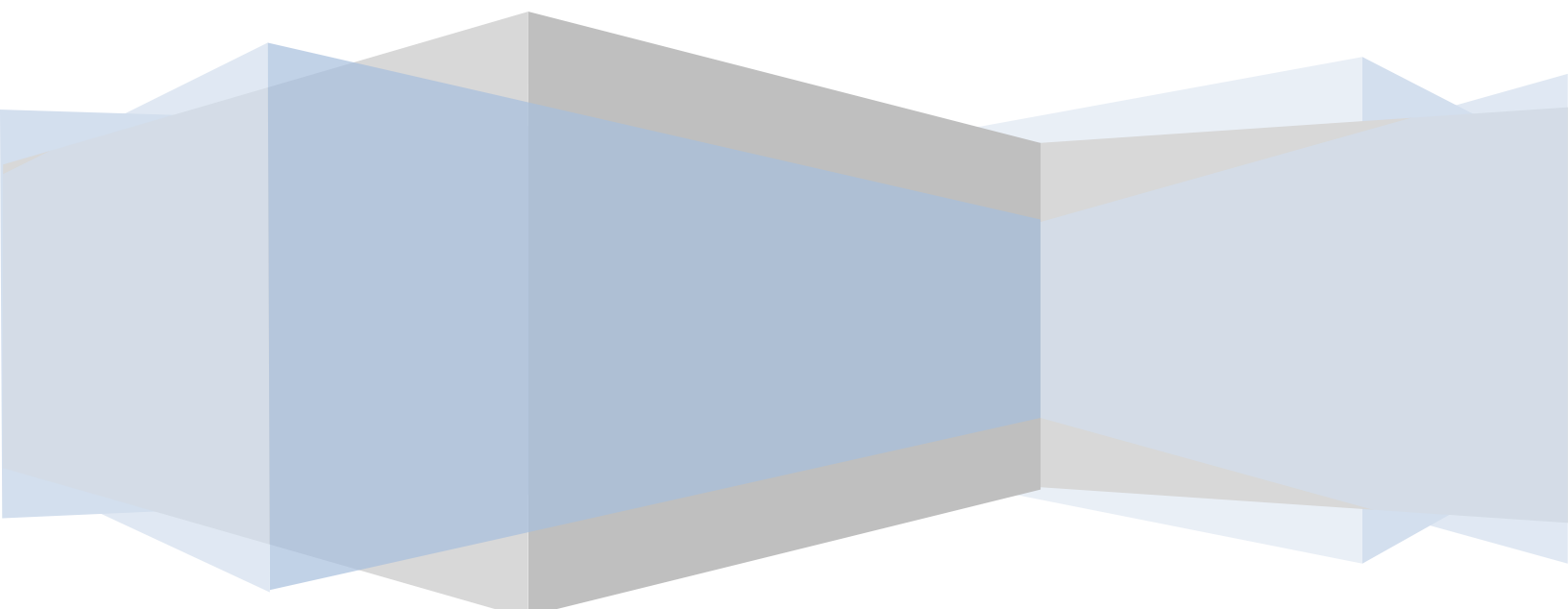


CentOS 5



Essentials

CentOS Essentials



CentOS Essentials – Release 1.0.2

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Table of Contents

Chapter 1.	About CentOS Essentials.....	14
Chapter 2.	Installing CentOS on a Clean Disk Drive.....	15
2.1	Trying CentOS without Installing.....	15
2.2	Obtaining the CentOS Installation Media	16
2.3	Installing CentOS	16
2.4	Partitioning a Disk for CentOS.....	17
2.5	Configuring Networking Settings	19
2.6	Timezone and the Root Password.....	19
2.7	Package Selection.....	19
2.8	The Physical Installation.....	21
2.9	Final Configuration Steps	21
Chapter 3.	Performing a CentOS Network Installation	22
3.1	CentOS Network Installation Requirements	22
3.2	Configuring the Network Installation.....	23
3.3	Starting the CentOS Network Installation.....	25
Chapter 4.	Installing CentOS with Windows in Dual Boot Environment.....	26
4.1	Partition Resizing.....	26
4.2	Shrinking a Windows XP Partition.....	28
4.3	Choosing an Operating System at Boot Time	34
4.4	Editing the CentOS Boot Menu	35
4.5	Accessing the Windows Partition from Linux	37
Chapter 5.	Allocating a Windows Disk Partition to CentOS.....	40
5.1	Deleting the Windows Partition from the Disk	40
5.2	Formatting the Unallocated Disk Partition	43
5.3	Editing the Boot Menu	44
5.4	Mounting the New Partition	44
Chapter 6.	Logging into the CentOS GNOME Desktop.....	46

