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Prepared by OS Integration

Compaq Computer Corporation

Contents

"Quick Setup" with Red Hat Linux 7.1 on the Compaq ProLiant ML330 and ProLiant ML330e Servers

Abstract: This document provides information on installing and implementing a Red Hat Linux 7.1 operating system on Compaq ProLiant ML330 and ProLiant ML330e servers.

It includes a step-by-step installation with Red Hat Linux 7.1 and Appendix A provides web resources for additional information on Compaq and Red Hat Linux.

For additional information regarding the configuration of Linux on Compaq ProLiant servers, visit the Compaq and Linux website: http://www.compaq.com/linux. For the latest Linux documentation: http://www.compaq.com/products/servers/linux/whitepapers.html and to view or download the latest "Installing Linux on Compaq ProLiant Servers" "How To": http://www.compaq.com/products/servers/linux/compaq-howto.html

Note: Read this document before installing Red Hat Linux 7.1 on your Compaq ProLiant ML330 or ProLiant ML330e servers.

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Notice

"Quick Setup" with Red Hat Linux 7.1 on the Compaq ProLiant ML330 and ProLiant ML330e Servers Integration Note prepared by OS Integration

First Edition (May 2001)
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Compaq ProLiant ML330 and ML330e Servers

Designed to meet the growing needs of both small and medium size businesses, the Compaq ProLiant ML330 and the ProLiant ML330e undergoes thousands of hours of quality assurance, integration, optimization, and testing to assure maximum reliability on hardware and software to keep networks up and running continuing to enhance business productivity. Compaq also participates in the Red Hat Linux Hardware Certification Program and our engineers constantly review the Compaq hardware and drivers to ensure compatibility with Red Hat Linux.

New Features of Red Hat 7.1 Linux

The latest release of Red Hat 7.1 Linux positions Red Hat Linux as an enterprise class operating system. Significant improvements over the previous kernel (2.2.x) are apparent in the following areas:

- Supports up to 8 Multiprocessors and 64 GB RAM
- Eliminates the PCI bus limit and makes virtual memory limitless
- Supports a greater number of users and groups and includes a revised scheduler to handle more processes
- Supports USB and IEEE 1394, also referred to as FireWire™, devices.
- Improves multi-threaded network stack

The Red Hat 7.1 kernel (2.4.x) is now configured for 2 GB of virtual memory for the kernel and 2 GB virtual memory for individual processes. Rebuilding the kernel with one of the CONFIG_{1,2,3} GB options will give either more or less virtual memory to the kernel, allowing process virtual memory to be adjusted as well.

Using the Compaq System Erase Utility

To begin the installation of Red Hat 7.1 Linux on your ProLiant ML330 or the ProLiant ML330e start with a System Erase. If you do not have a SmartStart CD-ROM and if your ProLiant ML330 or the ProLiant ML330e is not fresh from the factory download the Compaq System Erase Utility at this URL: http://www.compaq.com/support/files/server/us/download/9156.html.

This SoftPaq creates one System Erase Utility diskette. Follow the steps below to use the System Erase Utility.

1. Obtain One (1) formatted 1.44-MB diskettes.
2. Download the SoftPaq to a directory on your hard drive and change to that directory. The file that is downloaded is an executable with a filename based on the SoftPaq Number.
3. From that drive and directory, execute the downloaded file and follow the on-screen instructions. The following files will be created:

   QRST5.EXE
   276090xx._01
   README.1ST

where "xx" is US (English), or JP (Japanese).

4. Run qrst5.exe to create the diskettes.
5. After the diskettes have been created, you may delete the SoftPaq file downloaded in step 2 and all files generated.
6. To run the Compaq System Erase Utility, power down your computer, place the Compaq System Erase Utility diskette 1 in Drive A:, then power up your computer.

If you have the SmartStart and Support Software CD-ROM, boot the server using the Compaq SmartStart and Support Software CD-ROM. SmartStart supports manual path installation of Linux.

Starting with a system erase ensures you begin the installation process from a known non-configured state.

1. Boot your server using the SmartStart CD-ROM or your bootable floppy disk.
2. Select **Run System Erase Utility** from the Main Menu, then select **Yes**
3. Restart the server

Special Instructions for the ProLiant ML330e ATA model:

If you are setting up Red Hat 7.1 Linux on a Compaq ProLiant ML330e ATA model follow the instructions below. The Compaq ProLiant ML330e uses the CMD 649 IDE chipset. Support for this chipset is not explicitly present in Linux kernels before 2.4.1.

IMPORTANT: Following the completion of the Red Hat 7.1 Linux installation, complete the steps below to enable ATA-100 performance.

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1. Download the SoftPaq *"Compaq IDE Hard Disk Parameter Setting"*, available at http://www.compaq.com/support/files/server/us/locate/3061.html to a Linux server. This package installs a small shell script to turn on DMA mode on all ATA disk drives installed in the server at boot time causing the IDE subsystem to run in PIO mode by default.
2. When the download is completed, extract the software:

   Type `# tar –xzvf sp16306.tar.gz [Enter]`

   The following files should be created:

   - `cpqhdparm-1.0-1.i386.rpm`
   - `readme.txt`

Installing Red Hat 7.1 Linux

For this “Quick Setup” guide we will be using the Red Hat 7.1 Linux CD-ROM. Normally, when doing server installations you do not need to install X window (or the GUI interface), but for the purposes of this document we will be configuring the X window system.

We will also use the **Automatic Partitioning** available in Red Hat 7.1. These partitions will be automatically created. If you would like additional information on partitioning your hard drive is available at, http://www.redhat.com/support/docs/howto or you can review the Red Hat 7.1 Linux documentation.

1. To begin the Red Hat 7.1 Linux installation.
   a. Insert the Red Hat Linux CD-ROM into your CD-ROM drive.
   b. Select the **OK** button and press [Enter].

      At this time, the installation program probes your system and attempts to identify your CD-ROM drive. Use the HELP sidebar to the left of the GUI to help guide you through the installation.
2. Select the language.
   a. Select the language you use (i.e., **English** or other language).
   b. Click the **Next** button.
3. Set the Keyboard configuration.
   a. Select **Model of keyboard** or **Generic** (with number of keys).
   b. Select **Layout**.
   c. Select **enable** or **disable** for the dead keys.
   d. Click the **Next** button.
4. Set the mouse configuration.
   a. Select the **mouse type for your system** or **Generic mouse**. Red Hat 7.1 Linux automatically discovers the following mouse Types: PS2 and bus.
   b. Select the **Emulate 3 Buttons** checkbox to use a two-button mouse as if it had three buttons (pressing both mouse buttons simultaneously). If you are installing the X Window System Select the Emulate 3 Buttons option to use a three-button mouse.
   c. Click the **Next** button.

      The Welcome Screen appears with information about registering your software.
5. Install options.

   The following installation options are available: workstation, server, laptop, custom, or upgrade.
   a. Select **Server**.
   b. Click the **Next** button.
6. Select your disk partitioning type.

