

Red Hat Linux 7.1

The Official Red Hat Linux iSeries Installation Guide

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1 Introduction

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

The *Official Red Hat Linux iSeries 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.

WARNING

In order to complete the installation process, you must follow all steps as given in Section 3.22, *Installation Complete*. If these steps are not appropriately followed, you will not have a fully functioning Red Hat Linux iSeries installation.

1.1 Documentation Conventions

When you read this manual, you will see that certain words are represented in different fonts, type-faces, 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.



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 data on hard drives assigned to the Linux logical partition you are installing on. See Appendix C, *Re-installation of Red Hat Linux and Preserving Existing Data* for information regarding saving existing data before reinstalling, or consider a different installation class that will preserve your data.

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 3, *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

2 Steps to Get You Started

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

2.1 Checking For Additional Hardware-Specific Documentation

The installation process assumes basic familiarity with the IBM iSeries platform and makes reference to IBM's *Configuring Linux in a Guest Partition*. In general, this section assumes that you have read the *Configuring Linux in a Guest Partition* document (<http://publib.boulder.ibm.com/pubs/html/as400/v5r1/ic2924/info/rzalm/rzalmlinuxkickoff.htm>) in its entirety.

2.1.1 Additional Resources

For more information on iSeries hardware, refer to the following resources.

Useful Websites

- *Configuring Linux in a Guest Partition* — <http://publib.boulder.ibm.com/pubs/html/as400/v5r1/ic2924/info/rzalm/rzalmlinuxkickoff.htm>
- Linux for iSeries — <http://www-1.ibm.com/servers/eserver/iseries/linux/>

2.2 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>.

2.3 iSeries Hardware Preparation for Installation

In order to prepare your iSeries system for installation, you should follow the instructions in the *Planning to run Linux on a logical partition* and *Creating a logical partition to run Linux* sections of the *Configuring Linux in a Guest Partition* document.

The virtual LAN interface may be configured for DHCP or a static IP address. Consult your OS/400 command documentation for information on configuring the OS/400 facilities. The partition may be configured for IPL type A, B, or *NWSSTG. If IPL type *NWSSTG is used, a 4 MB PReP Boot (primary, active) partition is required on the first virtual disk.

2.4 Do You Have Enough Disk Space?

Nearly every modern-day operating system (OS) uses **disk partitions**, and Red Hat Linux is no exception. When you install Red Hat Linux, you may have to work with disk partitions. If you have not worked with disk partitions before (or need a quick review of the basic concepts) read *An Introduction to Disk Partitions* in the appendix of the *Official Red Hat Linux Reference Guide* before proceeding.

You must ensure that Red Hat Linux has enough available disk space on the hard drive(s) for this installation.

These disks, especially virtual disks, must be made large enough for your maximum needs before the installation. For the iSeries, it is not necessary to share these disks with other Linux partitions or with other operating systems. Plan your disk space accordingly for the partitions where Red Hat Linux will be installed.

Before you start the installation process, one of the following conditions must be met:

- Your computer must have enough *unpartitioned* disk space for the installation of Red Hat Linux.
- You must have one or more partitions that may be deleted, thereby freeing up enough disk space to install Red Hat Linux.

2.4.1 Installation Disk Space Requirements

Workstation-class

A workstation-class installation, choosing to install GNOME or KDE, requires at least 1.2 GB of free space. Choosing both GNOME and KDE requires at least 1.5 GB of free disk space.

Server-class

A server-class installation requires 650 MB for a minimal installation and at least 1.2 GB of free space if every package is selected.

Custom-class

A custom-class installation requires 300 MB for a minimal installation and at least 2.4 GB of free space if every package is selected.

Note

To use automatic partitioning, you must have enough free disk space available (1.2 GB or more); if you do not have enough free disk space available, this option will not appear during your installation.

If you are not sure that you meet these conditions, or if you want to know how to create free disk space for your Red Hat Linux installation, please refer to the partitioning appendix in the *Official Red Hat Linux Reference Guide*. Sections relating to LILO and Intel-specific BIOS issues can be ignored.

2.5 Which Installation Class is Best For You?

Usually, Red Hat Linux is installed on its own disk partition or set of partitions, or over another installation of Linux.

WARNING

Installing Red Hat Linux over another installation of Linux (including Red Hat Linux) does *not* preserve any information (files or data) from a prior installation. Make sure you save any important files! If you are installing this way, and you want to preserve the current data, refer to Appendix C, *Re-installation of Red Hat Linux and Preserving Existing Data*.

For the iSeries platforms, Red Hat Linux provides three different classes, or types, of installations:

Workstation

A workstation-class installation is most appropriate for a desktop system user. *This option is not recommended for iSeries systems.*

Server

A server-class installation is most appropriate for you if you would like your system to function as a Linux-based server, and you do not want to heavily customize your system configuration. The server-class installation is the preferred type of installation for iSeries systems.

Custom

A custom-class installation allows you the greatest flexibility during your installation. You choose your partitioning scheme, which packages you want and more. Custom-class installations are most appropriate for those users more familiar with Red Hat Linux installations.

These classes give you the option of simplifying the installation process (with some potential for loss of configuration flexibility), or retaining flexibility with a slightly more complex installation process. Next, take a detailed look at each class, so you can see which one is right for you.

2.5.1 Workstation-Class Installations

Most suitable for new users, the workstation-class installation will install your choice of the GNOME or KDE desktop environments, or both, and the X Window System.

WARNING

A workstation-class installation will erase *all information in all Linux-related hardfile (disk) partitions assigned to that Linux Logical partition. Refer to Appendix C, *Re-installation of Red Hat Linux and Preserving Existing Data* for options that will allow you to save existing data on your system.*

Below are the minimum recommended disk space requirements for a workstation-class installation.

- Workstation choosing GNOME: 1.2 GB
- Workstation choosing KDE: 1.2 GB
- Workstation choosing both GNOME and KDE, and games: 1.5 GB

If you plan to choose all group packages (for example, GNOME is a group of packages), as well as select additional individual packages, you may want to allow yourself 1.5 GB or more of disk space. If you provide this extra space, you will have room for additional data, if needed.

Note

Unlike workstation-class installations previous to Red Hat Linux 7.0, performing a Red Hat Linux 7.1 workstation-class installation will not install the network daemon `xinetd` (inet services). When `xinetd` is not installed, you will have a more secure installation. However, in-bound network-related services such as `finger`, `telnet`, `talk`, and `FTP` will not work.¹ If you require these types of services, please go back and choose a server- or a custom-class installation.

¹ For example, you can `telnet` out to other systems, but other systems cannot `telnet` in to your system.

What a Workstation-Class Installation Will Do

If you choose automatic partitioning, a workstation-class installation removes all Linux-related partitions on all installed hard drives (and uses all free unpartitioned disk space) to create the following partitions:

- A 64 MB swap partition.
- An 8 MB PRoP Boot partition in which the Linux kernel or the boot loader resides.
- A variable-sized root partition (mounted as /) in which all other files are stored (the exact size of this partition is dependent on your available disk space).

2.5.2 Server-Class Installations

A server-class installation is most appropriate for you if you would like your system to function as a Linux-based server, and you do not want to heavily customize your system configuration.