Chapter 7. Configuring CentOS GNOME Screen Resolution and Multiple Monitors	49
7.1 Configuring the Display Resolution	49
7.2 Configuring Multiple Monitors.....	50
Chapter 8. A Guided Tour of the CentOS GNOME Desktop	52
8.1 The CentOS GNOME Desktop.....	52
8.2 The Desktop Background	53
8.3 The Desktop Panels	54
Chapter 9. Changing the CentOS GNOME Desktop Background.....	56
9.1 Changing the CentOS GNOME Desktop Background	56
9.2 Selecting a Background from the Wallpaper List	56
9.3 Creating a Solid or Graded Background	57
9.4 Specifying a Background Image	58
Chapter 10. Installing and Customizing CentOS Desktop Themes	59
10.1 What is a Desktop Theme?	59
10.2 Changing the CentOS Desktop Theme	59
10.3 Downloading and Installing a Theme.....	60
10.4 Creating a Custom Theme Package.....	61
10.5 Summary	62
Chapter 11. Configuring CentOS Desktop Fonts.....	63
11.1 Font Options on CentOS.....	63
11.2 Changing Font Settings.....	63
11.3 Font Rendering Settings	65
11.4 Advanced Font Rendering	65
11.5 Accessing the System Font Folder.....	66
Chapter 12. Configuring the CentOS Desktop Panels.....	67
12.1 What are Desktop Panels.....	67
12.2 Changing the Position of a Panel	67
12.3 Adding and Deleting Desktop Panels	68

12.4	Changing the Appearance of a Desktop Panel	68
12.5	Adding Items to a GNOME Desktop Panel	69
12.6	Adding Menus to a Panel	72
12.7	Changing the Number of CentOS Desktop Workspaces	73
Chapter 13.	Configuring the CentOS Desktop Menu System	74
13.1	Customizing a CentOS Desktop Menu	74
13.2	Moving Menu Items	75
13.3	Adding and Deleting a Menu Item	75
Chapter 14.	Browsing My Computer, Files and Folders on the CentOS Desktop	76
14.1	Accessing Nautilus.....	76
14.2	Nautilus and the Computer Icon	76
14.3	Adding Emblems to Files and Folders	77
14.4	Changing File and Folder Permissions.....	79
14.5	Renaming and Deleting Files and Folders	80
Chapter 15.	Configuring the CentOS File Manager	82
15.1	Displaying Icons or Lists	82
15.2	Configuring the List View	83
15.3	Configuring the Icon View	84
Chapter 16.	CentOS Startup Programs and Session Configuration	88
16.1	Session Managed and Non-Session Managed Programs.....	88
16.2	Understanding Sessions	88
16.3	Creating a New Session	88
16.4	Configuring Session Preferences.....	89
16.5	Configuring the Current Session	90
16.6	Configuring Startup Programs.....	91
Chapter 17.	CentOS Desktop Keyboard Shortcuts	92
17.1	Viewing Keyboard Shortcuts	92
17.2	Changing a Shortcut	93