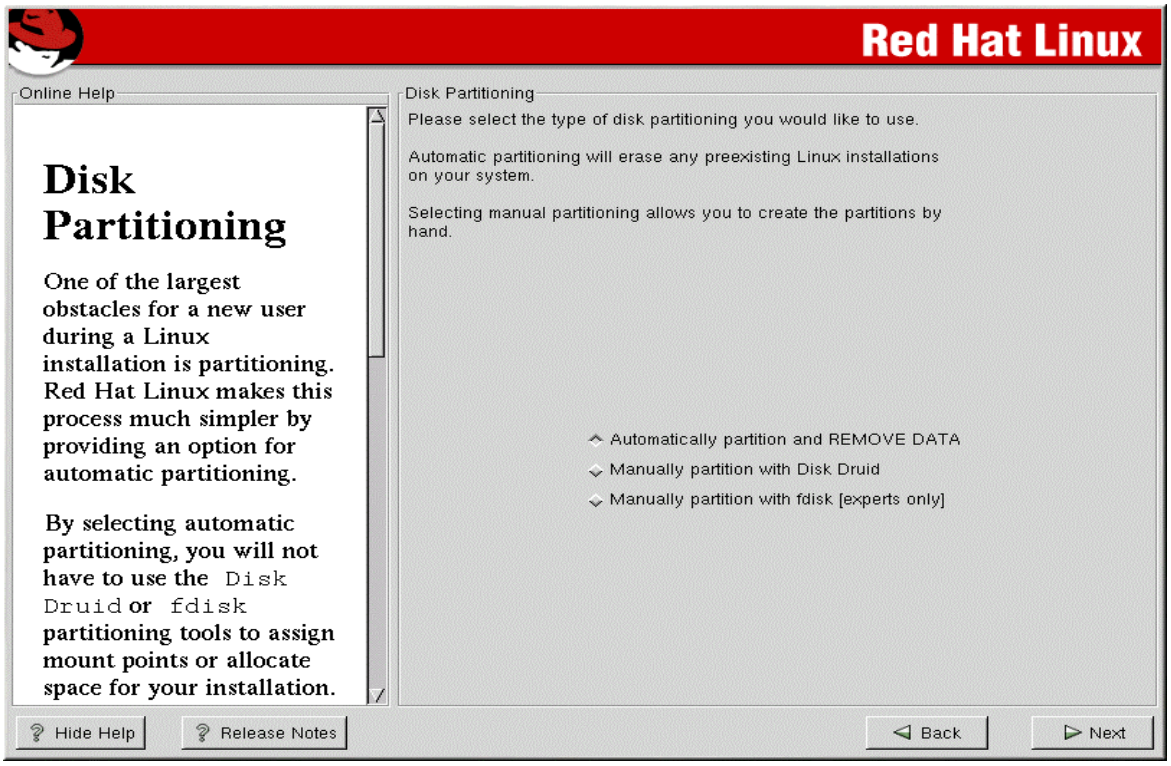

Figure1 Partitioning

a. Select the **Automatic partition and REMOVE DATA** radio button.

   Automatic partitioning removes any existing Linux partitions.

b. Click the **Next** button.

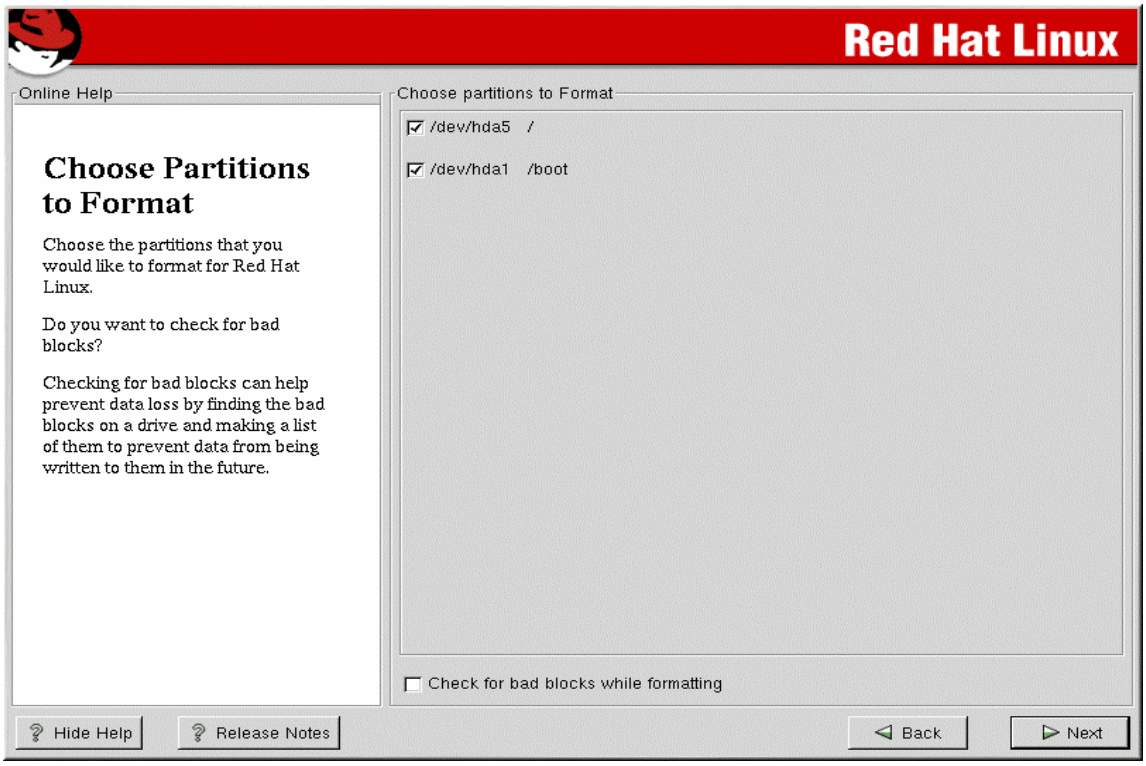

Figure 2 Choose partitions to Format

7. Format your partitions.

   After creating partitions, you are required to format them (see below).

   a. Select **/dev/hda5/** and **/dev/hda1/boot**

   b. Check the **Check for bad blocks while formatting** box (optional)

   c. Click the **Next** button.

8. Install LILO.

   IMPORTANT: To be able to boot your Red Hat Linux system, you will need to install LILO (the *LI*nux *LO*ader). LILO can be installed in either: the master boot record (MBR) or the first sector of your boot partition.

   If you install LILO in the MBR, when your machine boots, LILO will display a LILO: prompt. You are then able to boot Red Hat Linux. If your system will use only Red Hat Linux, choose the MBR.