The minimum recommended disk space requirements for a server-class installation are as follows:

- Server (minimum): 650 MB
- Server (choosing everything): 1.2 GB

If you plan to choose all group packages, as well as select additional individual packages, you may want to allow yourself 1.2 GB or more of disk space.

At this point, you should have already planned your disk space requirements so that you know how much additional space is needed beyond what the Red Hat installation program requires. You should have also determined where that space will come from, whether from a virtual disk, a physical disk, or a combination of the two. Once you have completed the installation, altering the sizes of your partitions can be disruptive.

WARNING

A server-class installation will erase all disk data (physical or virtual) that is assigned to the Linux Logical partition being installed. Refer to Appendix C, *Re-installation of Red Hat Linux and Preserving Existing Data* for options that will allow you to preserve your existing data.

What a Server-Class Installation Will Do

During the server-class installation, *the X Window System is not configured and no GUI will be loaded* when the system boots, unless you choose to install the appropriate packages during package selection.

If you choose automatic partitioning, the installation program *deletes all data in all existing partitions of any kind* and decides how to partition the disk for the new version.

If you choose automatic partitioning, a server-class installation removes *ALL existing partitions on ALL installed hard drives*, so choose this installation class only if you are sure you have nothing you want saved! When the installation is complete, you will find the following partitions:

- A 256 MB swap partition.
- A 256 MB partition (mounted as `/`).
- A partition of at least 512 MB (mounted as `/usr`).
- A partition of at least 512 MB (mounted as `/home`).
- A 256 MB partition (mounted as `/var`).
- An 8 MB PReP Boot partition in which the Linux kernel or the boot loader resides.

This disk partitioning scheme results in a reasonably flexible filesystem configuration for most server-class tasks.

2.5.3 Custom-Class Installations

The *custom-class installation* allows you the most flexibility during your installation. The workstation-class and server-class installations automatically go through the installation process for you and omit certain steps. During a custom-class installation, *you* must decide how disk space should be partitioned. You have complete control over the packages that will be installed on your system.

The minimum recommended disk space requirements for a custom-class installation are as follows:

- Custom (minimum): 300 MB
- Custom (choosing everything): 2.4 GB

At this point, you should have already planned your disk space requirements so that you know how much additional space is needed beyond what the Red Hat installation program requires. You should have also determined where that space will come from, whether from a virtual disk, a physical disk, or a combination of the two. Once you have completed the installation, altering the sizes of your partitions can be disruptive.

What a Custom-Class Installation Will Do

As you might guess from the name, a custom-class installation puts the emphasis on flexibility. During a custom-class installation, you can choose how disk space should be partitioned. You have complete control over which packages will be installed on your system.

The following list may help those of you who are trying to decide which installation class will better suit your needs. If you think you will have trouble performing any of the tasks on this list, you should

not perform a custom-class installation without reading through this manual and clarifying any questions you may have.

- **Selecting and Installing Packages** — This step is performed after your partitions have been configured and selected for formatting. You are allowed to select groups of packages, individual packages, a combination of the two, or choose an **Everything** install.
- **Authentication Configuration** — During a custom-class installation, you can set up network passwords using authentication configuration.

Choosing between automatic or manual partitioning is an important choice. In choosing automatic partitioning, a custom-class installation erases all disk storage related to that Linux LPAR and re-allocates the space to the following partitions:

- A 64 MB swap partition.
- An 8 MB PReP Boot partition in which the Linux kernel or the boot loader resides.
- A variable-sized root partition (mounted as /) in which all other files are stored (the exact size of this partition is dependent on your available disk space).

In choosing manual partitioning, you have more control and can preserve portions of existing disks (hard disk partitions). This can be a strong reason to choose manual partitioning within a custom-class installation when performing a reinstall of an iSeries Linux Logical partition installation.

3 Installing Red Hat Linux

This chapter explains how to install Red Hat Linux from the CD-ROM. The following topics will be discussed:

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

3.1 The Installation Program User Interface

This release of Red Hat Linux features a text-based installation. A graphical, mouse-based installation is not available at this time.

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 3-1, *Installation Program Widgets as seen in Configure TCP/IP* and Figure 3-2, *Installation Program Widgets as seen in Disk Druid* illustrate the screens you will see.

Figure 3-1 Installation Program Widgets as seen in Configure TCP/IP

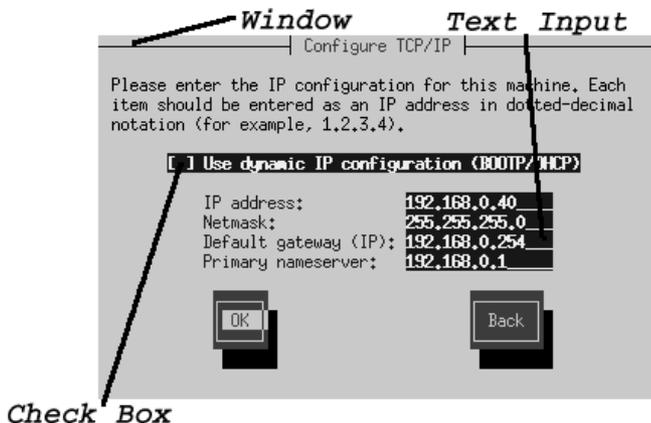
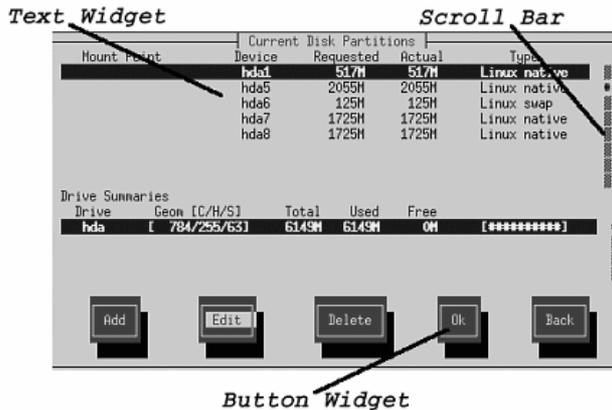


Figure 3–2 Installation Program Widgets as seen in Disk Druid



Here is a list of the most important widgets shown in Figure 3–1, *Installation Program Widgets as seen in Configure TCP/IP* and Figure 3–2, *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 3–1, *Installation Program Widgets as seen in Configure TCP/IP*, the cursor is positioned on the **OK** button. Figure 3–2, *Installation Program Widgets as seen in Disk Druid* shows the cursor on the **Edit** button.

3.1.1 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).

3.2 Booting the Installation Program

Insert the installation CD into the CD-ROM drive. Determine the volume name by which OS/400 refers to the CD. This can be found by executing the command `wrklnk ' /qopt / * ' at the OS/400 command line. Unless there is another CD with the same label in another drive, the volume name will be Red_Hat. Note, if the volume name includes a timestamp (as it does when there are name conflicts), ejecting and re-inserting the CD will cause the volume name to change and you must determine what it is again.`

If you will be installing to SCSI disks, you must have a copy of the `ibmsis` driver CD-ROM. If you have multiple CD-ROM drives available to the target LPAR, you must determine which CD-ROM

drive will be the first CD-ROM drive (`/dev/vcda`) for the LPAR. Refer to IBM documentation for information how to determine this. You will place the driver disk into the first CD-ROM drive when instructed by the installation program.