17.3	Disabling a Keyboard Shortcut	93
Chapter 18.	Managing CentOS Users and Groups.....	94
18.1	Adding a New User to a CentOS System	94
18.2	Editing the Properties of a User	96
18.3	Deleting a User from a CentOS System.....	96
18.4	Adding a New Group to a CentOS System	96
18.5	Modifying a CentOS Group	98
18.6	Deleting a Group from a CentOS System	99
Chapter 19.	Configuring CentOS Runlevels and Services	100
19.1	Understanding CentOS Runlevels	100
19.2	Understanding CentOS Services.....	100
19.3	CentOS Runlevels Descriptions	100
19.4	Configuring the Default CentOS Runlevel	101
19.5	Changing the Current Runlevel from within a Running CentOS System.....	102
19.6	Identifying Services that Start at Each Runlevel	102
19.7	Changing the Services for a Runlevel	103
Chapter 20.	Basic CentOS Firewall Configuration	104
20.1	Configuring a Basic CentOS Firewall	104
20.2	Enabling and Disabling the Firewall	105
20.3	Configuring Firewall Port Settings.....	105
20.4	Configuring Other Ports	106
20.5	Firewall Configuration from a Terminal using lokkit.....	107
20.1	Trusted Interfaces	109
20.2	Masquerading	109
Chapter 21.	Remote Access to the CentOS Desktop	110
21.1	Installing Remote Desktop Support	110
21.2	Activating Remote Desktop Access.....	111
21.3	Secure and Insecure Remote Desktop Access	112

21.4	Firewall Configuration	112
21.5	Accessing a Remote CentOS Desktop using vncviewer	112
21.6	Accessing a Remote CentOS Desktop from a Windows System	114
21.7	Establishing a Secure Remote Desktop Session	114
21.8	Establishing a Secure Remote Desktop Session from a Windows System	115
21.9	Creating Additional Desktops.....	117
21.10	Shutting Down a Desktop Session	118
21.11	Configuring the Remote Desktop Environment	118
Chapter 22.	Configuring CentOS Remote Access using SSH.....	121
22.1	Installing SSH on a CentOS System.....	121
22.2	Configuring the CentOS Firewall to Allow SSH Connections.....	122
22.3	Using SSH on CentOS.....	122
22.4	Copying files using SSH.....	123
22.5	Disabling the SSH Server	124
Chapter 23.	Displaying CentOS Applications Remotely (X11 Forwarding).....	126
23.1	Requirements for Remotely Displaying Applications.....	126
23.2	Remotely Displaying a CentOS Application.....	126
23.3	Trusted X11 Forwarding.....	127
23.4	Compressed X11 Forwarding	127
Chapter 24.	Using NFS to Share CentOS Folders with Remote Linux and UNIX Systems	128
24.1	Ensuring NFS Services are Running on CentOS	128
24.2	Configuring the CentOS Firewall to Allow NFS Traffic	130
24.3	Specifying the Folders to be Shared.....	130
24.4	Accessing Shared CentOS Folders	132
24.5	Mounting an NFS Filesystem on System Startup	133
24.6	Unmounting an NFS Mount Point	133
Chapter 25.	Sharing CentOS Files with Remote Windows Systems	134
25.1	Samba and Samba Client.....	134

25.2	Installing Samba on a CentOS System.....	134
25.3	Starting the Samba Service on CentOS	135
25.4	Configuring the CentOS Firewall to Enable Samba	136
25.5	Configuring Samba Users and Resource Sharing	136
25.6	Accessing Windows Shares from CentOS.....	139
Chapter 26.	Configuring a CentOS Based Web Server	142
26.1	Requirements for Configuring a Web Server	142
26.2	Installing the Apache Web Server on CentOS.....	142
26.3	Starting the Apache Web Server	143
26.4	Testing the Web Server	144
26.5	Configuring the Apache Web Server for Your Domain	144
26.6	Web Server and Firewall Issues	145
Chapter 27.	Configuring a CentOS Postfix Email Server	146
27.1	The structure of the Email System	146
27.1.1	Mail User Agent	146
27.1.2	Mail Transfer Agent	146
27.1.3	Mail Delivery Agent.....	147
27.1.4	SMTP	147
27.2	Configuring a CentOS Email System.....	147
27.3	Postfix Pre-Installation Steps	147
27.4	Installing Postfix on CentOS	149
27.5	Configuring Postfix	149
27.6	Starting Postfix on a CentOS System.....	150
Chapter 28.	Configuring a CentOS Mail Client (Evolution).....	151
28.1	An Overview	151
28.2	Configuring Evolution to Receive Mail from a Local Postfix Server	152
28.3	Configuring Evolution to Receive Mail from a Remote POP Server.....	153
28.4	Configuring Evolution to Send Mail	153

