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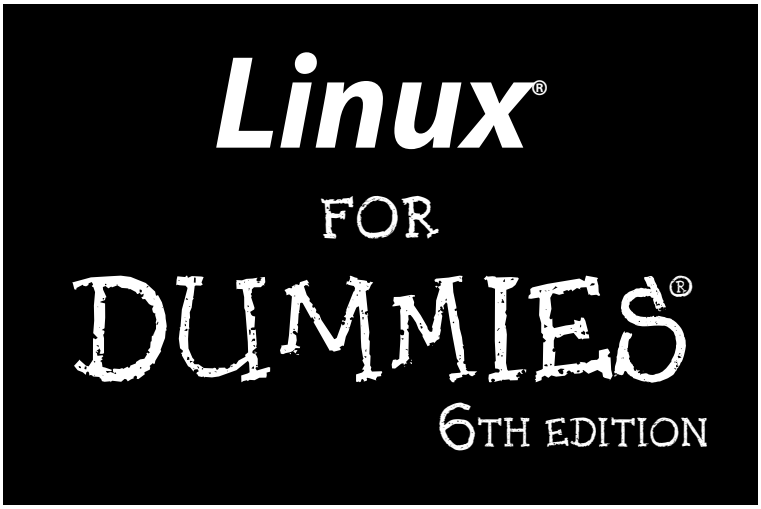

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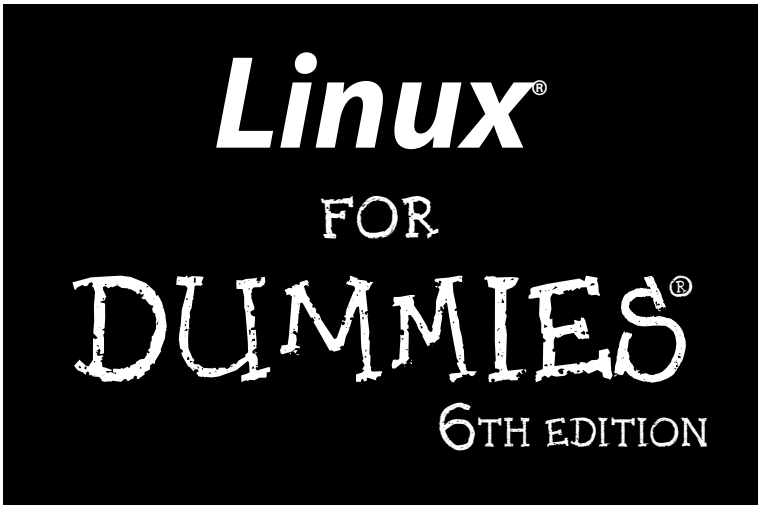

by Dee-Ann LeBlanc

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Dee-Ann LeBlanc, RHCE (Red Hat Certified Engineer), is a writer, course developer, instructor, and trainer who specializes in Linux. She is the gaming industry editor for *LinuxWorld* magazine, and the author of numerous books on Linux and other computer topics. Dee-Ann is also a regular contributor to *Computer Power User* magazine and the new *Tux* magazine dedicated to the Linux desktop, among other publications. When Dee-Ann isn't teaching in person or online classes, developing course materials, writing technical non-fiction or fantasy fiction, chatting about Linux online or at conferences, or trying in one way or another to save the world, she hikes with her dogs and experiments on her husband Rob with new recipes. See the latest that Dee-Ann's up to and join her readers' mailing list at `www.Dee-AnnLeBlanc.com`. (Contact Dee-Ann at `dee@renaissoft.com`.)

Dedication

I dedicate this book to my husband, who always has to listen to my stressed whining when I'm running behind, and my dogs, who really would like their mom to stop staring at the glowing box once in a while.

Author's Acknowledgments

I, as usual, have lots of people I'd like to thank. First off, thanks to the folks without whom the earlier editions of this book would have never existed. For one, there's John "maddog" Hall for giving me the opportunity to take over this book's evolution. He was too busy leading Compaq's UNIX Software Group, acting as Executive Director for Linux International, and sitting on the board of advisors for Sair Linux/GNU certification to continue handling this project. There's also the folks at LANWrights for all their hard work, along with Melanie Hoag and Evan Blomquist for their strong efforts. Finally, of course, to the editors and staff at Wiley Publishing, Inc. Without them and their guidance, this book would not exist or continue to improve over time.

Most of all, I'd like to thank the readers who contacted me with their questions, suggestions, and concerns. I apologize to anyone who got lost in the great deluges of e-mail and didn't get an answer, but please trust that, at the very least, when I dug your e-mail out from the pile three months later, I filed it away as one more thing to consider in the next edition. It's reader participation that keeps books like this improving over the years, and it's my goal to continue refining *Linux For Dummies* to keep it the best desktop Linux book available.

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We're proud of this book; please send us your comments through our online registration form located at www.dummies.com/register/.

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Introduction

Welcome to the fascinating world of open source software that is Linux. In this book, I introduce you to the wonders of the Linux operating system, originally created as a labor of love by Linus Torvalds in the early 1990s. My goal is to initiate you into the rapidly growing ranks of Linux users and enthusiasts busily rewriting the rules for the operating system marketplace.

If you've contemplated switching to Linux but find the prospect too forbidding, you can relax. If you can boil water or set your alarm clock, you, too, can become a Linux user. (No kidding!)

When this book appeared in its first edition, Linux was an emerging phenomenon that was neither terribly well known nor understood. In this edition — for a new generation of Linux users — so much material is available that I have steered this particular title toward what Linux is and how you can make the best use of it on your desktop. To that end, these pages contain various online resources, tips, and tricks, as well as more general instruction. If you're looking for material on servers, many other books can serve your needs.

I keep the amount of technobabble to a minimum and stick with plain English as much as possible. Besides plain talk about Linux installation, boot-up, configuration, and tuning, I include many examples, plus lots of detailed instructions to help you build and manage your very own Linux machine with a minimum of stress or confusion.

I also include with this book a handy DVD-ROM that contains Fedora Core 3 and Knoppix, along with the CD-ROM *images* (the files you use to burn your own CDs) for Linspire, Mandrake, SuSE, and Xandros. (To find out what exactly is included on the DVD-ROM, see Appendix B.) If you have no idea of what any of these items are, don't worry. You'll know soon enough!

About This Book

Think of this book as a friendly, approachable guide to tackling terminology and the Linux collection of tools, utilities, and widgets. Although Linux isn't terribly hard to figure out, it does pack a boatload of details, parameters, and administrivia (administrative trivia, in Unixspeak). You need to wrestle those

details into shape while you install, configure, manage, and troubleshoot a Linux-based computer. Some sample topics you find in this book include the following:

- Understanding where Linux comes from and what it can do for you
- Installing the Linux operating system
- Working with a Linux system to manage files and add software
- Setting up Internet access and surfing the Web
- Customizing your Linux system
- Managing Linux system security and resources

Although it may seem, at first glance, that working with Linux requires years of hands-on experience, tons of trial and error, advanced computer science training, and intense dedication, take heart! It's not true! If you can tell somebody how to find your office, you can certainly build a Linux system that does what you want. The purpose of this book isn't to turn you into a full-blown Linux geek (that's the ultimate state of Linux enlightenment, of course); it's to show you the ins and outs that you need to master in order to build a smoothly functioning Linux system and to give you the know-how and confidence to use it.

How to Use This Book

This book tells you how to install, configure, and customize a Linux desktop system. Although you can do most things in Linux these days by pointing and clicking, you still may want to try using Linux at the command prompt — where you type detailed instructions to load or configure software, access files, and do other tasks. In this book, input appears in monospace type like this:

```
rmdir /etc/bin/devone
```

When you type Linux commands or other related information, be sure to copy the information exactly as you see it in the book, including uppercase and lowercase letters, because that's part of the magic that makes Linux behave properly.

A failure to follow instructions exactly can have all kinds of unfortunate, unseemly, or unexpected side effects.

The margins of a book don't give you the same amount of room as your computer screen; therefore, in this book some URLs and lengthy commands at the command prompt may appear wrapped to the next line. Remember that your computer sees these wrapped lines as a *single set of instructions,* or as a

single URL — so if you're typing a hunk of text, keep it on a single line. Don't insert a hard return if you see one of these wrapped lines. I clue you in that it's supposed to be all one line by breaking the line at a slash mark or a natural word break (to imply "Wait — there's more!") and slightly indenting the overage, as in the following silly example:

```
www.infocadabra.transylvania.com/nexus/plexus/lexus/
          praxis/okay/this/is/a/make-
          believe/URL/but/some/real/ones/
          are/SERIOUSLY/long.html
```

Note that as you dig your way into and through this book — and other sources of Linux wit, wisdom, and inspiration that you're likely to encounter — you may find some terms used interchangeably. For example, you may see the same piece of software called a *program,* a *command,* a *utility,* a *script,* an *application,* or a *tool,* depending on the source, the context, and the author of the information you're consulting. To a large extent, you can treat these terms as interchangeable, and when an important distinction needs to be made among them, I'm sure to point it out. Similarly, when you're working with various commands or configuration controls, you may also encounter terms such as *flag, switch, option,* or *parameter* used more or less interchangeably. In this case, all these terms refer to ways in which you can control, refine, or modify basic commands or programs to make them do what you want. Again, wherever distinctions and clarifications may be needed, I provide them.

