Red Hat Enterprise Linux 4 (RHEL4) OS Installation Guide

Introduction/Server Requirements

The document below is intended as a general guide to deploy and install a base operating system of RHEL4 for deploying Video Surveillance Manager software. RHEL4 can be downloaded from Red Hat at http://www.redhat.com/RHEL.

Prior to starting installation of RHEL4, please make sure that the server meets the following specifications:

- Intel Celeron or Pentium, 1.7Ghz or higher
- 1 GB DRAM
- 10GB Hard Disk
- SuSE Enterprise 10 SP1

Note: Installation guide below is based on using CD version of RHEL4 ES.

Prior to starting the installation of RHEL4, you will need to gather the following information to make sure the installation goes as smoothly as possible:

IP address: _____

Subnet mask: _____

Default Gateway: _____

Hostname: _____

Root Password: _____

Domain: _____

Installation of RHEL4

1. Power on the server, and insert RHEL4 CD into the DVD/CD drive. As server powers up, select “Enter” from the boot up window to install RHEL4 in graphical mode (Figure 1).

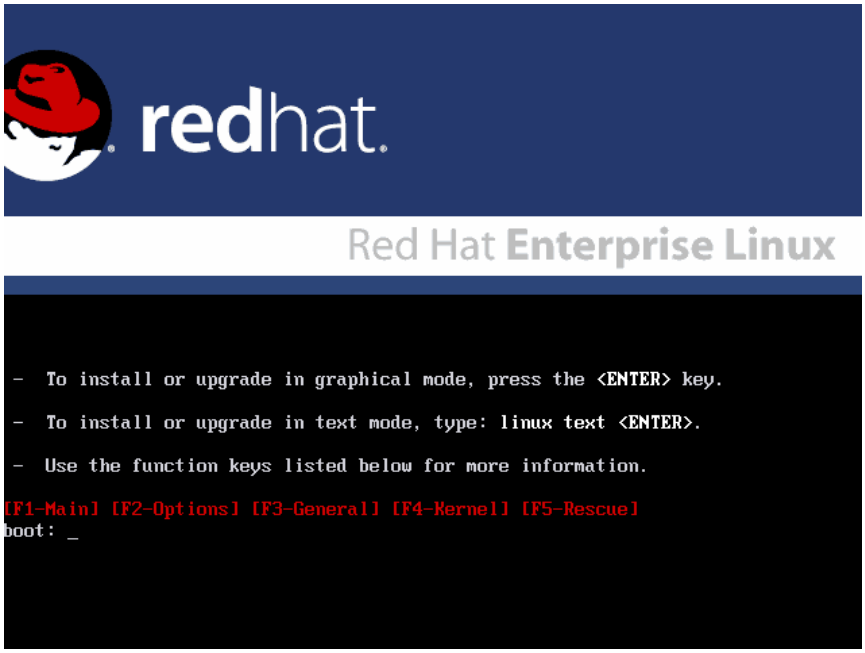

Figure 1 - Red Hat Boot Up Menu

2. Choose ‘OK’ or ‘Skip’ on the media verification test window (Figure 2).

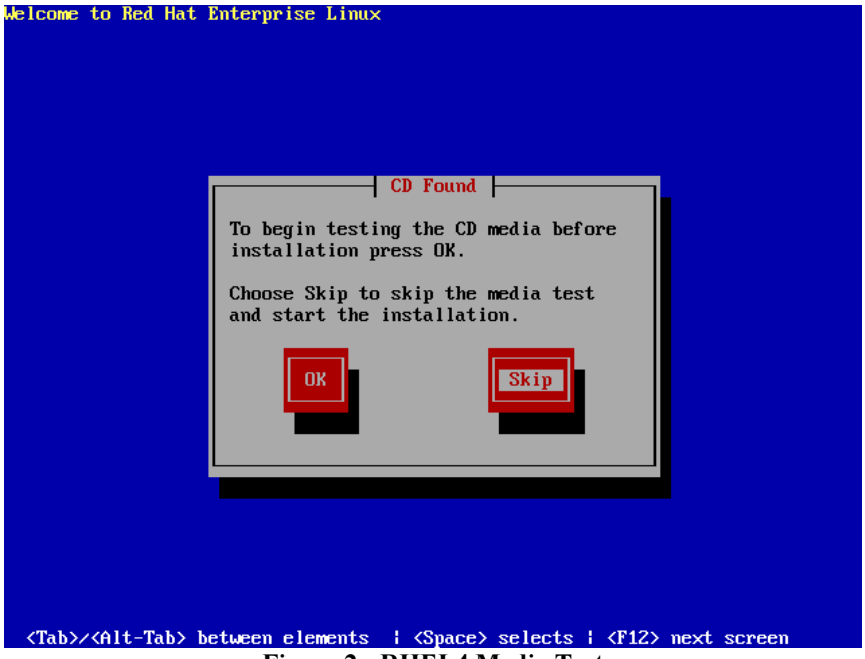

Figure 2 - RHEL4 Media Test

3. Select ‘Next’ at the RHEL4 Welcome Screen (Figure 3).

Figure 3 - Installation Welcome Screen

Language Settings

4. Select the language desired from the list, and then select “Next” (Figure 4).

Figure 4 - Language Selection Screen

Keyboard Configuration

5. Select the appropriate layout for the keyboard connected to the RHEL server (Figure 5).

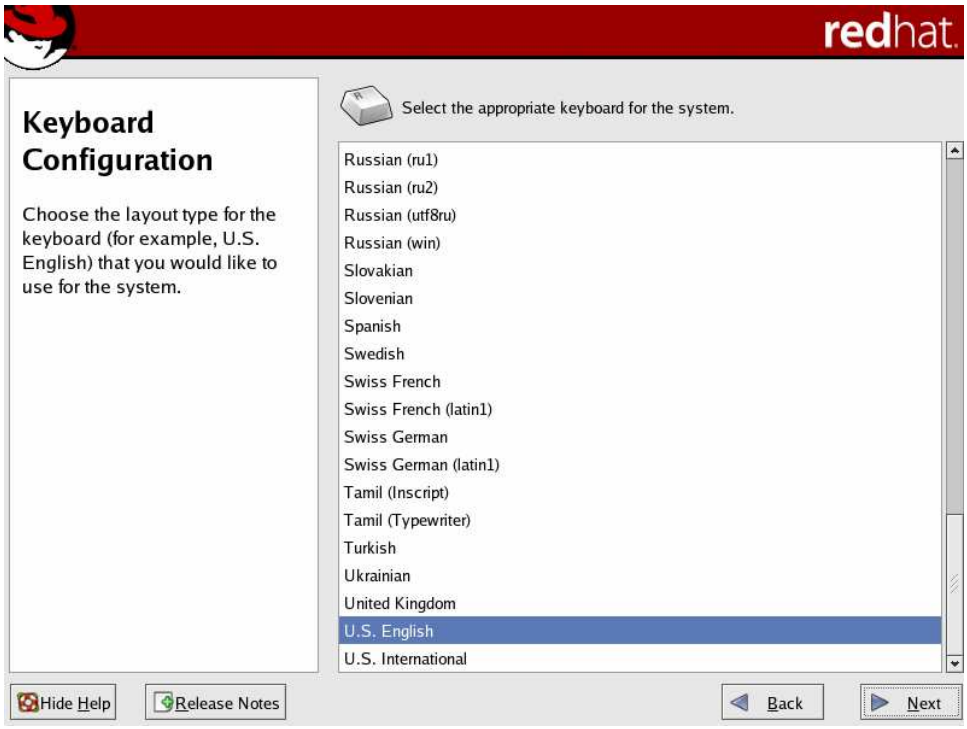

Figure 5 - Keyboard Configuration

Partitioning the Hard Drive

Once the Language and Keyboard Configuration have been selected, the next step is to configure the partitions necessary to install the Cisco Media Server. There are four partitions that will need to be created:

- 100 MB for the "/boot" partition
- 10 GB for the "/" partition
- 1 GB* for the Swap partition
- The remainder of the drive should be placed in a partition for repositories called the "/media0" partition

***The amount of space set aside for the SWAP partition should be equal the amount of RAM that installed on the server (e.g. 1GB RAM = 1GB SWAP, 2GB RAM = 2GB SWAP).**

6. From the Disk Partitioning Setup window, select 'Manually partition with Disk Druid' then click Next (Figure 6).

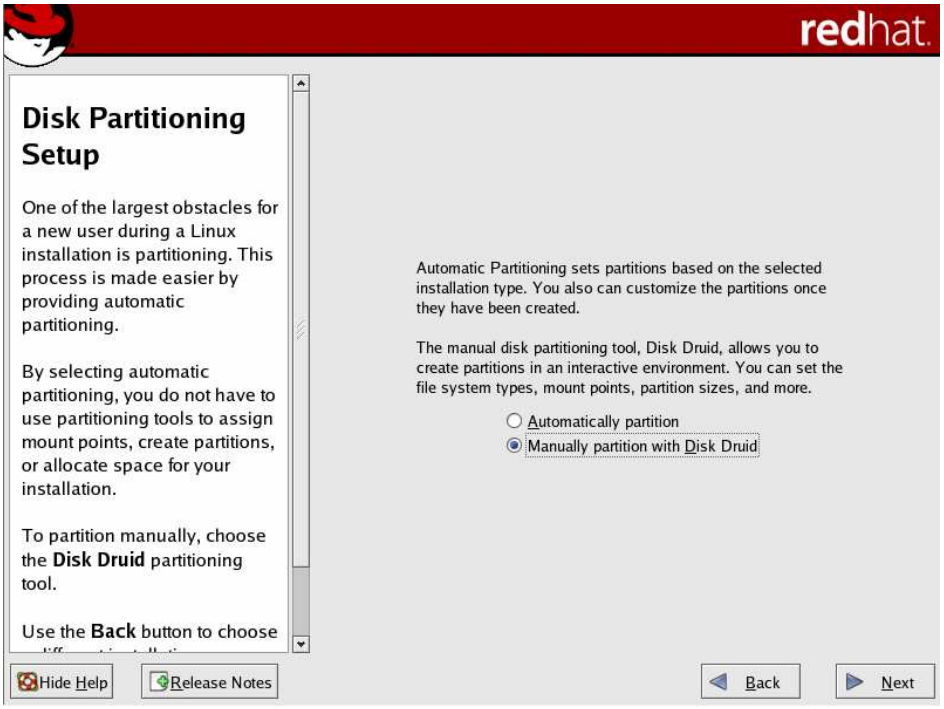

Figure 6 - Disk Partitioning Setup

7. Select 'Yes' to initialize the drive, if a Warning pop-up window appears (Figure 7).

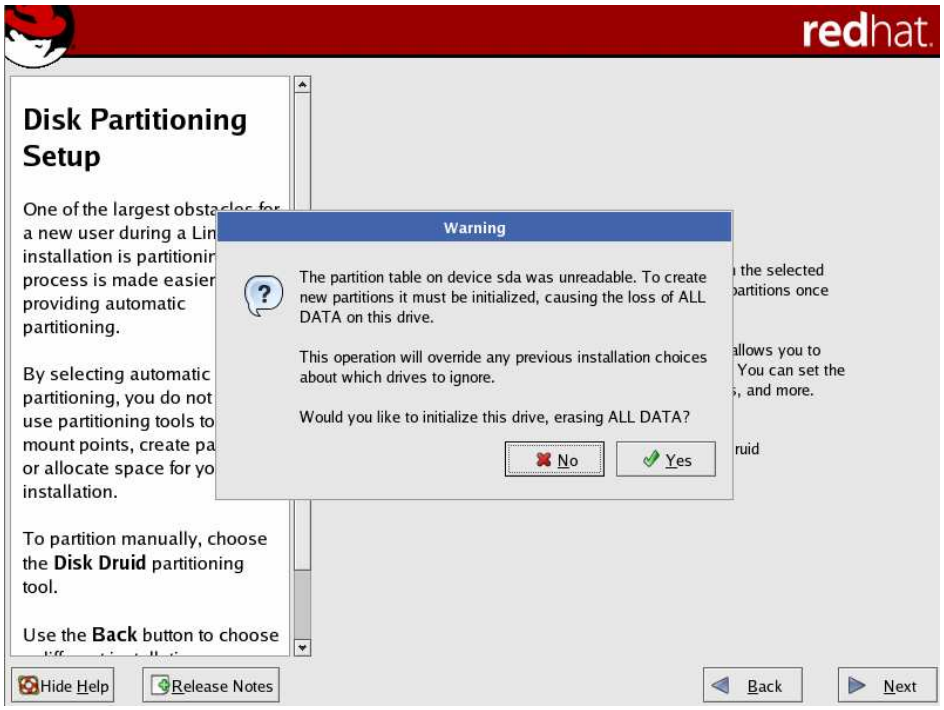

Figure 7 - Partition Warning Window

Creating /boot Partition

8. In Edit Partition pop-up window, type in '/' into the Mount Point window. Select 10,000 for the Size (MB) window. And make sure that 'Fixed size' is selected under Additional Size Options (Figure 8). Click 'OK' when complete.

