ls` at the `fs0:\>` to make sure you are in the correct partition.
3. Then type

```
Shell>type elilo.conf
```

This command displays the contents of the configuration file. Each stanza contains a line beginning with `label` followed by a label name for that kernel. The label name is what you type after `elilo` to boot the different kernels.

4.23.1 Post-Installation Boot Loader Options

In addition to specifying a kernel to load, you can also enter other boot options such as `single` for single user mode or `mem=1024M` to force Red Hat Linux to see 1024 MB of memory. To pass options to the boot loader, enter the following at the EFI Shell prompt (replace `linux` with the label name of the kernel you want to boot and `options` with the boot options you want to pass to the kernel):

```
Shell>elilo linux option
```

4.23.2 Booting Red Hat Linux Automatically

After installing Red Hat Linux you can type `elilo` and any boot options at the EFI Shell prompt each time you wish to boot your Itanium system. However, if you wish to configure your system to boot into Red Hat Linux automatically, you need to configure the EFI Boot Manager.

To configure the EFI Boot Manager,

1. Boot the Itanium system and choose **Boot option maintenance menu** from the EFI Boot Manager menu.
2. Choose **Add a Boot Option** from the Main Menu.
3. Select the system partition that is mounted as `/boot/efi` in Linux.
4. Select the `elilo.efi` file.
5. At the `Enter New Description:` prompt, type **Red Hat Linux 7.1**, or any name that you want to appear on the EFI Boot Manager menu.
6. At the `Enter Boot Option Data Type` prompt, enter **N** for **No Boot Option** if you do not want to pass options to the ELILO boot loader. This option will work for most cases. If you want to pass options to the boot loader, you can configure it in the `/boot/efi/elilo.conf` configuration file instead.
7. Answer **Yes** to the `Save changes to NVRAM` prompt. This will return you to the EFI Boot Maintenance Manager menu.
8. Next, you want to make the **Red Hat Linux 7.1** menu item the default. You will see a list of boot options. Move the **Red Hat Linux 7.1** menu item up to the top of the list by selecting it with the arrow keys and pressing the `[u]` key to move it up the list. You can move items down the list by selecting it and pressing the `[d]` key. After changing the boot order, choose **Save changes to NVRAM**. Choose **Exit** to return to the Main Menu.
9. Optionally, you can change to boot timeout value by choosing **Set Auto Boot TimeOut => Set Timeout Value** from the Main Menu.
10. Return to the EFI Boot Manager by selecting **Exit**.

Using a Startup Script

It is recommended that you configure the ELILO Boot Manager to boot Red Hat Linux automatically. However, if you require additional commands to be executed before starting the ELILO boot loader, you can create a startup script named `startup.nsh`. The last command should be `elilo` to boot into Linux.

The `startup.nsh` script should be in the `/boot/efi` partition (`/boot/efi/startup.nsh`) and contain the following text:

```
echo -off
your set of commands
elilo
```

If you want to pass options to the boot loader (see Section 4.23.1, *Post-Installation Boot Loader Options*) add them after **elilo**.

You can either create this file after booting into Red Hat Linux or use the editor built into the EFI shell. To use the EFI shell, at the `Shell>` prompt, change devices to the system partition (mounted as `/boot/efi` in Linux). For example, if `fs0` is the system boot partition, type `fs0:` at the EFI Shell prompt. Type `ls` to make sure you are in the correct partition. Then type `edit startup.nsh`. Type the contents of the file and save it.

The next time the system boots, EFI will detect the `startup.nsh` file and use it to boot the system. To stop EFI from loading the file, type `[Ctrl]-[c]`. This will abort the process, and you will return to the EFI shell prompt.

5 Installing Red Hat Linux via Text Mode

This release of Red Hat Linux features a graphical, mouse-based installation program, but you can also install Red Hat Linux using a text mode, keyboard-based installation program. This chapter briefly explains how to use the text mode installation program. Here are some recommendations:

- If you are new to Linux installations, read Chapter 4, *Installing Red Hat Linux* first. The main focus of the chapter is the graphical installation process, but most of the concepts apply to the text mode installation as well. After reading that chapter, Section 5.1, *Things You Should Know* will give you more in-depth information regarding the aspects of installing Red Hat Linux that do not apply to the graphical installation process.

Additionally, the *An Introduction to Disk Partitions* appendix in the *Official Red Hat Linux Reference Guide* may be helpful to you, since it discusses disk partition resizing. If you plan to install Red Hat Linux on a disk where another operating system is currently installed, this knowledge will be crucial.

- If you plan to install over a network (via NFS, FTP, or HTTP), you must make a network boot disk. *Booting the Installation Program from an LS-120 Diskette* in Section 3.2.3 explains how to do this.
- If you have never used the text mode installation program, or need a refresher on its user interface, read the next sections.
- To begin installation without further delay, turn to Section 5.3, *Starting the Installation Program*.

5.1 Things You Should Know

Before attempting to install Red Hat Linux, you should collect information about your system. This information will help prevent any surprises during the installation. You can find most of this information in the documentation that came with your system, or from the system's vendor or manufacturer.

The most recent list of supported hardware can be found at <http://hardware.redhat.com>. You should check your hardware against this list before proceeding.

Note

You can perform a text mode installation of Red Hat Linux 7.1 by following the instructions in this chapter. However, if you are installing from a CD-ROM, you might prefer to use the graphical installation mode, which is easy to use and provides a flexible, custom-class installation mode. For more information on graphical installations, turn to Chapter 4, *Installing Red Hat Linux*.

5.1.1 Basic Hardware Configuration

You should have a basic understanding of the hardware installed in your computer, including the following:

- Hard drive(s) — specifically, the number, size, and type. If you have more than one, it is helpful to know which one is first, second, and so on. It is also good to know if your drives are IDE or SCSI. If you have IDE drives, you should check your computer's BIOS to see if you are accessing them in linear mode. Please refer to your computer's documentation for the proper key sequence to access the BIOS. Note that your computer's BIOS may refer to linear mode by other names, such as "large disk mode." Again, your computer's documentation should be consulted for clarification.
- Memory — the amount of RAM installed in your computer.
- CD-ROM — most importantly, the unit's interface type (IDE, SCSI, or other interface) and, for non-IDE, non-SCSI CD-ROMs, the make and model number. IDE CD-ROMs (also known as AT-API) are the most common type of CD-ROM in recently manufactured, PC-compatible computers.
- SCSI adapter (if one is present) — the adapter's make and model number.
- Network card (if one is present) — the card's make and model number.
- Mouse — the mouse's type (serial, PS/2, or bus mouse), protocol (Microsoft, Logitech, MouseMan, etc.), and number of buttons; also, for serial mice, the serial port it is connected to.