Vary off the NWS.

Edit the NWS description. Set the `IPL source` option to ***STMF**.

Set the `IPL stream file` option to `/QOPT/RED_HAT/PPC/SERIES/VMLINUX` (case is not significant), where `RED_HAT` is the name of the CD volume as it appears under `/QOPT`.

Set the `IPL parameters` option to **'dd'** (including quotes) if you will be using a driver disk. Otherwise, set the option to ***NONE**.

Use a telnet client to connect to the virtual console of the LPAR. When prompted, select the partition you want to work with and then enter the OS/400 service tools userid and password.

Vary on the NWS. You should see the boot sequence begin on the virtual console in a few seconds. The installation program will begin automatically.

3.3 Using the Driver Disk

You may be asked if you have a driver disk. If you are not asked about a driver disk, skip to Section 3.4, *Language Selection*.

If you do not need to load a driver from a driver disk, answer **No** to the driver disk question and skip to Section 3.4, *Language Selection*.

If you have specified a driver disk (IPL parameters set to **'dd'**), you will first be asked if you have a driver disk. Answer **yes** to this question. When the installation program tells you to insert the driver disk, put it in the first CD-ROM, then select **OK**. When the installation program tells you to remove the driver disk, take it out of the CD-ROM drive and re-insert the installation disk if necessary, then select **OK**.



If you removed the installation disk to insert the driver disk, re-insert the installation disk when you are prompted to remove the driver disk, before you select **OK**.

3.4 Language Selection

Using the [Up] and [Down] arrow keys, select the language you would prefer to use for the installation and as the system default (see Figure 3–3, *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 3–3 Language Selection



Once you have made your selection, press [Enter].

A scroll bar appears to the right of the list. This indicates that there are more entries than can be displayed in the available space at once. You'll see other scroll bars like this throughout the installation program.

3.5 Welcome to Red Hat Linux

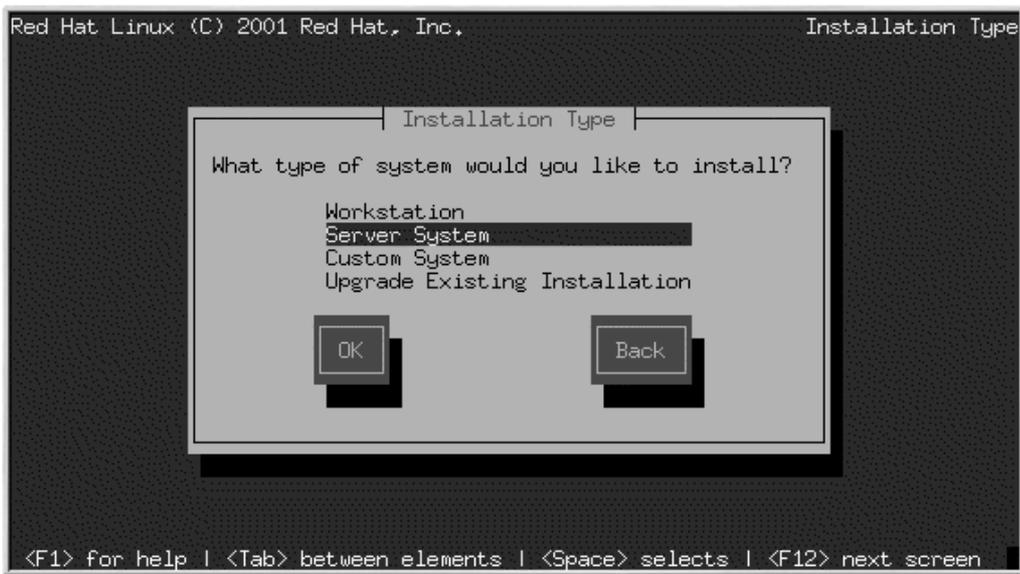
The **Welcome** screen does not prompt you for any input.

Figure 3–4 Welcome Screen

Select the **OK** button and press [Enter] to continue.

3.6 Install Options

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

Figure 3–5 Choosing Install or Upgrade

3.7 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.

If you are not sure how you want your system to be partitioned, please read Appendix C, *Re-installation of Red Hat Linux and Preserving Existing Data* and then read *An Introduction to Disk Partitions* in the *Official Red Hat Linux Reference Guide*. Sections relating to LILO and Intel-specific BIOS issues can be ignored.

Figure 3–6 Disk Partitioning**WARNING**

A workstation- or custom-class installation using automatic partitioning will remove all data on all Linux disk partitions within the virtual or physical disks associated with the current Linux LPAR. To preserve this data, refer to Appendix C, *Re-installation of Red Hat Linux and Preserving Existing Data*.

WARNING

A server-class installation using automatic partitioning will remove all data on all disk storage (virtual or physical) associated with current Linux LPAR. To preserve this data, refer to Appendix C, *Re-installation of Red Hat Linux and Preserving Existing Data*.

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.

If you chose automatic partitioning, skip ahead to Section 3.11, *Network Configuration*.

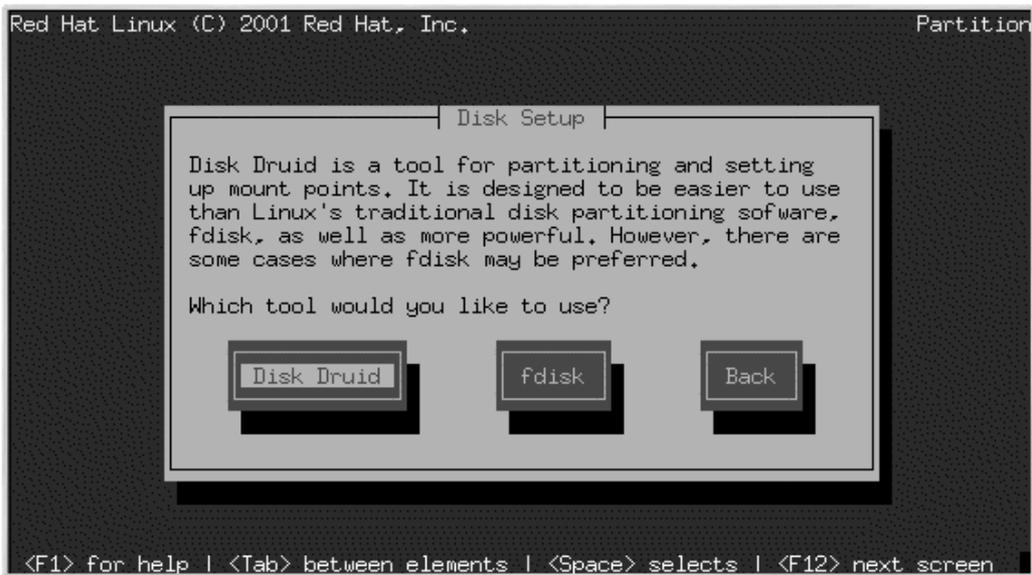
If you do not choose automatic partitioning, it is highly recommended that you choose to use Disk Druid in the disk partitioning section.