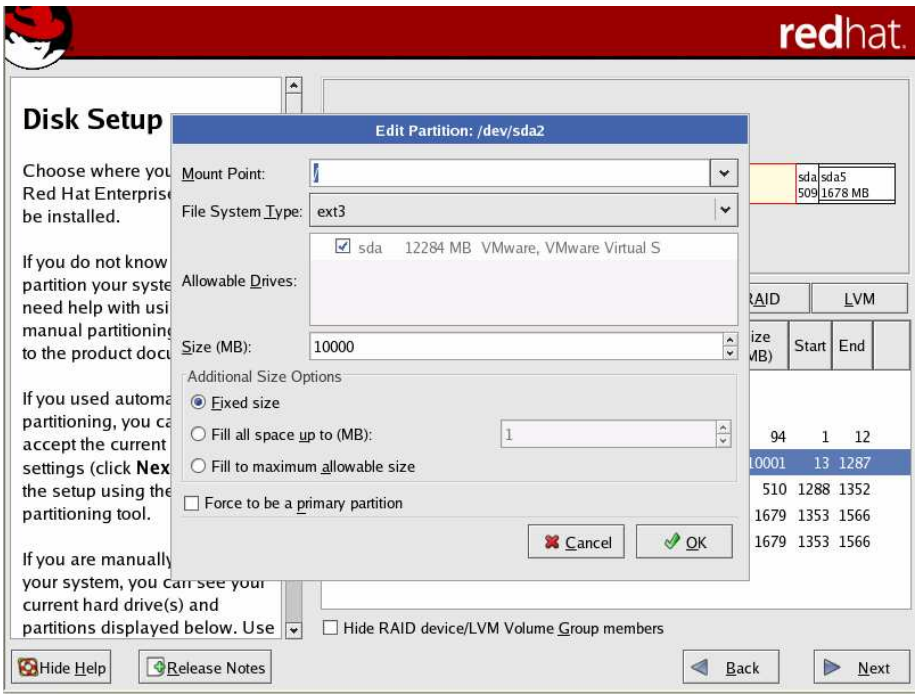

Figure 8 - / Partition Settings

Creating / Partition

9. From the Disk Setup window, click on the 'New' button to create the first partition (Figure 9).

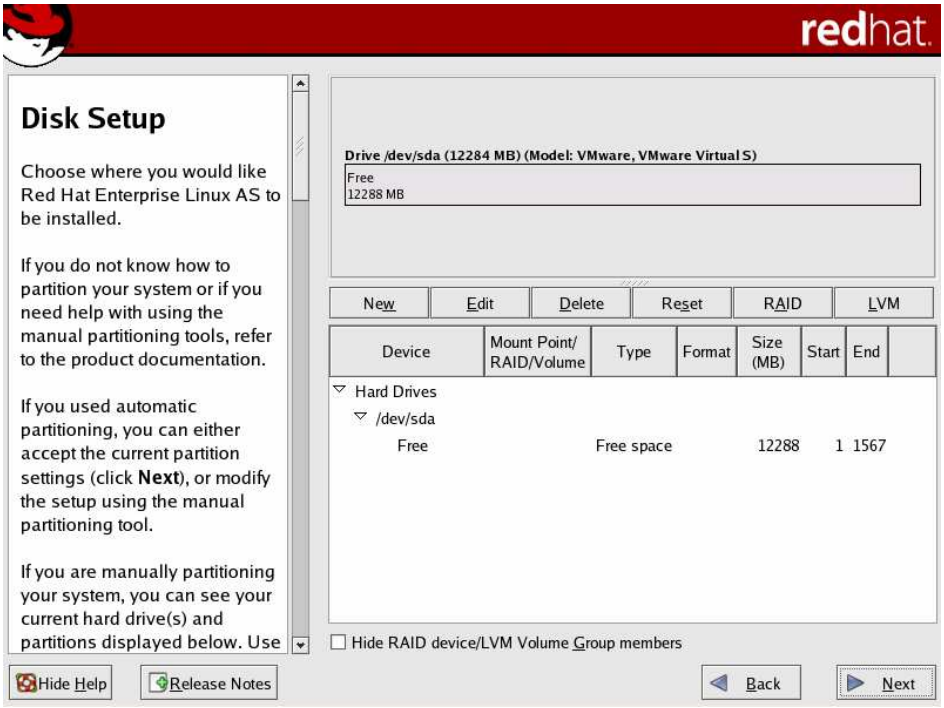

Figure 9 - Disk Setup

10. From the Disk Setup window, click on the 'New' button to create the /boot partition. In Edit Partition pop-up window, type '/boot' into the Mount Point window. Select 100 for the Size (MB) window. Make sure that 'Fixed size' is selected under Additional Size Options (Figure 10). Click 'OK' when complete.

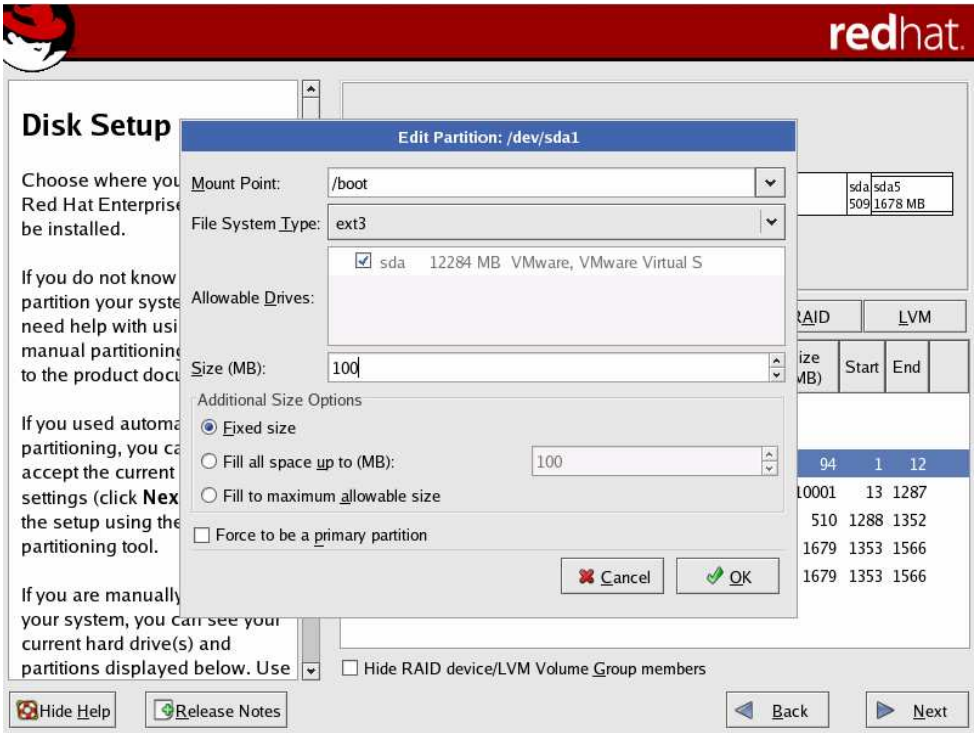

Figure 8 - /boot Partion Settings

Creating Swap Partition

11. From the Disk Setup window, click on the 'New' button to create the swap partition. In Edit Partition pop-up window, select 'swap' from the drop down menu for 'Mount Point:'. Set the value of the 'Size (MB)' window to equal the amount of RAM installed on the server. Make sure that 'Fixed size' is selected under Additional Size Options (Figure 11). Click 'OK' when complete.

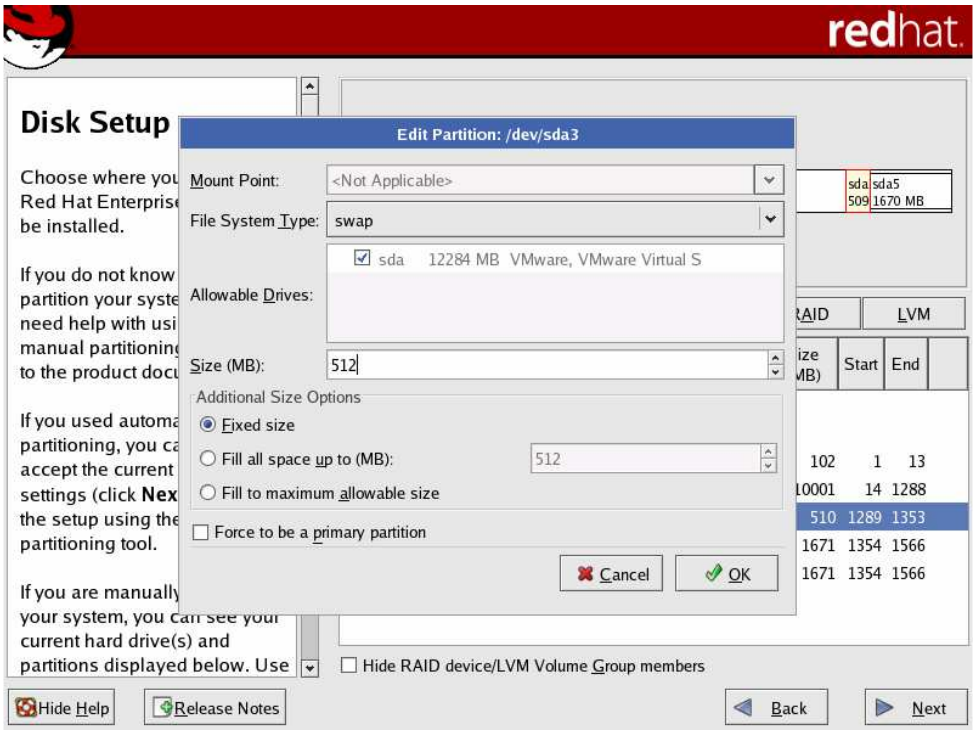

Figure 9 - Swap Partition Settings

Creating /media0 Partition

12. From the Disk Setup window, click on the 'New' button to create a /media0 partition. In Edit Partition pop-up window, select 'ext3' from the drop down menu for 'Mount Point:'. Disregard the 'Size (MB)' window, but make sure to select 'Fill to maximum allowable size' under Additional Size Options (Figure 12). Click 'OK' when complete.