On many newer systems, the installation program is able to automatically identify most hardware. However, it is a good idea to collect this information anyway, just to be sure.

5.1.2 Video Configuration

If you will be installing the X Window System, you should also be familiar with the following:

- Your video card — the card's make and model number (or the video chipset it uses) and the amount of video RAM it has. (Most PCI-based cards are auto-detected by the installation program.)
-

- Your monitor — the unit's make and model number, along with allowable ranges for horizontal and vertical refresh rates. (Newer models may be auto-detected by the installation program.)

5.1.3 Network-related Information

If you are connected to a network, be sure you know the following:

- IP address — usually represented as a set of four numbers separated by dots, such as 10.0.2.15.
- Netmask — another set of four numbers separated by dots; an example netmask would be 255.255.248.0.
- Gateway IP address — another set of four dot-separated numbers; for example, 10.0.2.254.
- One or more name server IP addresses — one or more sets of dot-separated numbers; for example, 10.0.2.1 might be the address of a name server.
- Domain name — the name your organization uses; for example, Red Hat has a domain name of redhat.com.
- Hostname — the name assigned to your individual system; for example, a computer might be named pooh.

Note

The information provided here is as an example only! Do *not* use it when you install Red Hat Linux! If you do not know the proper values for your network, ask your network administrator.

5.2 The Installation Program User Interface

The Red Hat Linux text mode installation program uses a screen-based interface that includes most of the on-screen "widgets" commonly found on graphical user interfaces. Figure 5–1, *Installation Program Widgets as seen in Configure TCP/IP* and Figure 5–2, *Installation Program Widgets as seen in Disk Druid* illustrate the screens you will see.

Figure 5–1 Installation Program Widgets as seen in Configure TCP/IP

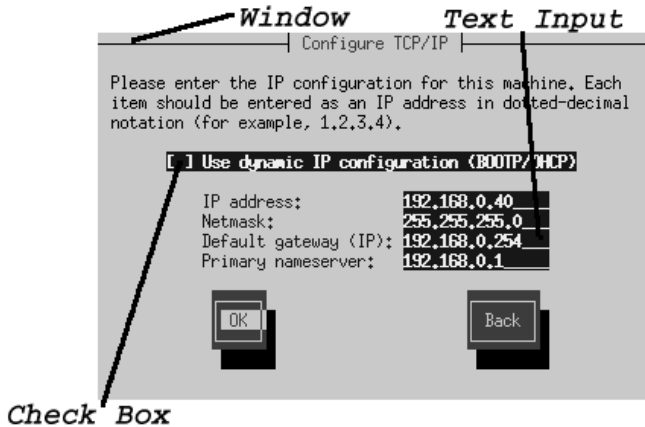
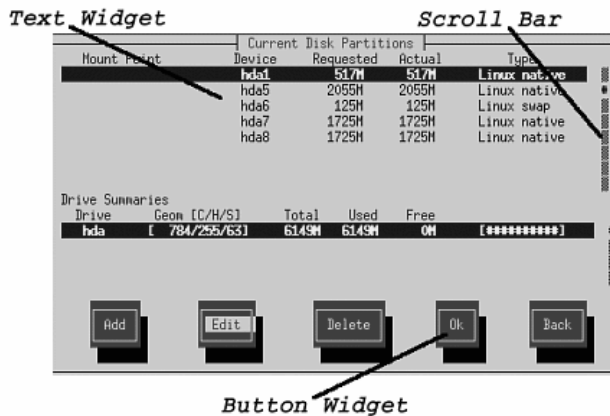


Figure 5–2 Installation Program Widgets as seen in Disk Druid



Here is a list of the most important widgets shown in Figure 5–1, *Installation Program Widgets as seen in Configure TCP/IP* and Figure 5–2, *Installation Program Widgets as seen in Disk Druid*:

- Window — windows (usually referred to as **dialogs** in this manual) will appear on your screen throughout the installation process. At times, one window may overlay another; in these cases, you

can only interact with the window on top. When you are finished in that window, it will disappear, allowing you to continue working in the window underneath.

- **Text Input** — text input lines are regions where you can enter information required by the installation program. When the cursor rests on a text input line, you may enter and/or edit information on that line.
- **Checkbox** — checkboxes allow you to select or deselect a feature. The box displays either an asterisk (selected) or a space (unselected). When the cursor is within a checkbox, press [Space] to select an unselected feature or to deselect a selected feature.
- **Text widget** — text widgets are regions of the screen for the display of text. At times, text widgets may also contain other widgets, such as checkboxes. If a text widget contains more information than can be displayed in the space reserved for it, a scroll bar appears; if you position the cursor within the text widget, you can then use the [Up] and [Down] arrow keys to scroll through all the information available. Your current position is shown on the scroll bar by a # character, which moves up and down the scroll bar as you scroll.
- **Button widget** — button widgets are the primary method of interacting with the installation program. You progress through the windows of the installation program by navigating these buttons, using the [Tab] and [Enter] keys. Buttons can be selected when they are highlighted.
- **Cursor** — although not a widget, the cursor is used to select (and interact) with a particular widget. As the cursor is moved from widget to widget, it may cause the widget to change color, or you may only see the cursor itself positioned in or next to the widget. In Figure 5–1, *Installation Program Widgets as seen in Configure TCP/IP*, the cursor is positioned on the **OK** button. Figure 5–2, *Installation Program Widgets as seen in Disk Druid* shows the cursor on the **Edit** button.

5.2.1 Using the Keyboard to Navigate

Navigation through the installation dialogs is performed through a simple set of keystrokes. To move the cursor, use [Left], [Right], [Up], and [Down] arrow keys. Use [Tab], and [Alt]-[Tab] to cycle forward or backward through each widget on the screen. Along the bottom, most screens display a summary of available cursor positioning keys.