LILO configuration

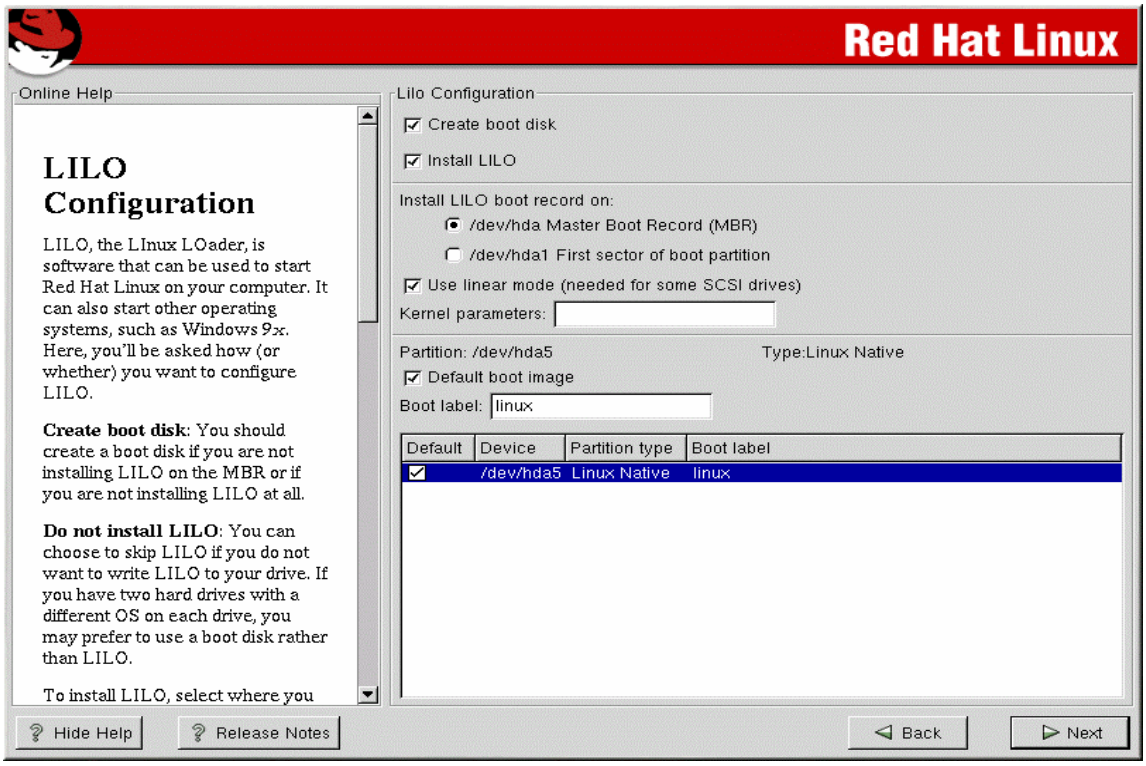

Figure 3 LILO Configuration

a. Check the **Create Boot disk** checkbox (doing this will allow you to boot Red Hat 7.1 from floppy in the event of a system failure).

b. Check the **Install LILO** checkbox.

c. Check the **/dev/hda Master Boot Record (MBR)** radio button.

d. Check the **Use linear mode (needed for some SCSI drives)** checkbox.

e. Check the **Default boot image** checkbox.

f. Type **linux** in the Boot label window.

The partition holding your Red Hat Linux root file system will have a Boot label of linux. If you want to add boot labels for other partitions (or change an existing boot label), click once on the partition to select it. Once selected, you can change the boot label.

g. Click the **Next** button.

SMP Motherboards and LILO

If the installation program detects an SMP motherboard on your system, it automatically creates two lilo.conf entries. The two entries in lilo.conf will be linux and linux-up. Linux will then boot by default.

9. Setup your network configurations.

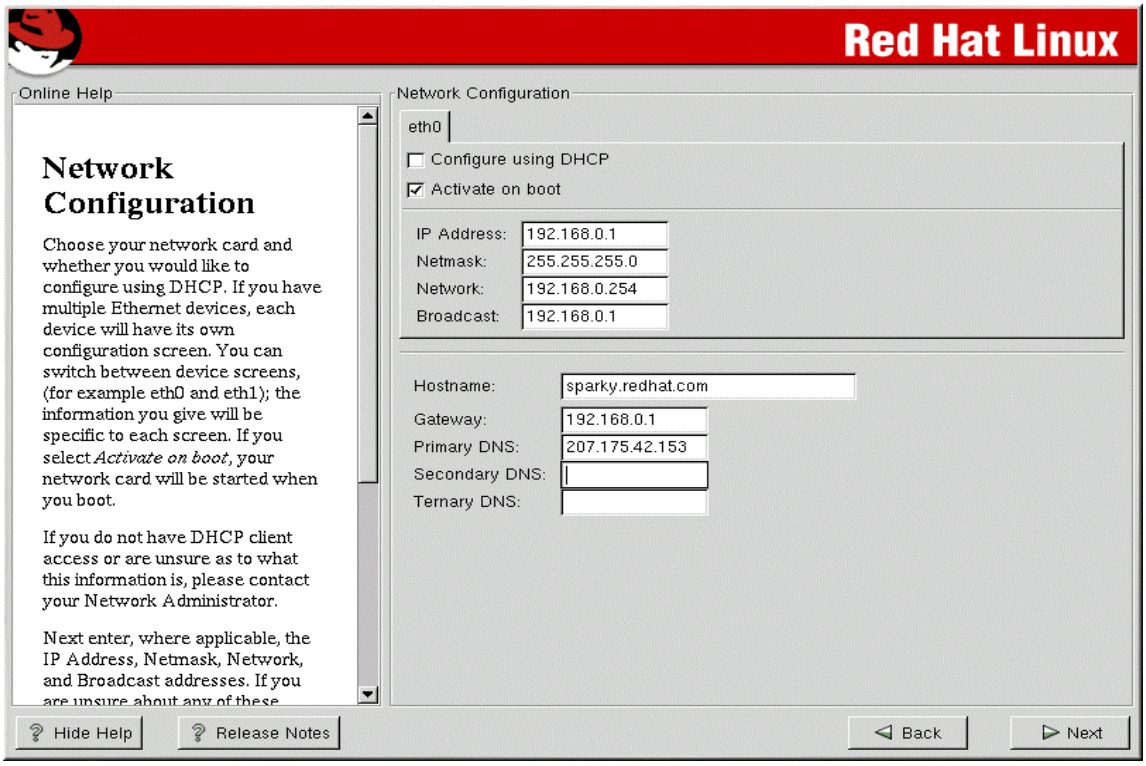

Figure 4 Network Configuration

Choose whether you would like to configure your IP address using DHCP

a. By selecting the **Activate on boot** checkbox, your network interface will start when you boot your server. If you select the DHCP check box , ignore steps b and c.

b. Type in the **IP Address**, **Netmask**, **Network**, and **Broadcast** addresses if needed

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

c. Type the **Gateway** and **Primary DNS** (if applicable the **Secondary DNS** and **Ternary DNS**) addresses