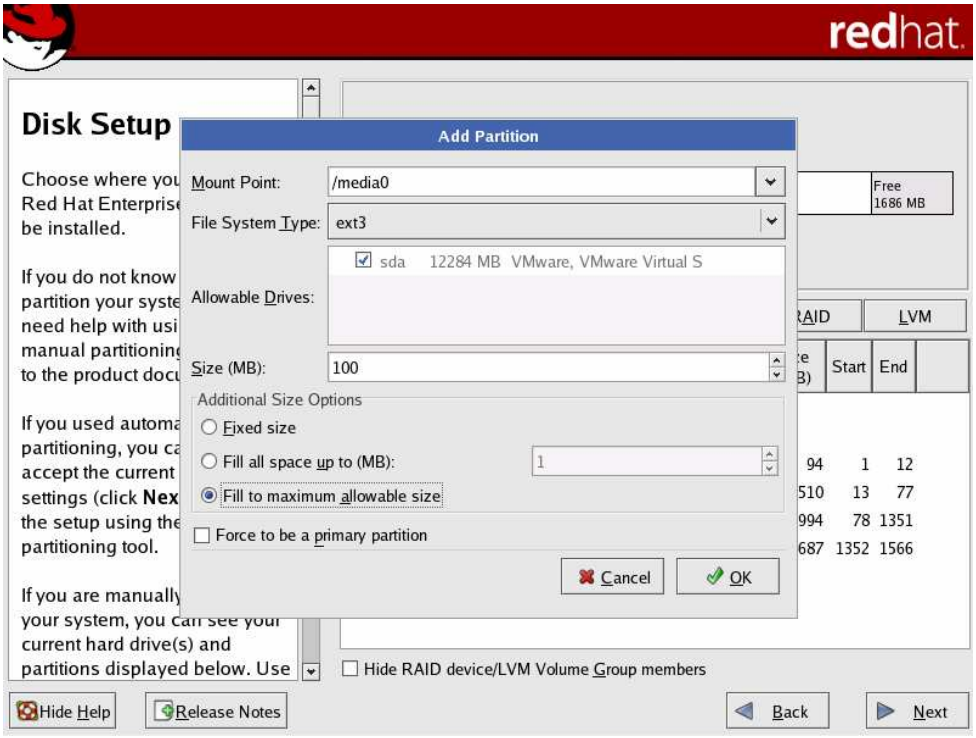

Figure 10 - /media0 Partition Settings

13. When completed, select 'Next' from the Disk Setup configuration window (Figure 13).

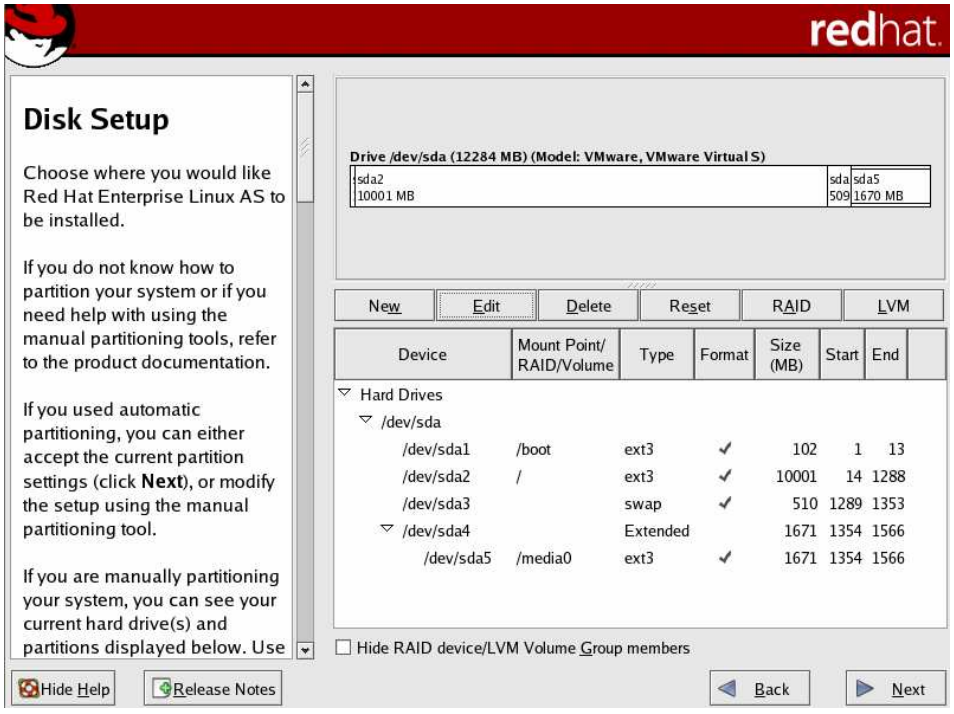

Figure 11 - Disk Setup Window

14. Click ‘Next’ to accept the default settings listed in the Boot Loader Configuration window (Figure 14).

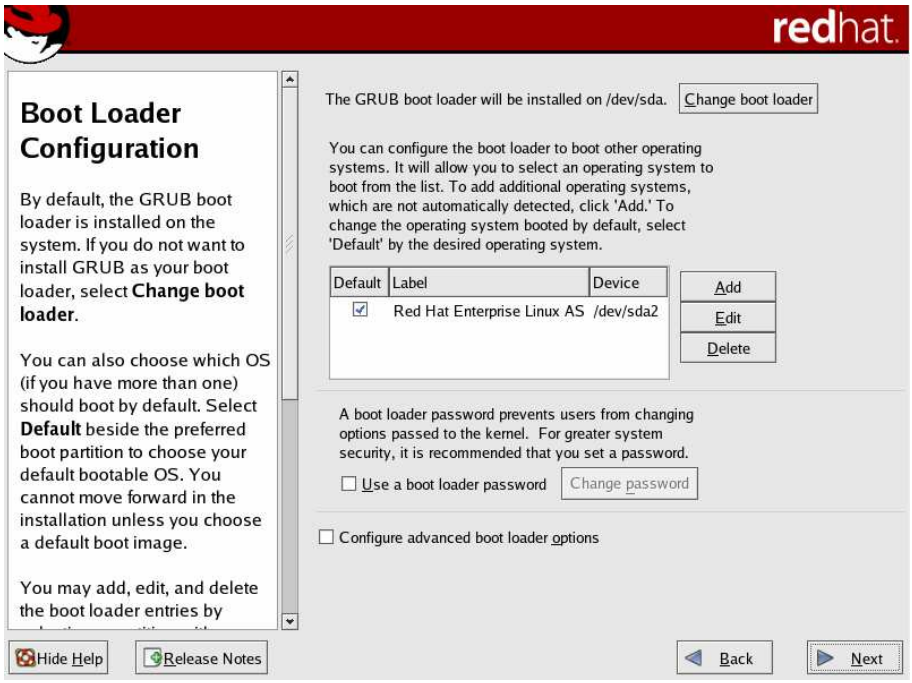

Figure 12 - Boot Loader Configuration Window

Configuring IP Address, Hostname, DNS

15. In the Network Configuration window, select the ‘Edit’ button to set the IP address and Netmask for the server (Figure 15).

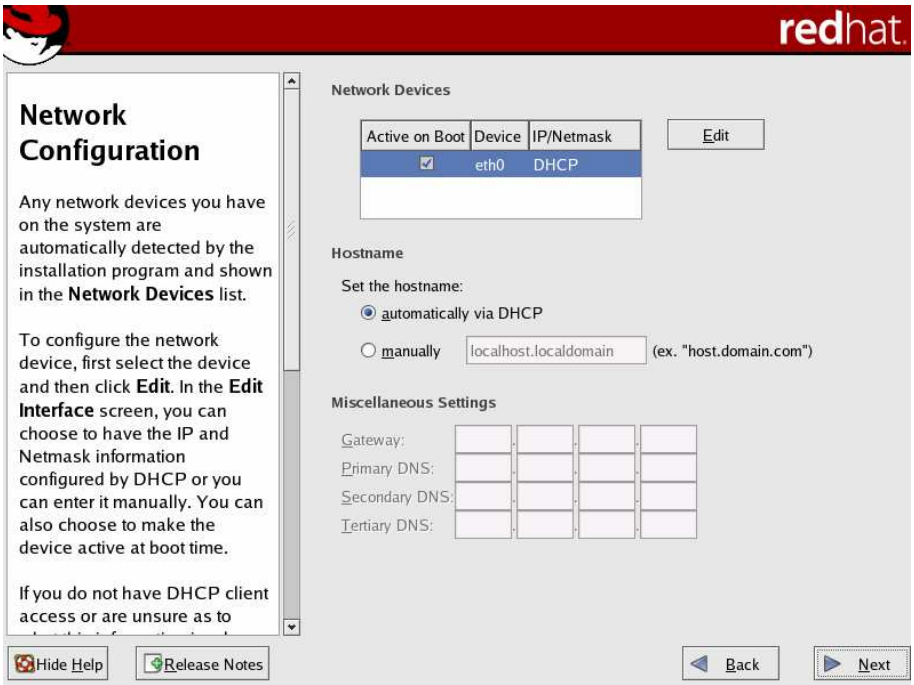

Figure 13 - Network Configuration Window

16. From the Edit Interface pop-up window, uncheck the ‘Configure using DHCP’ box. Enter in the IP address and subnet mask for the server, then select ‘OK and ‘Next’ (Figure 16).

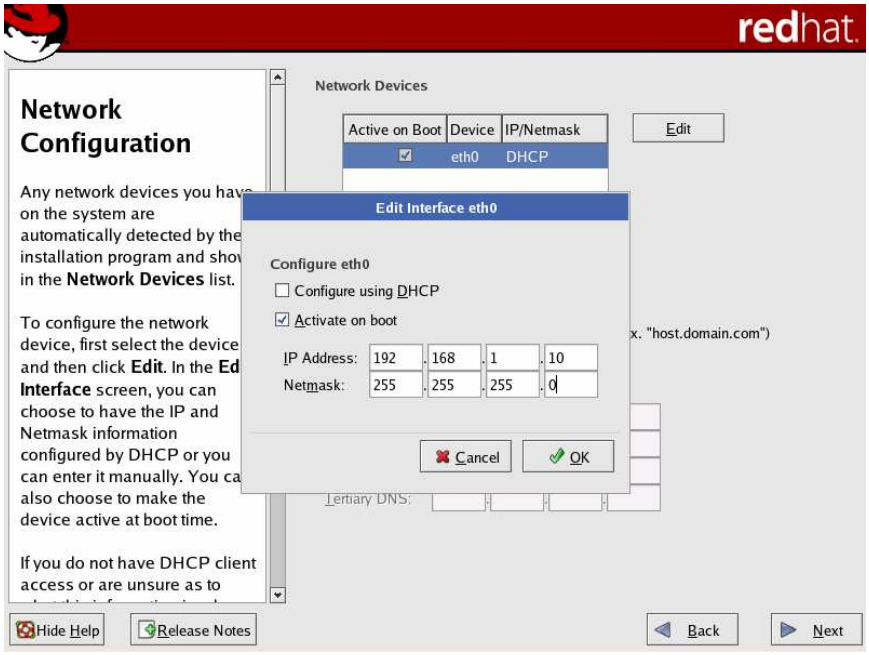

Figure 14 - Edit Interface Settings

17. From the Network Configuration window, select ‘manually’ under Hostname and enter the Hostname for the VSM server. Also enter in the IP address for the Default Gateway and DNS Server(s) (Figure 17). Select ‘Next’ when complete.