Three Presumptuous Assumptions

They say that making assumptions makes a fool of the person who makes them and of the person about whom those assumptions are made. (And just who are *they,* anyway? I *assume* that I know, but — never mind.) Even so, practicality demands that I make a few assumptions about you, gentle reader:

- You can turn your computer on and off.
- You know how to use a mouse and a keyboard.
- You want to install, configure, and use a desktop Linux system because you're curious or interested or it's your job to do so.

You don't need to be a master logician or a wizard in the arcane art of programming to use this book, nor do you need a Ph.D. in computer science. You don't even need a complete or perfect understanding of what's going on in your computer's innards.

If you can boot a PC or install an application on your machine, you can install, configure, and manage a basic Linux system. If you have an active

imagination and the ability to solve rudimentary problems, that's even better — you have already mastered the key ingredients necessary to making Linux work for you. The rest is mere details and a bit of patience. I can help you with the details, but the patience is up to you!

How This Book Is Organized

This book contains six major parts, arranged in an order to take you from Linux installation and configuration through keeping a Linux desktop system up and running, if not purring like a cat in the sun! Most parts contain three or more chapters or appendixes, and each chapter or appendix contains modular sections. Whenever you need help or information, pick up this book and start anywhere you like, or use the Table of Contents and the index to locate specific topics or key words.

Following is a breakdown of the book's six parts and what you find in each one.

Part I: Getting Your Feet Wet

This part sets the stage and includes an overview of and introduction to the terms, techniques, and software components that make Linux the raging software tiger that's so ready, willing, and able do its thing. To be a little more specific, I start out with a Linux overview that explains what Linux is, where it came from, and how it works. Next, I tackle the various tasks and activities involved in preparing for and installing Linux on a PC. If you're not a diehard Fedora Core fan, I also cover what's involved in installing Linspire, Mandrake, SuSE, and Xandros, but in a little less detail (or this book would be the size of a set of encyclopedias!) After that, I tell you how to give Linux the boot — not to get rid of it by any means, but rather, to fire up your brand-new system to reach the heights of computing ecstasy (at least, I hope it's as good for you as it usually is for me)! Finally, I help you explore standard Linux tools and interfaces, work with accounts, and get the skinny on various aspects of distribution-related Linux tools.

If you don't want to install but do want to try Linux, I also give you the option of using what's called a *LiveCD,* or *bootable* distribution. Knoppix is probably the most popular of these, so it's covered here as well.

Part II: Internet Now!

In this part, you explore the issues involved in connecting a Linux system to the Internet, including configuring a modem, managing a dial-up connection

to an Internet Service Provider (or ISP), and configuring the various Internet protocols involved to make your Internet connection work. You also go through the details involved in configuring and using a Web browser and setting up and using an e-mail client and newsreader.

Part III: Getting Up to Speed with Linux

Linux includes a great many facilities and capabilities, so after you get past the initial installation and configuration, you probably want to use your system to *do* something. Here's where the doing begins! In this part of the book, you can read about the Linux file system and how to work with files, directories, and related access rights — called *permissions* in Linuxspeak. You discover how to move in, out, and around GNOME and KDE, the two major graphical interfaces (GUIs) in Linux. In addition, I include an in-depth exploration of the Linux command-prompt environments, also known as *shells.* Part III also contains important security information, along with how to add software to your system and keep it updated.

Part IV: Getting Things Done

In this part of the book, you discover how to use a variety of software available in Linux. Everything from plain text editors to full office suites is addressed, as well as whiz-bang multimedia tools and Microsoft Windows-based file formats and media. Even better, did you know that you can run many Windows programs under Linux? I show you how in this part.

Part V: The Part of Tens

In this book's grand climax, I sum up and distill the essence of what you now know about Linux and its inner workings. Here, you have a chance to revisit some key troubleshooting tips and tricks for Linux systems and find out more about how you can use Knoppix, the specialty "bootable" distribution included with this book.

Part VI: Appendixes

This book ends with a set of appendixes designed to sum up and further expand on this book's contents. Appendix A delivers groups of Linux commands, complete with syntax and explanations, arranged according to their function. Appendix B lists details about what's on the *Linux For Dummies,* 6th Edition, DVD. As I note in this appendix, the materials on the DVD include the Fedora Core 3 distribution.

Icons Used in This Book

Within each chapter, I use icons to highlight particularly important or useful information. You find the following icons in this book:

The Tip icon flags useful information that makes living with your Linux system even less complicated than you feared that it might be.

I sometimes use this icon to point out information you just shouldn't pass by — don't overlook these gentle reminders. (The life, sanity, or page you save may be your own.)

Be cautious when you see this icon — it warns you of things you shouldn't do. This icon is meant to emphasize that the consequences of ignoring these bits of wisdom can be severe.

This icon signals technical details that are informative and interesting but not critical to understanding and using Linux. Skip these paragraphs if you want (but please come back and read them later).

Where to Go from Here

This is where you pick a direction and hit the road! *Linux For Dummies,* 6th Edition, is much like *1001 Nights* because it almost doesn't matter where you start out. You look at lots of different scenes and stories as you prepare yourself to build your own Linux system. Although each story has its own distinctive characters and plot, the whole is surely something to marvel at. Don't worry — you can handle it. Who cares whether anybody else thinks that you're just goofing around? I know that you're getting ready to have the time of your life.

Enjoy!

Part I

Getting Your Feet Wet

"Can't I just give you riches or something?"

In this part . . .

This part includes an introduction to the development and capabilities of the Linux operating system. I also cover the terms and tools that make Linux what it is, along with detailed step-by-step instructions about what it takes to prepare your computer for Linux and to install Linux on your very own PC. For those interested in Linux distributions other than Fedora Core 3, which is included with this book, I also cover what's involved in installing four other popular distributions — namely, Linspire, Mandrake, SuSE, and Xandros. I even explain how to configure this marvelous operating system to do what you want it to do and how to boot your brand-spanking-new system into a computing colossus — not to mention how to shut it off properly so that you don't lose any data. After that, you find out what's involved in working with standard Linux tools, the point-and-click GUI, accounts, and printers, as well as get a quick tour of your distribution-related Linux tools.

Chapter 1

Getting Acquainted with Linux

In This Chapter

- Describing Linux
- Telling Linux apart from the rest of the operating system pack
- Depending on GNU and the GPL
- Marveling at the Linux Company (or lack thereof)
- Checking out popular Linux distributions

Ford, you're turning into a penguin. Stop it!

— Arthur Dent

Welcome to the world of Linux, the operating system developed by over a thousand people around the world! In this chapter, you find out about Linux itself — what it is, where it comes from, and why it gets so much attention in the news these days. Prepare to have your assumptions about how software must be developed and sold challenged, and your mind opened to new possibilities.

Is Free Really Free?

Understanding Linux requires a radical shift of thought regarding the way that you acquire and use computer software. (***Note:*** By *radical,* I mean getting to the root of the matter rather than putting on beads and camping out in the administration building.) Your first step toward shifting your mind-set is to alter your general connotation of the word *free* to represent *freedom,* rather than *free lunch.* That's right; you can sell "free" software for a fee . . . and you're encouraged to do so, as long as you relay the same freedom to each recipient of the software.

Don't scratch your head too hard; these concepts are tough to grasp initially, especially when you consider the conditioning you've received from the marketing departments of the commercial software industry. Perhaps you don't know that when you purchase most proprietary, shrink-wrapped software, you don't actually *own* the software; rather, you're granted permission to use the software within the bounds dictated by the licensor.

Linux also has a license, but the motives and purpose of the license are much different from those of most commercial software. Rather than use the license to protect ownership of the software, the GNU General Public License (GPL) that Linux is licensed under ensures that the software will always be open to anyone. No company can ever own or dictate the way in which you use or modify Linux — though they can have their own individual copyrights and trademarks on their various brands of it, like Red Hat. In essence, you already own Linux, and you can use it for anything you like, as long as you propagate the GPL freedoms to any further recipients of the software.

Linux: Revolution or Just Another Operating System?

