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Prepared by OS Integration

Compaq Computer Corporation

Contents

"Quick Setup" with Red Hat Linux 7.1 on the Compaq ProLiant DL320 Server

Abstract: This document provides information on installing and implementing a Red Hat Linux 7.1 operating system on the Compaq ProLiant DL320 server. It includes a feature description of the ProLiant DL320 and a step-by-step installation with Red Hat Linux 7.1. Appendix A provides a hardware system requirements table for you to fill in and reference as you are installing Red Hat an your ProLiant DL320. Appendix B contains a listing of Compaq and Red Hat Linux related web resources.

For additional information regarding the configuration of Linux on Compaq ProLiant servers, visit the Linux at Compaq website: http://www.compaq.com/linux.

For the latest Linux documentation and white papers check: http://www.compaq.com/products/servers/linux/whitepapers.html.

To view the *"Installing Linux on Compaq ProLiant Servers"* white paper:
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 DL320 or ProLiant DL320e servers.

Help us improve our technical communication. Let us know what you think about the technical information in this document. Your feedback is valuable and will help us structure future communications. Please send your comments to: OSIntegration.feedback@compaq.com

Notice

"Quick Setup" with Red Hat Linux 7.1 on the Compaq ProLiant DL320 Server
Integration Note prepared by OS Integration

First Edition (June 2001)
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Compaq ProLiant DL320 Server

Designed to meet the growing needs of both small and medium size businesses, the Compaq ProLiant DL320 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 Linux 7.1

The latest release of Red Hat Linux 7.1 positions Red Hat Linux as an enterprise class operating system. Red Hat Linux 7.1 kernel (2.4.x) is now configured for 2 gigabytes of virtual memory for the kernel and 2 gigabytes of virtual memory for individual processes. Rebuilding the kernel with one of the CONFIG_{1,2,3} gigabyte options will add either more or less virtual memory to the kernel, allowing process virtual memory to be adjusted as well.

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

Using the Compaq System Erase Utility

To begin the installation of Red Hat Linux 7.1 on your ProLiant DL320 start with a system erase. If you do not have a SmartStart CD-ROM and if your ProLiant DL320 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.

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 Compaq SmartStart for Servers CD-ROM, boot the server. 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.

ROM Based Setup Utility (RBSU)

The ultra thin, ultra density rack mounted Compaq ProLiant DL320 supports a ROM based setup allowing you to use these "quick setup" instructions. The Compaq RBSU is a new setup feature enabling you to easily configure your Compaq ProLiant DL320 server. The RBSU is loaded by pressing F9 when prompted at POST. For example, it allows you to set the date and time, boot controller order; hardware interrupts, and advanced system settings. The first time the server is powered up you will be prompted to enter RBSU and select the Operating System version as well as the preferred language.

Installing Red Hat Linux 7.1

For this "Quick Setup" guide, we will be using the Red Hat Linux 7.1 CD-ROM. Usually, when performing server installations; you do not need to install X window (or the GUI interface), however 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 Linux 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 Linux 7.1 documentation provided with your Red Hat Linux 7.1 package.

1. Begin the Red Hat Linux 7.1 installation using the CD-ROM.
   a. Select **CD-ROM**, and then click the **OK** button.
   b. Insert the Red Hat Linux CD-ROM into your CD-ROM drive.
   c. Select the **OK** button and press **[Enter]**.

      At this time, the installation program probes your system and attempts to identify your CD-ROM drive. Notice 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 Linux 7.1 automatically discovers the following mouse Types: PS2 and bus.

      If you are using a serial mouse, choose the correct port and device. By selecting the **Emulate 3 Buttons** checkbox, you will be able 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.

   b. 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 the **Server** radio button.

   b. Click the **Next** button.