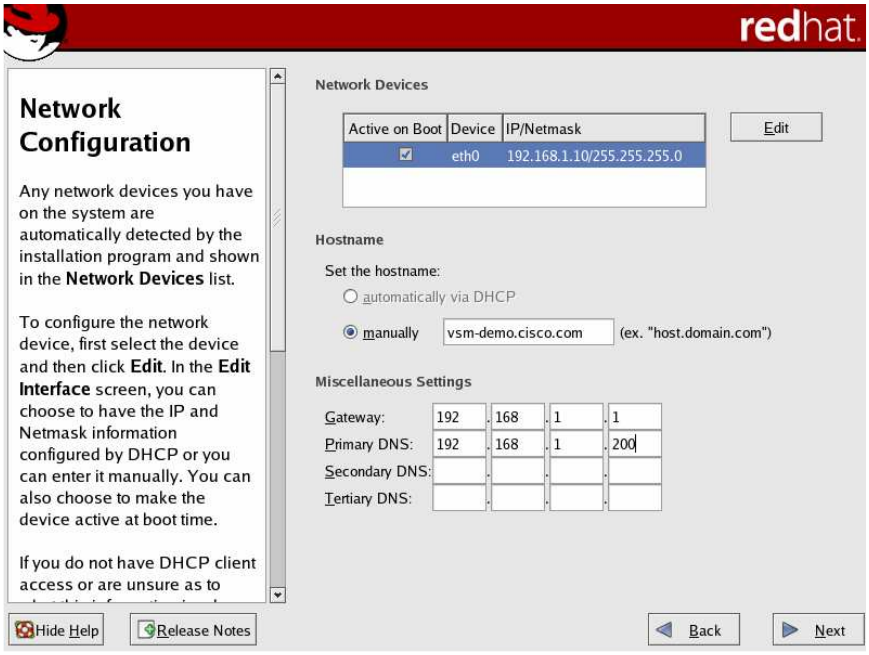

Figure 15 - Network Configuration Settings

Firewall Configuration Settings

18. Select 'No firewall' and disable SELinux in the Firewall Configuration window (Figure 18). Click 'Proceed' in the Warning pop-up window.

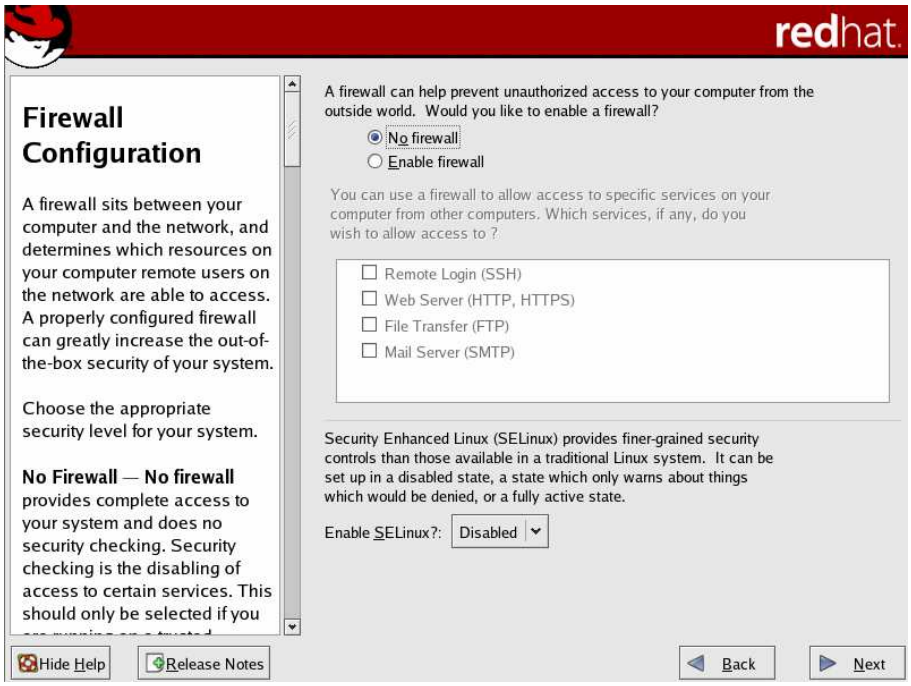

Figure 16 - Firewall Configuration Settings

19. Select the appropriate language from the Additional Language Support configuration window (Figure 19).

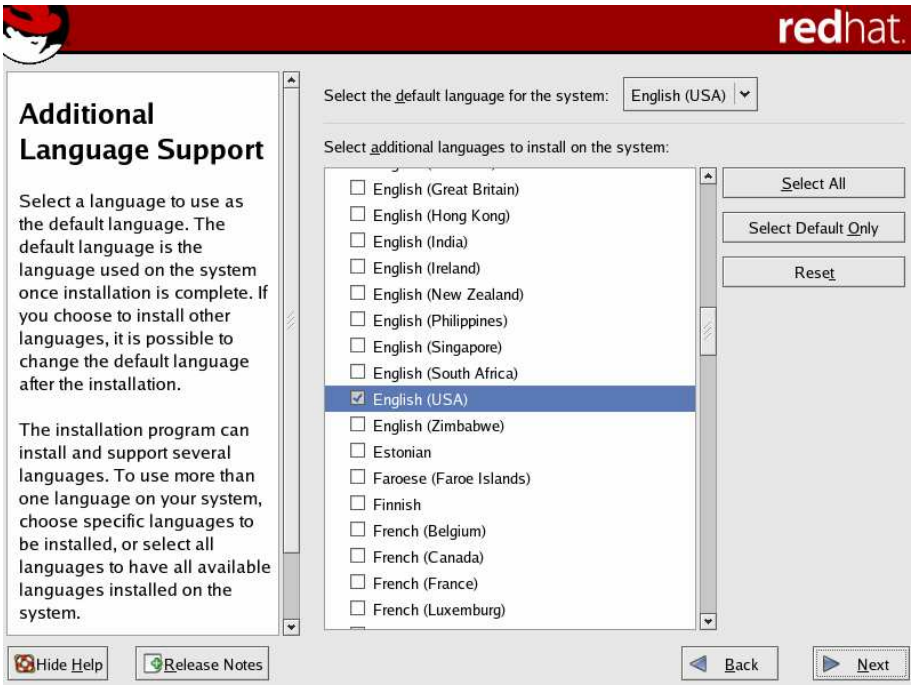

Figure 17 - Additional Language Support

Timezone & NTP Configuration

20. From the Time Zone Selection window, select the appropriate time zone. Also, make sure to check the button next to 'System Clock uses UTC' (Figure 20).

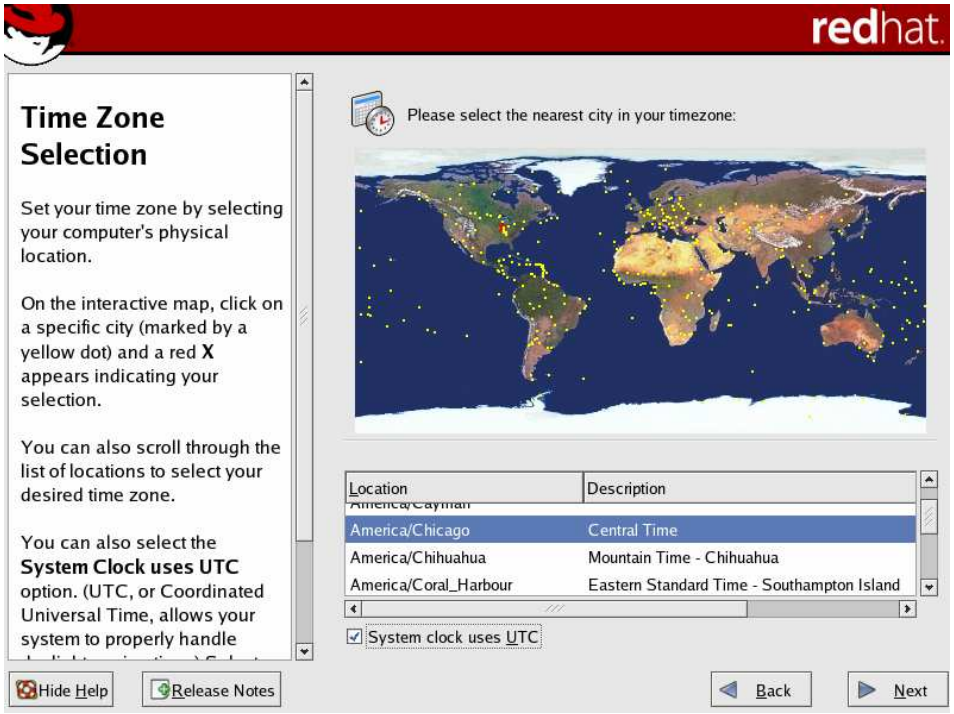

Figure 18 - Time Zone Settings

Setting Server Root Password

21. Set the Root Password to log into the RHEL4 server (Figure 21).

Figure 19 - Root Password

Configuring Default Software Packages

22. Select 'Customize software packages to be installed' from the Package Installation Defaults window, and click 'Next' (Figure 22).

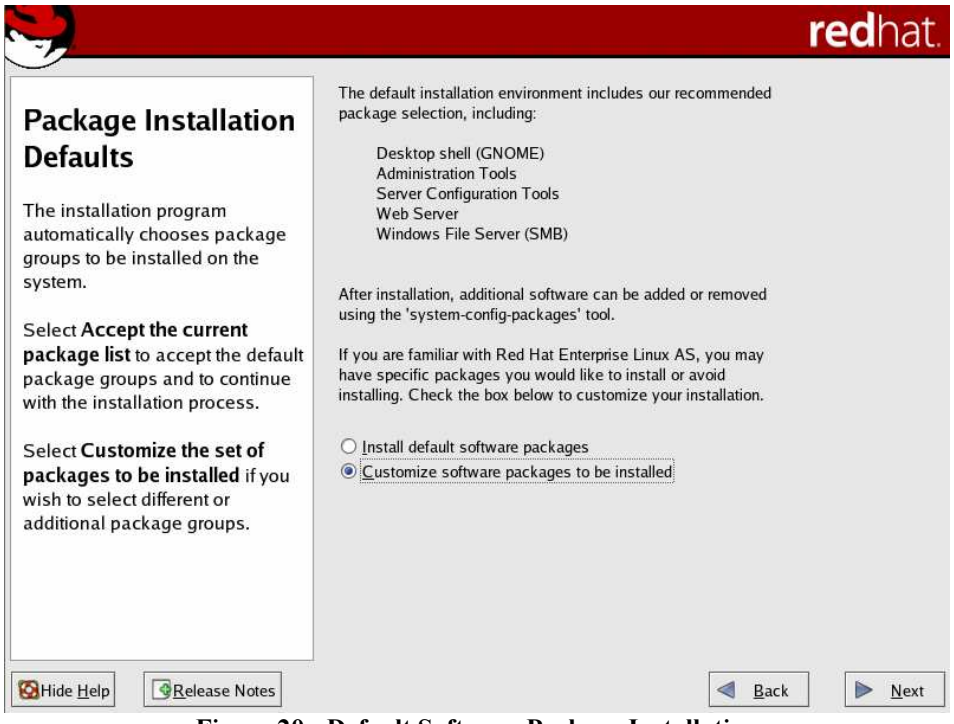

Figure 20 - Default Software Package Installation

23. From the Package Group Selection window, select the follow packages listed below to be installed (Figures 23-25). Click 'Next' when completed.