Chapter 29. Sending and Receiving GMail Email via POP on a CentOS System	154
29.1 Configuring a GMail Account for POP Access	154
29.2 Configuring Evolution to Receive GMail Messages.....	154
29.3 Configuring Evolution to Send GMail Messages	156
Chapter 30. Installing and Configuring CentOS Xen Virtualization	158
30.1 Full Virtualization vs. Para-Virtualization	158
30.2 Checking Xen Hardware Compatibility.....	159
30.3 Preparing CentOS for Xen Virtualization	160
30.4 Building a CentOS Xen Guest System.....	161
30.5 Summary	167
Chapter 31. Using Xen Full Virtualization to Run Windows on CentOS	168
31.1 Hardware Requirements for Xen-based Full Virtualization on CentOS	168
31.2 Preparing the Installation Image.....	168
31.3 Creating the New Virtual Machine.....	169
31.4 Configuring Xen Virtualization Method	169
31.5 Selecting Installation Media.....	170
31.6 Configuring Storage.....	171
31.7 Configuring Network Access	171
31.8 CPU and Memory Allocation	172
31.9 Creating and Starting the New Xen Virtual Machine	173
Chapter 32. Managing and Monitoring CentOS based Xen Guest Systems.....	174
32.1 Starting and Stopping Xen Guest Systems	174
32.2 Pausing a Xen Guest Operating System	175
32.3 Changing Xen Guest Operating System Settings.....	175
32.4 Monitoring Virtual Machine Performance.....	177
Chapter 33. Configuring a New CentOS Xen Virtual Network.....	180
33.1 CentOS Xen Guest Networking Options.....	180
33.2 Identifying the Settings of an Existing CentOS Xen Virtual Network.....	180

33.3	Creating a New Xen Virtual Network on a CentOS Host	181
33.4	Assigning the New Virtual Bridge during Virtual Machine Creation	184
33.5	Changing an Existing Virtual Machine to Use a new Virtual Network	185
Chapter 34.	Managing Xen on CentOS using the xm and virsh Command-line Tools.....	188
34.1	xm Command-line vs virsh Shell	188
34.2	Listing Guest System Status	192
34.3	Starting a Xen Guest System	193
34.4	Connecting to a Running Xen Guest System	193
34.5	Shutting Down a Guest System	194
34.6	Pausing and Resuming a Guest System.....	194
34.7	Suspending and Resuming a Guest OS.....	195
34.8	Saving and Restoring Xen Guest Systems	195
34.9	Rebooting a Guest System	195
34.10	Configuring the Memory Assigned to a Xen Guest OS	196
34.11	Migrating a Domain to a Different Host	196
Chapter 35.	Installing KVM on CentOS and Configuring a Network Bridge	197
35.1	KVM Hardware Requirements	197
35.2	32-bit Support for KVM on CentOS	198
35.3	Preparing CentOS for KVM Virtualization	198
35.4	Verifying the KVM Installation	199
35.5	Virtual Networks and Network Bridges	200
35.6	Creating a Network Bridge	201
Chapter 36.	Creating a CentOS KVM Virtual Machine.....	206
36.1	Starting the Virtual Machine Manager	206
36.2	Creating the New CentOS based KVM Virtual Machine	207
36.3	Configuring the Installation Method.....	207
36.4	Configuring the KVM Virtual Storage	208
36.5	Configuring KVM Network Settings.....	209

36.6	Configuring KVM Virtual Machine Memory and CPU Settings	210
36.7	Starting the New KVM Virtual Machine	211
Chapter 37.	Installing a CentOS KVM Guest OS from the Command-line (virt-install)	214
37.1	Running <i>virt-install</i> to Build the KVM Guest System.....	214
37.2	An Example CentOS virt-install Command.....	220
37.3	Starting the Virtual Machine from the Command Line.....	222
Chapter 38.	Managing and Monitoring CentOS based KVM Guest Systems	223
38.1	Starting and Stopping CentOS based KVM Guest Systems	223
38.2	Pausing a KVM Guest Operating System.....	224
38.3	Changing KVM Virtual Guest System Settings	224
38.4	Monitoring Virtual Machine Performance.....	226
38.5	Monitoring Host Performance	228
Chapter 39.	Adding a New Disk Drive to a CentOS System	229
39.1	Mounted File Systems or Logical Volumes	229
39.2	Getting Started	229
39.3	Finding the New Hard Drive in CentOS	229
39.4	Creating Linux Partitions	231
39.5	Creating a File System on a CentOS Disk Partition.....	233
39.6	Mounting a File System	234
39.7	Configuring CentOS to Automatically Mount a File System	235
Chapter 40.	Adding a New Disk to a CentOS Volume Group and Logical Volume	236
40.1	An Overview of Logical Volume Management (LVM)	236
	Volume Group (VG)	236
40.1.1	Physical Volume (PV)	237
40.1.2	Logical Volume (LV).....	237
40.1.3	Physical Extent (PE).....	237
40.1.4	Logical Extent (LE).....	237
40.2	Getting Information about Logical Volumes	237