> *Contrary to popular belief, penguins are not the salvation of modern technology. Neither do they throw parties for the urban proletariat.*
>
> — Anonymous

> ***Author note:*** *Cute quote . . . obviously Anonymous has never been to a Linux convention!*

Before going any further into Linux, I need to get some terminology out of the way.

Tux is the formal name of the mascot penguin that represents Linux. Rumor has it that Linux's creator, Linus Torvalds, is rather fond of these well-dressed inhabitants of the Antarctic.

An *operating system* is the software that runs your computer, handling all of the interactions between you and the hardware. Whether you're writing a letter, calculating a budget, or managing your recipes on your computer, the operating system provides the essential air that your computer breathes. Furthermore, an operating system isn't just one program; it consists of hundreds of smaller programs and utilities that allow us humans to use a computer to do something useful. You then run other programs on top of the operating system, like a word processor, to get everything done.

In recent technological history, Linux has evolved from water cooler techie chatter to a rock-solid solution for the business enterprise. The same software that was once dismissed as rogue is now being adopted and promoted by industry leaders such as IBM, Hewlett-Packard, Motorola, and Intel. Each of these computer manufacturers has, in some way, determined that Linux provides value for their customers (as well as for their own operations). Of these companies, the only one that has publicly denounced Linux is Microsoft. Note that one doesn't have to look very far to conclude that Microsoft is merely running scared from the threat that Linux poses to its personal computer operating system monopoly.

Linux has been accused of being "just another operating system." On the surface, it may appear so, but if you look deeper, you can see that this isn't so. The Linux project is a flagship leading the current trend toward open source and free (as in freedom, not free beer) software within the computing industry. A rock-solid operating system because of the model under which it was (and continues to be) developed, Linux represents much that is good and pure in software development.

Two fundamental distinctions separate Linux from the rest of the operating system pack:

- Linux is licensed under the unique and ingenuous *GNU General Public License,* which you can read about in the next section.
- Linux is developed and maintained by a worldwide team of volunteer programmers, working together over the Internet.

Linux is great for many reasons, including the fact that the folks who built it from the ground up wanted it to be:

- **Multiuser:** More than one user can be logged in to a single computer at one time.
- **Multiprocess:** True *pre-emptive multitasking* enables the operating system core to efficiently juggle several programs running at once. This is important for providing multiple services on one computer.
- **Multiplatform:** Linux currently runs on 24 *platforms* (hardware types), including Intel-based PCs, Digital/Compaq Alpha, PowerPC-based Apple Macintosh, Sun SPARC, Amiga, and StrongARM-based computers.
- **Interoperable:** Linux plays nice with most network protocols (languages) and operating systems, allowing you to interact with users and computers running Microsoft Windows, Unix, Novell, both Mac OS 9 and the generation beginning with OS X, and other, more niche groups.
- **Scalable:** As your computing needs grow, you can rely on Linux to grow with you. The same Linux operating system can run on a desktop computer or a very large, industrial strength server system.

- **Portable:** Linux is mostly written in the C programming language. *C* is a language created specifically for writing operating system-level software and can be readily *ported* (translated) to run on new computer hardware.
- **Flexible:** You can configure the Linux operating system as a network host, router, graphical workstation, office productivity PC, home entertainment computer, file server, Web server, cluster, or just about any other computing appliance that you can think of.
- **Stable:** The Linux *kernel* (the operating system itself) has achieved a level of maturity that makes most software developers envious. It's not uncommon to hear reports of Linux servers running for years without crashing.
- **Efficient:** The modular design of Linux enables you to include only those components that you need to run your desired services. Even older Pentium computers can utilize Linux and become useful again.
- ***Free!:*** To most people, the most intriguing aspect of Linux is the fact that it's often free. How (the capitalists murmur) can anyone build a better mousetrap with no incentive of direct monetary return?

So, where did Linux come from?

To understand Linux, you need to take a peek at its rich heritage. Although programming of the Linux core started in 1991, the design concepts were based on the time-tested Unix operating system.

Unix was developed at Bell Telephone Laboratories in the late 1960s. The original architects of Unix created it back when there were few operating systems, with the desire to have one that shared data, programs, and resources both efficiently and securely — something that wasn't available at this time. From there, Unix evolved into many different versions, and its current family tree is so complicated it looks like a kudzu infestation!

In 1991, Linus Torvalds was a computer science student at the University of Helsinki in Finland. He wanted an operating system that was like the Unix system that he'd grown fond of at the university, but both Unix and the hardware it ran on were prohibitively expensive. A Unix version called Minix was available for free, but it didn't quite meet his needs. So, as a computer science student, Torvalds studied Minix and then set out to write a new version himself. In his own words (recorded for posterity on the Internet since this was in an early version of an online chat room), this was, "just a hobby, won't be big and professional like gnu."

Writing an operating system is no small task. Even after six months of hard work, Torvalds had made very little progress toward the general utility of the system. He posted what he had to the Internet and found that many people shared his interest and curiosity. Before long, some of the brightest minds around the world were contributing to Linus's project by adding enhancements or fixing *bugs* (errors in the code).

In this chapter, I intend to answer that last question for you. I also hope to paint a picture of the open source software development model that created Linux.

Anatomy of an Open Source Software Project

Linux isn't a product. Linux is an organic part of a software ecosystem.

— Michael Robinson, Netrinsics

To the casual observer (and some corporate IT decision-makers), Linux appears to be a freak mutation — a rogue creature randomly generated by anarchy. How, after all, can something so complex and discipline-dependent as a computer operating system be developed by a loosely knit band of volunteer computer geeks from around the world?

Just as science is constantly attempting to classify and explain everything in existence, technology commentators are still trying to understand how this open source model can create superior software. Often, the reasons have much to do with the usual human desire to fill a need with a solution. When a programmer in the Linux world wants a tool, the programmer simply writes one or bands together with other people who want a similar package to write it together.

GNU who?

Imagine — software created out of need rather than projected profit. Even though Unix ultimately became expensive proprietary software, the ideas and motives for its creation were originally based on need. What people usually refer to in the singular as the *Linux operating system* is actually a collection of software tools that were created with the express purpose of solving specific computing problems.

Linux also wouldn't be possible without the vision of a man whom Steven Levy (author of the book *Hackers*) refers to as The Last of the Great MIT AI-LAB Hackers — the original meaning of the word hacker, which meant someone who plays with code, not the current meaning implying criminal intent. This pioneer and advocate of *freedom* software is Richard Stallman.

tool open and go to the section "Making space," later in this chapter). On the other hand, if there's less than 3GB available, you don't have enough room, so also go to "Making space." If you have 3GB or more available, skip to the section "Preparing to Use Windows and Linux together."

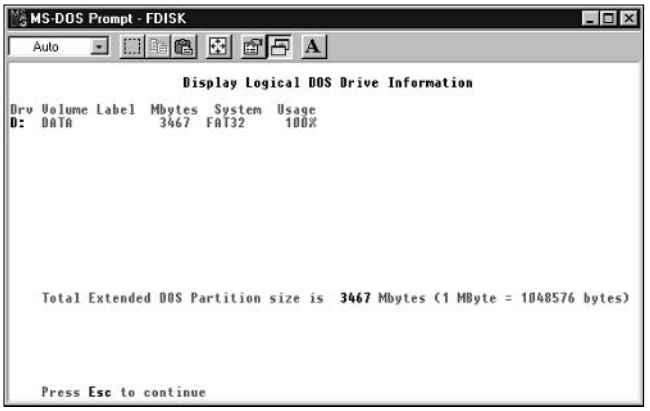


Figure 2-5: Logical drive information in FDISK.

Making space

You may have unallocated space, but less than 3GB worth, or you may have none at all. Either way, you need to rearrange the data on your hard drive(s) in order to make room for Linux, unless you decide to add a second hard drive to the machine. If you're installing SuSE or Mandrake, these distributions can handle the resizing for you, so users of these Linux versions are welcome to skip ahead to the section "Running Windows and Linux together." Everyone else is encouraged to keep reading.

Keep in mind that you may actually want more than 3GB of space. For example, if you download lots of multimedia, you'll eat up that space fast!

If it turns out that you have free/unallocated space on more than one spot on your hard drive (maybe between various partitions), count this space up and see how much the total is. You can move things around if you have to by resizing the partitions.

If you don't have any free/unallocated space, you'll definitely have to resize your partitions. The key to doing this is to take a look to see how much of your drive space you're really using. In Windows XP and 2000, you can determine how much of your Windows partitions are actually empty by looking at the Capacity, Free Space, and % columns in the Computer Management tool. In Windows 98 and 95:

1. **Double-click My Computer to open the Computer Management tool.**
2. **Choose View➪Web Page.**
3. **Highlight your first drive.**

   You see something like what is shown in Figure 2-6.