If you prefer to use fdisk, there are some rules you must follow.

- The root partition must be the first partition on the first disk.
- If *NWSSTG IPL is to be used, the first disk must have a primary partition of type PReP Boot, marked bootable (active). The PReP Boot partition should be 8 MB.

If you choose manual partitioning, you will see a screen allowing you to choose between two partitioning tools, Disk Druid or fdisk (see Figure 3-7, *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 3–7 Disk Partitioning

3.8 Partitioning Your System

If you chose **Automatic Partitioning**, please skip ahead to Section 3.11, *Network Configuration*.

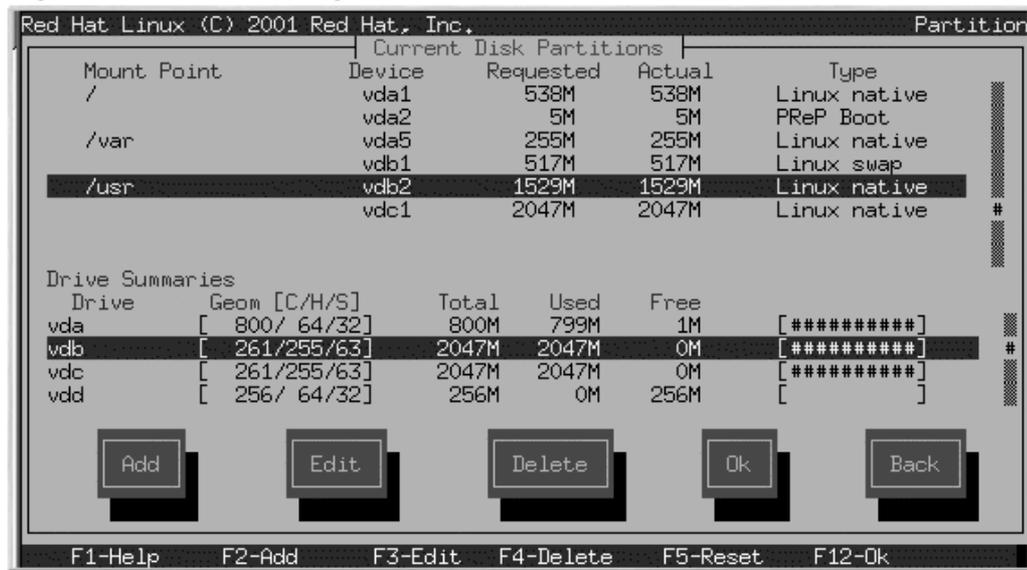
If you chose **Manually partition with fdisk**, please skip ahead to Section 3.9, *Partitioning with fdisk*.

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 3–8, *Partitioning with Disk Druid*).

Note

If you have not yet planned how you will set up your partitions, refer to Appendix C, *Re-installation of Red Hat Linux and Preserving Existing Data* and the partitioning appendix in the *Official Red Hat Linux Reference Guide*. Sections relating to LILO and Intel-specific BIOS issues can be ignored.

Figure 3–8 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.

3.8.1 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).

3.8.2 Recommended Partitioning Scheme

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

- A swap partition (twice your RAM) — 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. If your computer has 16 MB of RAM or less, you *must* create a swap partition. 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. However, it is recommended that the swap be two times the amount of RAM on your system. In Disk Druid, the partition field for swap should look similar to the following:

```
<Swap> hda6 64M 64M Linux swap
```

- A root partition (1.2-2.4 GB) — this is where "/" (the root directory) will be located. In this setup, all files are on the root partition. An 1.2 GB root partition will permit the equivalent of a workstation-class installation (with *very* little free space), while a 2.4 GB root partition will let you install every package. In Disk Druid, the partition field for / should look similar to:

```
/ hda5 3734M 3734M Linux native
```

3.8.3 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.

3.8.4 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.
- **Used:** These fields show how much of the hard disk's space is currently allocated to partitions, in megabytes and percentage.
- **Free:** This field shows how much of the hard disk's space is still unallocated, in megabytes.

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 3.8.6, *Adding Partitions*.

3.8.5 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.
- **Ok:** Used to accept the current settings and move forward in the installation process.
- **Back:** Used to move to the previous screen without saving current changes.

3.8.6 Adding Partitions

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

Note

You will need to dedicate at least two partitions to Red Hat Linux (`/` (root) and `swap`), 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 `/`.
- **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. The final partition sizes will not be permanent until you select **OK** to create the partitions.
- **Partition Type:** This field contains a list of different partition types (such as Linux Native or DOS).
- **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.

3.8.7 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.

3.8.8 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 3.10, *Formatting Partitions* for further installation instructions.

3.9 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 3.7, *Disk Partitioning* for automatic partitioning or Section 3.8, *Partitioning Your System* for partitioning with Disk Druid.

If you prefer to use `fdisk`, there are some rules you must follow.

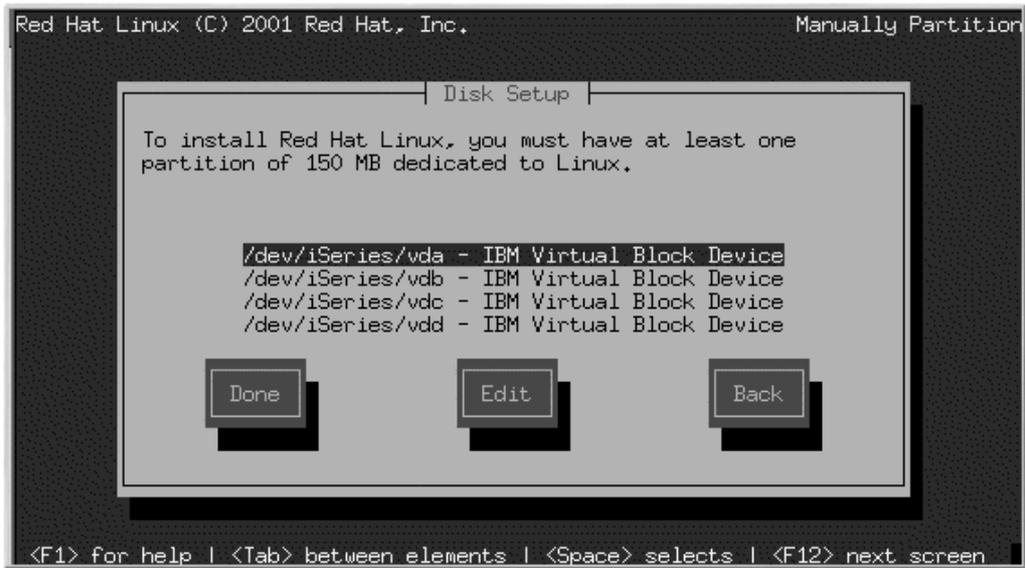
- The root partition must be the first partition on the first disk.
- If `*NWSSTG IPL` is to be used, the first disk must have a primary partition of type PReP Boot, marked bootable (active). The PReP Boot partition should be 8 MB.



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`.

Figure 3–9 Partitioning with 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.

