Chapter 1

And in the Opposite Corner . . . a Penguin?

*W*e see a penguin in your future. He's an unassuming fellow who's taking on a rather big competitor — that other operating system — in the battle for the hearts, minds, and desktops of computer users. Red Hat Linux, with its splashy brand name and recognizable logo, is undeniably one of the driving forces behind the Linux revolution — and is by far the most popular Linux brand.

This chapter introduces you to the latest and greatest Red Hat release, Red Hat Linux 10. This book covers all the bases — a good number of them, at least — about how to use Red Hat Linux as a desktop productivity tool, Internet portal, multimedia workstation, and basic network server. You can do lots of things with Red Hat Linux, and this chapter gives you an overview of the possibilities in addition to a brief look at the history of Linux.

History of the World — Er, Linux — Part II

In the beginning of computerdom (said in a booming, thunderous voice), the world was filled with hulking mainframes. These slothful beasts lumbered through large corporations; required a special species of ultranerds to keep

them happy; and ate up huge chunks of space, power, and money. Then came the IBM PC and Microsoft, and the world changed. Power to the people — sort of.

In 1991, a student at the University of Helsinki named Linus Torvalds became dissatisfied with the standard PC operating system. Torvalds thought that the Unix operating system might be better suited than MS-DOS or Windows to help him accomplish his work. Unix was invented in the 1970s and, although powerful, was expensive, so he began writing his own version of Unix. Now, writing your own operating system is a simple task — *not!* After formulating the basic parts, Torvalds recruited a team of talented programmers through the Internet, and together they created a new operating system, or *kernel,* now named Linux.

One of the most important decisions Torvalds made in the early days of Linux was to freely distribute the Linux kernel code for anyone to do with as they wanted. These free Linux distributions were and still are available in several forms, mainly online.

The only restriction Linus imposed on the free distribution of his creation was that no version of the software can be made proprietary. (*Proprietary* software is owned and developed by private companies in places that often rival Area 51 in security. *Open source* code is for "the people" — anyone can use and develop it without fear of violating copyrights.) You can modify the heck out of it and also distribute it for fun or profit. What you can't do is stop anyone else from using, modifying, and distributing the software you have modified.

Think of open source software as a chain. You can use the existing chain and add another link to the chain. However, you can't stop anyone from using the chain or adding to it.

The lack of proprietary restrictions on Linux has led to drastic improvements in its technology. Open source software, and Linux in particular, is transparent to all users and developers. That transparency allows people throughout the world to rapidly improve Linux and its associated subsystems. In contrast, proprietary operating systems are like a black box where no one except a small group of insiders knows what goes on inside. Only that select group can make modifications, and that limits innovation and improvements.

Go back to our history lesson. In early spring 1994, the first real version of Linux (Version 1.0) was made available for public use. Even then it was an impressive operating system that ran smartly on computers with less than 2MB of RAM and a simple 386 microprocessor. Linux 1.0 also included free features for which other operating systems charged hundreds of dollars. Nowadays, tens of millions of users enjoy Linux at home and work.

TECHNICAL STUFF
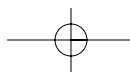
By the way, if you're wondering about the whole penguin thing, the answer is disappointingly simple. Linus loves penguins. The Linux world naturally started using it as its symbol. The friendly and familiar penguin — whose name is Tux, by the way — now symbolizes All Things Linux.

Knowing What You Can Do with Red Hat Linux

Linux is freely available software. The source code for Linux, which is the heart and soul of the operating system, is also publicly available. The Free Software Foundation (FSF) contributes much of the utilitarian software that makes using Linux much easier — FSF is the brainchild of the great Richard Stallman.

Red Hat Linux combines all those pieces plus some additional applications and then goes another step and adds a few of its own to create an *integrated product.* Red Hat, Inc., combines the basic Linux operating system with software (some made by other companies and some made by Red Hat) to produce a package with a value that's greater than the sum of its parts. That combination is known as a *distribution,* or *flavor,* of Linux.

So that you can get up and running as quickly as possible, we have bundled the Red Hat Linux 10 distribution on the DVD in the back of this book. The Publisher's Edition contains all the major parts of the full Red Hat distribution except the source code and some MS-DOS utilities (for example, the Windows File Allocation Table, or FAT, repartitioning program First nondestructive Interactive Partitions Splitting [FIPS] isn't included).

TIP

If your computer can't use DVD-ROMs, you can get the full Red Hat Linux distribution on CD-ROMs by sending in the coupon in the back of this book.

Red Hat Linux was initially used almost solely to provide network services. However, Red Hat started working hard to make Linux suitable for your everyday use. The result is that Red Hat Linux is now used in both server and desktop environments. It's used by individuals, businesses, and governments to cut costs, improve performance, and just plain get work done.

You can use Red Hat Linux as a desktop workstation, a network server, an Internet gateway, a firewall, the basis of an embedded system (such as a smart VCR or a robot), or even as a multiprocessor supercomputer. And, thanks to the many, many people who continually make refinements and innovations, Red Hat Linux continues to become more flexible and capable with each release.
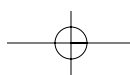
This list shows some cool Red Hat Linux features you can use:

✔ **Desktop productivity tools:** Red Hat has successfully worked overtime over the past few years to make Linux work on your desktop. Red Hat bundles software, such as the OpenOffice suite of productivity tools, so that you can get your everyday work done. The OpenOffice suite includes a full-function word processor plus spreadsheet, presentation, graphical drawing, and Web page creation tools. Its word processor can read and write all Windows Office formats plus many others, such as WordPerfect. When you install Red Hat Linux, OpenOffice is installed and icons are placed on the menu bar to make accessing it easy.