d. Click the **NEXT** button

10. Configure your firewall.

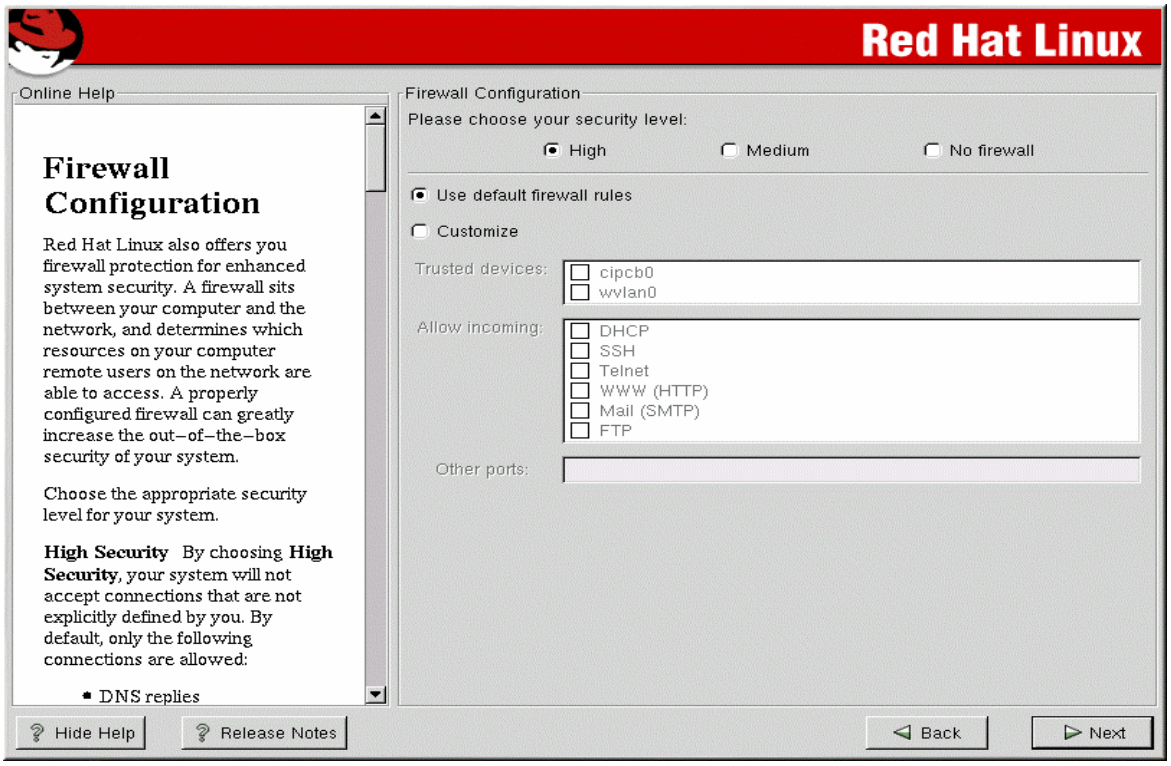

Figure 5 Firewall Configuration

a. Select either the **High, Medium** or **No Firewall** radio buttons (Selecting High may inhibit your network access ability i.e., internet or intranet)

b. Select the **Use default firewall rules** or **Customize** radio button to add trusted devices or to allow additional incoming services.

   You can allow access to ports not listed here, by listing them in the **Other ports** field. Use the following format: **`port:protocol.`** To specify multiple ports, separate them with commas.

c. Click the **Next** button.

11. Select your time zone configuration.

    You will see two tabs. The first tab allows you to configure your time zone by your location and the second tab allows you to specify a UTC offset such as daylight savings.

    a. Select your **Time Zone**

    b. Click the **Next** button.

12. Establish language support.

    a. Select the language you use (i.e., **English** or other language).

    b. Click the **Next** button.

13. Configure your account.

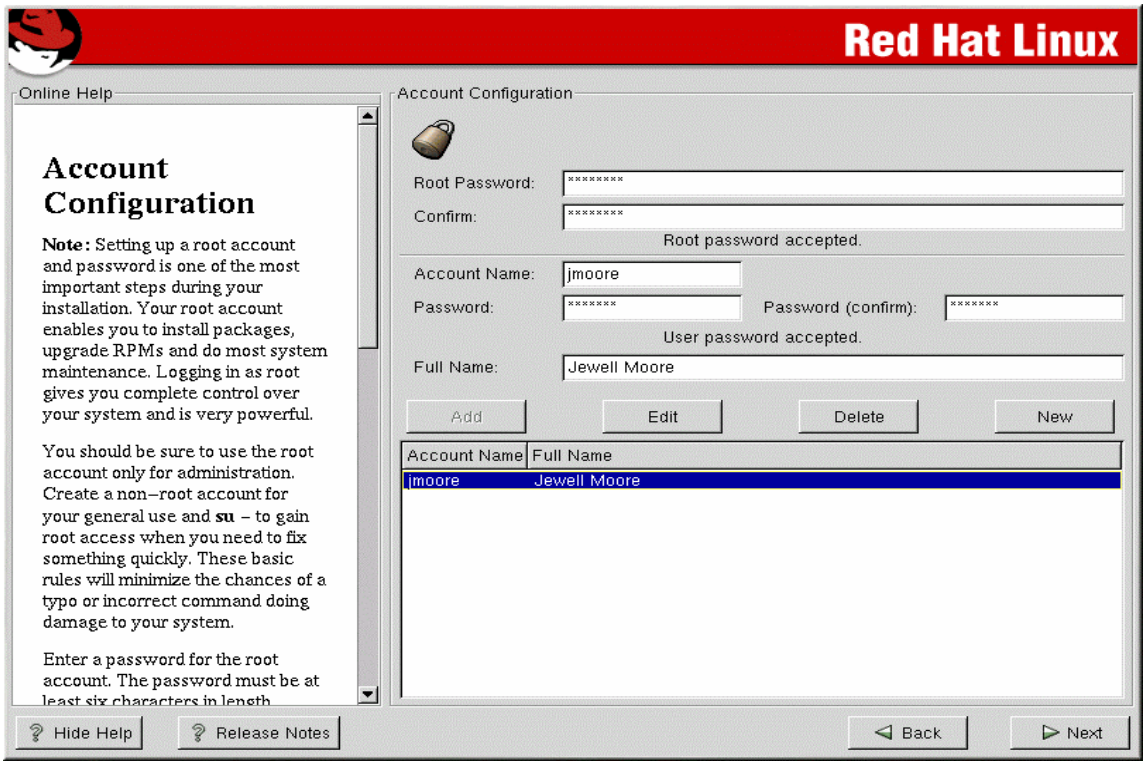

Figure 6 Account Configuration

Setting the Root Password – Administrator ONLY

a. Type in your **[password]** **(**must be at least six characters long)

b. Then **[type to confirm password]**

Setting Up User Accounts

a. Enter an account name.

b. 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.

c. Click the **Next** button.

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. Use **Edit** or **Delete** for user accounts you have created and no longer need.

14. Select the packages to install.

GNOME and KDE are graphical user interfaces (desktop environments) similar to Windows allowing you to navigate the Linux landscape effortlessly. Before these two packages evolved, Linux users had to memorize many shortcuts and commands, then Type them at the command line to navigate or accomplish tasks. It is recommended that you select at least one of these packages if you are not a Linux or UNIX guru.