Determining how much space is enough for your Windows setup — you don't want to shrink it so much that you run out of space in Windows! — also involves looking at how you use your machine. Again, if you download a lot of multimedia stuff and you tend to save it, you need to keep enough room around for your downloading habit.

If you find that your Windows drives are all too full, or you download and save too much multimedia, it may be time to burn some of your files off onto CDs so that you can delete them from your hard drive.

Once you have decided which partition you want to resize, make a note of which hard drive it's on and which partition it is (first, third, second, and so on). You need this information when it comes time to tell the installer where to put Linux.

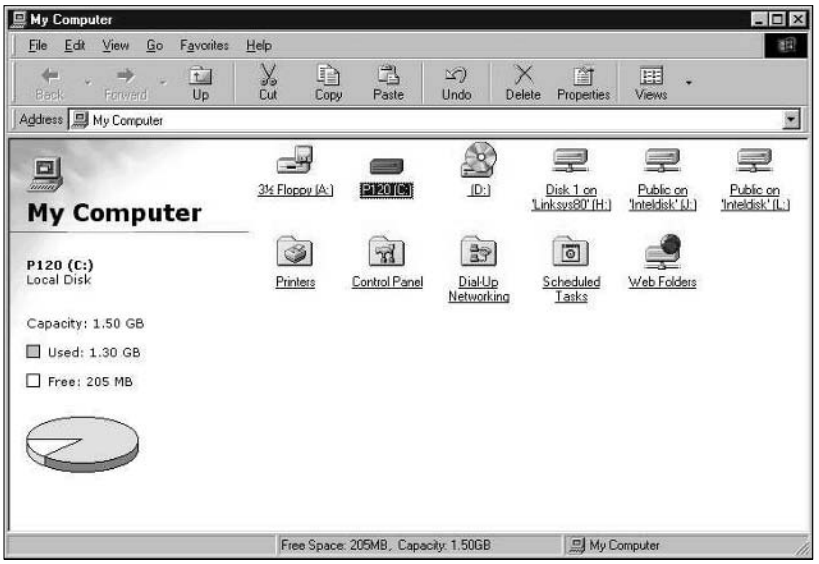


Figure 2-6: How much disk space is available on this Windows 98 user's C: drive.

Commercial tools, such as Partition Magic, provide an easy way to resize and work with the partitions on your hard drives. You can find information about Partition Magic from the company's Web site at `www.powerquest.com`. In the next section, "Working with Disk Partitions," you also find out how to get and use a free alternative, `qtparted`.

Working with Disk Partitions

In the section "Preparing to Use Linux and Microsoft Windows Together" at the beginning of this chapter, I discuss why you might need to set aside disk space for Linux on a computer already running Windows. The techniques I cover here assume that you have found free space that you can give to Linux, after you resize your partitions. If you're installing on a fresh, additional hard drive, are wiping out a whole hard drive to give it over to Linux, or have a chunk of Unallocated/Free space bigger than 3GB already that you want to use and so don't need to resize anything, skip ahead to the section "Preparing to Use Windows and Linux Together," later in this chapter.

A cheap, additional hard drive can be worth its weight in gold if you're afraid to change anything on your Windows drive.

Choosing a partitioning tool

Perhaps the easiest and safest way to adjust your existing partitions is through the use of a commercial program such as Partition Magic. Partition Magic enables you to view the partition information for your hard drive or drives. The utility also includes the ability to resize, move, and add partitions. However, you don't have to go out and buy software just to resize your partitions. Instead, you can download a free tool to do the job for you.

Before going any further, make a backup of anything you don't want to lose off your Windows installation! Things can go wrong during the various steps of this process, even when using Windows tools on Windows.

If you create an open partition using Partition Magic, after resizing your Windows partition, make a note of which drive and partition it is (first, second, and so on). You'll need it when you're telling the installer where to put Linux.

Getting and resizing partitions with qtparted

A free resizing program you can use is called `qtparted`. This utility is capable of working with both VFAT and NTFS partitions, so it can handle both of the filesystems you may have used when you set up your machine in Windows. This program comes with Knoppix, which is a *Live CD* — another term is *bootable distribution* — which means that you can put this CD into your CD-ROM drive, boot your computer with it, and it brings you into a full version of Linux that you don't have to install. Knoppix is handy for showing

people Linux, but more importantly for my purposes, it's useful for rescuing machines that can't boot and resizing partitions.

Knoppix comes on the DVD included with this book, which is pretty handy. If you can't use the DVD for whatever reason, see Chapter 4 for how to get Knoppix on CD. Before proceeding, double-check that you backed up all your important data before you proceed. Then, pull out any notes you may have made in the section "Preparing to Use Linux and Microsoft Windows Together" earlier in this chapter — about which partition(s) you want to change — and then do the following:

1. **Put your Knoppix CD or the DVD that came with this book into the CD- or DVD-ROM drive and reboot your computer.**

   If you're using the book's DVD, a boot menu appears — if you have trouble booting into Knoppix from the DVD, see Appendix B. Just press Enter to boot into Knoppix, and eventually the Knoppix welcome screen appears. If you're using a plain Knoppix CD, your computer boots directly to the Knoppix welcome screen.

2. **At the `boot:` prompt, press Enter.**

   Lots of text scrolls by as Knoppix figures out all the hardware on your system. It takes perhaps a minute for Knoppix to fully launch on many machines, because it's got to run entirely from CD-ROM. Once it's up and running, you see the Knoppix desktop (see Figure 2-7).

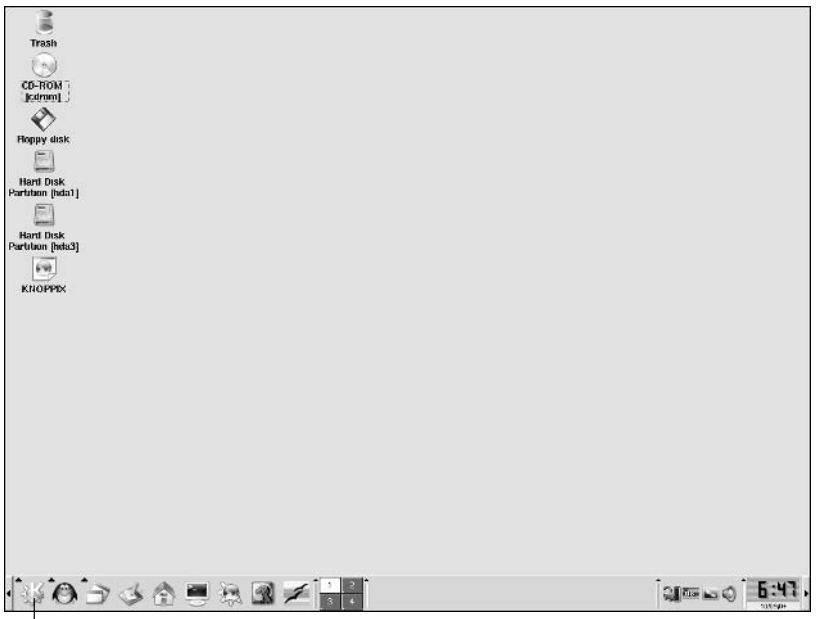


Figure 2-7: The initial KNOPPIX desktop with the help browser closed.

If anything goes wrong during the KNOPPIX startup process, press Ctrl-Alt-Del to reboot and try adding more of the possible boot options shown with F2 and F3.

3. **From the main menu, choose System➪QTParted.**

   The QTParted tool opens (see Figure 2-8).

4. **On the left, select the drive you want to work with.**

   If necessary, refer to your notes (see the section "Preparing to Use Linux and Microsoft Windows Together," earlier in this chapter) to see whether it's the first, second, third, or so on of your hard drives. If you have both IDE and SCSI hard drives, you can tell the difference by the "hd" starting IDE names and the "sd" starting SCSI names. The order they're installed on the machine is indicated alphabetically. For example, hda is the first IDE hard drive, hdb is the second, and so on. (It's the same for SCSI, sda and sdb.)