✔ **Multimedia stuff:** Red Hat Linux packs numerous multimedia tools for you to use. You can play, record, and rip audio tracks from CDs and DVDs. You can listen to streamed media sources, such as radio stations, over the Internet. Linux also lets you transfer photos and other items from your own cameras and MP3 players, for example.

✔ **Network services:** Red Hat Linux works as a network-based server too. Linux found its initial popularity performing jobs like Web serving and file and printer sharing and hasn't missed a beat. We show you how to create several network services.

Boosting your personal workstation

We cannot emphasize enough how well Red Hat Linux works as a personal workstation. With Red Hat Linux, you can easily create your own, inexpensive, flexible, and powerful personal workstation. Linux provides the platform for most of the applications you need to get your work done. Many applications come bundled with Red Hat Linux, from desktop productivity suites, to web browsers and multimedia systems, for example.

The following list describes just a few major categories of free software available for Linux, along with some examples of popular programs:

✔ **Office suites:** OpenOffice provides a complete desktop productivity suite that includes an advanced word processor, a spreadsheet, and a presentation editor, for example. The OpenOffice word processor can read and write Microsoft Word files, HTML editors, spreadsheet editors, and graphics editors.

OpenOffice provides its own file format but also reads and writes Microsoft Office 97, Office 2000, and Office XP files. It also can use other formats, such as Rich Text Format. Check out the site, at `www.openoffice.org`.

✓ **Multimedia players:** Red Hat packages and installs the open source XMMS player. You can use XMMS to play downloaded Ogg/Vorbis files or continuous Ogg/Vorbis streams. You can download the excellent open source MPlayer audio and video player. MPlayer lets you watch DVDs and listen to MediaPlayer streams. You can, alternatively, download a free version of the proprietary RealPlayer, from RealNetworks, to listen to RealAudio streams. The Internet is going nuts with multimedia, and these multimedia players let you get in on the action.

✓ **Running Microsoft Windows applications and environments:** You can use Linux to run Windows programs. The WINE (Wine Is Not an Emulator) system facilitates running Windows programs directly under Linux. The commercial VMware workstation product creates a virtual computer within your Linux PC. The virtual machine looks, acts, smells, and performs just like a real computer, but is really just a program running under the Linux operating system. You can install Linux or Windows or both on the virtual machine. Both WINE and VMware create a bridge between Linux and Windows to give you the best of both worlds.

✓ **Web browsers and e-mail clients:** The open source browser, Mozilla, is included with Red Hat Linux 10. The nongraphical, text-based `lynx` and `links` browsers are included too and come in handy if you're using an older, slower modem because they don't require as much speed as Mozilla does. You can use Mozilla or the new Ximian Evolution personal organizer, calendar, and e-mail client.

TECHNICAL STUFF

Linux is for nerds too

The Linux operating system has been *ported* (or converted) from the 32-bit Intel architecture to a number of other architectures, including Alpha, MIPS, PowerPC, and SPARC. This conversion gives users a choice of hardware manufacturers and keeps the Linux kernel flexible for new processors. Linux handles *symmetric multiprocessing* (it can take on more than one CPU or mathematical and logical programming unit per system box). In addition, projects are in the works to provide sophisticated processing capabilities, such as

Real-time programming: Controlling machinery or test equipment.

High availability: Running a server that needs to work all the time.

Parallel processing: Amplifying the problem-solving power of a computer by using multiple processors to work in parallel. Parallel processing systems come in various flavors, such as Symmetric Multi Processing (SMP), extreme Linux systems, and Beowulf clusters. Research organizations and even individuals can create machines with supercomputer capabilities at a fraction of the price of supercomputers. In certain cases, extreme Linux systems have been made from obsolete PCs, costing the organizations that make them nothing in material costs.

Using Linux network tools and services

Linux computers can provide many powerful and flexible network services. Your Red Hat Linux Publisher's Edition DVD comes packed with the tools to provide these services:

- ✔ **Apache web server:** Of all the web servers on the Internet, the majority are run by the open source Apache web server. You can start a simple web server by simply installing the bundled Apache software from this book's companion DVD-ROM.

- ✔ **OpenSSH:** The open source version of Secure Shell enables you to communicate securely across the Internet. Secure Shell is much safer than Telnet because Secure Shell encrypts your communication when you log in (even when you log in to other computers), making much slimmer the chance that others can discover your passwords and other sensitive information. OpenSSH also provides other authentication and security features and enables you to securely copy files from machine to machine. With OpenSSH, you can prevent people from listening to your communication.

- ✔ **Internet accessing utilities:** Red Hat Linux provides several configuration utilities that help you connect to the Internet. The utilities help you to configure DSL, cable modems, and plain old telephone modems to connect to the Internet. They also help you to connect to Local Area Networks (LAN) using Ethernet adapters.

- ✔ **Firewalls:** A *firewall* is a system that controls access to your private network from any outside network (in this case, the Internet) and to control access from your private network to the outside world. To keep the bad guys out, Red Hat Linux provides protection by giving you the tools to build your own firewall. Red Hat Linux is flexible in this regard, and many software packages are available, including the popular and simple-to-use `netfilter/iptables` filtering software, which is included on the companion DVD-ROM. Building a firewall is covered in Chapter 8.

This list is just a sample of the network-y things you can do with Red Hat Linux. We describe many of them in this book, but it takes much more exploration to find them all!