To "press" a button, position the cursor over the button (using [Tab], for example) and press [Space] or [Enter]. To select an item from a list of items, move the cursor to the item you wish to select and press [Enter]. To select an item with a checkbox, move the cursor to the checkbox and press [Space] to select an item. To deselect, press [Space] a second time.

Pressing [F12] accepts the current values and proceeds to the next dialog; it is equivalent to pressing the **OK** button.



Unless a dialog box is waiting for your input, do not press any keys during the installation process (doing so may result in unpredictable behavior).

5.3 Starting the Installation Program

The following methods can be used to start the installation:

- Insert a boot diskette that you have created into the primary diskette drive and reboot your computer.
- Insert the Red Hat Linux CD 1 into the drive and reboot, if your computer can boot from the CD-ROM drive.

Refer to Section 3.2.3, *Booting the Installation Program* to determine whether you can boot off the CD-ROM or need to boot off a boot diskette.

To boot into text mode, at the EFI Shell type:

```
Shell>elilo linux text
```

5.3.1 Displaying Online Help

Once the installation program is loaded into memory, you can obtain information about the installation process and options by pressing [F1] through [F6]. For example, press [F2] to see general information about the online help screens.

5.4 Installation Cross-reference Table

Most text mode installation screens can be cross-referenced with their GUI screen counterparts. This table lists the installation screens in order and where you can go to get the necessary information for each part of the installation.

For those screens which do not have adequate GUI counterparts, installation-related instructions and screenshots will be provided in this chapter.

Table 5–1 Installation Cross-reference Table

| Text Mode Screen | Text Mode Reference Point |
|--|--|
| Language Screen | Section 4.3, <i>Language Selection</i> |
| Keyboard Screen | Section 4.4, <i>Keyboard Configuration — Layout</i> |
| Installation Method | Section 4.2, <i>Selecting an Installation Method</i> |
| Identify Disk Partition to Install From | Section 5.5, <i>Identify Disk Partition to Install From</i> |
| Installing over a Network | Section 5.6, <i>Installing over a Network</i> |
| Welcome Screen | Section 4.6, <i>Welcome to Red Hat Linux</i> |
| Installation Type | Section 4.7, <i>Install Options</i> |
| Automatic Partitioning | Section 4.8, <i>Disk Partitioning</i> |
| Disk Druid | Section 4.9, <i>Partitioning Your System</i> |
| fdisk | Section 4.10, <i>Partitioning with fdisk</i> |
| Hostname Configuration | Section 4.12, <i>Network Configuration</i> |
| Firewall Configuration | Section 4.13, <i>Firewall Configuration</i> |
| Network Configuration | Section 4.12, <i>Network Configuration</i> |
| Mouse Selection | Section 4.5, <i>Mouse Configuration</i> |
| Language Support and Default Language | Section 4.14, <i>Language Support Selection</i> |
| Time Zone Selection | Section 4.15, <i>Time Zone Configuration</i> |
| Root Password | Section 4.16, <i>Account Configuration</i> |
| Add User/User Account Setup | Section 4.16, <i>Account Configuration</i> |
| Authentication Configuration | Section 4.17, <i>Authentication Configuration</i> |
| Package Installation (Group, Individual, Dependencies) | Section 4.18, <i>Package Group Selection</i> |
| X Configuration — Video Adapter | Section 5.7, <i>Configuring Your Video Adapter</i> |
| Package Installation | Section 4.20, <i>Preparing to Install</i> and Section 4.21, <i>Installing Packages</i> |

| Text Mode Screen | Text Mode Reference Point |
|---------------------------------|---|
| Configuring the X Window System | Section 5.8, <i>Configuring the X Window System</i> |
| Video Card — Manual Selection | Section 4.19.1, <i>Video Card Configuration</i> |
| Installation Complete | Section 4.22, <i>Installation Complete</i> |

5.5 Identify Disk Partition to Install From

Note

Hard drive installations now require the use of the ISO (or CD-ROM) images instead of just copying an entire installation tree. After placing the required ISO images in a directory, choose to install from the hard drive. You will then point the installation program at that directory to perform the installation.

If you verify that the ISO images are intact before you attempt an installation, you will help to avoid problems that are often encountered during a hard drive installation. To verify the ISO images are intact before performing an installation, use an `md5sum` program (many `md5sum` programs are available for various operating systems). An `md5sum` program should be available on the same server as the ISO images.

The **Select Partition** screen (Figure 5–3, *Selecting Partition Dialog for Hard Drive Installation*) applies only if you are installing from a disk partition (that is, if you selected **Hard Drive** in the **Installation Method** dialog). This dialog allows you to name the disk partition and directory from which you are installing Red Hat Linux.

Figure 5–3 Selecting Partition Dialog for Hard Drive Installation

Enter the device name of the partition containing the Red Hat ISO images. There is also a field labeled **Directory holding images**. If the ISO images are not in the root directory of that partition, enter the path to the ISO images (for example, if the ISO images are in `/test/new/RedHat`, you would enter `/test/new`).

After you have identified the disk partition, you will next see the **Welcome** dialog. See Table 5–1, *Installation Cross-reference Table* for more information.

5.6 Installing over a Network

If you are performing a network installation, the **Configure TCP/IP** dialog appears; for an explanation of this dialog, go to Section 4.12, *Network Configuration* and then return here.