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.

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.



Unlike and Intel system, an iSeries Linux partition should be booted from a PReP Boot partition. The PReP Boot partition must be created and be made active with the `a` option. Failure to do so may leave the resulting system unbootable, even if the installation completes successfully.

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**.

3.10 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 3–10, *Choosing Partitions to Format*).

Figure 3–10 Choosing Partitions to Format



Note

It is never necessary to check for bad blocks on a virtual disk.

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.

3.11 Network Configuration

If you do not have a physical LAN card or virtual LAN, you will not see this screen. Please skip ahead to the next section, Section 3.16, *Time Zone Configuration*.

If you have a physical LAN card or virtual LAN, and you have not already configured your networking, you now have the opportunity (as shown in Figure 3–11, *Network Configuration*).

If there is more than one LAN interface allocated to the LPAR, this dialog configures the primary interface. This will enable tools such as `setup` to configure the others later. Other network interfaces can be configured after installation, using the `setup` command.

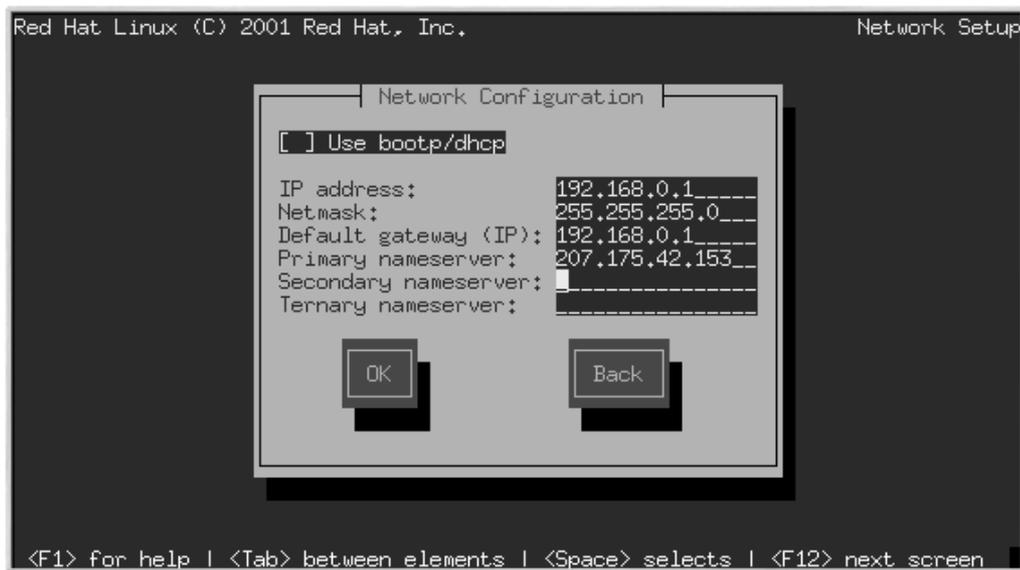
Choose whether you would like to configure your IP address using **bootp/dhcp**. If you do not have DHCP client access or you are unsure what to provide here, please contact your network administrator.

In this case, an existing server on your LAN dynamically supplies network-related information needed to add this system to the network at connect-time. (Note that if you do this, the remaining fields in this dialog will be disabled, as DHCP and BOOTP essentially "fill in the blanks" for you.)

If you do not use **bootp/dhcp**, enter, where applicable, the **IP Address**, **Netmask**, **Default gateway (IP)**, **Primary nameserver**, **Secondary nameserver**, and **Ternary nameserver**. If you are unsure of any of these, please contact your network administrator.

The information you enter here is static network information. In this case, the network information you supply is assigned permanently to this computer.

Figure 3–11 Network Configuration



3.12 Hostname Configuration

The **Hostname Configuration** dialog prompts you to enter a name for your computer (called a **hostname**).

Figure 3–12 Hostname Configuration

If you have a network card in your computer, enter a **fully-qualified domain name** in this format:

hostname.domain.name

In this example, *hostname* is the name you've chosen for your computer and *domain.name* is the TCP/IP domain. (A domain name may contain more nodes: for example, *eastcoast.mainserver.redhat.com* and *westcoast.mainserver.redhat.com*.)

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

Tip

To change your hostname once you have rebooted your system, first become root. In a terminal at the root prompt, type **hostname *newname***, where *newname* is what you want the hostname to be. If you just want to have the hostname echoed onto the display, type **hostname** and it will display the system's hostname.

3.13 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 3–13 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
- Secure Shell (SSH)
- 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 the Secure Shell (SSH), while still blocking access to normal system services, choose **Medium** and then 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 *S*hell (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

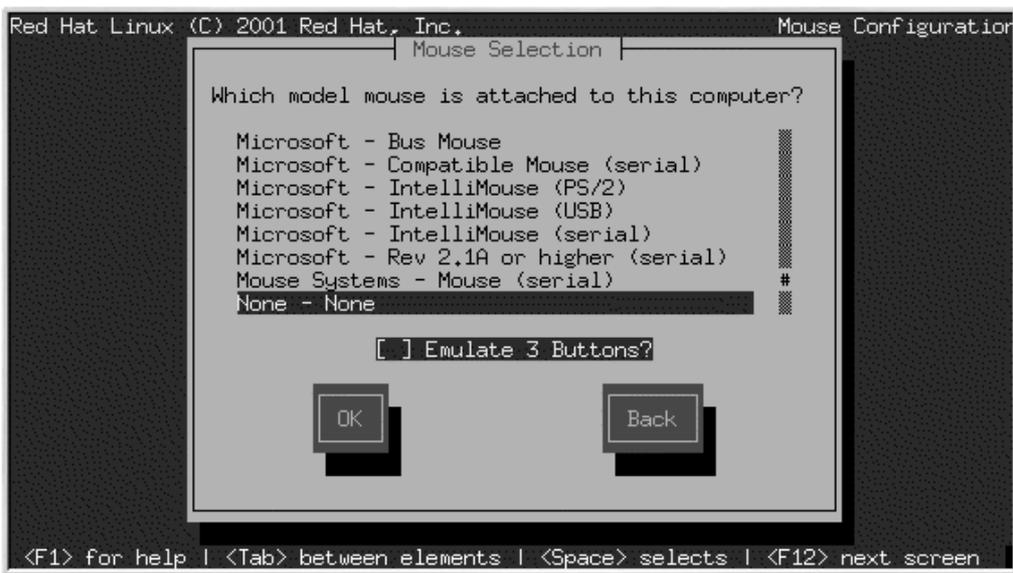
The FTP protocol is used to transfer files between machines on a network. If you plan on making your FTP server publicly available, enable this option. You need to install the `wu-ftpd` (and possibly the `anonftp`) package for this option to be useful.

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.