6. Select your disk partitioning type.

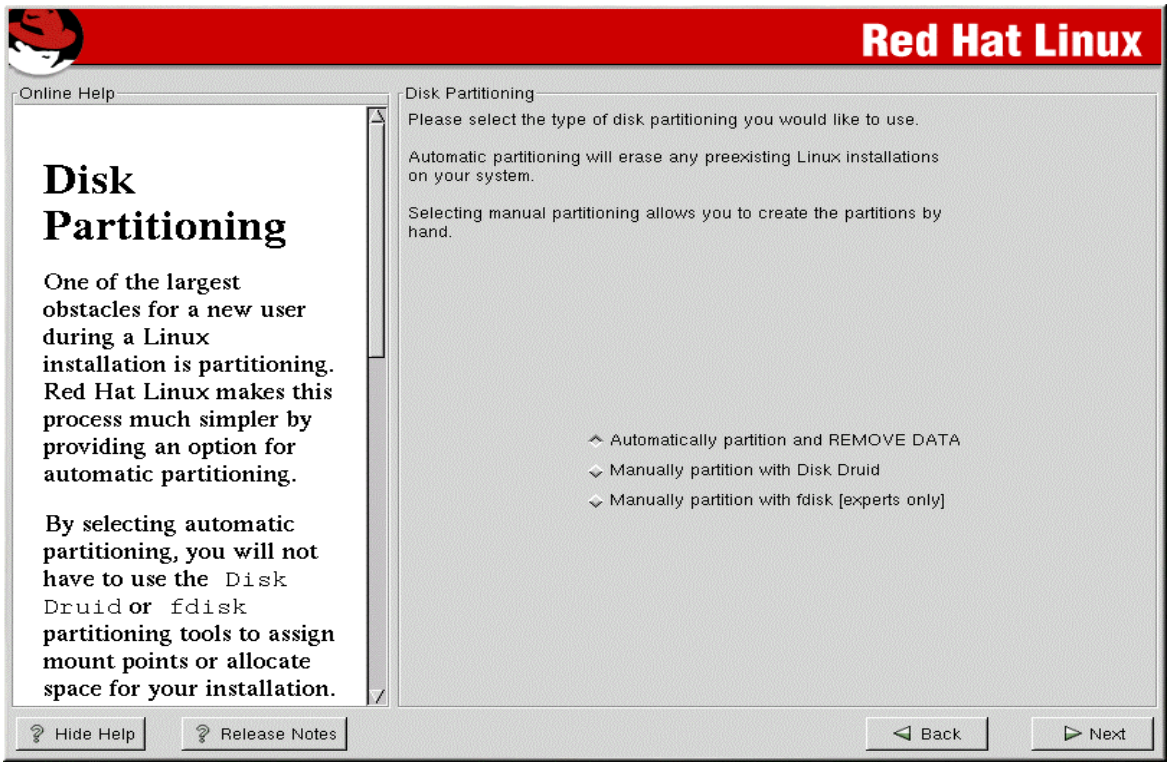

Figure1. Partitioning

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

      Automatic partitioning removes any existing Linux partitions.

b. Click the **Next** button.

7. Setup your network configurations.

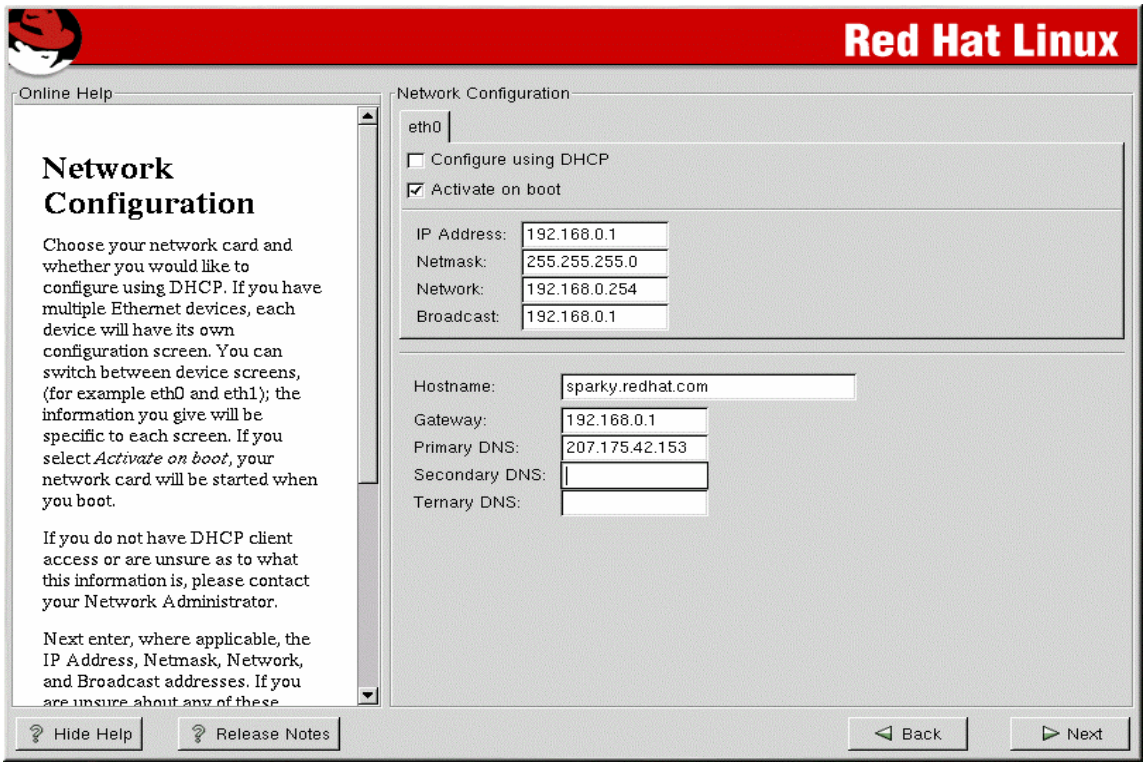

Figure 2. Network Configuration

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.

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.

