

Chapter 1

And in the Opposite Corner . . . a Penguin?

In This Chapter

- ▶ Napping through Linux History 101
 - ▶ Finding out what Red Hat Linux can do
 - ▶ Using Red Hat Linux network functions
 - ▶ Using Red Hat Linux as a workstation
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We 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 9. This book covers all the bases — a good number of bases, 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

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

In 1991, a student at the University of Helsinki named Linus Torvalds found himself dissatisfied with his operating system. Torvalds thought that the Unix operating system might be better suited 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 that's 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 under wraps by private companies. *Open source* code is for “the people” — anyone can develop it without breaking the law.) You can modify the heck out of it and distribute it for fun (and for profit, if you want). What you can't do is stop anyone else from using, modifying, and distributing even your modified version of the software — either freely or for profit.

The lack of proprietary restrictions on Linux has led to drastic improvements in the technology. We can't overstress how important it has been to the Linux operating system that its source code is freely available; the Linux operating system continues to improve rapidly — even organically — because it is continually being tweaked by lots of really smart people. (In contrast, proprietary operating systems, like Microsoft Windows, are tweaked every once in a while by a smaller group of smart people.)

By the early spring of 1994, the first real version of Linux (Version 1.0) was 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.



By the way, if you're wondering about the whole penguin thing, the answer is disappointingly simple. The reason the friendly penguin (whose name is Tux, by the way) symbolizes All Things Linux is that Linus Torvalds, the inventor of the Linux operating system, loves penguins. Some mystery, eh?

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 with Red Hat Linux 9 as quickly as possible, we've been sweet enough to include the Publisher's Edition operating system on the CDs that come with 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).

Initially used almost solely to provide network services, Red Hat Linux is now used by businesses, individuals, 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 thousands of people who continually refine different parts of Linux, Red Hat Linux continues to become more flexible and capable with each release.

This list shows some of the 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. The word processor can read and write all the 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.

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- ✓ **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 can't 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 address books and text editors to checkbook balancers and Web browsers.

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



- ✓ **Office suites:** Complete desktop productivity suites — such as OpenOffice, StarOffice, and Koffice — include advanced word processors that can read and write Microsoft Word files (as can the Open Source AbiWord word processor), HTML editors, spreadsheet editors, and graphics editors. For simple, no-frills word processing, you can use the well-known AbiWord word processor.

OpenOffice is Microsoft Office 97, Office 2000, and Office XP compatible. Check out the site at www.openoffice.org.
- ✓ **Streaming multimedia players:** Red Hat packages and installs the Open Source XMMS MP3 player. You can use XMMS to play downloaded MP3 files or continuous MP3 streams. You can also download a free version of the RealNetwork RealPlayer to listen to radio stations across the world and also watch video streams. The Internet is going multimedia, and streaming players let you get in on the action.
- ✓ **Freely distributable Open Source programs:** You can download these programs from the Internet and use them without paying to register the product. Literally dozens and dozens of software packages are available on the CDs that come with this book, including (but by no means limited to) the `pine` text-based e-mail reader, the zip data-compression program (which compresses files using the same format as WinZip), the Gimp graphics manipulation program, and many more.

- ✔ **Virtual machines:** The commercial VMware workstation 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. VMware helps bridge the world between Linux and Windows and gives you the best of both worlds.
- ✔ **Web browsers and e-mail clients:** The Open Source browser, Mozilla, is included with Red Hat Linux 9. Red Hat Linux also provides the Galleon Web browser. The nongraphical, text-based `lynx` 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 the Mozilla or the new Ximian Evolution personal organizer, calendar, and e-mail client.



Not all the software in the preceding list is included on the CDs with this book. RealPlayer, for example, is available for download only over the Internet. You can obtain StarOffice by downloading it from the Internet or ordering it on CD from www.sun.com.



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 testing equipment.

High availability: Running a reliable computer all the time.

Journalized file systems: Using journaled file systems that can “heal” much more quickly and reliably than nonjournaled ones.

Parallel processing: Amplifying the problem-solving power of 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.

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Using Linux network tools and services

Linux computers can provide many powerful and flexible network services. Your two Red Hat Linux Publisher Edition CDs come 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 the companion CD.
- ✔ **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.
- ✔ **VPN (Virtual Private Network):** VPNs encrypt connections across insecure networks, such as the Internet, to create in effect private networks. Red Hat Linux packages the tools necessary to securely connect two computer or private networks across the Internet.
- ✔ **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 accompanying CD-ROMs. Building a firewall is covered in Chapter 8.

This list is just a sample of the networky 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!