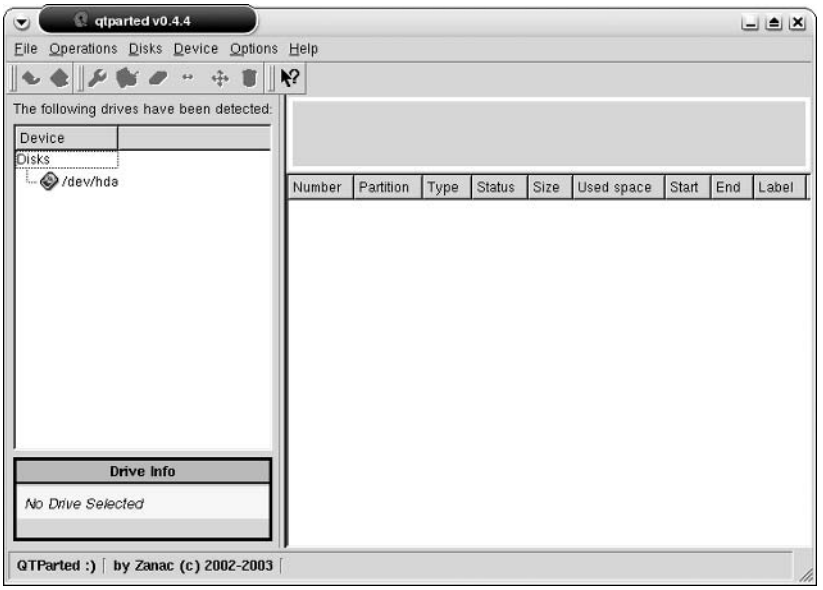


Figure 2-8: The initial QTParted partition editor screen.

Once you have made your selection, the drive's partitions and other information appear in the bottom and right portions of the window (see Figure 2-9).

5. **On the right, select the partition you want to resize.**

   Again, refer to your notes from the section "Preparing to Use Linux and Microsoft Windows Together," earlier in this chapter, to see which partition you wanted to change.

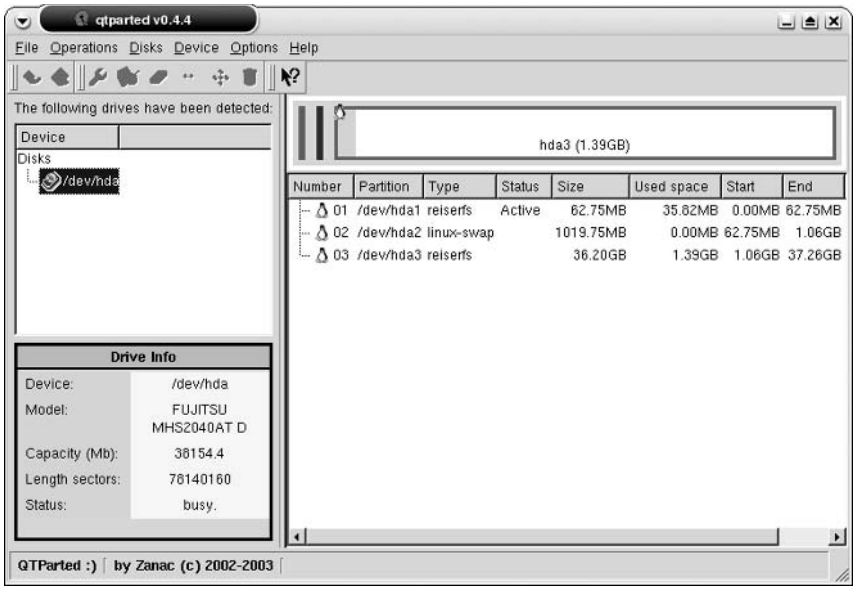


Figure 2-9: QTParted with the first IDE hard drive selected.

6. **Choose Operations➪Resize to open the Resize Partition dialog (see Figure 2-10).**

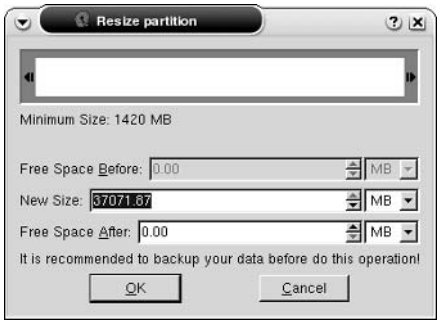


Figure 2-10: QTParted's Resize partition dialog box.

7. **Make your sizing changes.**

   Note that you have multiple options here. You can alter the Free Space Before, the size (New Size), and the Free Space After. If you have smaller pieces of blank space scattered through your drive between partitions, you can start by changing the Free Space Before entries to zero, thus squeezing things together more efficiently by moving all your free space to the end of the drive. This concept is perhaps better illustrated with an image, so see Figure 2-11.

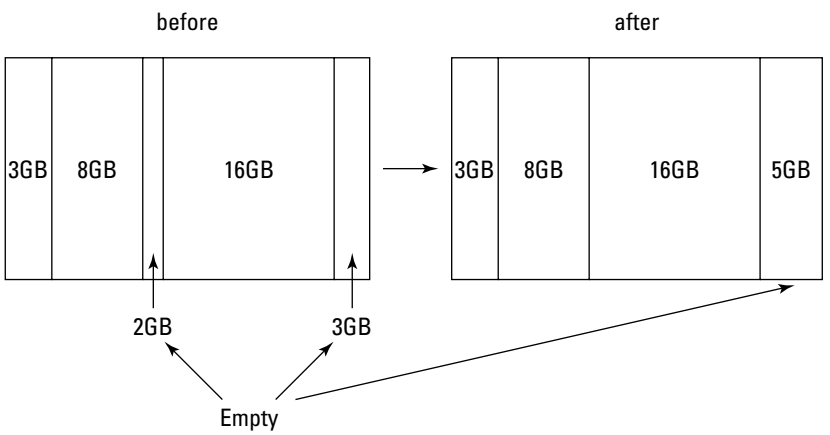


Figure 2-11: Squeezing inefficient partition layouts, taking 2GB and 3GB free space partitions, and combining them to make them 5GB.

8. **Click OK to save the changes for that partition.**

   Your hard drive isn't permanently changed just yet.

9. **Return to Step 5 if you have more partitions you want to change. Otherwise, proceed to Step 11.**

10. **Choose File⇨Commit to put the changes into effect.**

    Now is when your hard drive is actually changed!

11. **Double-check that you have given yourself at least 3GB, if not more, of free space to install Linux in.**

    If not, resize things further.

12. **Choose File⇨Quit to close QTparted.**

    You're now finished with your repartitioning.

13. **From the Knoppix main menu, choose Logout.**

14. **From the End Session for Knoppix dialog box, choose Restart Computer.**

15. **Click OK to reboot the machine.**

    The computer may speak as it shuts down. When the shutdown process completes, you're told to remove the CD, close the CD-ROM drive, and press Return/Enter. Follow the instructions and just let the machine boot back into Windows so that you can make sure nothing went wrong. If it did, use your Windows system recovery media (such as your XP CD) to try to repair the damage. Fortunately, such damage is very rare!

After you've finished your repartitioning, proceed to the next section so you can get ready to do the actual installation.

Gathering Information about Your Machine

Most hardware these days works just fine with Linux. Sometimes, if you have the very latest whiz-bang video card or some other fancy new type of electronics, you may run into some trouble, so if you're an early-adopter sort of person, you'll want to go to your distribution's hardware compatibility list and make sure you're covered. If you like to be organized and check out hardware ahead of time anyway, or if you run into problems and want to do some research to see what's wrong, you can go to three basic places get information:

- The most specific is the list for your particular distribution:
  - **Fedora:** There's no official Fedora hardware list as yet, though the Fedora Hardware Project (`http://people.ucsc.edu/~maxka/fhp/`) is working to correct this issue. In the meantime, you can use the Red Hat listings at `http://hardware.redhat.com/hcl/`. Keep in mind that this list focuses on business equipment rather than home stuff and doesn't entirely apply to Fedora users.
  - **Linspire:** Check out `www.linspire.com/lindows_hwsw_compatibility.php`.
  - **Mandrake:** Go to `www.mandrakelinux.com/en/hardware.php3`.
  - **SuSE:** The place to start is `www.suse.com/us/private/support/online_help/`. From here, click the Hardware Database link to search.
  - **Xandros:** Check out `http://support.xandros.com/hcl-search.php`.

  For all these hardware lists, don't worry about items being *Certified* or not. *Supported* will do just fine most of the time.

If you're new to computers or aren't that familiar with hardware definitions and details, you can find a lot of information on the Internet. (One good Web site is `www.tomshardware.com`.)

- If your hardware isn't listed, don't panic. You can also check the generic Linux hardware list at `www.tldp.org/HOWTO/Hardware-HOWTO/`.
- If you still can't find the hardware listed, point your Web browser to `www.google.com/linux` and do a Web search on the make and model of the hardware, plus the word Linux. For example, you can search on `Innovision DX700T Linux` to find out how other people are faring with this particular brand and model of hardware (no endorsement of any hardware mentioned as examples is implied here, of course).

If worse comes to worse, you might not find support listed for a piece of hardware. Try it anyway; it might work fine with a few minor caveats. For example, you might not be able to use the very latest features of your latest-generation video card, but you'll be able to use it as a generic SVGA at the very least. Also, sometimes older hardware is left off the lists but is still supported.