8. Configure your firewall.

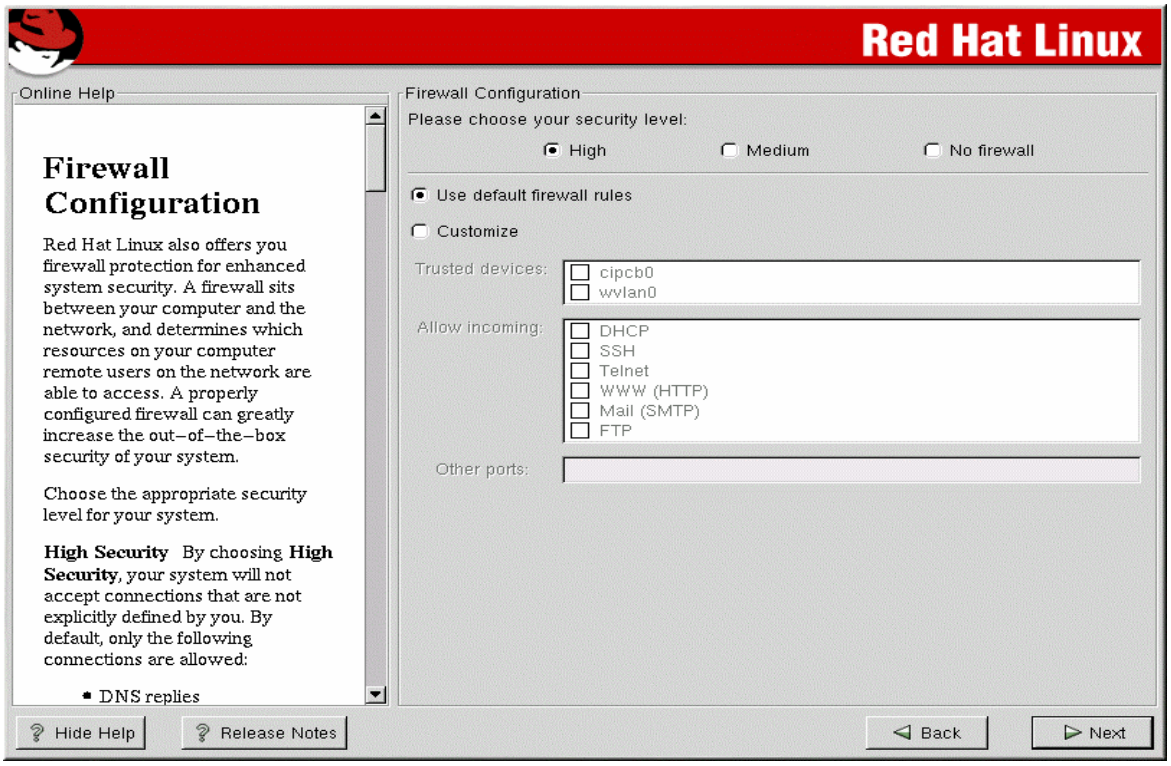

Figure 3. Firewall Configuration

a. Select the **High**, **Medium** or **No Firewall** radio button.

NOTE: Choosing **High** will not allow the following: Active mode FTP (passive mode FTP, used by default in most clients, should still work), IRC DCC file transfers, RealAudio™, and the Remote X Window System clients.

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.

9. 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.

10. Establish language support.

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

b. Click the **Next** button.

11. Configure your account.

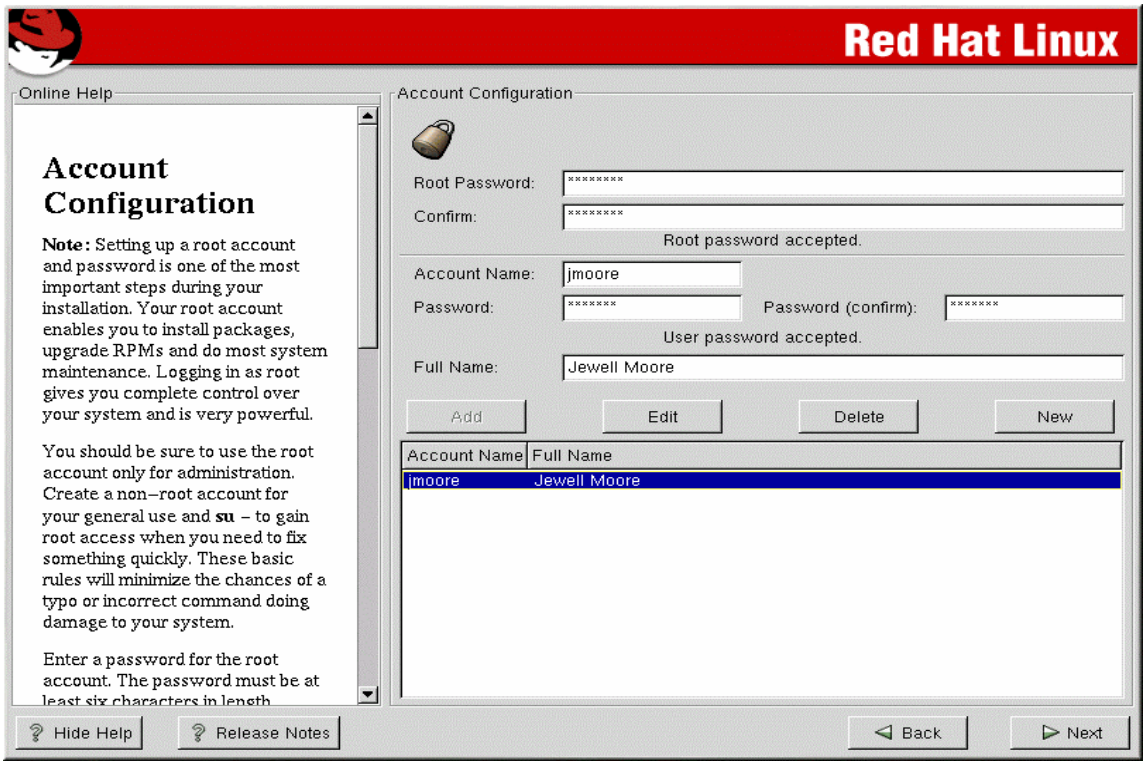

Figure 4. Account Configuration

Setting the Root Password –Administrate ONLY

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

Setting Up User Accounts

a. Enter an account name.

b. Enter and confirm a password for that user account. Enter the full name of the account user and click **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.