Because the Red Hat Linux 7.1 installation program is capable of installing Red Hat Linux Linux from multiple CD-ROMs, if you intend to support NFS, FTP, or HTTP installations you must copy the `RedHat` directory from each CD-ROM comprising Red Hat Linux 7.1 onto a disk drive:

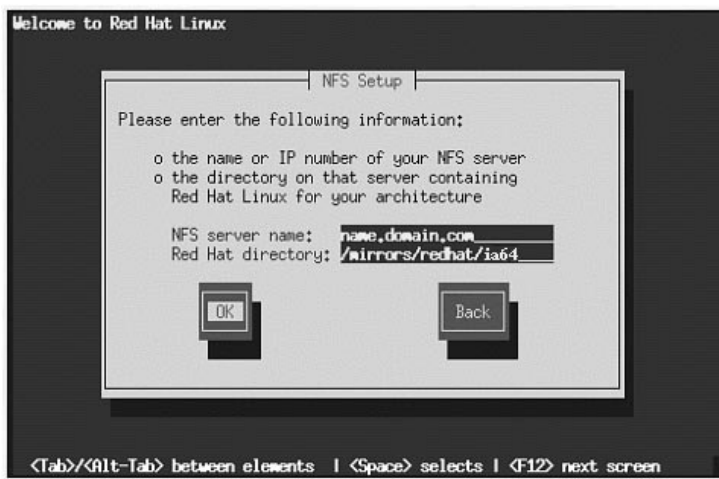
- Insert CD-ROM 1 and execute the following commands:
 - `mount /dev/cdrom /mnt/cdrom`
 - `cp -var /mnt/cdrom/RedHat /location/of/disk/space`
 - `umount /mnt/cdrom`

- Insert CD-ROM 2 and execute the following commands:
 - `mount /dev/cdrom /mnt/cdrom`
 - `cp -var /mnt/cdrom/RedHat /location/of/disk/space`
 - `umount /mnt/cdrom`
- You must then make the directory containing the RedHat directory accessible to the installation program (for example, exporting it for NFS installations).

5.6.1 NFS Setup

The NFS setup dialog (Figure 5–4, *NFS Setup Dialog*) applies only if you are installing from an NFS server (that is, if you selected **NFS Image** in the **Installation Method** dialog).

Figure 5–4 NFS Setup Dialog



Enter the fully-qualified domain name or IP address of your NFS server, and the name of the exported directory that contains the Red Hat Linux installation files or CD. For example, if you are installing from a host named `eastcoast` in the domain `redhat.com`, enter `eastcoast.redhat.com` in the **NFS Server** field.

If the NFS server has the Red Hat Linux CD mounted on `/mnt/cdrom`, enter `/mnt/cdrom` in the **Red Hat directory** field. If the NFS server is exporting a mirror of the Red Hat Linux installation tree instead of a CD, enter the directory which contains the RedHat directory. For example, if your

NFS server contains the directory `/mirrors/redhat/ia64/RedHat`, enter `/mirrors/redhat/ia64`.

Note

If you are performing an NFS installation and are copying the files from the Red Hat Linux CD-ROM, be sure to check the file permissions to make sure they are set correctly for your installation. If you do not, the files that you copy will not be executable and you will have to change the permissions before you are able to install.

Next you will see the **Welcome** dialog. See Table 5-1, *Installation Cross-reference Table* for more information.

5.6.2 FTP Setup

The **FTP Setup** screen (Figure 5-5, *FTP Setup Dialog*) applies only if you are installing from an FTP server (that is, if you selected **FTP** in the **Installation Method** dialog). This dialog allows you to identify the FTP server from which you are installing Red Hat Linux.

Figure 5-5 FTP Setup Dialog



Enter the fully-qualified domain name or IP address of the FTP site you are installing from, and the name of the directory on that FTP site which contains the RedHat installation files for your architecture. For example, if the FTP site contains the directory `/mirrors/redhat/ia64/RedHat`, enter `/mirrors/redhat/ia64`.

If everything has been specified properly, a message box appears indicating that `base/hdlist` is being retrieved.

Next you will see the **Welcome** dialog. See Table 5–1, *Installation Cross-reference Table* for more information.

5.6.3 HTTP Setup

The **HTTP Setup** screen (Figure 5–6, *HTTP Setup Dialog*) applies only if you are installing from an HTTP server (that is, if you selected **HTTP** in the **Installation Method** dialog). This dialog prompts you for information about the HTTP server from which you are installing Red Hat Linux.

Figure 5–6 HTTP Setup Dialog



Enter the name or IP address of the HTTP site from which you are installing Red Hat Linux, and the name of the directory there which contains the RedHat installation files for your architecture. For example, if the HTTP site contains the directory `/mirrors/redhat/ia64/RedHat`, enter `/mirrors/redhat/ia64`.

If everything has been specified properly, a message box appears indicating that `base/hdlist` is being retrieved.

Next you will see the **Welcome** dialog. See Table 5–1, *Installation Cross-reference Table* for more information.

5.7 Configuring Your Video Adapter

The installation program then probes for your video card. If your card is detected, click **OK**.

Figure 5–7 Video Card Confirmation



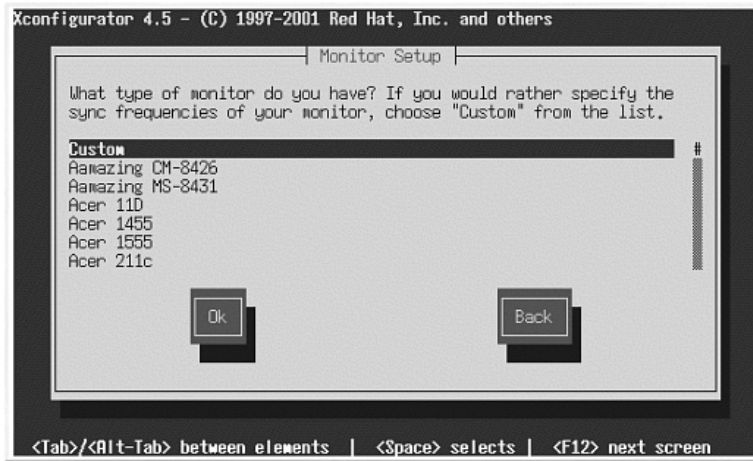
If the installation program cannot detect your video adapter, you will need to select your video card from the available list. See Section 4.19.1, *Video Card Configuration* for more information.

5.8 Configuring the X Window System

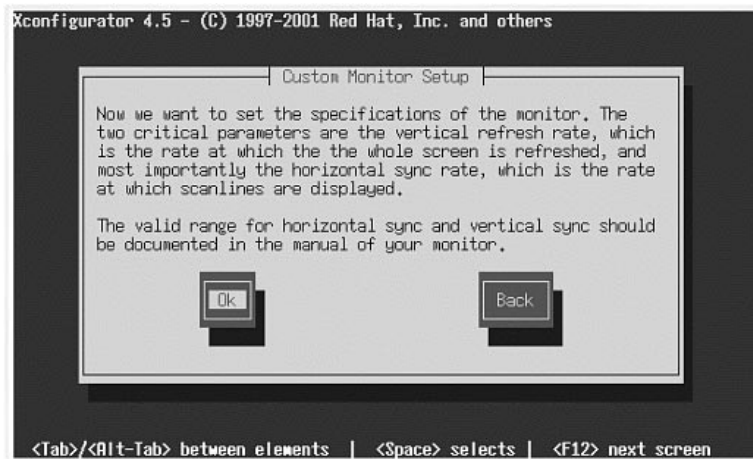
The Xconfigurator utility gives you the opportunity to configure the X server for your system.