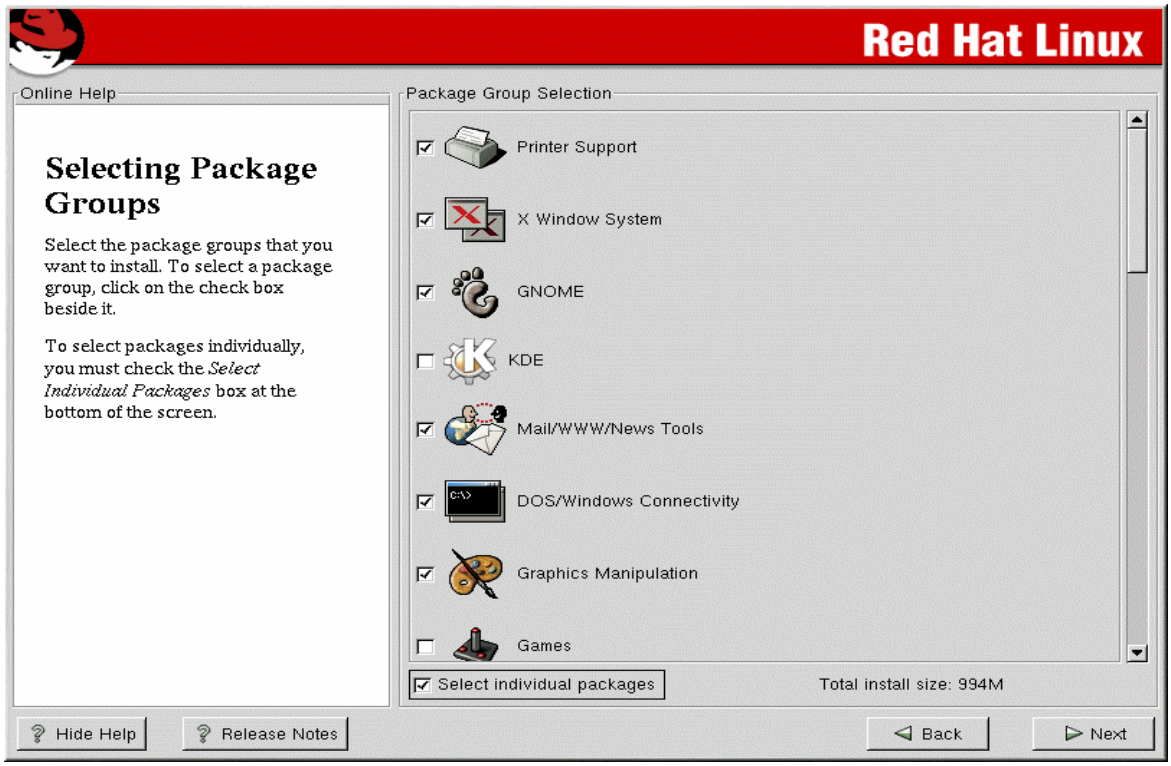

Figure 7 Selecting Package Groups

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

b. Select the **Packages to Install** check boxes (choose Printer Support, X Window System, either KDE or GNOME, Mail/WWW/News Tools, DOS/Windows Connectivity and Graphics Manipulation)

   Selecting **Everything** installs all the packages included with Red Hat Linux. You need approximately 1.7 GB of free disk space.

c. After selecting the components you wish to install, you can select or deselect individual packages using your mouse.

   Check the **Total install size** in the lower right portion of the screen to be certain you have sufficient disk space available.

d. Click the **Next** button.

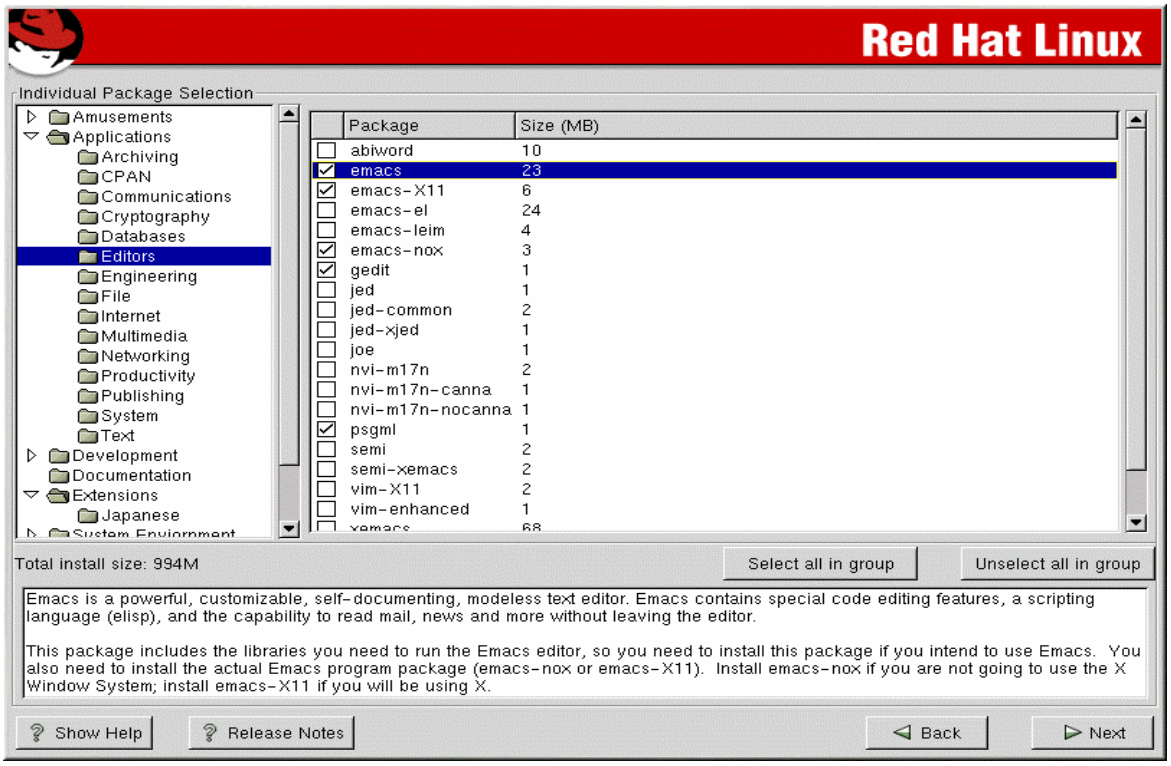

Figure 8 Individual Package Selections

NOTE: To select an individual package, double-click the checkbox beside the 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.

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

b. Click the **Next** button.

15. Configure authentication.

    To configure the NIS option, you must be connected to an NIS network and have your passwords and other network information ready.

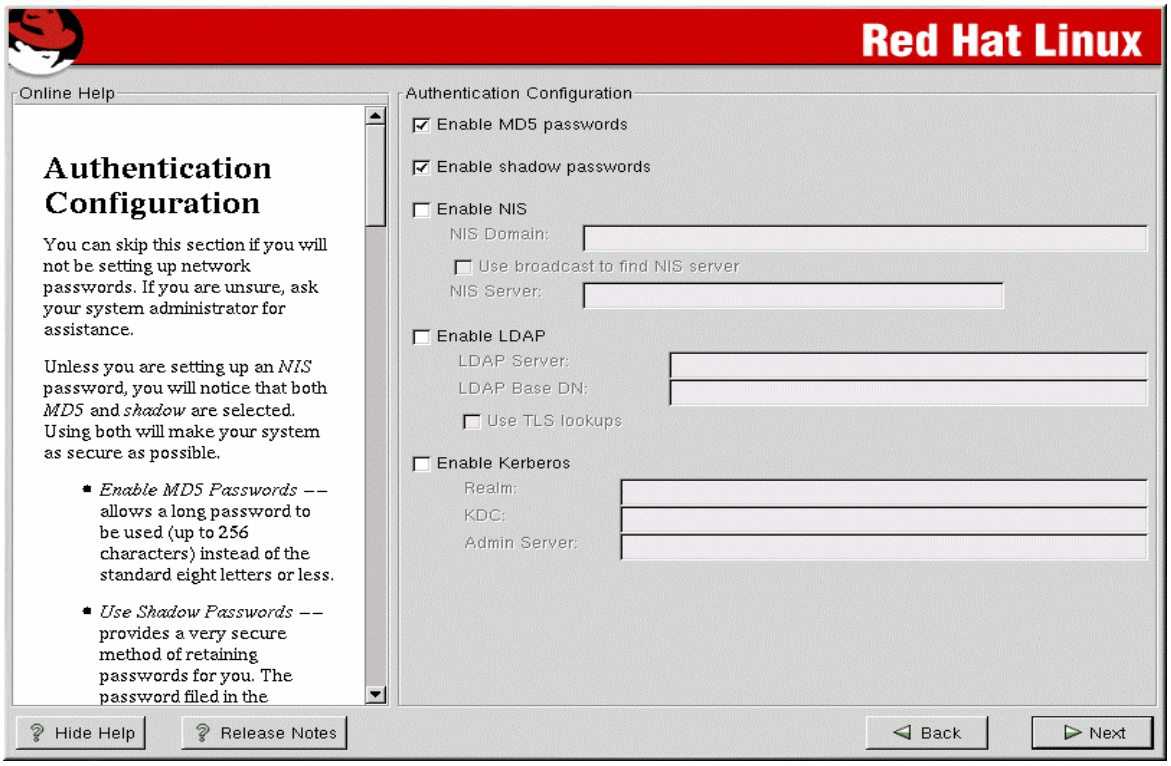

Figure 9 Authentication Configurations

a. Select the **Enable MD5 passwords** check box (allows a long password to be used (up to 256 characters)