12. 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 and type them at the command line to navigate or accomplish tasks. Compaq recommends selecting at least one of these packages if you are not a Linux or UNIX guru.

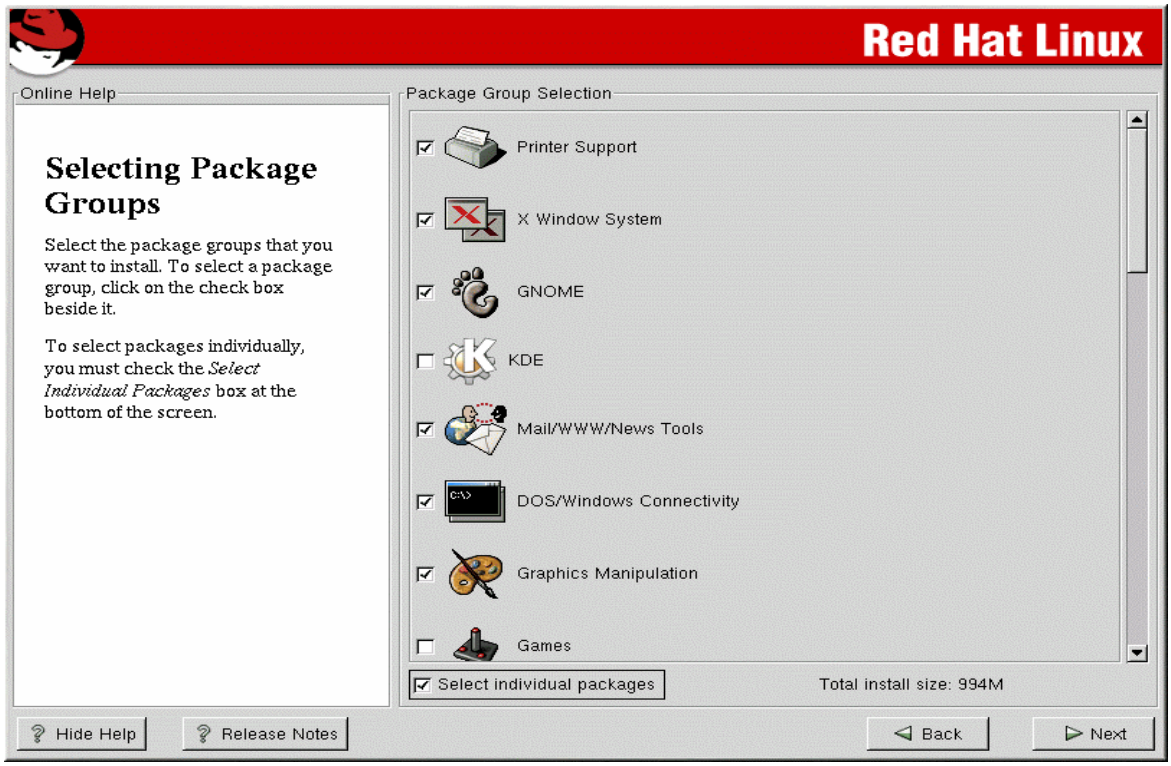

Figure 5. Selecting Package Groups

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

b. Select the **Packages to Install** checkboxes (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 ensure the availability of sufficient disk.

d. Click the **Next** button.