- X Window System
- GNOME Desktop Environment
- Server Configuration Tools
- Administration Tools
- System Tools

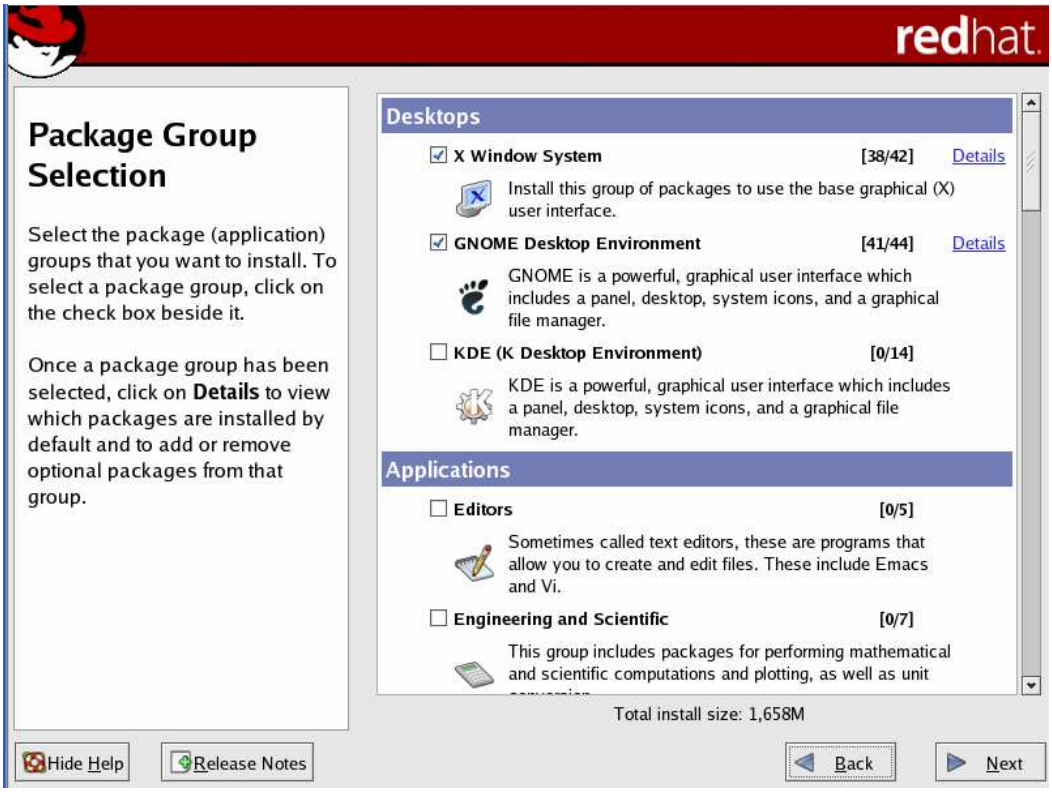

Figure 21 - Package Group Selection 1

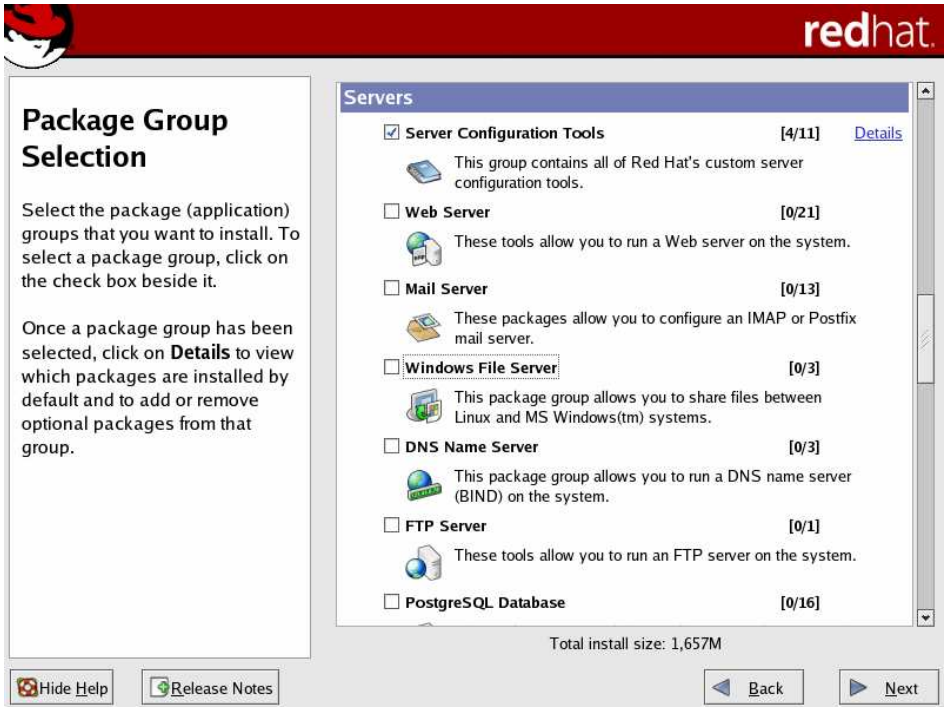

Figure 22 - Package Group Selection 2

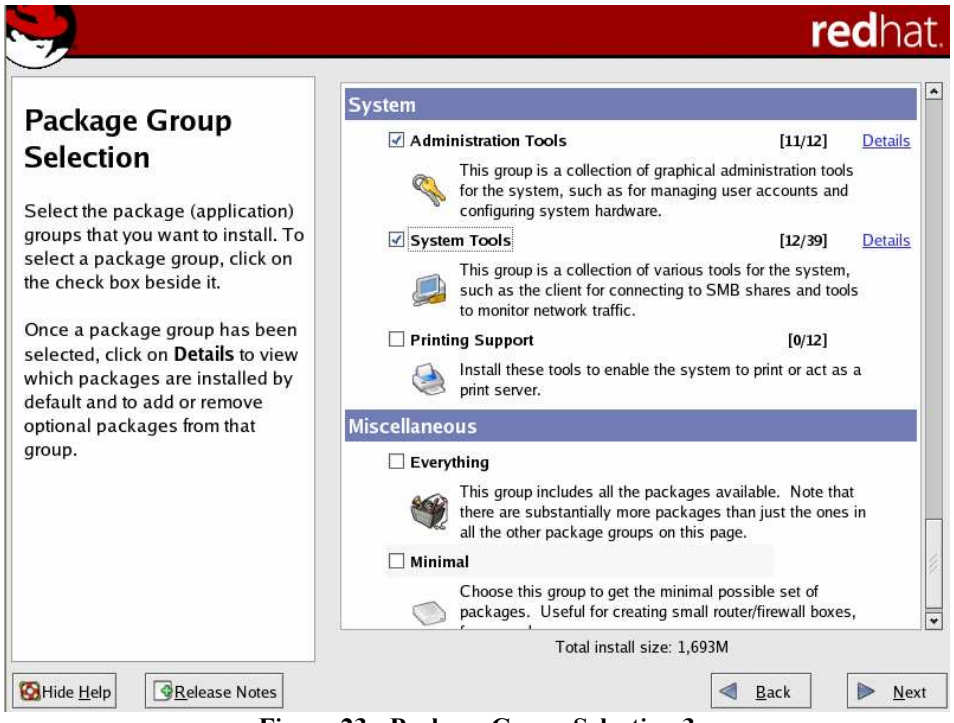

Figure 23 - Package Group Selection 3

24. Click ‘Next’ to start the installation process (Figure 26).

Note: This step will take 20-30 minutes to complete.

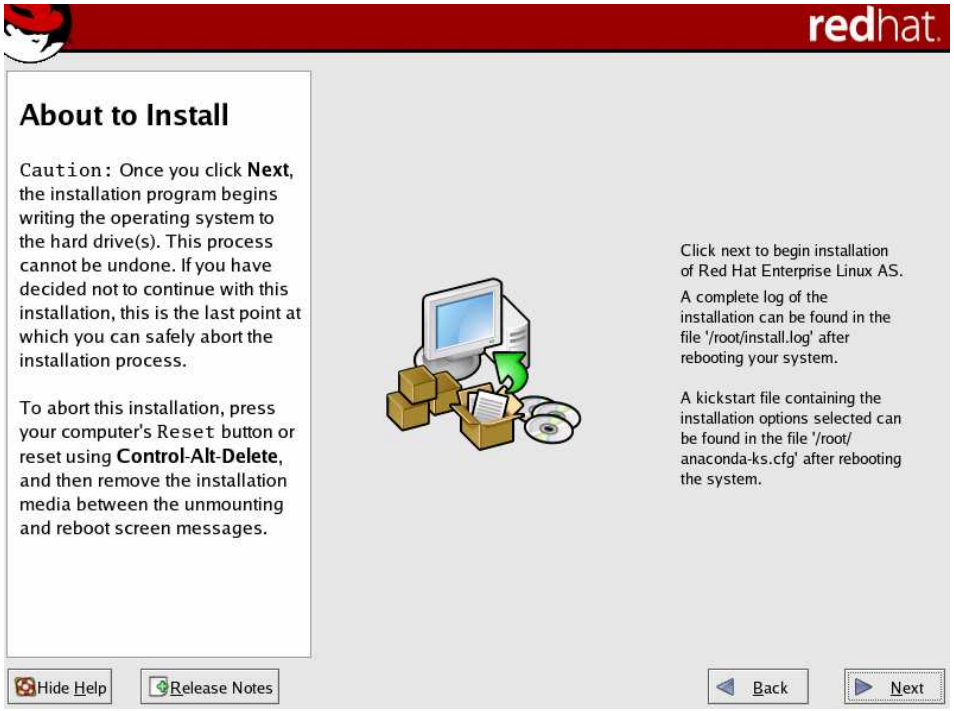

Figure 24 - About to Install Window

RHEL4 Welcome Screen

25. Once the server has completed the installation process and rebooted, click 'Next' at the 'Welcome' window to finalize the installation process (Figure 27).