First, Xconfigurator displays a list of monitors (see Figure 5–8, *Monitor Setup Dialog*). If your monitor is listed, select it and press [Enter]. Otherwise, select **Custom**.

If you select a monitor from the list, you will need to enter your video memory. See Figure 5–13, *Video Memory*.

Figure 5–8 Monitor Setup Dialog

If you select **Custom**, Xconfigurator prompts you to select the horizontal sync range and vertical sync range of your monitor (these values are usually available in the documentation which accompanies your monitor, or from your monitor’s vendor or manufacturer).

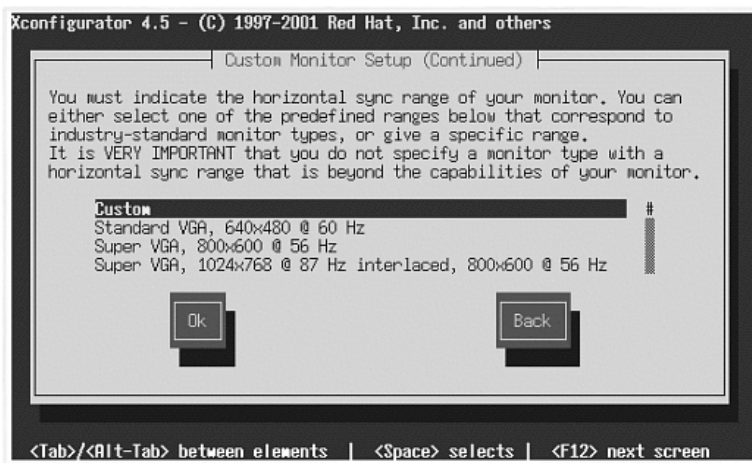
Figure 5–9 Custom Monitor Setup



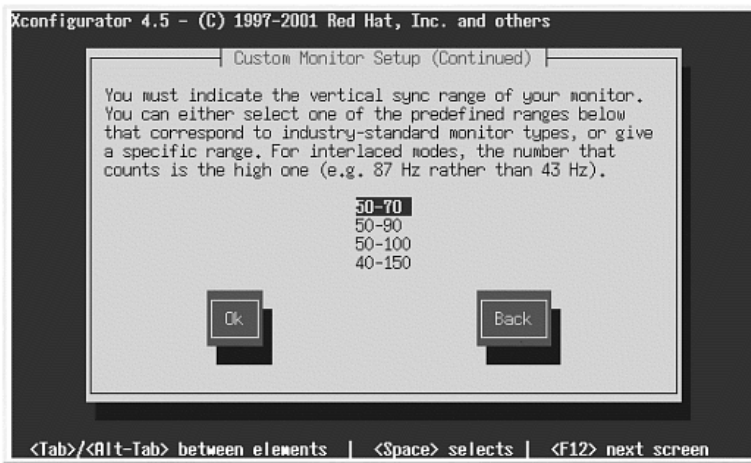
Do not select any range that exceeds the capacity of your monitor. If you do this, it is possible you may overclock your monitor and damage or destroy it.

Choose a horizontal sync range for your monitor (see Figure 5–10, *Custom Monitor Setup - Horizontal Sync*). Be sure *not* to choose a range outside of your monitor's capacity. For custom settings, refer to Figure 5–12, *Custom Monitor Information*.

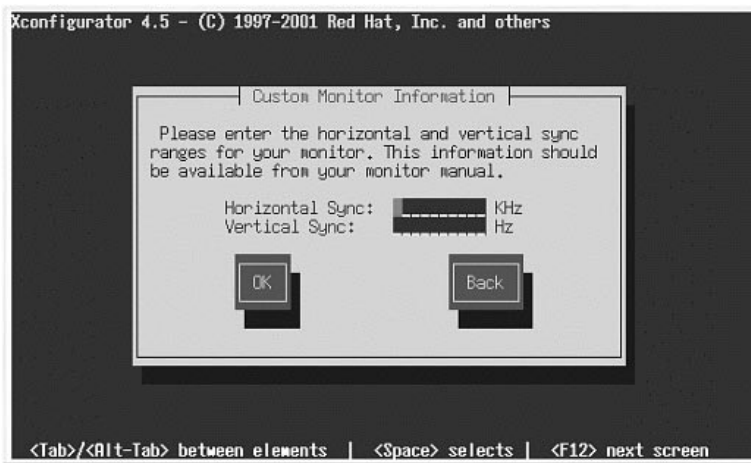
Figure 5–10 Custom Monitor Setup - Horizontal Sync



Next, choose a vertical sync range.

Figure 5–11 Custom Monitor Setup — Vertical Sync

If you chose to enter custom monitor settings, please enter both the horizontal and vertical sync ranges for your monitor (see Figure 5–12, *Custom Monitor Information*).

Figure 5–12 Custom Monitor Information

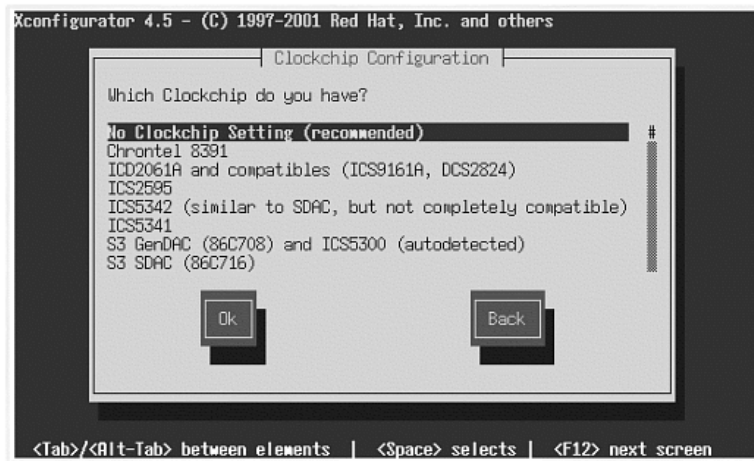
After you have selected your monitor (and its settings), you must choose the amount of memory provided by your video card (see Figure 5–13, *Video Memory*).