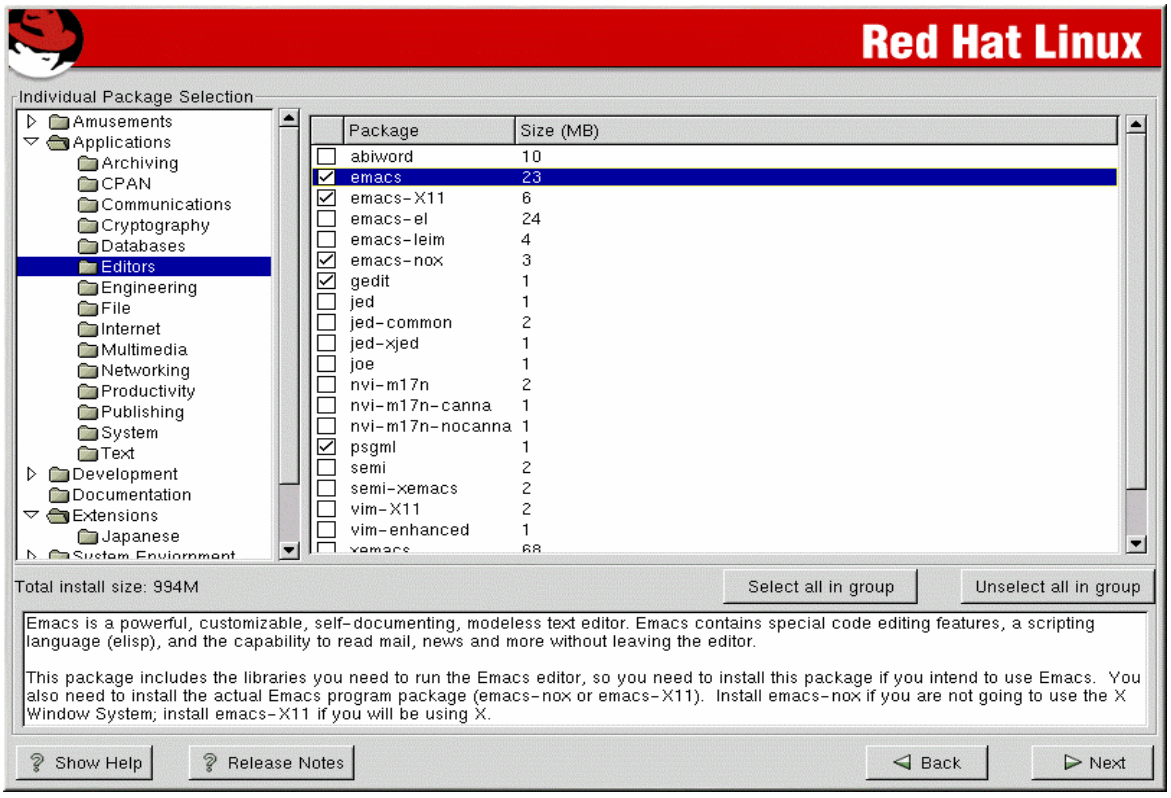

Figure 6. Individual Package Selections

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.

13. Configure authentication.

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

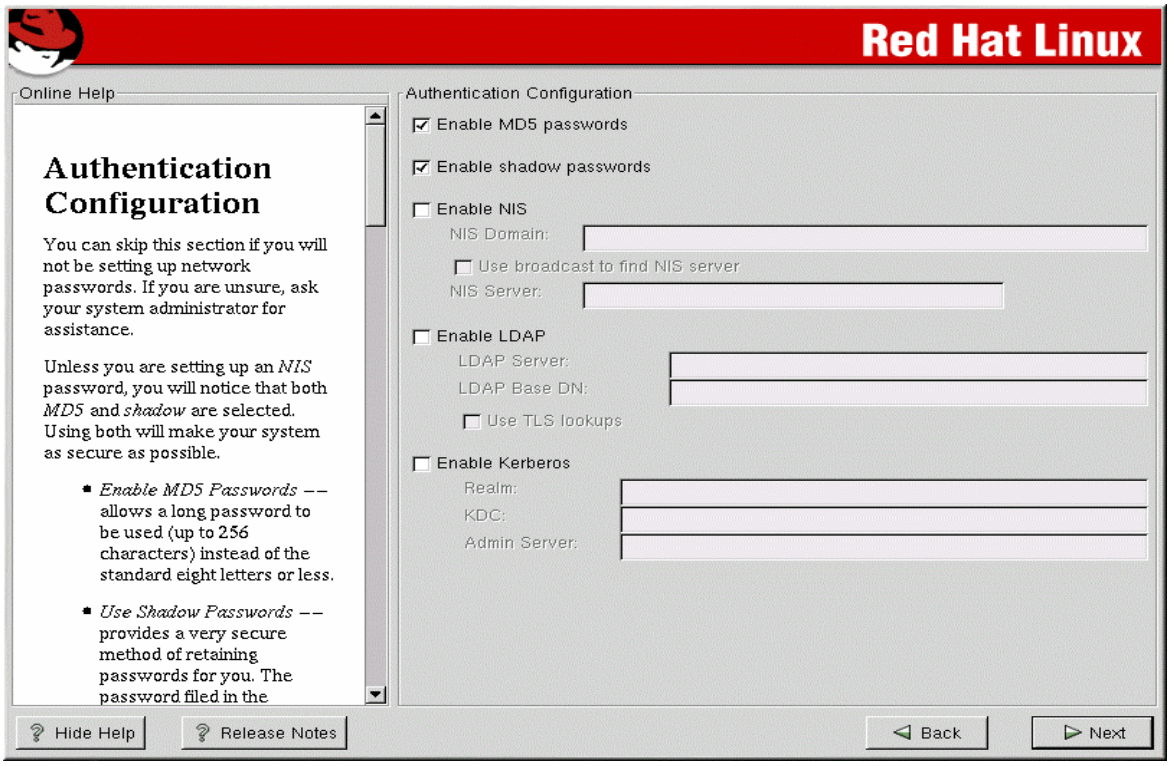

Figure 7. Authentication Configuration

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

b. Select the **Enable shadow passwords** checkbox, 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 belong.
   - **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** checkbox to use LDAP for some or all authentication.

   Choose from the following options:

   - **LDAP Server**, allows access a specific server by providing an IP address.
   - **LDAP Base DN**, discovers user information by its Distinguished Name (DN).

e. Select the **Use TLS lookups** checkbox 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:

- **Realm** allows access a network that uses Kerberos, composed of one or a few servers and a potentially large number of clients.
- **KDC** grants access to the Key Distribution Center (KDC), a machine that issues Kerberos tickets (TGS).
- **Admin Server** allows you to access a server running **kadmind**.

g. Click the **Next** button.