40.3 Adding Additional Space to a CentOS Volume Group from the Command Line 241

Chapter 41. Related eBook Publications 244

Chapter 1. About CentOS Essentials

The CentOS Linux distribution is a remarkable case study of the unique power of open source software. In CentOS we have an enterprise level operating system that is developed and maintained at great expense that we can download and deploy without having to pay any money. To fully understand the origins of CentOS, however, it is necessary to begin by talking about another Linux distribution.

Arguably one of the most highly regarded and widely used enterprise Linux distributions available today is Red Hat Enterprise Linux (RHEL). It is considered to be amongst the most stable and reliable operating systems and is backed by the considerable resources and technical skills of Red Hat, Inc. Red Hat Enterprise Linux is also an open source product, meaning that anyone can access the source code to the operating system and modify it as they see fit. Whilst the source code to RHEL is freely available, RHEL is not free of charge. In order to get a binary copy of this operating system you have to purchase it as part of a service agreement that includes technical support.

CentOS is 100% compatible with Red Hat Enterprise Linux. In fact, CentOS is essentially Red Hat Enterprise Linux with the Red Hat branding and logos removed. CentOS is available for free so you get the power and stability of Red Hat Enterprise Linux without having to purchase it.

Of course, CentOS lacks the dedicated and guaranteed technical support that you get by buying a Red Hat subscription so if you plan to deploy Linux in a mission critical environment where any level of downtime is unacceptable then the Red Hat service is unquestionably worth the money. That said, CentOS is backed by a skilled and active community and I have yet to encounter a problem with CentOS that could not be resolved with the help of the extremely responsive and helpful experts who participate on the CentOS forums.

CentOS Essentials is designed to provide detailed information on the use and administration of the CentOS 5.x Linux distribution. For beginners, the book covers the basics of configuring the desktop environment, resolving screen resolution issues and configuring the email client to send and receive email messages via web based services such as GMail. Installation topics such as dual booting with Microsoft Windows and configuring wireless networking are covered together with all important security topics such as configuring a firewall.

For the experienced user, topics such as configuring email and web servers, Xen and KVM virtualization, Secure Shell (SSH), remote desktop access and file sharing are covered in detail to provide a thorough overview of this enterprise class operating system.

Chapter 2. Installing CentOS on a Clean Disk Drive

The first step on the path to learning about CentOS involves installing the operating system. CentOS can be installed either in a *clean disk* environment (where an entire disk is cleared of any existing partitions and dedicated entirely to CentOS) or in a *dual boot* environment where CentOS co-exists with another operating system on the disk (typically a member of the Microsoft Windows family of operating systems). In this chapter we will be covering the clean disk approach to installation. Dual boot installation will be covered in [Installing CentOS with Windows in Dual Boot Environment](#).

2.1 Trying CentOS without Installing

In addition to installing CentOS, there is one other option that will allow you to try out CentOS without physically installing it to a disk drive. This is achieved by using the CentOS Live CD. This is essentially a copy of CentOS that can be run from the DVD/CDROM drive of your system. The Live CD image can be downloaded from the mirror sites listed on the CentOS web site at:

<http://mirror.centos.org/centos/5/isos/>

Once you have loaded this page into your browser, select either the i386 or x86_64 link depending on whether the target system is a 32-bit or 64-bit platform. Within the next screen select a mirror from the list to view the available downloads and look for a link to download the Live CD image. This will typically be named as follows:

```
CentOS-<version>-<architecture>-LiveCD.iso
```

Once you have downloaded the image, burn it to a CD, then make sure your BIOS is configured to boot from the CDROM/DVD drive before the hard disk and then boot from the CD. The system will boot CentOS and you will have a fully functional CentOS environment to explore.