Figure 5–13 Video Memory

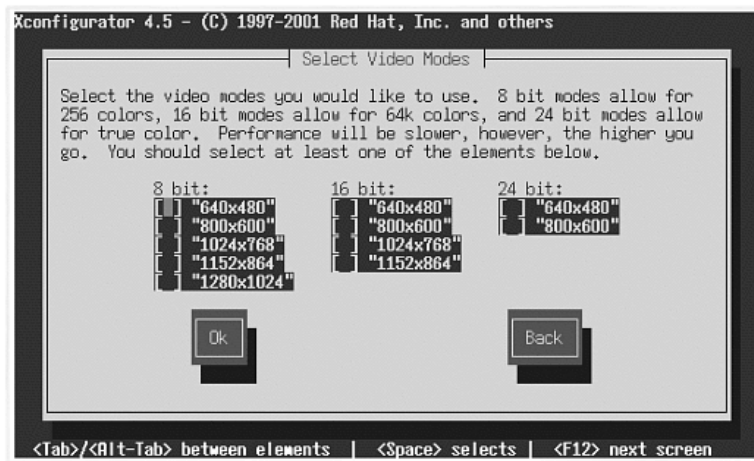


If you are not sure how much memory your card has, consult the documentation accompanying your video card. Choosing more memory than is present in your card will not damage it, but may cause the XFree86 server to start incorrectly.

Next, choose a clockchip setting if your video card supports it (if it has one). The recommended choice is **No Clockchip Setting**, since XFree86 can automatically detect the proper clockchip in most cases.

Figure 5–14 Clockchip Configuration Dialog

To choose your preferred display mode (see Figure 5–15, *Select Video Modes*), select one or more modes by pressing [Space].

Figure 5–15 Select Video Modes

Tip

The minimum recommended settings for video modes are 16 bit for most applications in 1024 x 768. Video modes set higher than 16 bit can run more slowly.

Do not select a mode that exceeds the capacity of your monitor.

Once you have either selected the default video mode or specified a different mode, the **Starting X** dialog lets you test your X configuration.

Figure 5–16 Test Your X Configuration



If you select **OK**, you will have the opportunity to go back and enter different configuration values, if an error occurs. If no error occurs, X will start and a small display window will ask you if you can read its contents clearly; using the mouse, click **Yes** within ten seconds. Then you will be asked whether you want X to start when the system boots.

In most cases, X configuration is complete at this point, and you will see the completion screen.

Xconfigurator then saves all of your choices to the configuration file `/etc/X11/XF86Config` or `/etc/X11/XF86Config-4`. To modify your X configuration after installation, issue the Xconfigurator command as root.

A Additional Resources about Itanium and Linux

Other reference materials, related to running Red Hat Linux on an Itanium system, are available on the Web. A few of the available resources are as follows:

- <http://www.redhat.com/products/IA64/Jumpstart/> — Red Hat Itanium Jumpstart Program
 - <http://www.linuxia64.org> — *The Official Home Page of the Itanium Linux Project*
 - <http://developer.intel.com/software/idap/processor/itanium/> — The Intel website on the Itanium Processor
 - http://developer.intel.com/software/idap/tech/video/efi/efi_shell_2.htm — Navigating through the EFI Shell Primer by Intel
-

B Getting Technical Support

B.1 Remember to Sign Up

If you have an official edition of Red Hat Linux 7.1, please remember to sign up for the benefits you are entitled to as a Red Hat customer.

You will be entitled to any or all of the following benefits, depending upon the Official Red Hat Linux product you purchased:

- Official Red Hat support — Get help with your installation questions from Red Hat, Inc.'s support team.
- Red Hat Network — Easily update your packages and receive security notices that are customized for your system. Go to <https://www.redhat.com/network> for details.
- Priority FTP access — No more late-night visits to congested mirror sites. Owners of Red Hat Linux 7.1 receive free access to priority.redhat.com, Red Hat's preferred customer FTP service, offering high bandwidth connections day and night.
- Under the Brim: The Official Red Hat E-Newsletter — Every month, get the latest news and product information directly from Red Hat.

To sign up, go to <http://www.redhat.com/apps/activate/>. You will find your **Product ID** on the Registration Information Card in your Official Red Hat Linux boxed set.

B.2 An Overview of Red Hat Support

Red Hat provides installation assistance for Official Red Hat Linux boxed set products and covers installation on a single computer. This assistance is intended to help customers successfully install Red Hat Linux. Assistance with installation is offered via telephone and the Web.

Red Hat Support will attempt to answer any questions you may have before the installation process is initiated. This includes the following:

- Hardware compatibility questions
- Basic hard drive partitioning strategies

Red Hat, Inc. Support can also provide assistance during the installation process:

- Getting supported hardware recognized by the Red Hat Linux operating system
- Assistance with drive partitioning

We can also help you with basic post-installation tasks, such as:

- Successfully configuring the X Window System using Xconfigurator
- Configuring a local parallel port printer to print text
- Configuring a mouse

Our installation assistance service is designed to get Red Hat Linux running on your system as quickly and as easily as possible. However, there are many other things that you may want to do with your Red Hat Linux system, from compiling a custom kernel to setting up a Web server, which are not covered.

For assistance with these tasks, there is a wealth of on-line information available in the form of HOWTO documents, Linux-related websites, and commercial publications. The various Linux HOWTO documents are included with Red Hat Linux on the Documentation CD in the /HOWTOS directory. These HOWTOS are provided in text files that can easily be read from within Red Hat Linux and other operating systems.

A large number of Linux-related websites are available. The best starting point for finding information on Red Hat Linux is the Red Hat, Inc. website:

<http://www.redhat.com/>

Many Linux-related books are available. If you are new to Linux, a book that covers Linux basics will be invaluable. We can recommend several titles: *Using Linux*, by Bill Ball; *Linux Clearly Explained*, by Bryan Pfaffenberger; *Linux for Dummies*, by Jon "maddog" Hall; and *Learning Red Hat Linux*, by Bill McCarty.