3.14 Mouse Configuration

Figure 3–14 Mouse Selection

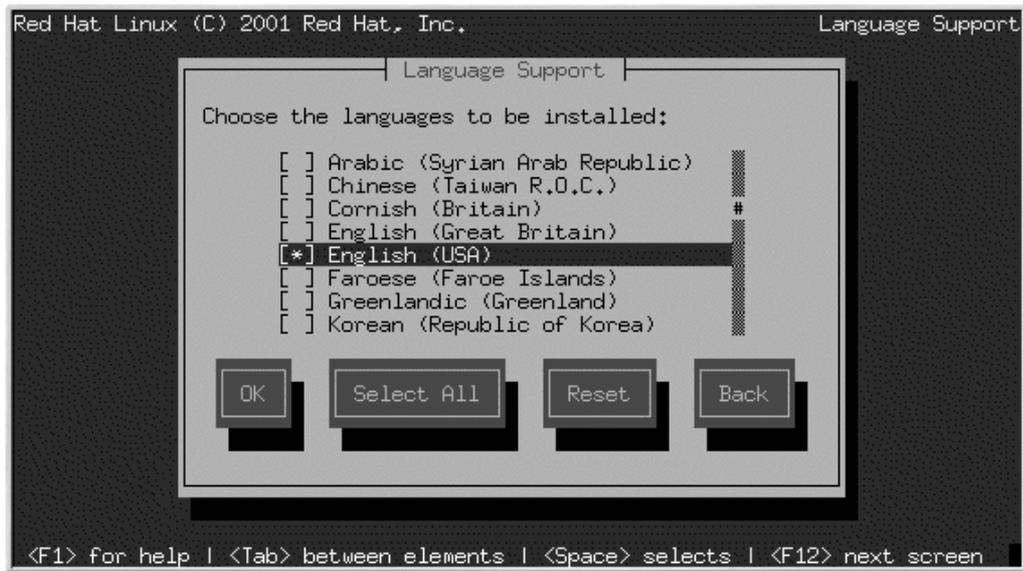


You will be prompted to select a mouse type. Please select **none**.

3.15 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 3–15 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.

3.16 Time Zone Configuration

You can set your time zone by selecting your computer's physical location.

Figure 3–16 Configuring the Time Zone

If you wish to set the hardware (CMOS) clock to GMT (Greenwich Mean Time, also known as UTC, or Universal Coordinated Time), select **Hardware clock set to GMT**. Setting it to GMT means your system will properly handle daylight-saving time, if your time zone uses it.

Select your time zone from the list and press [Enter].

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.

3.17 Account Configuration

The **Root Password** screen allows you to set your root password (see Figure 3–17, *Root Password*).

Figure 3–17 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.

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.

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.

3.17.1 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.

Enter an account name (user name). Then enter and confirm a password for that user account. Enter the full name of the account user. Once the information has been entered properly, select the **OK** button and press [Enter].

Figure 3–18 Add User



Once the account has been set up, you will be presented with the **User Account Setup** screen which will display the account you just entered.

Figure 3–19 User Account Setup

Choose **Add** to create a new user account.

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

3.18 Authentication Configuration

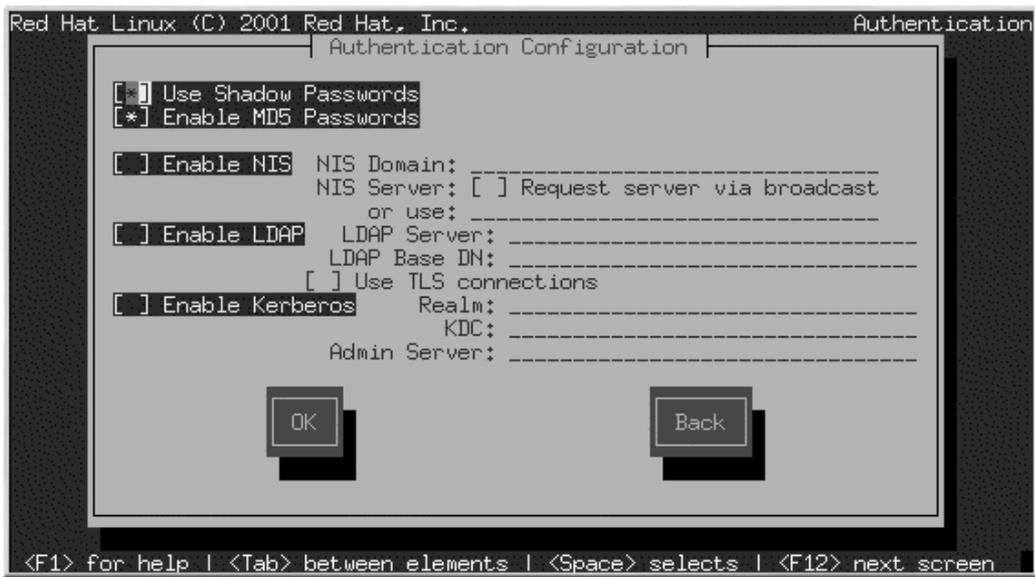
If you are performing a workstation- or server installation, please skip ahead to Section 3.19, *Package Group Selection*.

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 3–20, *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 3–20 Authentication Configuration



- **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 MD5 passwords** allows a long password to be used (up to 256 characters), instead of the standard eight letters or less.
- **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.
 - **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 connections** (*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.

3.19 Package Group Selection

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

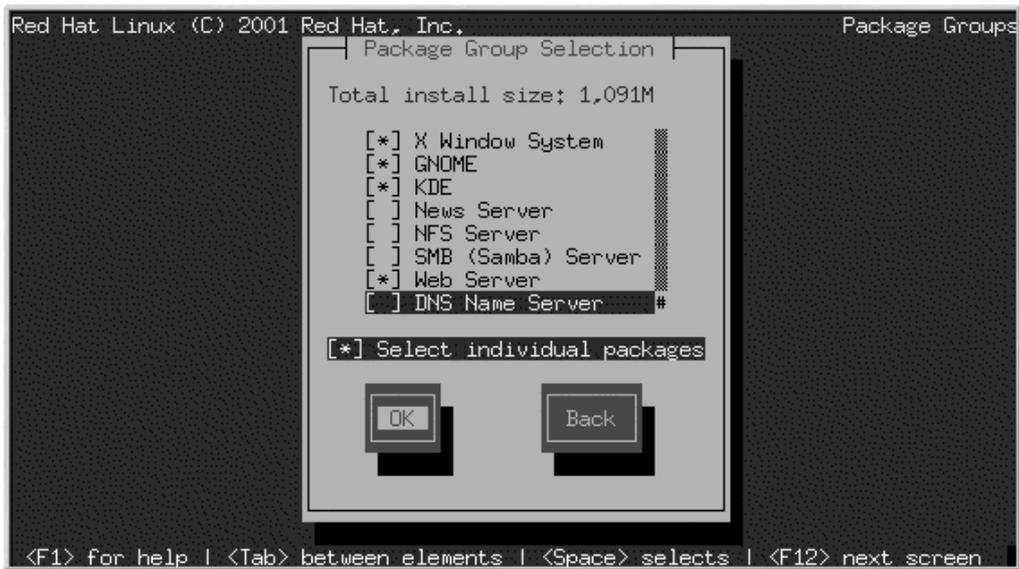
Note

Unless you choose a custom-class installation, the installation program will automatically choose most packages for you.

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 3–21, *Package Group Selection*).