Figure 25 - Welcome Window

License Agreement

26. Select “Yes’ on the License Agreement window, then click ‘Next’ (Figure 28).

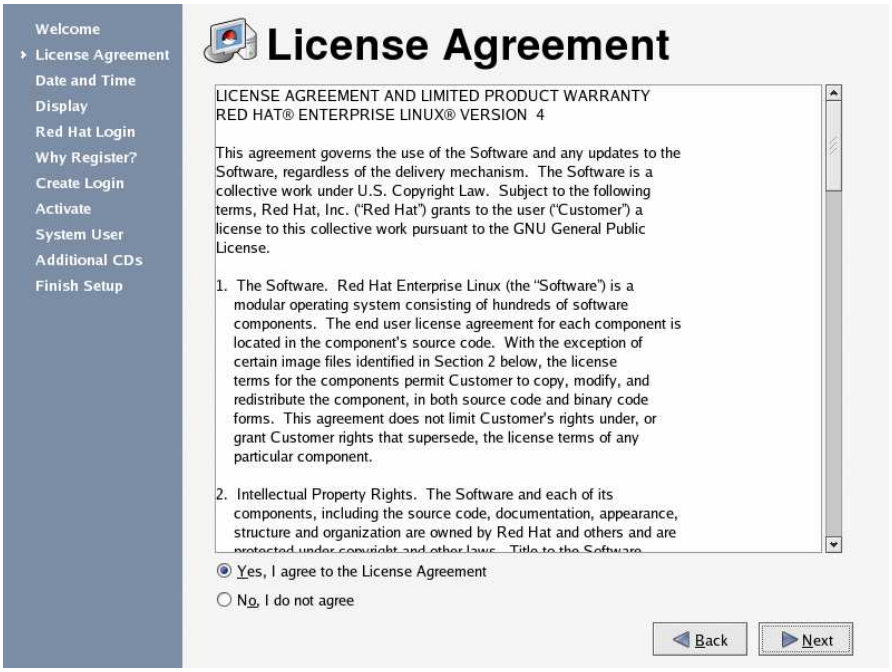

Figure 26 - License Agreement

Configuring Date & Time

27. Set the appropriate date and time for the server (Figure 29).
Note: Make sure to set UTC time for the server.

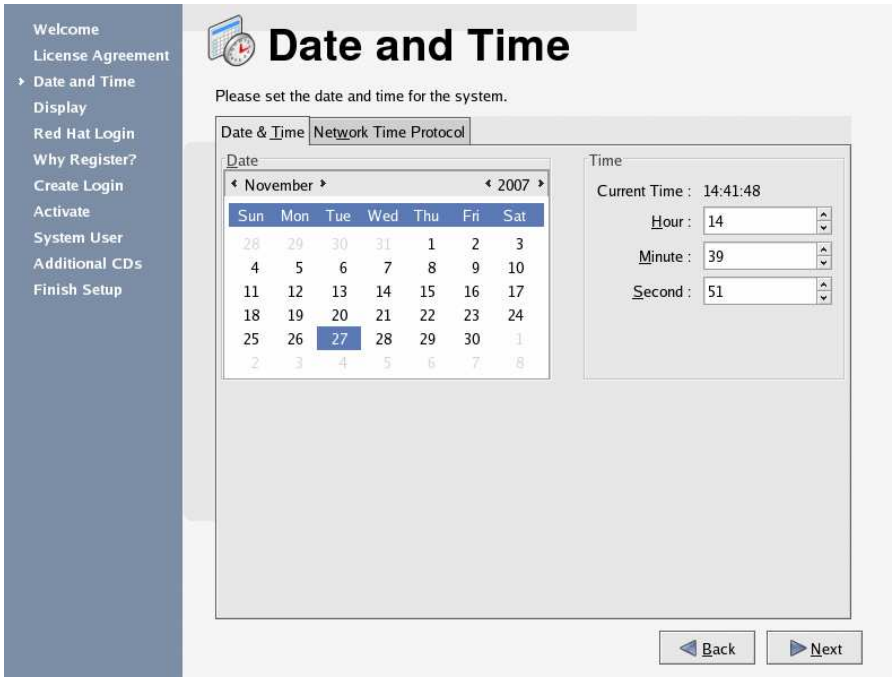

Figure 27 - Setting Date & Time

Configuring NTP

28. If using NTP, select 'Enable Network Time Protocol' and enter in the IP address or hostname of the NTP server (Figure 30).

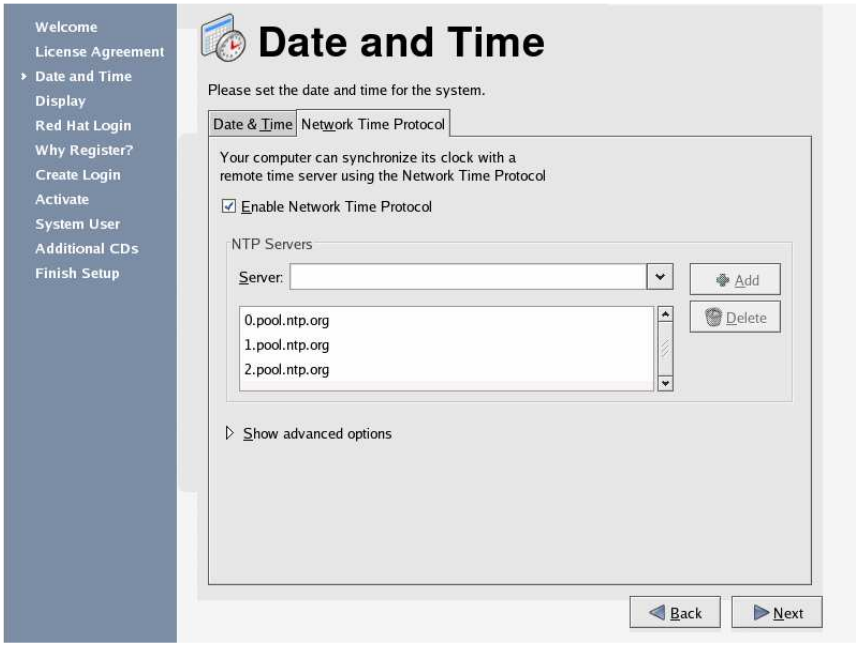

Figure 28 - NTP Settings

Configuring Display

29. Configure the display settings for the monitor connected to the RHEL server (Figure 31).

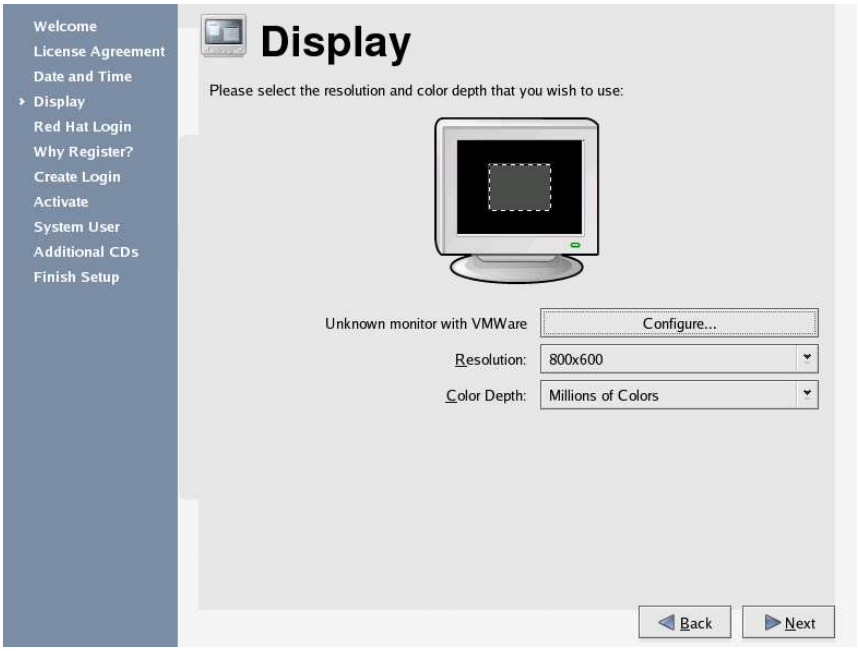

Figure 29 - Display Settings

30. Enter in the appropriate Red Hat Login information (Figure 32).

Figure 30 - Red Hat Login Window

31. If needed, create any additional users who will have access to the RHEL Server (Figure 33).

Note: This is separate from users/administrators that will be created when installing VSM software

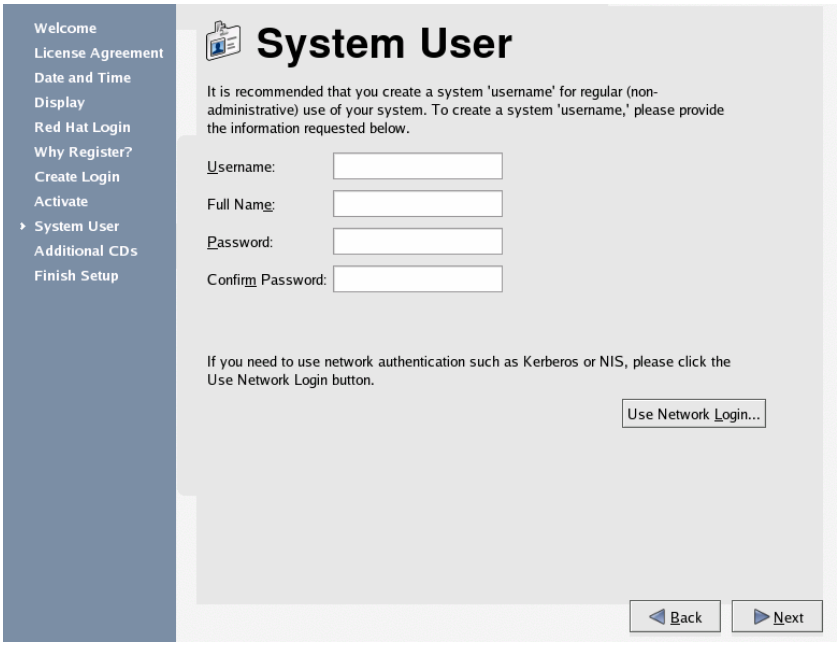

Figure 31 - System User Window

32. Click ‘Next’ on the Additional CDs window (Figure 34).

Figure 32 - Additional CDs Window

33. Click ‘Next’ to finalize the RHEL4 OS installation process (Figure 35).

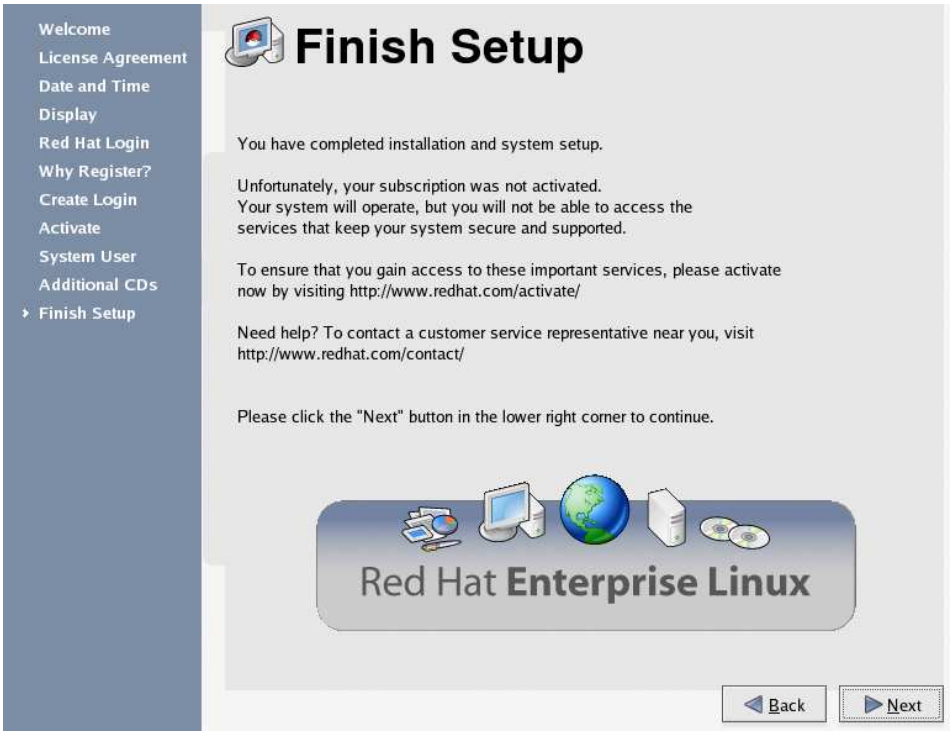

Figure 33 - Finish Setup Window

34. Log into the Server using the Root username and password (Figure 36).

Figure 34 - Red Hat Login Screen

Tuning Red Hat for VSM Installation

Once RHEL4 has been installed on the server, there are several steps that need to be completed prior to installing the VSM software such as disabling IPv6, installing MySQL v5.0, and installing some required RPM packages.

Disabling IPv6

1. RHEL4 automatically configures IPv6 during the OS installation. To disable IPv6 functionality, open a terminal window from the Server (or use SSH). To open a Terminal window, select Applications -> System Tools -> Terminal (Figure 37).