Red Hat also offers various incident-based support plans to assist with configuration issues and tasks that are not covered by installation assistance. Please see the Red Hat Support website for more information. The Red Hat technical support website is located at the following URL:

<http://www.redhat.com/support/>

B.3 Scope of Red Hat Support

Red Hat, Inc. can only provide installation assistance to customers who have purchased an Official Red Hat Linux boxed set. If you have obtained Linux from any other company, you must contact that company for support. Examples of such companies are as follows:

- Macmillan
 - Sams/Que
 - Linux Systems Labs (LSL)
 - Mandrake
 - CheapBytes
-

Additionally, Red Hat Linux obtained via any of the following methods does not qualify for support from Red Hat:

- Red Hat Linux PowerTools Archive
- Downloaded via FTP on the Internet
- Included in a package such as Motif or Applixware
- Copied or installed from another user's CD

B.4 How to Get Technical Support

In order to receive technical support for your Official Red Hat product, you must first sign up.

Every Official Red Hat product comes with a Product Identification code: a 16-character alphanumeric string. The Product ID for Red Hat Linux 7.1 is located on the Registration Information Card that can be found inside the box. Your Product ID is on a perforated card that you can punch out and keep in a safe place. You need this code, so do not lose the card!

Note

Do not throw away the card with your Product ID. You need the Product ID to get technical support. If you lose the certificate, you may not be able to receive support.

The Product ID is the code that will enable your technical support and any other benefits or services that you purchased from Red Hat, depending upon which Red Hat product you purchased. The Product ID may also enable priority FTP access, depending on the product that you purchased, for a limited amount of time.

B.4.1 Signing up for Technical Support

To sign up for technical support, you will need to:

1. Create a customer profile at <http://www.redhat.com/apps/activate/>. You may have already completed this step; if you have, continue to the next step. If you do not already have a customer profile on the Red Hat website, please create a new one.
 2. Using your login name and password you created during the customer profile, please login at the Red Hat Support website at <http://www.redhat.com/support>.
 3. Update your contact information if necessary.
-

Note

If your email address is not correct, communications regarding your technical support requests CANNOT be delivered to you, and you will not be able to retrieve your login and password by email. Be sure that you give us your correct email address.

If you are worried about your privacy, please see Red Hat's privacy statement at http://www.redhat.com/legal/privacy_statement.html.

4. Add a product to your profile. Please enter the following information:
 - The Product ID for your boxed set product
 - A description of the hardware on which the Red Hat Linux product will be installed
 - The Support Certificate Number or Entitlement Number if the product is a contract
5. Set your customer preferences.
6. Answer the optional customer questionnaire.
7. Submit the form.

If the previous steps were completed successfully, you can now login at <http://www.redhat.com/support> and open a new technical service request. However, you must still use your Product ID in order to obtain technical support via telephone (if the product you purchased came with phone support). Please do not lose your Product ID, or you might not be able to receive support.

B.5 Questions for Technical Support

Technical support is both a science and a mystical art form. In most cases, support technicians must rely on customer observations and communications with the customer in order to diagnose and solve the problem. Therefore, it is extremely important that you are as detailed and clear as possible when you state your questions and report your problems. Examples of what you should include are:

- Symptoms of the problem (for example: "Linux is not able to access my CD-ROM drive. When it tries, I get timeout errors.")
 - When the problem began (for example: "My system was working fine until yesterday, when a lightning storm hit my area.")
 - Any changes you made to your system (for example: "I added a new hard drive and used Partition WIZZO to add Linux partitions.")
-

- Other information that may be relevant to your situation, such as the installation method (CD-ROM, NFS, HTTP)
- Specific hardware devices that may be relevant to your problem (for example: If you cannot setup networking, what kind of NIC do you have?)

B.5.1 How to Send Support Questions

Please login at <http://www.redhat.com/support> and open a new service request, or call the phone number for support. If your product came with phone support, or you have purchased a phone support contract, the phone number you will need to call will be provided to you during the sign up process.

For more information on using Red Hat's online support system go to <http://www.redhat.com/support/services/access.html>.

B.6 Support Frequently Asked Questions (FAQ)

B.6.1 Q: Email Messages to support@redhat.com Bounce

I send email to support@redhat.com but my messages bounce back to me. What is the problem?

B.6.2 A: support@redhat.com Is Not Used at This Time

To better serve our customers, Red Hat is re-engineering our email support process. At this time, the support@redhat.com address is not functional. In the meantime, please use support via the Web or by telephone.

B.6.3 Q: System Will Not Allow Login

I know that I have already signed up, but the system will not let me log in.

B.6.4 A: Old Logins and Passwords Will Not Work

You could be trying to use an old login and password, or simply mistyping your login or password. Refer to Section C.4.2, *Problems When You Try to Log In* for more information.

C Troubleshooting Your Installation of Red Hat Linux

This appendix discusses some common installation problems you could encounter and provides solutions to these problems.

C.1 You are Unable to Boot Red Hat Linux

C.1.1 Is Your System Displaying Signal 11 Errors?

If you receive a fatal signal 11 during your installation, it is probably due to a hardware error in memory on your system's bus. A hardware error in memory can be caused by problems in executables or with the system's hardware. Like other operating systems, Red Hat Linux places its own demands on your system's hardware. Some of this hardware may not be able to meet those demands, even if they work properly under another OS.

Check to see if you have the latest installation and supplemental boot diskettes from Red Hat. Review the online errata to see if newer versions are available. If the latest images still fail, it may be due to a problem with your hardware. Commonly, these errors are in your memory or CPU-cache. A possible solution for this error is turning off the CPU-cache in the BIOS. You could also try to swap your memory around in the motherboard slots to see if the problem is either slot or memory related.

For more information concerning signal 11 errors, refer to <http://www.bitwizard.nl/sig11/>.

C.1.2 Are You Unable to Boot from a Network Boot Disk?

If you are experiencing difficulties in getting the network boot disk you made to boot your system correctly, you may need an updated boot disk.

Check the online errata for updated diskette images (if available) and follow the instructions provided to make an updated boot disk for your system.