When possible, keep your computer manuals (especially the ones for your video card and monitor) handy, just in case you need them in order to answer a question asked by the installer — most people won't have to deal with this at all, but some will. If the installer can't detect your video card in particular, then you'll need to know exactly what it is, and what its specifications are — or just choose the Generic option. (I get to how to do this when you install Linux.) If you're determined to know what exactly is in your machine or need to find out because you have to do some extra research, you have the following options:

- **Use an existing operating system to document your hardware.** If your computer is already running Windows, you can collect a lot of information from the Windows environment. Use one of the following methods, depending on your system:
  - In Windows 98, choose Start➪Settings➪Control Panel➪System➪Device Manager to access the dialog box shown in Figure 2-12.
  - In Windows 2000, choose Start➪Control Panel➪System➪Hardware➪Device Manager to access the list of hardware installed on your machine, as shown in Figure 2-13.

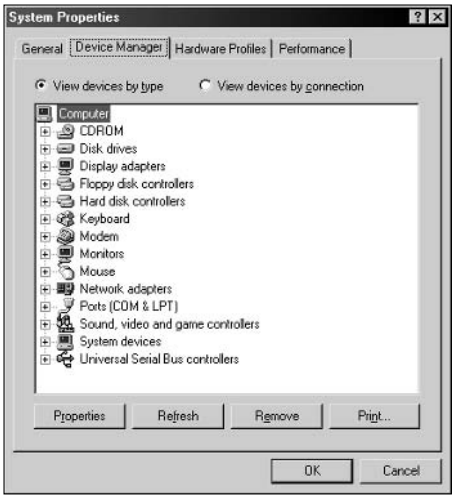


Figure 2-12: In Windows 98, the Device Manager gives you information on what hardware you have installed.

Figure 2-13: The Windows 2000 Device Manager.

- In Windows XP, choose Start➪Control Panel➪Printers And Other Hardware. Here, you can select one of the items from the dialog box under "or Pick a Control Panel Icon," or you can look to the "See Also" section and select System. If you choose System, from there choose Hardware➪Device Manager (Figure 2-14).

You can double-click each of the items within the Device Manager to display the corresponding details.

- **Download PC hardware detect tools.** If you don't have any diagnostic tools and you have a relatively current version of DOS, you can download various PC hardware detect tools, such as `PC-CONFIG`, from the Internet. The `PC-CONFIG` tool contains several screens of information and menus to choose hardware areas and options. This tool is shareware, and the usage and fee information is available from the Holin Datentechnik Web site (`www.holin.com`).
- **Gather information by reading the screen when the computer starts.** If your system doesn't contain any operating systems and you don't have any of your system's documentation, you can resort to reading the screen as your computer starts. On some systems, the video information is displayed as the computer boots. You may have to reboot several times to read the information if it goes by too fast. Also, some systems display the PCI components and their settings as the system is starting up. Again, you may need to reboot several times to gather all the information.

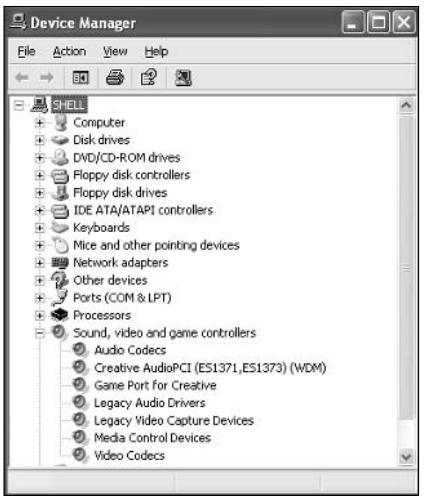


Figure 2-14: The Windows XP Device Manager.

You can try pressing the Pause-Break key on your computer (it should be near the Scroll Lock key) to get it to freeze during boot. You can then unfreeze it by pressing any key.

- **Access the Basic Input/Output System (BIOS) information.** Stored in a small area of memory and retained by a battery, this is sometimes referred to as CMOS (Complementary Metal-Oxide Semiconductor), which indicates the type of computer chip that can store and retain information. The amount of information stored in the BIOS can be very

Laptop considerations

The current distributions of Linux do very well on relatively new notebooks and laptops. (See `www.linux-laptop.net` for an excellent research site for how Linux gets along with various makes and models.) If your laptop is a common brand, you shouldn't encounter any problems installing Linux. However, laptops often contain WinModems. (Hardware labeled with the Win prefix is for Windows, not Linux.)

If you plan on purchasing a laptop for Linux, check out the modem and other hardware, such as network cards, to make sure they're not Win branded. If the built-in or default hardware for the laptop is Win labeled or you discover while researching the machine that it contains a Win product even if it isn't properly labeled, you might be able to switch the offending hardware for a PC (or PCMCIA) card. Most current laptops contain at least one PC Card slot so that you can slip in a PC card modem, network card, or combo modem-network card. As long as you stick with a common brand of PC card, it should be able to work well with Linux.

little to quite a lot. Some newer systems may display several screens of information about the computer's hardware.

To access the BIOS, you need to do so before any operating systems load. Most manufacturers indicate the keyboard key or key sequence to get into the BIOS, or Setup, on the screen when the system is starting up — for example, `Press Del to enter Setup`. If you can't find the keyboard sequence, check the manufacturer's Web site. After you've entered the BIOS, you typically navigate around with the arrow keys, Tab key, or Enter key. In some BIOS environments, the function keys are also used. Look for a list of function key options on the top or bottom of the screen.

You especially need to be cautious of labels on hardware boxes and Web sites that include the term *Win* (as in Windows). These components, such as *WinModem,* don't contain all the configuration and software in the hardware — even worse, there may be nothing on the packaging that suggests this limitation. These components are designed to use the Windows operating system to handle some of the load. Only a very slight chance exists that you can find a Linux driver for *Win* hardware. If you do find one, copy it to a floppy *before* installing Linux. If you can't find a driver and you need to use a modem, put down a little cash and get a modem that is supported properly. For more information about WinModems, see Chapter 8.

Finally, Finally, Before You Get Started

No matter what Linux distribution you choose, it probably comes with a bootable first CD (out of the CD set) or DVD — Fedora, the distribution included with this book, comes on a bootable DVD, and if you use the coupon to get the CDs, the first CD is also bootable. A boxed set might also come with some floppy disks. You probably won't need the floppy disks, but some people do. If you've ever booted your system from a CD or DVD, you'll have no problem booting from the Linux installation CD. You can find this information in your BIOS, in the section that lets you tell the machine which storage devices (drives) to check at boot time. If CD-ROM or DVD-ROM isn't listed in the options, Chapters 3 and 4 show you how to make an installer boot floppy for your distribution.

If you have to make changes in your BIOS, make sure to save them when you exit! It's easy to forget and end up wondering why the machine isn't doing what you told it to do.

Now, before you go any further, there's one more thing I want you to do: Locate your Linux distribution's documentation. These manuals can help you get past installation roadblocks and contain lots of useful information

for after the install is finished. If you purchased your distribution, it probably came with printed manuals. Otherwise, for the included distributions, you can find their various help forums and interfaces at:

- **Fedora:** The Fedora Documentation Project (`http://fedora.redhat.com/docs`) is still quite new, but its collection should grow over time. In addition, there's the Fedora Forum (`www.fedoraforum.org`), Fedora News (`www.fedoranews.org`), and the Unofficial Fedora FAQ (`www.fedorafaq.org`).
- **Linspire:** The official Linspire support page is `http://support.linspire.com`. Be sure to examine all the links because they contain lots and lots of help pointers.
- **Mandrake:** The official Mandrake documentation page is `www.mandrakelinux.com/en/fdoc.php3`, and you can visit an additional help site at `MandrakeExpert.com`.
- **SuSE:** The official SuSE support page is `www.suse.com/us/private/support/`.
- **Xandros:** The official Xandros support page is `http://support.xandros.com/`.

In general, another popular place to go for help is `linuxquestions.org`. If you're ready to install, proceed to Chapter 3 for Fedora and Chapter 4 for Linspire, Mandrake, SuSE, Xandros, and more.

Chapter 3

Installing Fedora Core

In This Chapter

- Considering some last issues before installation
- Creating a Fedora installer boot disk
- Installing Fedora as a personal desktop
- Booting Fedora for the first time

Do, or do not. There is no "try."

— Yoda, *The Empire Strikes Back*

No longer are arcane glyphs and complex sorcerer's spells required to install Linux. The graphical installation is now quite easy to perform and will be familiar to users coming from another graphical operating system, such as Microsoft Windows. This chapter provides the details.

If you're installing Linspire, Mandrake, SuSE or Xandros, proceed to Chapter 4 — do the same if you want to use Knoppix without having to install anything. Even if you're not using Fedora, however, you can still find out plenty in this chapter, because all Linux distributions share common elements.