14. Configure the GUI X Configuration tool.

Configuring Your Videocard

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

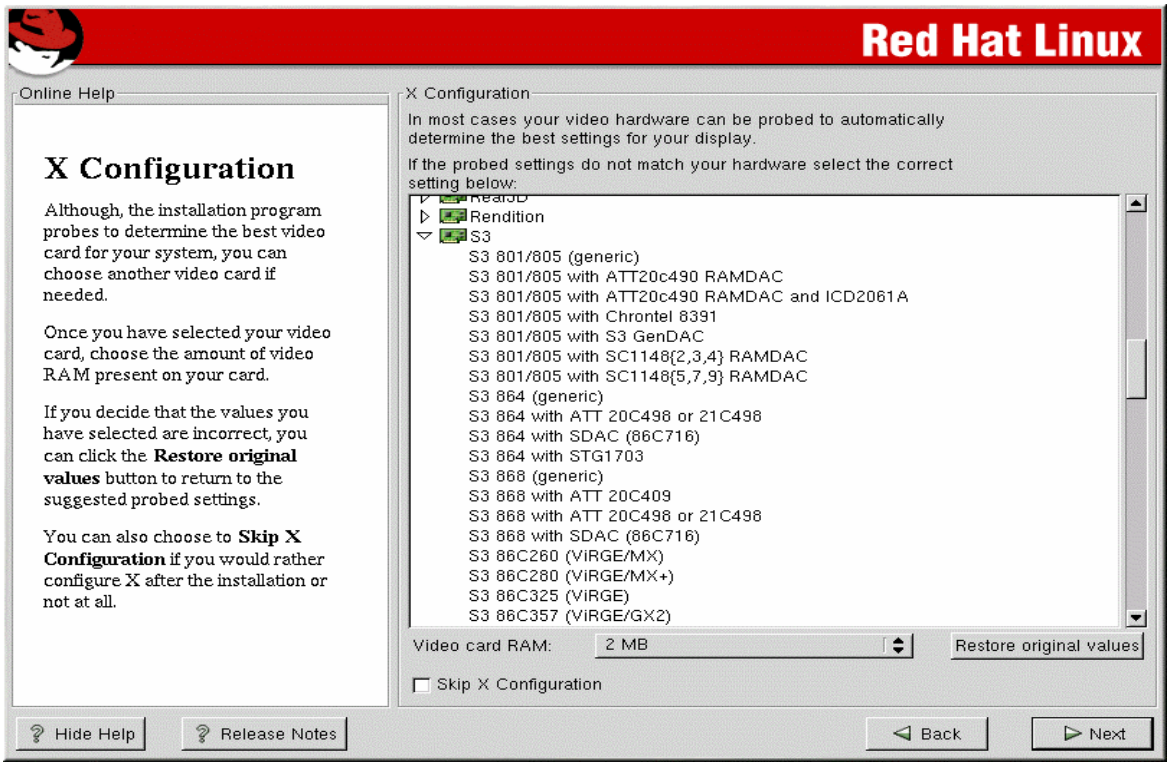

Figure 8. X Configuration

X configurator presents a list of video cards for you to choose from. If your video card does not appear on the list, X configurator may not support it. Check the Red Hat Hardware Compatibility List (HCL) available at http://hardware.redhat.com/hcl/genpage2.cgi.

You can choose **Unlisted Card** and attempt to configure it by matching your card's video chipset with one of the available X servers.

a. Select your **Videocard** from the list by using your mouse, then allow Red Hat to auto-detect it.

b. Click the **Next** button.

Configuring Your Monitor

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

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.

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

b. Click the **Next** button.