b. Select the **Enable shadow passwords** check box (provides a secure method for retaining passwords)

c. Select the **Enable NIS** check box 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 or **Use broadcast to find NIS server** allows you to broadcast a message to your local area network to find an available NIS server.

d. Select the **Enable LDAP** check box to use LDAP for some or all authentication. Choose from the following options: **LDAP Server** to allow access to a specific server by providing an IP address and **LDAP Base DN** to look up user information by its Distinguished Name (DN).

e. Select the **Use TLS lookups** check box to allow LDAP to send encrypted user names and passwords to an LDAP server before authentication.

f. Select the **Enable Kerberos** checkbox (a secure system for providing network authentication services).

There are three options to choose from here:

(1) **Realm** allows access to a network that uses Kerberos, composed of one or a few servers and a potentially large number of clients.

(2) **KDC** grants access to the Key Distribution Center (KDC) a machine that issues Kerberos tickets (TGS) and

(3) **Admin Server** allows you to access a server running **kadmind**.

g. Click the **Next** button.

16. Configure the GUI X Configuration tool.

Configuring Your Videocard

The next step is to configure an X server for your system.

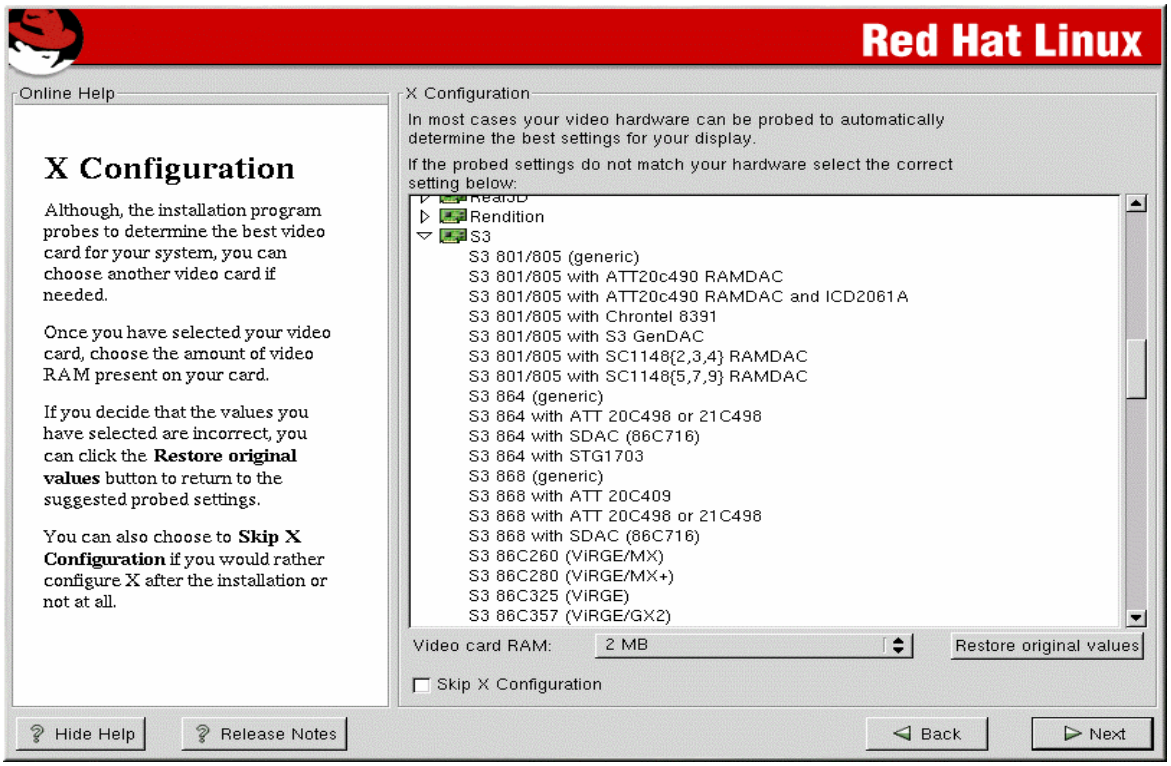

Figure 9 X Configuration

Xconfigurator presents a list of video cards for you to choose from.

a. Select your **Videocard (select the ATI Rage XL for the ML330 and ML330e**) from the list using your mouse, then let Red Hat detect it.

b. Click the **Next** button.

If your video card does not appear on the list, Xconfigurator may not support it. Check the Red Hat Hardware Compatibility List (HCL) available at http://hardware.redhat.com/hcl/genpage2.cgi.

Configuring Your Monitor

Xconfigurator will then display a listing of monitors. You can either use the monitor that is auto detected or select a different monitor.

a. Select your Compaq **Monitor Type or a Generic** from the list

IMPORTANT: If your monitor does not appear on the list, select the most appropriate **Generic** model available. 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 damage your monitor.

b. Click the **Next** button.