Things to Consider Before You Begin Installation

You can install Fedora Core by

- Booting with the DVD-ROM included in this book and, when you see the boot menu, typing `linux` and pressing Enter. If, for some reason, you don't see the boot menu, see Appendix B.
- Booting with the Fedora Core installation CD, which is CD number 1 if you ordered the CD set using the included coupons at the back of this

book, or from a third-party vendor such as those listed on the Fedora Project's vendors page at (`http://fedora.redhat.com/download/vendors.html`).

- Booting with an installation floppy disk and having the remainder of the installation files read from the DVD-ROM or CD.

To begin the installation from the DVD-ROM or CD-ROM, you must first change your system to start, or *boot,* from a DVD-ROM or CD-ROM. In Chapter 2, I cover how to configure a computer to boot from these devices.

If you want or need to make the installation floppy disk and have access to a Windows system, perform the steps to create the installation floppy covered in the next section, "Making a Boot Floppy (if Needed)."

After the floppy creation section, the instructions in this chapter tell you how to follow the installation for Fedora Core 3. I concentrate on Fedora Core 3 and its installation for two main reasons:

- Fedora Core 3 is included on the DVD with this book, and the CDs you can order with your coupon.
- Covering the installation of every Linux distribution in existence would make this book into a set of encyclopedias.

I cover the Personal Desktop installation because it requires little or no hard drive preparation and doesn't use umpteen partitions like other installations do. In addition, the Personal Desktop installation option installs the fun point-and-click stuff that is commonly used on desktop and laptop systems. Server or service-type applications, such as the Apache Web server and FTP server, aren't installed with the Personal Desktop option and aren't covered in any detail in this book. However, if you want to use them, you can add these to your Personal Desktop package selection later in the installation process.

Please note that if you're installing Red Hat Enterprise Linux, a different version of Fedora Core, or a different distribution of Linux, your screens *will* look different from what is shown in this book (for Linspire, Mandrake, SuSE, and Xandros, see Chapter 4). Each Linux distribution's installation routine covers the same basic tasks, but each action may be presented in a different order or be customized to look different on the screen. For example, one distribution may present account creation before network configuration, and another may have these two topics reversed.

With Fedora, up until you reach the About To Install (GUI install) screen, you can back out of the installation without changing anything on your system. None of the configuration options you make before the About To Install screen are saved to your disks. After you continue beyond the About To Install screen, data is written to disk, and your system is changed.

Making a Boot Floppy (if Needed)

If you're having trouble booting from the DVD or CD, you can start the installation from a floppy disk. Because there is no boxed set for Fedora, however, you'll have to make this disk yourself. You can find the *disk image* file — a fancy way of referring to a snapshot of a floppy disk's contents — on the DVD or first CD in the `/images` directory. You can't just copy this image onto the floppy, however. You have to use a special program to make sure that every tiny part of the image is written over exactly correctly. Assuming that you're using Windows right now, the program I use for this purpose is `RAWRITE`, which you can download from `http://uranus.it.swin.edu.au/~jn/linux/rawwrite.htm`.

To make a boot disk on a Windows system using Fedora Core 3 and the DVD (or CD) that came with this book, follow these steps (I focus on Windows XP here, with notes for people using other versions of Windows):

1. **Point your Web browser to `http://uranus.it.swin.edu.au/~jn/linux/rawwrite.htm`.**
2. **Click the latest Binary release (at the time of this writing it's the first link on the page, `rawwritewin-0.7.zip`) to download it.**
3. **When asked what to do with this file, click Save.**
4. **When the Save As dialog appears, navigate to where you would like to save the file and click Save to download the file.**

   This is a small program, so even for dial-up users, it shouldn't take all day!
5. **Once the program is saved on your machine, open your file browser and navigate to where you have saved it.**

   If you used the defaults in Windows XP, it's in the My Documents\My Downloads folder.
6. **If you're using Windows XP or another version of Windows with a program like WinZip (`http://www.winzip.com/`) installed, double-click the `rawwritewin` file to open the archive.**

   If you don't have a program that can open this file, download WinZip and install it on your machine. You can then return to Step 6.
7. **If you're using WinZip, extract the files into the same folder or a new one and skip to Step 9. If you're using XP, click Extract All Files to the left of the folder listing.**

   This action opens the Extraction Wizard.
8. **Follow through the brief wizard, telling it where to extract the files.**

   When finished, you end up in a folder containing the extracted files.

9. **Insert the DVD that comes with this book into the DVD drive and make a note of the drive letter that corresponds to your DVD drive.**

   If you're using the CD set, insert the first CD.

10. **To create a boot disk, double-click the rawwritewin penguin icon in the folder.**

    The RawWrite window appears (see Figure 3-1).

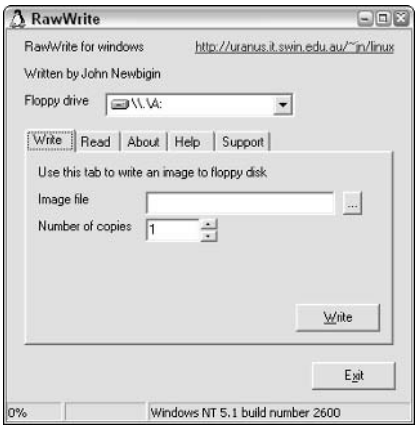


Figure 3-1: The RawWrite disk image writer.

11. **Next to the Image File text box, click the ... button to open the file browser.**

12. **Navigate to your DVD-ROM or CD-ROM drive, depending on whether you're using the DVD from the book or a CD set for installation.**

    For many people, this is the D: drive.

13. **Double-click the `images` folder to enter it.**

14. **Select the file `diskboot.img` and then click Open.**

    The file browser dialog closes.

15. **Insert a blank 1.44MB floppy disk into the floppy drive.**

16. **Click the Write button to start writing the image to the floppy disk.**

    This process can take a few minutes.

    Once the image has been written, the Image Successfully Written dialog box appears.

17. **Click OK and then click the Exit button to close the program.**

After you've created the installation boot disk, you need to configure, or verify, that your computer is set to boot from the floppy drive. The easiest way to do this is to insert a floppy disk into your main floppy drive, make sure that no other drives have media in the machine (such as a DVD in your DVD-ROM drive), and then reboot your computer. If your computer boots from the floppy, you're set. You can then pull out the floppy and reboot into Windows or proceed to the section "The Installation Process."

If your computer seems to be ignoring the floppy drive as it boots, check in your system's BIOS (see Chapter 2.) Make sure that the floppy is listed first. Then save your changes before exiting the BIOS; otherwise, the items you set don't take effect.

The Installation Process

In this chapter, I follow the graphical installation. If you can't use the graphical installer for some reason (if Linux doesn't support your video card, for example), follow the text-based installation instead. The steps are the same, it's just not as pretty, and you don't quite get all the options that you have available in the point-and-click version.

To install Fedora Core 3, follow these steps:

1. **If you want to boot and install from the Fedora DVD-ROM that comes with this book, place the DVD in your DVD-ROM drive and reboot your system.**

   Otherwise:

   - Use CD 1 if you ordered or burned your own CD set, placing it into the CD-ROM drive and rebooting the computer.
   - Place the installation floppy disk (see the section "Making a Boot Floppy (if Needed)" for details) in your floppy drive, put the DVD or CD 1 in your DVD-ROM or CD-ROM drive, and reboot your system.

   Whether you start the installation from the floppy disk, CD-ROM, or the DVD-ROM, the first installation screen, shown in Figure 3-2, appears, though the screen for the DVD-ROM included with this book looks slightly different than the one from the Fedora CD-ROM. No matter which version you're using, this screen contains several options, which are each described in the following list:

   - **Install Or Upgrade In Graphical Mode:** The first option in the graphical interface is for installing Fedora Core for the first time or for upgrading an existing version of Linux. This installation probes to detect your system's hardware. The graphical interface is designed to work with a mouse to select options. If you don't have

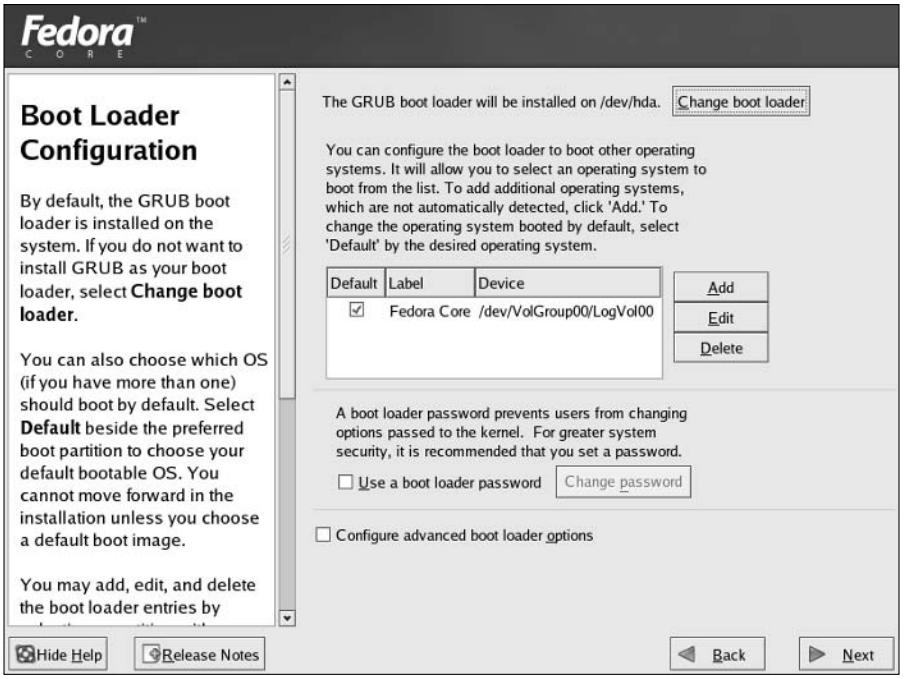


Figure 3-8: The Boot Loader Configuration screen.