C.2 Trouble Beginning the Installation

C.2.1 Is Your Mouse Not Detected?

If the **Mouse Not Detected** screen (see Figure C-1, *Mouse Not Detected*) appears, then the installation program was not able to identify your mouse correctly.

You can choose to continue with the GUI installation or use the text mode installation, which does not require using a mouse. If you choose to continue with the GUI installation, you will need to

provide the installation program with your mouse configuration information (see Figure 4–3, *Mouse Configuration*).

Figure C–1 Mouse Not Detected



For an overview of text mode installation instructions, please refer to Chapter 5, *Installing Red Hat Linux via Text Mode*.

C.2.2 Problems with Booting into the Graphical Installation

The installation program will first try to run at 800 x 600 resolution. If that fails, it will try to run at 640 x 480. To force the installation program to run at 640 x 480, type the following command at the EFI Shell prompt:

```
Shell>elilo linux lowres
```

C.3 Trouble During the Installation

C.3.1 Do You Not See the Automatic Partitioning Screen?

If the **Automatic Partitioning** screen does not appear during your installation, you probably do not have enough free space in which to install Red Hat Linux.

If you do not want to partition manually, you should exit out of the installation (remove any diskettes and/or CD-ROMs from their respective drives and reboot your system). Then you can re-allocate space for your installation.

The best way to re-allocate space is to use the DOS-based `fips` utility. Review *An Introduction to Disk Partitions* in the *Official Red Hat Linux Reference Guide* for more information.

C.3.2 Partition Creation Problems

If you are having trouble creating a partition (for example, a root (/) partition, make sure you are setting its partition type to Linux Native.

C.3.3 Using Remaining Space

You have a `swap` and a / (root) partition created, and you have selected the root partition to use the remaining space, but it does not fill the hard drive.

If your hard drive is more than 1024 cylinders, you must create a `/boot` partition if you want the / (root) partition to use all of the remaining space on your hard drive.

C.3.4 Other Partitioning Problems

If you are using Disk Druid to create partitions, but cannot move to the next screen, you probably have not created all the partitions necessary for Disk Druid's dependencies to be satisfied.

You must have the following partitions as a bare minimum:

- A `/boot` partition of type Linux native
- A / (root) partition of type Linux native
- A `<swap>` partition of type Linux swap

Tip

When defining a partition's type as Linux swap, you do not have to assign it a mount point. Disk Druid automatically assigns the mount point for you.

C.3.5 Are You Seeing Python Errors?

During some upgrades or installations of Red Hat Linux, the installation program (also known as Anaconda) may fail with a Python or traceback error. This error may occur after the selection of individual packages or while trying to save the upgrade log in `/tmp`. The error may look similar to:

```
Traceback (innermost last):
```

```

File "/var/tmp/anaconda-7.1//usr/lib/anaconda/iw/progress_gui.py",
line 20, in run
    rc = self.todo.doInstall ()
File "/var/tmp/anaconda-7.1//usr/lib/anaconda/todo.py", line 1468, in
doInstall
    self.fstab.savePartitions ()
File "fstab.py", line 221, in savePartitions
    sys.exit(0)
SystemExit: 0

Local variables in innermost frame:
self: <fstab.GuiFstab instance at 8446fe0>
sys: <module 'sys' (built-in)>

ToDo object:
(itodo
ToDo
p1
(dp2
S'method'
p3
(iimage
CdromInstallMethod
p4
(dp5
S'progressWindow'
p6

<failed>

```

This error occurs in some systems where links to `/tmp` are symbolic to other locations or have been changed since creation. These symbolic or changed links are invalid during the installation process, so the installation program cannot write information and fails.

If you experience such an error, first try to download any available errata for *Anaconda*. Errata can be found at <http://www.redhat.com/support/errata>.

You can also search for bug reports related to this problem. To search Red Hat's bug tracking system, go to <http://bugzilla.redhat.com/bugzilla>.

Finally, if you are still facing problems related to this error, register your product and contact our support team. To register your product, go to <http://www.redhat.com/apps/activate>.

C.4 Problems After Installation

C.4.1 Problems with Server Installations and X

If you performed a server installation and you are having trouble getting X to start, that is because the X Window System is not installed during a server-class installation.

If you want the X Window System, but you did a server-class installation, you can perform an upgrade to install X. During the upgrade, select the X Window System packages, and choose GNOME, KDE, or both.

Alternatively, you can install the XFree86 RPMs. For more information, refer to <http://www.redhat.com/support/docs/howto/XFree86-upgrade/XFree86-upgrade.html>.

C.4.2 Problems When You Try to Log In

If you did not create a user account during the installation you will need to log in as root and use the password you assigned to root.

If you cannot remember your user account password, you must become root. To become root, type `su -` and enter your root password when prompted. Then, type `passwd <username>`. This allows you to enter a new password for the specified user account.

If you selected either the custom- or workstation-class installation and do not see the graphical login screen, check your hardware for compatibility issues. The *Hardware Compatibility List* can be found at <http://hardware.redhat.com>.

C.4.3 Does Netscape Navigator Crash on JavaScript Pages?

If Netscape Navigator continuously crashes on pages that contain JavaScripts, you may need to edit your `~/.mailcap` file.

Edit the file using `pico` by typing `pico ~/.mailcap` at the prompt in a terminal window. (You may use any text editor.)

Remove the following lines from the file:

```
application/x-javascript; \
x-mozilla-flags=save
```

You can also turn off JavaScript within Netscape Navigator itself. Click on **Edit=>Preferences=>Advanced** and make sure the **Enable JavaScript** checkbox is not selected.

If these do not help, you can also try to use a newer version of Netscape Navigator if available. Check the Red Hat Linux errata website under security advisories for more information.

C.4.4 Your Printer Will Not Work Under X

If you are not sure how to set up your printer or are having trouble getting it to work properly, try using the graphical `printtool` program. To access `printtool`, log in as root, open a terminal window, and type `printtool`.

C.4.5 Problems with Sound Configuration

If you do not have sound after your installation, you may need to run the sound configuration utility. As root, type `sndconfig` in a terminal window.

If the `sndconfig` application did not help, you may need to uncheck the mute buttons in the Audio Mixer. Click on **Panel=>Programs=>Applications=>Audio Mixer** to launch the application.

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