Custom Configuration

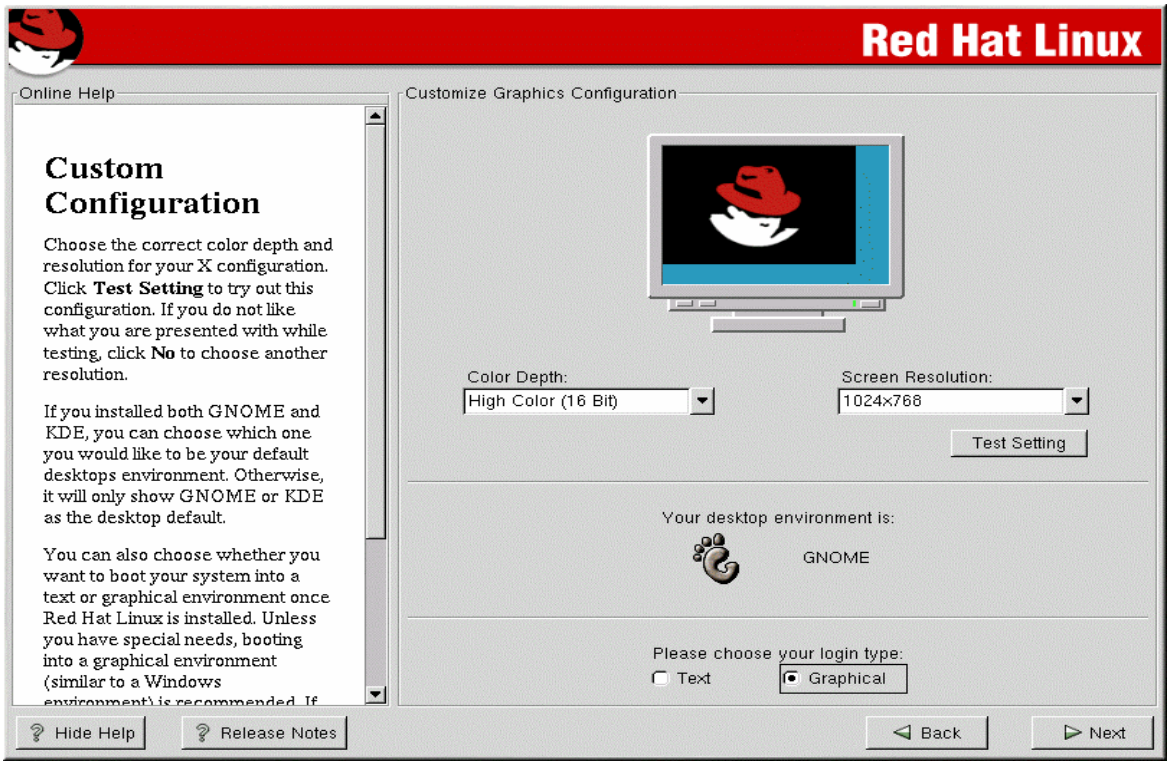

Figure 9. Custom Configuration

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, select one as your default desktop environment.

d. For the Login Type, select **Graphical** radio button. Compaq recommends booting into a graphical environment unless you have special needs.

e. Click the **Next** button.