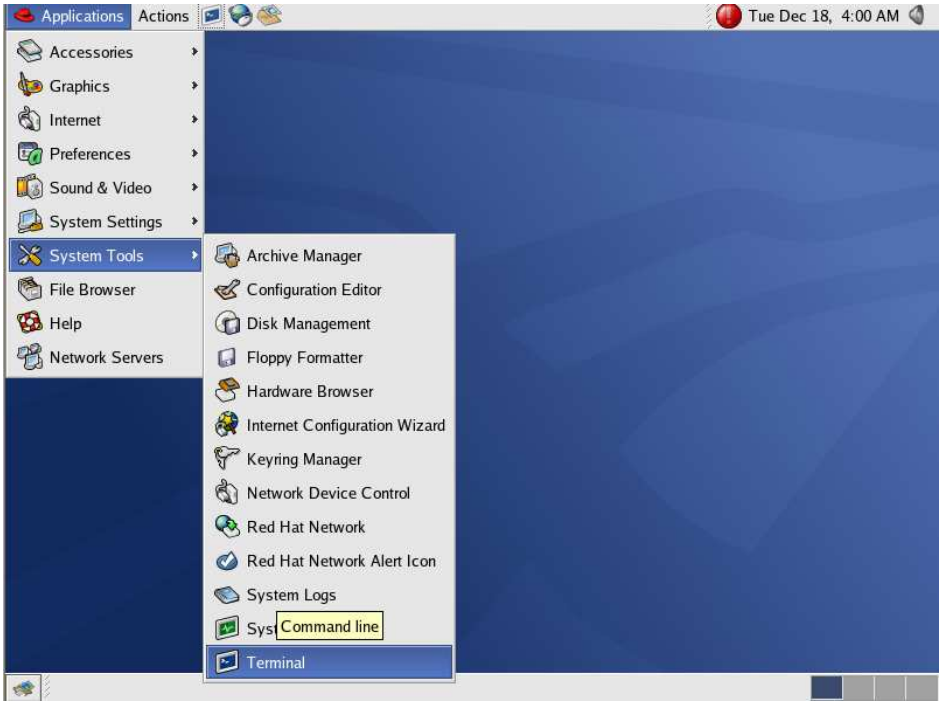

Figure 35 - Opening Terminal Window

2. Type “ifconfig” in terminal window. If there is an IPV6 address displayed, such as “inet6 addr: xxxx:xxxx:xxxx:xxxx:xxxx/xx” then IPv6 will need to be disabled (Figure 38)

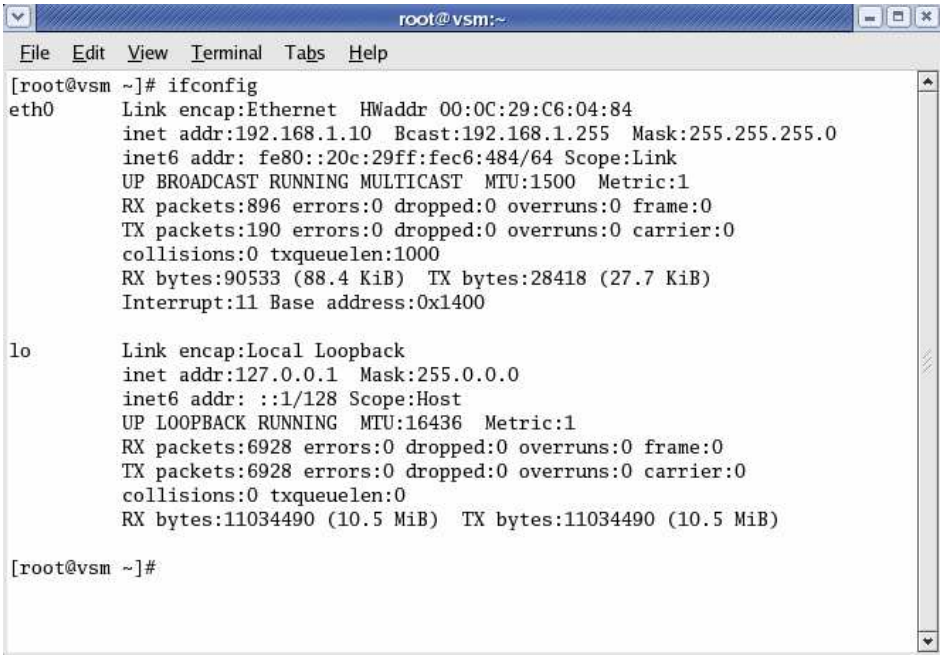

Figure 36 - Gnome Terminal Window

3. Type the following two commands in the terminal window to disable IPV6 (Figure 39):

echo "alias net-pf-10 off" >> /etc/modprobe.conf
echo "alias ipv6 off" >> /etc/modprobe.conf

Note: The net-pf-10 command is for "network protocol family 10", which is the IPv6 family. The alias line means that when something tries to load the net-pf-10 "module", it should instead load the ipv6 module, and pass it the off option

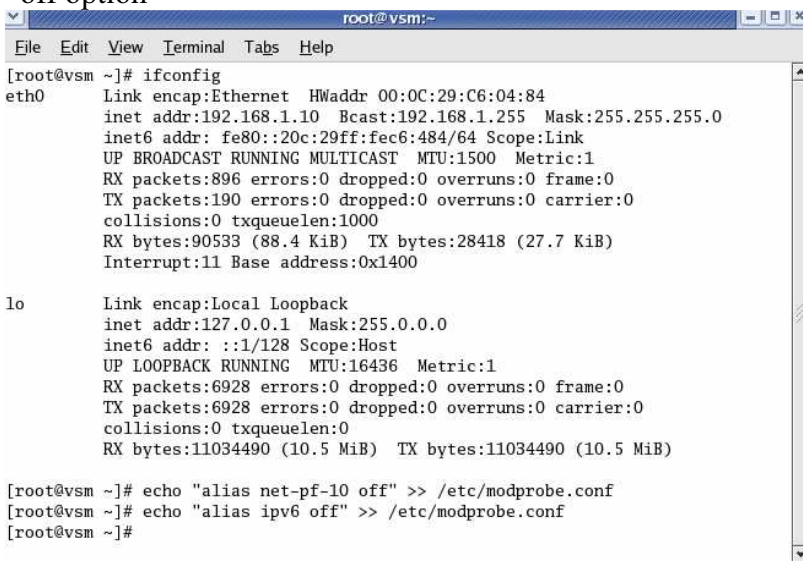

Figure 37 - Disabling IPV6

4. Reboot the server for the commands to take effect. Type “reboot” in terminal window. Log in after reboot, open a new terminal window and type in “ifconfig”. The inet6 address should no longer appear (Figure 40).

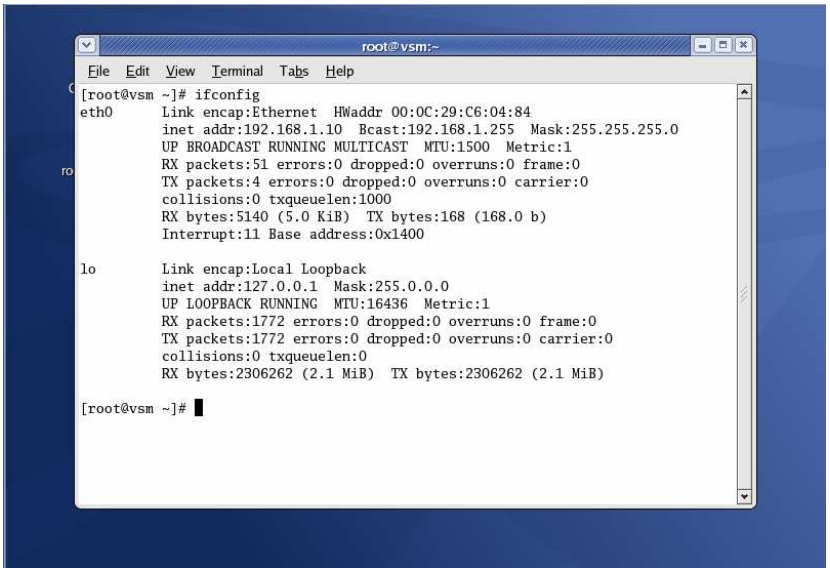

Figure 38 - IPV6 Address Removed

Installing MySQL v5.0 Database

1. Download the MySQL 5.0 Server, Client, and Shared Libraries rpms from the MySQL website to your laptop.

   http://dev.mysql.com/downloads/mysql/5.0.html#linux-rhel4-x86-32bit-rpms

2. Create a 'packages' directory in the /root director of the RHEL4 server. Using the SSH Secure Shell File Transfer tool, connect to the server and log in as root. Right-click in the right-hand window under the '/root' directory wndow and select 'New Folder' to create a new directory. Name the new folder 'packages' (Figure 41).

   Note: If using a keyboard and mouse directly attached, create a new directory using the mkdir command.

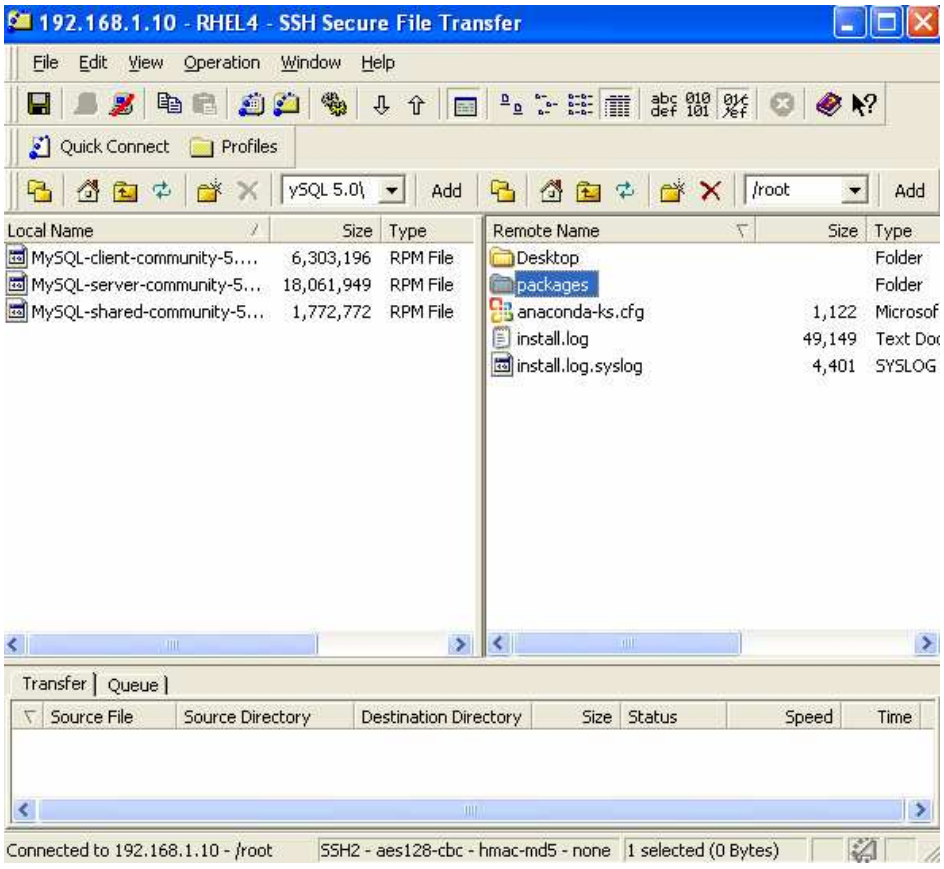

Figure 39 - Creating a /packages directory

3. Select the packages folder by double-clicking on it in the right-hand window. Then transfer the MySQL Server, Client and Shared Libraries RPMs to the packages folder by highlighting and dragging them from the left window to the right window (Figure 42).