Figure 3–21 Package Group Selection



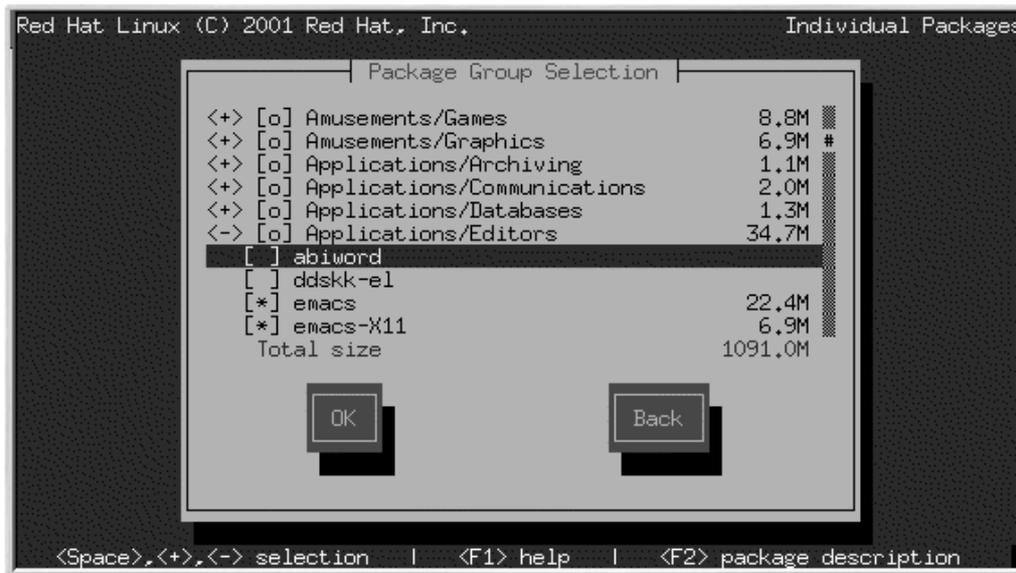
Select each component you wish to install. Selecting **Everything** (at the end of the component list) during a custom-class installation installs all packages included with Red Hat Linux. If you select every package, you will need approximately 1.7 GB of free disk space.

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

3.19.1 Selecting Individual Packages

After selecting the components you wish to install, you can select or deselect individual packages (see Figure 3–22, *Selecting Individual Packages*).

Figure 3–22 Selecting Individual Packages



To see the list of packages in the **Applications/Editors** category, for example, use the arrow keys to select this group and press [Enter] or [Space]. When you do, the + sign (closed) changes to a - sign (open) and a list of packages in this category appears. An * appears beside currently selected packages. Press the [Enter] or [Space] keys to select or deselect package

To see a description of a particular package, make sure that package is highlighted and press [F1].

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.

3.19.2 Unresolved Dependencies

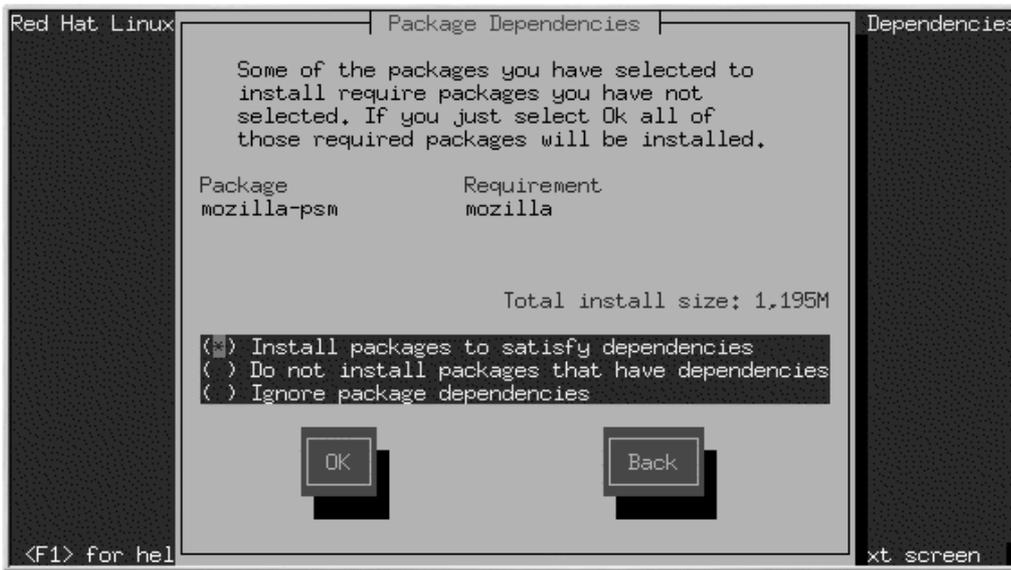
Many software packages, in order to work correctly, depend on other software packages that must be installed on your system. For example, many of the graphical Red Hat system administration tools require the python and pythonlib packages. To make sure your system has all the packages it

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 3–23, *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 3–23 Unresolved Dependencies



3.20 Preparing to Install

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

Figure 3–24 Installation to Begin**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.

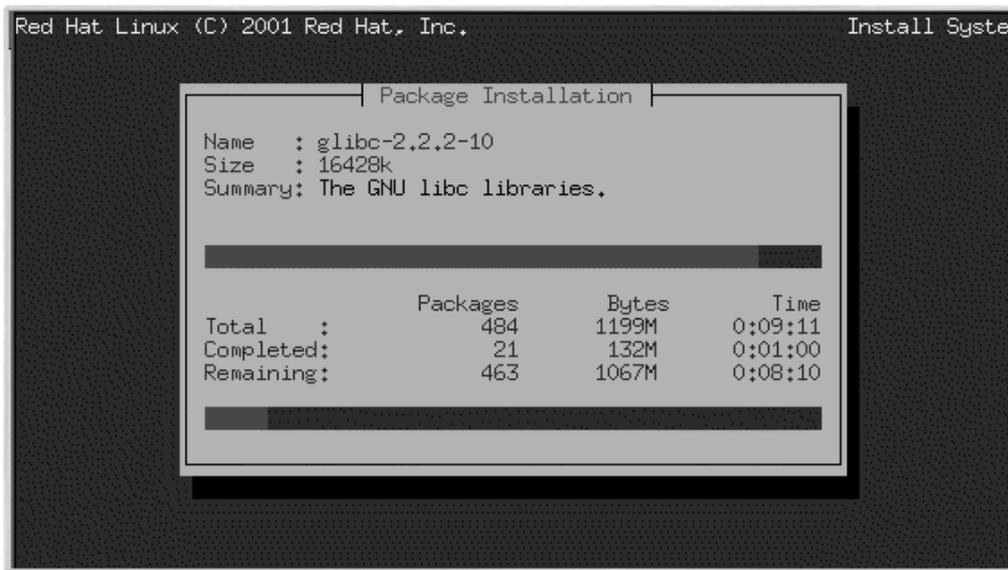
To cancel this installation process, use the OS/400 console to vary off the LPAR. It may also be necessary to perform an immediate power down of the system.

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

3.21 Installing Packages

At this point there is nothing left for you to do until all the packages have been installed (see Figure 3–25, *Installing Packages*). How quickly this happens depends on the number of packages you have selected and your computer's speed.