A couple of points should be noted about the Live CD. Firstly, if you are familiar with the Live CDs for other Linux distributions such as Ubuntu or Fedora you may be expecting to be able to perform an installation to disk from the CentOS Live CD. Unfortunately it is not possible to perform an installation of CentOS from the Live CD. The only way to install is to download the entire installation distribution (as outlined below).

Secondly, because the Live CD system runs on a virtual disk drive in memory, as soon as you shut down or reboot any files you have created will be lost.

Finally, the performance of running an operating system from a CDROM is going to be orders of magnitude slower than running from a disk drive, so don't be put off by the sluggishness of the

system while you are trying it out. This is entirely indicative of the slow speed of CDROM drives, not a reflection of the performance of the operating system.

The Live CD is a good way to quickly get a copy of CentOS up and running without wiping or repartitioning disk drives, but to really appreciate the power of the CentOS, you need to install it to a disk drive.

2.2 Obtaining the CentOS Installation Media

If you have tried out the Live CD and are now ready to install, or just want to move straight to the installation phase, you will need to download the entire CentOS installation media. Once again, go to the following URL and select either the 32-bit or 64-bit link to view available download mirrors:

<http://mirror.centos.org/centos/5/isos/>

The installation distribution can be downloaded as either six individual CDROM images or a single DVD image. Unless you specifically need to use CD images the DVD installation image is strongly recommended. The DVD image is named using the following convention:

```
CentOS-<version>-<architecture>-bin-DVD.iso
```

Alternatively, the image may be downloaded using BitTorrent by selecting the *.torrent* file. The CDROM images are named as follows:

```
CentOS-<version>-<architecture>-bin-nof6.iso
```

Having downloaded either DVD or CDROM images, either burn them to disk or configure your virtualization environment to treat them as DVD or CDROM drives.

2.3 Installing CentOS

Insert either the CentOS DVD or disk 1 of the CDROM collection into the appropriate drive and power on the system. If the system tries to boot from the hard disk drive you will need to enter the BIOS set up for your computer and change the boot order so that it boots from the CD or DVD drive first. Once the system has booted you will be presented with the following screen:



Installation may be performed using either the graphical or text mode installers. To install using the graphical installer, simply press the <Enter> key. To use the text installer type *linux text* followed by the <Enter> key.

CentOS will then provide the option to test the installation media for errors. Use the arrow keys to navigate between the options and make a selection with the <Enter> key. After a short delay the first screen of the graphical installer will appear. Click on the *Release Notes* button if you would like to learn about any key features or problems that exist in this release of CentOS. Navigate through the next few pages to configure your preferred language and keyboard type until you reach the partitioning screen.

2.4 Partitioning a Disk for CentOS

When you reach the disk partitioning phase of the installation, the installer will present a screen similar to the one illustrated in the following figure:



The drop down menu provides a number of options in terms of how the disk will be used to accommodate the CentOS installation:

- **Remove all partitions on selected drives and create default layout** - The entire disk drive will be assigned to the CentOS installation. Any pre-existing partitions, together with any existing operating systems and associated data files contained therein will be deleted to make room for CentOS. This option should only be used if you are absolutely sure you no longer need anything that is currently stored on that disk, or have already backed up all user files.
- **Remove Linux partitions on selected drives and create default layout** - If the drive was previously configured to support a Windows/Linux dual boot environment or was devoted entirely to another Linux installation, this option may be selected to instruct the installer to delete the pre-existing Linux partition and replace it with CentOS, leaving the non-Linux partitions intact. Once again, it is important to backup any user data that may still be needed.
- **Use free space on selected drives and create default layout** - If the current partitions on the drive do not take up the entire disk space available, any unallocated space may be assigned to the CentOS installation using this option.

- **Create custom layout** - When selected, this option displays the disk partitioning tool allowing each partition on the disk to be manually configured.