15. Prepare for the install.

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

Installing Packages

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

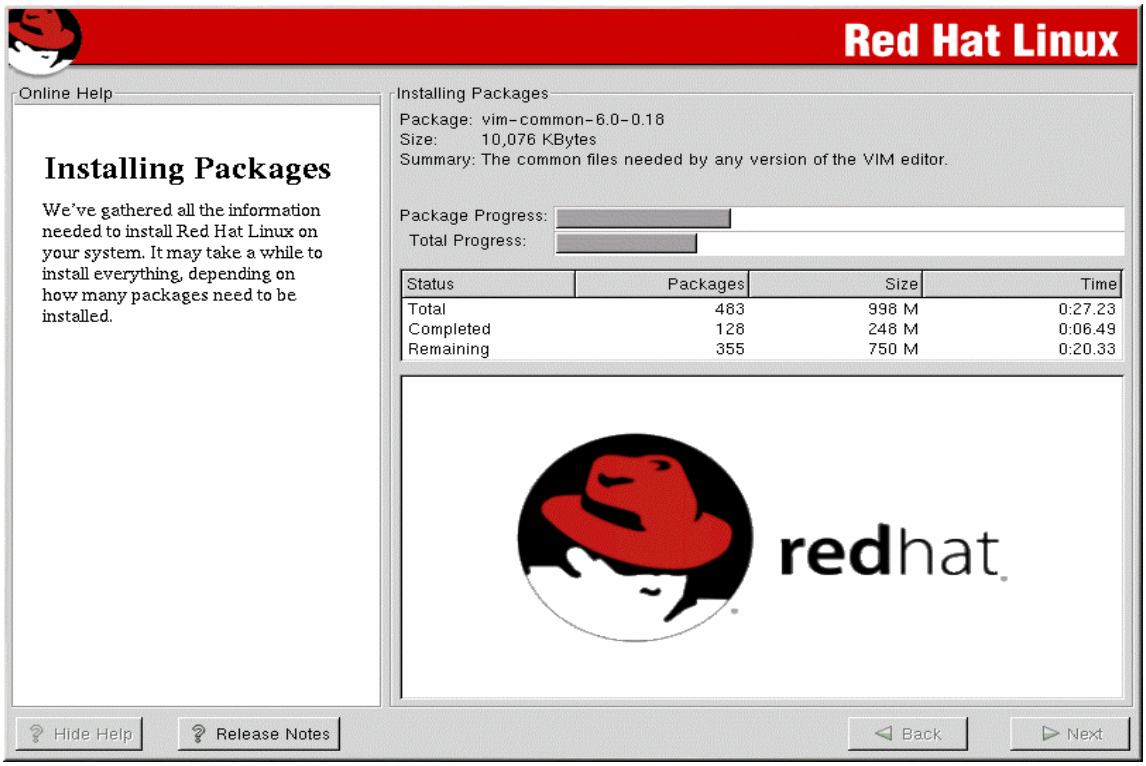

Figure 10. Installing Packages

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

16. Create a boot diskette.

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

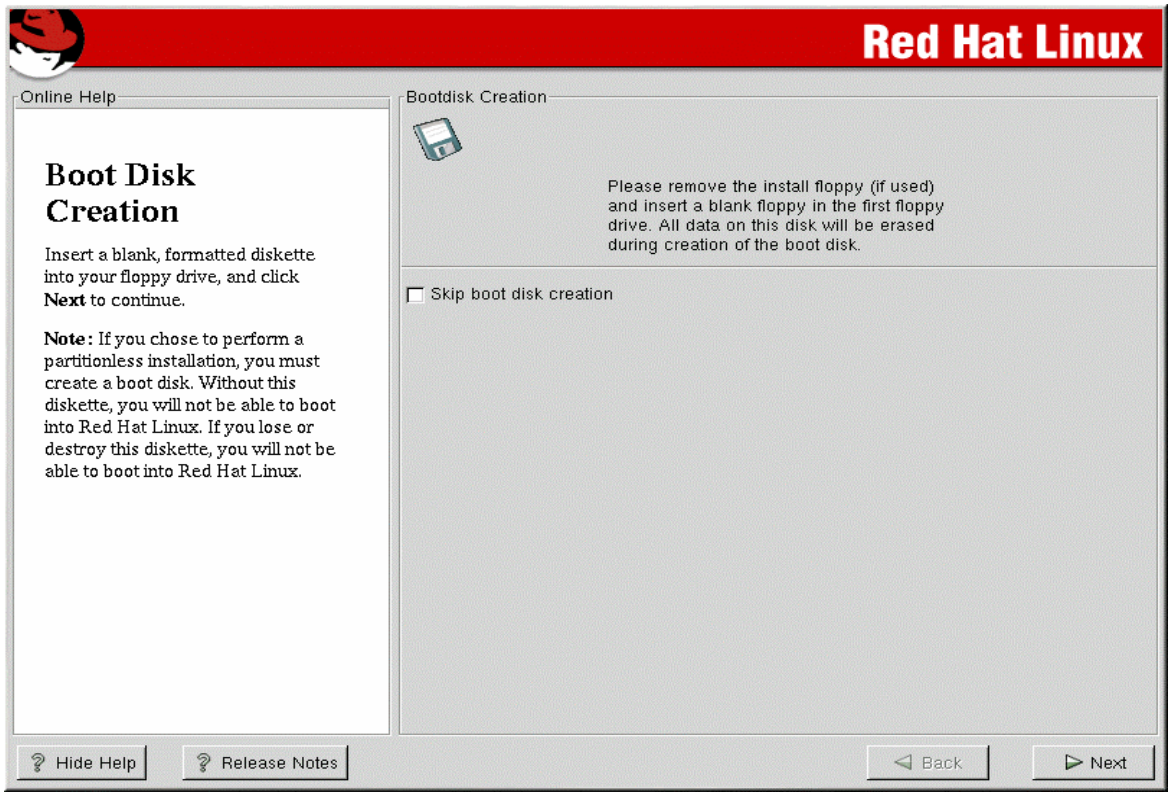

Figure 11. Boot Disk Creation

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

b. Remove it from your diskette drive and label it clearly since you may need it for future restores.

c. Click the **Next** button.

17. 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-ROM in the CD-ROM drive.

    b. After the power-up sequence completes, you should see the LILO GUI prompt. Do one of the following things:

        - Press [**Enter**] (LILO's default boot)
        - Select the **boot label**, followed by **[Enter]** (Following a timeout period, LILO will automatically boot the default entry)

    Following these steps, you should see one or more screens of messages scroll by, then you should see a `login:` prompt or a GUI login screen. You have now completed the installation of Red Hat 7.1 Linux.

Troubleshooting

Red Hat Linux 7.1 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 for servers and choose System Erase from the Main menu. You can also download the Compaq System Erase Utility at http://www.compaq.com/support/files/server/us/download/9156.html.

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 – System Requirements Table

Use this table for recording information about your Compaq ProLiant DL320 server before installing Red Hat Linux 7.1 and keep it as a reference.

Table 1. System requirements reference table

Description	Installed Hardware and Network Information
Hard drive(s): type, label, size; ex: IDE hda=1.2 GB	
Partitions: map of partitions and mount points; ex: /dev/hda1=/home, /dev/hda2=/ (Fill this in once you know where the partitions will reside)	
Memory: amount of RAM installed on your system; ex: 64 MB, 128 MB	
CD-ROM: interface type; ex: SCSI, IDE (ATAPI)	
SCSI adapter: if present, make and model number; ex: SCSI adapter	
Network card: if present, make and model number	
Mouse: type, protocol, and number of buttons; ex: generic 3 button PS/2 mouse, 2 button serial mouse	
Monitor: make, model, and manufacturer specifications	
Video card: make, model number and size of VRAM	
Sound card: make, chipset and model number; ex: Sound Blaster 32/64	
IP, DHCP, and BOOTP addresses: four numbers, separated by dots; ex: 10.0.2.15	
Netmask: four numbers, separated by dots; ex: 255.255.248.0	
Gateway IP address: four numbers, separated by dots; ex: 10.0.2.245	
One or more name server IP addresses (DNS): one or more sets of dot-separated numbers; ex: 10.0.2.1 domain name: the name given to your organization	
Hostname: the name of your computer; your personal choice of names; ex: cookie, southpark	

Appendix B 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 web resources.

Table 1. Compaq web resources

Item	Web Location
Compaq and Linux commit to deliver the best systems and services available in the industry, built upon a foundation of strong commitment to industry standards. Our 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 OpenSource contains a listing of current opensource projects and additional information regarding the opensource movement.	
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 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 *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
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 regarding Compaq products.	http://www.compaq.com/support/techpubs/Customer_advisories/index.html
Press releases and Communiqués announce the availability of new products and versions.	http://www.compaq.com/newsroom/pr

continued

Table 1. Compaq web resources *(continued)*

Item	Web Location
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 is available at the official Red Hat website. This reference contains useful information about your Red Hat Linux system. From fundamental concepts, such as the structure of the Red Hat Linux file system, 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 "HowTo" sites for Tips and FAQs' contains documents to help you install, set up, and troubleshoot your Linux system.	http://www.redhat.com/support/docs/howto
Red Hat Certified Hardware list assists you in the selection of hardware.	http://www.redhat.com/support/hardware
Red Hat Manuals and Documentation 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) assists you in the selection of hardware and ensure compatibility.	http://hardware.redhat.com/hcl/genpage2.cgi
Red Hat News provides 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 provides the latest information about the Linux kernel.	http://www.kernel.org/