Custom Configuration

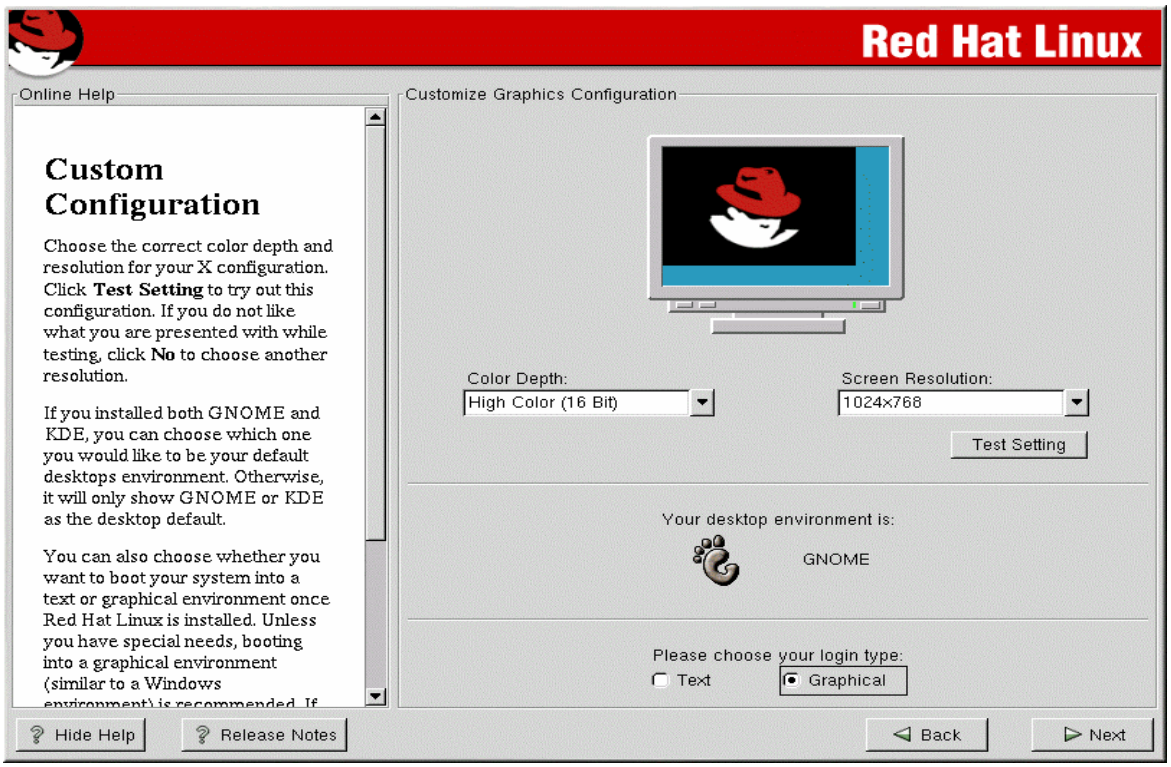

Figure 11 Custom Configuration

a. Choose the correct color depth and resolution for your X configuration.

b. Click the **Test Setting** button to try out this configuration.

c. If you installed both GNOME and KDE, choose which one to use as your default desktop environment

d. For the Login Type Select **Graphical** radio button (Do this unless you have special needs, booting into a graphical environment is recommended)

e. Click the **Next** button.

17. Prepare for the install.

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

Installing Packages

You will now see bars showing the packages you selected with their total progress, size and the summary as they are being installed.

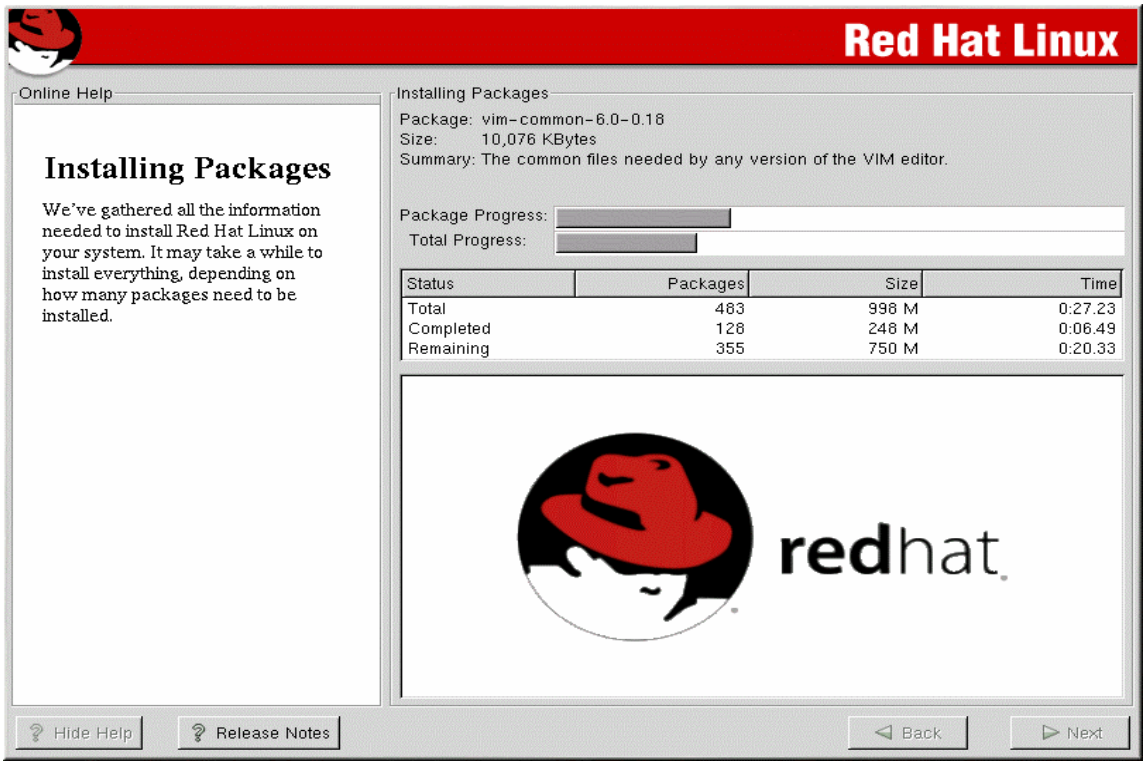

Figure 12 Installing Packages

a. Click the **Next** button.

After pressing the **Next** button, partitions will be written and packages will be installed. To cancel this installation process, hit your computer's Reset button or use the **Ctrl+Alt+Del** to restart your machine

18. Boot Disk Creation

IMPORTANT: When performing a partitionless installation, you must create a boot disk. Without this diskette, Red Hat Linux will not boot.

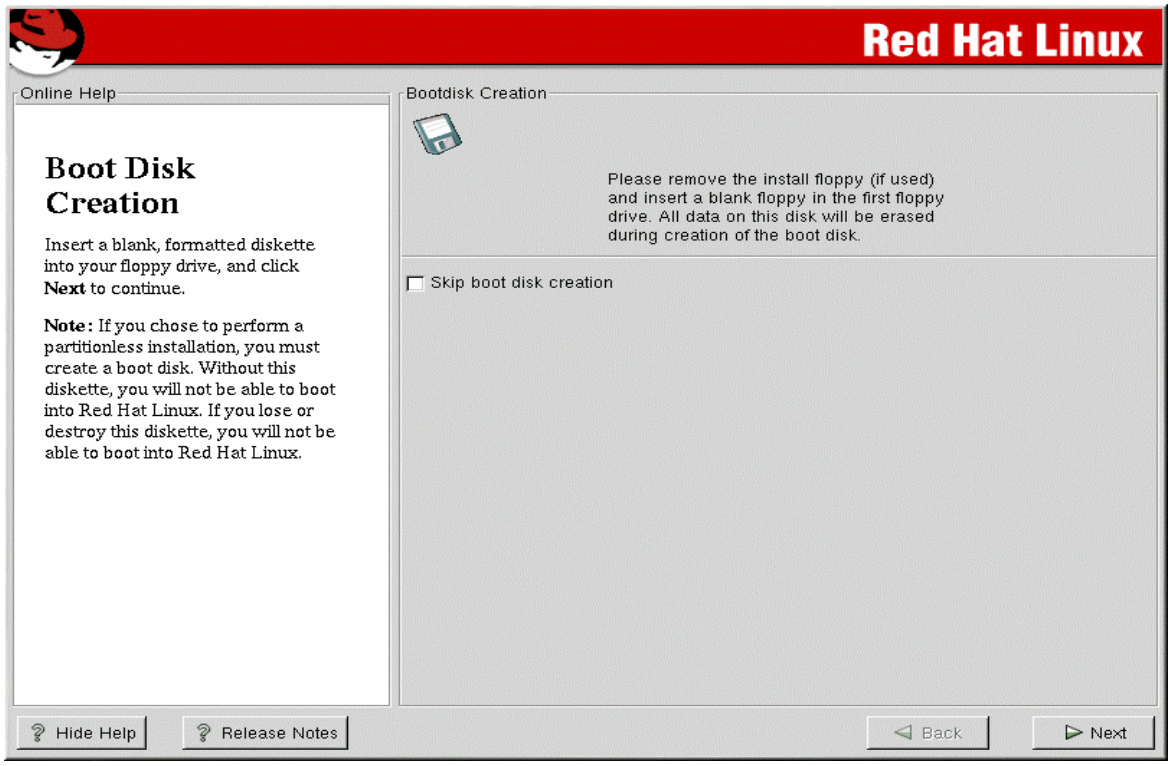

Figure 13 Boot Disk Creation

a. Insert a blank, formatted diskette into your diskette drive,

b. Click the **Next** button.