For the purposes of this chapter we are assuming the entire disk is available to accommodate the CentOS installation so select the *Remove all partitions on selected drives and create default layout* menu option.

Beneath the partition menu is the option to encrypt the system. The choice of whether to use encryption will depend on the purpose for which the system is being used, its physical location and type of data it is going to store. Keep in mind that as with any form of encryption there are performance overheads associated with selecting this option.

Having made the partitioning selection, choose which disk drives detected on your system are to be used for the installation and click *Next* to begin the partitioning process.

2.5 Configuring Networking Settings

After the disk partitioning and encryption decisions have been made the installer will prompt for some networking configuration information. If your system resides on a network served by a DHCP server (a server or device that automatically assigns network IP addresses to computers on the network) you should leave the default settings unchanged in the *Network Devices* section of the screen. If you need to manually specify an IP address, select the network device from the list and click on the Edit button to display the *Edit Interface* dialog and enter your IP address and netmask information, then close the dialog and enter the gateway and DNS settings for your network into the *Miscellaneous settings* section of the main screen.

If you manually specified your IP address, or have a DHCP server that does not automatically provide clients with host names, select the option to manually specify the host name and enter it into the text box and click *Next* to proceed.

2.6 Timezone and the Root Password

On the Timezone screen, make a selection corresponding to your geographical location.

On the next screen, enter a password for the root account on the system. The root, or super-user account is a special user that has administrative privileges on the system. Whilst you will generally use your own account to log into the system, you will need to gain root privileges in order to configure the system and to perform other administrative tasks.

2.7 Package Selection

Linux is a modular operating system in that it provides a basic operating system kernel and infrastructure upon which a range of different packages may be installed depending on your

specific requirements for the system. If, for example, you plan on using the system as a web server you would need to install the Apache web server package.

At this point in the installation the installer needs us to decide which packages should be installed along with the base operating system and displays the screen shown in the following figure:



This screen allows you to make general choices about the type of functions you need the system to perform. For example, if you want a graphical desktop environment in which to interact with the system keep the *Desktop - Gnome* option selected. Unless you know that you prefer the KDE desktop, the Gnome Desktop is recommended, and is the desktop we assume you are using throughout the remainder of this book. If the system will be acting as a web, ftp or file server, also select the *Server* option and so on. Based on these selections the installer will compile a list of the packages it believes you will need. We also recommend that you select the CentOS repository option. This will give us access to some CentOS specific packages that may come in useful later.

To view or modify the specific package selections, make sure that the *Customize Now* option is selected before proceeding. You will then be provided a complete overview of which packages are selected for installation and which are not together with the ability to make changes to these selections. Don't worry too much about getting this exactly right at this stage. Packages

can be added and removed at any time after the installation is complete by selecting the desktop *Applications -> Add/Remove Software* menu option.

2.8 The Physical Installation

Having made the appropriate package selections, clicking Next will display a screen indicating that the installation will begin and that a log file and kickstart file can be found on the system after installation is complete. The log file will be useful to identify any errors that occurred during the installation, and the kickstart file can be used to install CentOS on other systems using the exact same configuration created here.

During the installation process, the installer will format and partition the disk drive, provide a running commentary of the selected packages as they are installed and a progress bar. If you are installing from the 6 CDRoms as opposed to the single DVD you will need to insert the additional CDs when prompted to do so. If you are using the DVD the installation will complete without further interaction. Once the installation process is complete a screen will appear containing a button to reboot the system. Remove the installation media and click the button.

2.9 Final Configuration Steps

After the system has started for the first time, the CentOS Setup Agent will appear with a welcome message. Click on the *Forward* button to display the Firewall settings. By default all ports are closed on the firewall with the exception of the ssh port which allows you to remotely log into the system. The topic of firewall configuration will be covered in more detail in the chapter entitled [Basic CentOS Firewall Configuration](#) so for now leave the default settings unchanged. Leave SELinux configured as *Enforcing* to ensure the most secure environment. Next, create a user account for yourself and verify the date and time. If you would like the date and time of your CentOS system to be synchronized with an external Network Time Protocol server, select the *Synchronize date and time over network* option before proceeding to the *Sound Card* screen. Having worked through all the set up pages, click *Finish* to exit the setup agent and log in using your newly created account credentials.