Figure 3–25 Installing Packages



3.22 Installation Complete

Your Red Hat Linux 7.1 installation is almost complete.

When the installation program is done, you will be prompted to press the [Enter] key (see Figure 3–26, *Installation Complete*). The LPAR will then reboot with the installed Red Hat Linux OS.



In order to reboot properly you must save the kernel image and kernel command line arguments into your IPL source. Log in to Linux and follow the appropriate instructions below.

If you have installed onto virtual disks and have no SCSI disks, use these two commands:

```
/sbin/installkernel prep
/sbin/installcmdline prep
```

If you have both virtual and SCSI disks, and want to IPL from the PRéP Boot partition on the first virtual disk, use these two commands:

```
/sbin/installkernel prep
/sbin/installcmdline prep
```

If you have SCSI disks (with or without virtual disks) and want to IPL from the A or B side, use these two commands:

```
/sbin/installkernel a
/sbin/installcmdline a
```

substituting *b* for the *a* argument in each command to install the kernel and command line on the *B* side.

Note:

It may take a minute or longer for the `/sbin/installkernel` command to complete.

Now you may shutdown Linux and vary off the LPAR. Before you vary on again, you must set the IPL source to for the LPAR to ***NWSSTG, A, or B**.

Remember that the only place you can log in as root is at the console or other devices as listed in `/etc/securetty`. If you want to log in as root from remote systems, use `ssh`.

Figure 3–26 Installation Complete



3.23 Using the Installation Disks in Rescue Mode

You can use the installation disks in rescue mode, in case your LPAR will not boot. Rescue mode gives you access to the disk partitions on your LPAR so you can make any changes necessary to rescue your installation.

To boot in rescue mode, follow the instructions for booting the installation program, with this change: In the NWS Description, set the IPL parameters option to **'rescue'** (including the quotes), or to **'dd rescue'** if you need to load the SCSI driver.

After the Language Selection screen (see Section 3.4, *Language Selection*), the installation program will attempt to mount the disk partitions on your LPAR. It will then present you with a shell prompt where you can make the changes you need. These changes may include storing the kernel and command line into the IPL source, as described in the Installation Complete section (see Section 3.22, *Installation Complete*).

When your changes are complete, you can exit the shell using `exit 0`. This will cause a reboot from the **C** side. To reboot from the **A** or **B** side or from ***NWSSTG**, you should vary off the LPAR instead of exiting the shell.

3.24 Special Considerations for Accessing the SCSI Utilities from Rescue Mode

If your LPAR uses Native DASD disks, you may need access to the SCSI utilities from rescue mode. These utilities are located on the driver disc CD. The driver disc CD cannot be mounted from rescue mode unless special steps are taken. These steps are described below.

If you have a second CD-ROM drive assigned to your Linux LPAR, you can mount the driver disc CD in the second drive.

If you have only one CD-ROM drive, you will need to set up an NFS boot, using the following steps:

1. Copy `/qopt/red_hat/ppc/iSeries/vmlinux` to the IFS of the iSeries system containing your Linux LPAR. You can do this with a command like:

```
COPY OBJ ('/qopt/red_hat/ppc/series/vmlinux') TODIR('/tmp')
```

Note that `/tmp` can be replaced with any location on your IFS.

2. Copy the first installation disc onto a filesystem of another Linux LPAR or other Linux system.
 3. Make this copy of the installation disc available through NFS or FTP.
 4. Vary off or power down the LPAR you need to rescue. Set its IPL parameters as instructed for booting the Installation discs in rescue mode, except that the IPL source should point to the copy of **vmlinux** on your IFS (from step 1, above).
 5. *Make sure the installation disk is not in your CD-ROM drive.*
 6. IPL the Linux LPAR.
 7. Follow the prompts as described in Section 3.23, *Using the Installation Disks in Rescue Mode*. You will see an additional prompt for the installation source. Select NFS or FTP (as appropriate) and complete the following network configuration screen.
 8. When the Linux LPAR has booted into rescue mode, the CD-ROM drive will be available and you can mount the driver disk to access the SCSI utilities.
-

A Getting Technical Support

A.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.

A.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/>

A.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

A.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.

A.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.

A.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?)

A.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>.

A.6 Support Frequently Asked Questions (FAQ)

A.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?

A.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.

A.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.

A.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 B.2.3, *Problems When You Try to Log In* for more information.

B Troubleshooting Your Installation of Red Hat Linux

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

B.1 Trouble During the Installation

B.1.1 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.

B.1.2 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.

B.1.3 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.

B.1.4 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 / (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.

B.1.5 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>.

B.2 Problems After Installation

B.2.1 Unable to IPL from *NWSSTG

If you are experiencing difficulties when trying to IPL from `*NWSSTG`, you may not have created a PReP Boot partition set as **active**.

B.2.2 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>.

B.2.3 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.

B.2.4 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 Re-installation of Red Hat Linux and Preserving Existing Data

C.1 Preservation of Existing Data on an iSeries Red Hat Linux Logical Partition

Generally speaking, installing Red Hat Linux over a prior installation (including Red Hat Linux) will destroy some and often all the data on the disks (virtual and physical) attached to that Logical Partition (LPAR). If these disks contain data which is important to you, the data should be protected. There are a variety of ways to do this, some of which are unique to the iSeries environment.

1. The data can be saved and removed from the system before the (re)installation. This would be the ordinary and traditional Linux means of preserving data (tarballs, etc.).
2. Moving or copying the data (via FTP, NFS, etc.) to another Logical Partition, either OS/400 or Linux. Since each iSeries Logical Partition is independent, one Logical Partition's data is unaffected by a reinstall in a different Logical Partition.
3. Removing the disks from the Logical Partition during the installation. If your Red Hat Linux installation contains more than one disk (virtual or physical) and that disk does not contain data from the Red Hat installation (e.g. is mounted at `/home/myuserid`, mounted as the directories containing the data base data) it can be removed from the Logical Partition for the duration of the reinstall, and then added back in after the installation is complete. See the *Configuring Linux in a Guest Partition* document (<http://publib.boulder.ibm.com/pubs/html/as400/v5r1/ic2924/info/rzalm/rzalm-linuxkickoff.htm>) for details on how these functions are performed.
4. Adding disks, copying the data, and then removing the new disks during the installation. If you have data to spare on an OS/400 partition, creating a new virtual disk, mounting it, copying the data, and then removing it during the installation is another way of obtaining the benefits of step 3, even if you did not initially plan for it. After the installation, the disk can be added back and permanently mounted, or simply copied back and the new disk deleted. A similar procedure could be used for a spare physical disk.

C.2 Additional Considerations: iSeries Virtual Disks

When planning a new installation, the flexibility of virtual disks enable strategies not commonplace in today's world of large physical disks. If you plan on using virtual disks, having one large enough to hold the Red Hat Linux distribution and another holding applications and application data is one strategy worth considering. Another strategy might be a single partition on a virtual disk holding a particular application.

Since virtual disks are not bound by physical boundaries, they can be sized in any manner that is useful and culled out during a Red Hat Linux re-installation to preserve them over the installation.

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