c. Remove it from your diskette drive and label it clearly (Don't lose it or destroy it, you may need it one day)

19. Complete the installation.

    The installation program will now prompt you to prepare your system for reboot.

    a. Remove all media from the diskette drive or the CD in the CD-ROM drive

       After the power-up sequence has completed, you should see the LILO GUI prompt Do one of the following things:

    b. Press [**Enter**] (LILO's default boot)

    c. Select the **boot label**, followed by **[Enter]**

    d. After a timeout period, LILO will automatically boot the default entry

    e. Following this you should see one or more screens of messages scroll by, then you should see the GUI login screen

You have now completed the installation of Red Hat 7.1.

If You Experience Problems

Red Hat 7.1 Linux stores the installation log at */tmp/install.log*. If you experience problems during the installation refer to this log to determine which steps completed normally.

Check Appendix A for website support for Red Hat Linux 7.1 and Compaq ProLiant servers

For more information see the *Official Red Hat Linux Getting Started Guide* online at http://www.redhat.com/support/manuals and the Red Hat Linux errata pages available at, http://www.redhat.com/support/errata.

Compaq Related Questions and Answers

Where can I get more information on Compaq and Linux?

The Compaq Linux website hosts an array of information, such as the distributions Compaq supports, white papers, customer advisories, support matrices, and a direct link to all Linux SoftPaqs for servers and storage options located at, http://www.compaq.com/linux/

Does Compaq have Open Source projects?

Compaq is hosting a number of ongoing open source software projects running on ProLiant platforms. The Compaq open source website contains engineering projects, technical papers, news and articles from within the Compaq open source community. Compaq also aids in the support of Linux by regularly contributing software to the Linux kernel. Visit us at, http://www.opensource.compaq.com/

Why start with a system erase?

Starting with a system erase ensures you begin the installation process from a known non-configured state.

How do I perform a system erase?

Boot from the SmartStart CD-ROM and choose System Erase from the Main Menu.

How do I get to the main menu of SmartStart if all that shows is a boot: instead of the graphical menu when booting to the SmartStart CD?

One method is to build and use the System Erase Diskette. Create this diskette from the Compaq Disk Builder by inserting the SmartStart CD-ROM into a system running Microsoft Windows; the Autorun feature automatically starts the Disk Builder Program.

Appendix A - Web Resources

In addition to hardware and software products, Compaq also provides information enabling you to stay current on the latest developments and assisting you in making deployment decisions. Table 1 lists Compaq resources on the web.

Table 1. Compaq web resources

Item	Web Location
Compaq and Linux website - support for Linux includes close alliances with the major Linux distributions, contributions to open source projects, and expansion of our portfolio of solutions, technology, and services to incorporate support for Linux**.**	http://www.compaq.com/linux/
Compaq Resource Paq for Linux contains utilities, technical documentation, software drivers, and customer support information for administrators and users of Compaq server products	http://www.compaq.com/products/servers/linux/linuxpaq.html
Compaq SmartStart for Servers provides everything you need to get your servers up and running with full Compaq support.	http://www.compaq.com/products/servers/SmartStart/index.html
Compaq OpenSource contains a listing of current opensource projects and additional information regarding the opensource movement.	http://opensource.compaq.com/
Compaq System ROMPaqs are available for Compaq industry-standard server products.	http://www.compaq.com/support/files/server/us/index.html
Customer Advisories inform you of any known problems and workarounds because of a Service Pack release.	http://www.compaq.com/support/techpubs/Customer_advisories/index.html
Compaq *ActiveUpdate* offers proactive notification and delivery of the latest software updates. Do not waste time searching the web. Subscribe to Compaq ActiveUpdate for automatic delivery of software updates for your Compaq servers, desktops, workstations, and portables.	http://www.compaq.com/products/servers/management/activeupdate/index.html
Compaq Intelligent Manageability products maximize the availability, performance and operations of all Compaq servers, storage systems, workstations, desktops, and portables. Compaq, with its partners, offers best-in-class industry standard management systems to deploy, operate, and maintain your hardware investment. This website also provides tools, guides, and information to reduce expense, minimize complexity, and speed execution.	http://www.compaq.com/manage
Compaq *ActiveAnswers* gives you the benefit of our experience to help manage your system and reduce the time, risks, and complexity associated with deploying solutions.	http://www.compaq.com/activeanswers
Press releases and Communiqués announce the availability of new products and versions.	http://www.compaq.com/newsroom/pr
Compaq Server Software Download Center website provides the capability to download device drivers, utilities, services, and BIOS required for Compaq ProLiant servers.	http://www.compaq.com/support/files/server/us/index.html
White Papers (complete listing) inform you of ways to optimize your environment and obtain the maximum benefit from software enhancements.	http://www.compaq.com/support/techpubs/whitepapers/index.html

Information specific to Linux and Red Hat can be found at the locations listed in Table 2.

Table 2. Linux and Red Hat resources on the web

Item	Location
The Official Red Hat Linux 7.1 Reference Guide available at the official Red Hat web site. This reference contains useful information about your Red Hat Linux system. From fundamental concepts, such as the structure of the Red Hat Linux filesystem, to the finer points of disk partitioning and authentication control.	http://www.redhat.com/support/manuals/RHL-7.1-Manual/ref-guide/
The Official Red Hat Linux Customization Guide contains information on how to customize your Red Hat Linux system to fit your needs. If you are looking for step-by-step, task-oriented guides for configuring and customizing your system.	http://www.redhat.com/support/manuals/RHL-7.1-Manual/customization-guide/
Red Hat "How To" sites for Tips and FAQs' contains These documents are provided to help you install, set up, and trouble shoot your Linux system.	http://www.redhat.com/support/docs/howto
Red Hat Certified Hardware list is available to assist you in the selection of hardware.	http://www.redhat.com/support/hardware
Red Hat Manuals and Documentation These are the same guides that come with Red Hat's boxed products.	http://www.redhat.com/apps/support/documentation.html
Red Hat Hardware Compatibility List (HCL) to assist you in the selection of hardware and ensure compatibility.	http://hardware.redhat.com/hcl/genpage2.cgi
Red Hat News - find current and past press releases about Red Hat's products, services, and partnerships.	http://www.redhat.com/about/press_releases.html
Red Hat Errata contains the most recent information about important updates, fixes, and corrections for Red Hat Linux	http://www.redhat.com/support/errata
Linux Kernel Information – find the latest information about the Linux kernel	http://www.kernel.org/