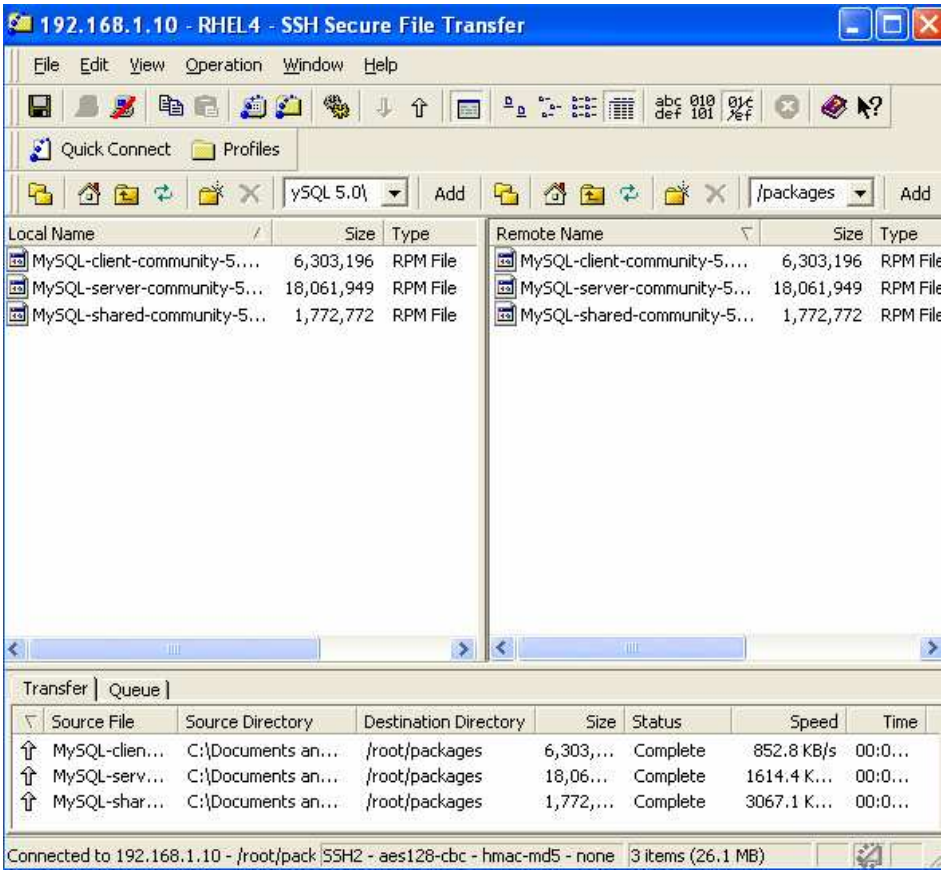

Figure 40 - Transfering MySQL RPM Files

Check For perl-DBI rpm

4. Prior to installing the MySQL RPMs, verfify that perl-DBI rpm was installed during the OS installation. From a terminal window navigate to the packages folder created in Step 2 and type in the following command to verify that the perl-DBI rpm has been installed (Figure 43):

   rpm –q perl-DBI (This command is case-sensitive)

   Note: The perl-DBI RPM may be installed by default during the OS installation. If so, the 'rpm –q' command will display what version has been installed.

Figure 41 - Perl-DBI Query

5. If the perl-DBI rpm was not been installed, search for the rpm on the RHEL4 CDs and install it.

Uninstalling MySQL v4

During the OS installation of RHEL4, the MySQL v4 database may have been installed by default. If so, it will need to be removed and replaced with MySQL v5.

6. To check to see if a version of MySQL has already been installed, use the 'rpm –q' command (Figure 44):

   rpm –q mysql

Figure 42 - Checking for MySQL

7. To remove any previously installed version of MySQL, use the 'rpm –e' command (Figure 45):

   rpm –e mysql-<version>-<OS>

   Note: A 'failed dependencies'error message may appear after running the rpm –e command. This means that the MySQL database cannot be removed until the dependant rpm program is removed first.

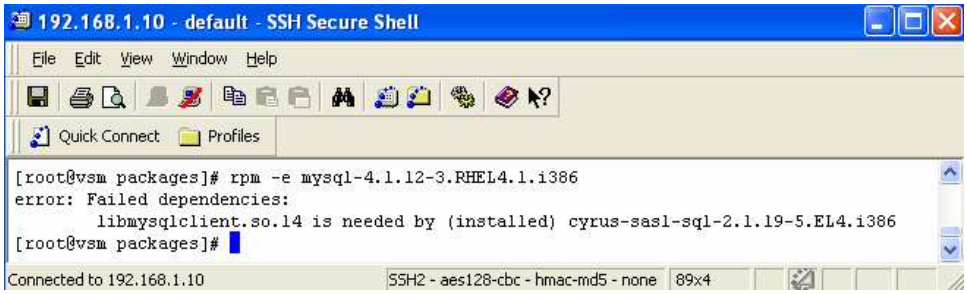

Figure 43 - Failed Dependencies Message

Uninstalling Dependant RPM Packages

8. To remove the dependant rpm package, use the the 'rpm –e' command along with the name of the dependant rpm (Figure 46).

9. Once the dependant package has been removed, repeat Step 7 above to remove the previously installed version of MySQL.

Figure 44 - Uninstall Dependant RPM Packages

Install MySQL 5

10. From a terminal window , navigate to the 'packages' directory created in Step 2, and install MySQL rpm using the following commands (Figures 47-49):

rpm –ivh MySQL-Server
rpm –ivh MySQL-Client
rpm –ivh MySQL-shared-community-<version>-<os>.rpm

Figure 45 – Installing MySQL Server RPM

Figure 46 – Installing MySQL Client RPM

Figure 47 - Installing MySQL Shared RPM

Install Required RPM Packages

There are five additional RPM packages that need to be installed on the RHEL4 server, prior to installing the VSM software. The RPMs and their locations are listed below.

- **perl-Socket6**
ftp://ftp.freshrpms.net/pub/dag/dries/redhat/el4/en/i386/RPMS.dries/perl-Socket6-0.19-1.2.el4.rf.i386.rpm

- **perl-Crypt-DES**
ftp://ftp.freshrpms.net/pub/dag/redhat/el4/en/i386/RPMS.dag/perl-Crypt-DES-2.05-3.2.el4.rf.i386.rpm

- **perl-Digest-SHA1** - Located on RHEL4 Installation CD

- **perl-Digest-HMAC** - Located on RHEL4 Installation CD

- **perl-Net-SNMP**
ftp://ftp.freshrpms.net/pub/dag/redhat/el4/en/i386/dag/RPMS/perl-Net-SNMP-5.2.0-1.2.el4.rf.noarch.rpm

1. Download/Copy the RPMs listed above and place them in the 'packages' folder located on the RHEL4 server.

2. Install the RPM in the order they are listed above (Figures 50-54)

Figure 48 - Installing Perl-Socket RPM

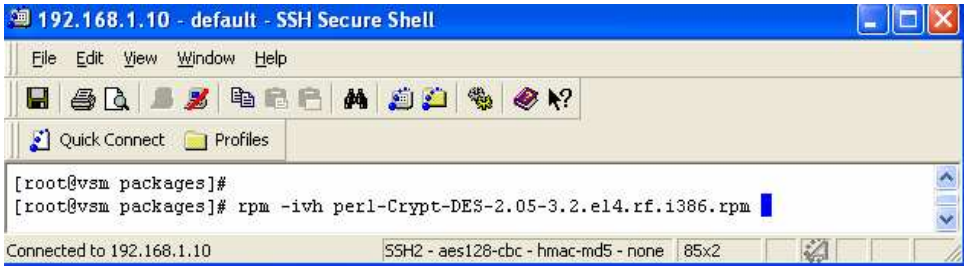

Figure 49 - Installing Perl-Crypt-DES RPM

Figure 50 - Installing perl-Digest-SHA1 RPM

Figure 51 - Installing perl-Digest-HMAC RPM

Figure 52 - Installing perl-Net-SNMP RPM

Change Owner For /media0 Partition

The final step to configure the OS for VSM installation is to change the ownership of the media0 partition from root/root to nobody/nobody. If this change is not made, users will not be able to record to archives or create snapshots or clips once the VSM software has been installed.

1. To verify ownership of the media0 partition open a terminal window type (or via SSH Connection) and type in the following commands from the root directory:

    1. cd ..
    2. ls –l

    NOTE: The “ls” command lists the contents of a directory and the “-l” syntax is used to show ownership

2. If the media0 listing shows “root root”, it will be necessary to change the ownership to “nobody nobody”. Type in the command below, to change the ownership settings for media0:

chown nobody: /media0

NOTE: There is a space between the colon and the forward slash.

Below is a sample output showing how to change the ownership of media0 directory all input commands are shown in blue.

```
vs-demo:~ # cd ..
vs-demo:/ # ls -l

total 30
-rw-------   1 root   root   1024 Mar 10 15:33 .rnd
drwxr-xr-x   2 root   root   2888 Mar 10 15:03 bin
drwxr-xr-x   5 root   root    632 Mar 10 15:08 boot
drwxr-xr-x  10 root   root   6820 Mar 11 17:02 dev
drwxr-xr-x  76 root   root   6456 Mar 11 17:01 etc
drwxr-xr-x   3 root   root     72 Mar 10 15:34 home
drwxr-xr-x  12 root   root   4000 Mar 10 15:04 lib
drwxr-xr-x   3 root   root     72 Mar 10 19:30 media
drwxr-xr-x   2 root   root      6 Mar 10 14:52 media0
drwxr-xr-x   2 root   root     48 Jun 16  2006 mnt
drwxr-xr-x   4 root   root     96 Mar 10 15:00 opt
dr-xr-xr-x 106 root   root      0 Mar 11 17:01 proc
drwx------  20 root   root    944 Mar 11 17:24 root
drwxr-xr-x   3 root   root   8640 Mar 10 15:05 sbin
drwxr-xr-x   4 root   root     96 Mar 10 14:53 srv
drwxr-xr-x   2 root   root     48 Jun 16  2006 subdomain
drwxr-xr-x  11 root   root      0 Mar 11 17:01 sys
drwxrwxrwt   9 root   root   4616 Mar 11 21:18 tmp
drwxr-xr-x  14 nobody nobody  392 Jun  6  2007 usr
drwxr-xr-x  15 root   root    384 Mar 10 18:01 var

vs-demo:~ # chown nobody: /media0
vs-demo:~ # ls -l /

total 30
-rw-------   1 root   root   1024 Mar 10 15:33 .rnd
drwxr-xr-x   2 root   root   2888 Mar 10 15:03 bin
drwxr-xr-x   5 root   root    632 Mar 10 15:08 boot
drwxr-xr-x  10 root   root   6820 Mar 11 17:02 dev
drwxr-xr-x  76 root   root   6456 Mar 11 17:01 etc
drwxr-xr-x   3 root   root     72 Mar 10 15:34 home
```

```
drwxr-xr-x  12 root   root   4000 Mar 10 15:04 lib
drwxr-xr-x   3 root   root     72 Mar 10 19:30 media
drwxr-xr-x   2 nobody nobody    6 Mar 10 14:52 media0
drwxr-xr-x   2 root   root     48 Jun 16  2006 mnt
drwxr-xr-x   4 root   root     96 Mar 10 15:00 opt
dr-xr-xr-x 106 root   root      0 Mar 11 17:01 proc
drwx------  20 root   root    944 Mar 11 17:24 root
drwxr-xr-x   3 root   root   8640 Mar 10 15:05 sbin
drwxr-xr-x   4 root   root     96 Mar 10 14:53 srv
drwxr-xr-x   2 root   root     48 Jun 16  2006 subdomain
drwxr-xr-x  11 root   root      0 Mar 11 17:01 sys
drwxrwxrwt   9 root   root   4728 Mar 11 21:19 tmp
drwxr-xr-x  14 nobody nobody  392 Jun  6  2007 usr
drwxr-xr-x  15 root   root    384 Mar 10 18:01 var
vs-demo:~ #
```