Defining partitions manually

If you choose to define partitions manually, you'll be using Red Hat's Disk Druid. Disk Druid enables you to delete existing partitions and add new partitions. If you don't know how to use Disk Druid, I recommend that you *not* proceed any further. Click Back to return to the Automatic Partitioning screen and choose to review the automatic setup Disk Druid suggests instead of starting from scratch.

If you choose to Review and decide to change things, there's some things you'll want to know. For example, there's something called a *mount point,* which is where a *device* (maybe the first partition on your first IDE hard drive, which would be /dev/hda1) attaches onto your *filesystem* (a particular directory in your directory hierarchy). The start for your filesystem is the "root directory," which is shown as /. You need to have a partition mounted as /, and you want it to be as large as possible if you're not making many partitions. You also want a partition mounted as /boot, but it can be small, maybe 100MB. Finally, you want a partition around twice the size of your memory that's assigned the swap filesystem type, to act as your virtual memory. (There's no mount point for swap, just a filesystem type). Otherwise, when it comes to Fedora, you'll be sticking with ext3 as your filesystem type because it's the default. I get more into these kinds of things in Chapter 10.

10. **After making any selections to the boot loader configuration settings, click Next.**

    The Network Configuration screen appears, as shown in Figure 3-9.

11. **If you're using a modem and don't have an Ethernet card in this system, you won't see this screen at all, so skip to Step 13. If you're using Dynamic Host Configuration Protocol (DHCP) on your network to set the computer's hostname, choose the Automatically Via DHCP option. If you aren't using DHCP to define the hostname, choose the Manually option and enter a hostname.**

    First, make sure the eth0 checkbox is checked so that your computer activates its networking when it boots. Then, if you're using DHCP, this setup allows another service or system to set all the networking parameters for your computer so that it can communicate properly on a network or on the Internet. If you're connected to a high-speed Internet service, such as DSL, your computer is probably configured to use DHCP for all the settings except the hostname, which gives an identity to your computer. If your computer is part of a company network, the DHCP services may provide the hostname in addition to the rest of the parameters. Check with the network administrator or IT department for the appropriate information for your network.

    To manually set the hostname of your Linux system (rather than letting the DHCP server pick one for you), make sure that the Automatically Via DHCP option is not selected and then configure the following:

    - Type a name for your computer in the field to the right of the Manually label. I recommend that you use only alphanumeric (letters and numbers) characters for the name of your computer. Sometimes, using other characters may interfere with an application and make it difficult to access your machine from a network.
    - If you're not using DHCP for the other network settings, click the Edit button to the right of the Network Devices list. In the Edit Interface eth0 window, remove the check next to Configure Using DHCP. Enter values for the IP Address and netmask settings and click OK. After you enter these two values, the remaining fields under the Miscellaneous Settings label are enabled. If you don't know what your IP address or netmask are supposed to be, ask your administrator.
    - Enter values in the Gateway and DNS fields that are valid for your network. If your network has more than one DNS server, you can enter up to three DNS server addresses.

    I cover DHCP and other IP-related information in more detail in Chapter 7.

12. **After you've made all your selections and entered your data, click Next.**

    The Firewall Configuration screen appears, as shown in Figure 3-10.

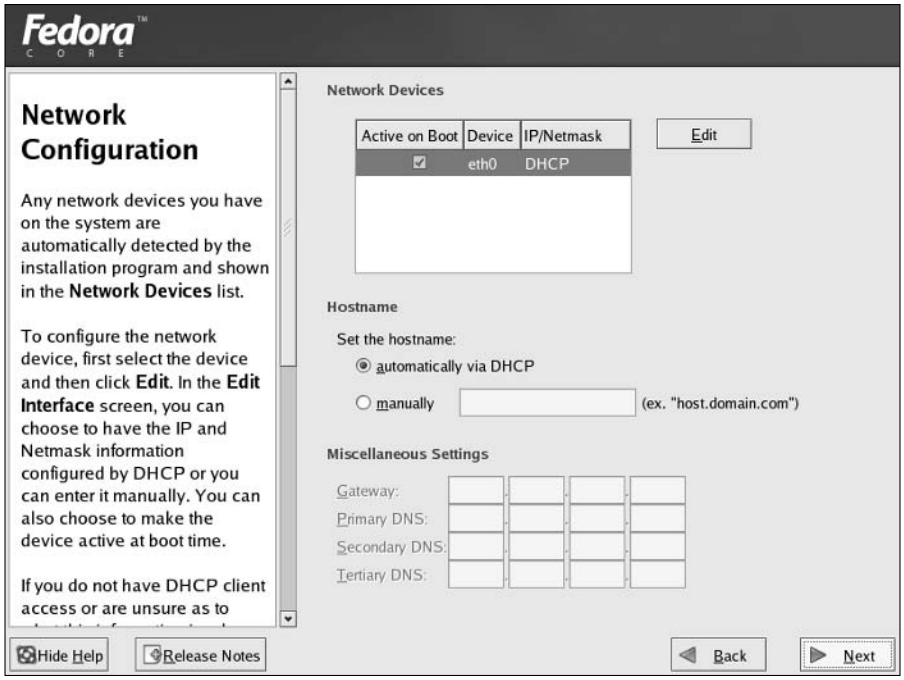


Figure 3-9: The Network Configuration screen.

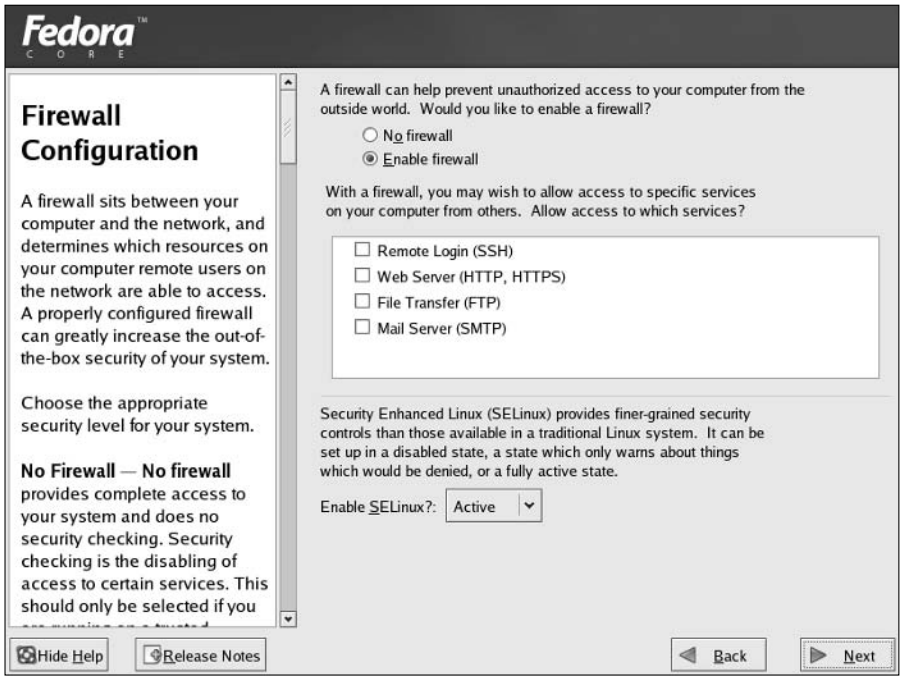


Figure 3-10: The Firewall Configuration screen.

Firewalls protect your system from unauthorized access and discovery. When you're connected to the Internet with a high-speed connection, your computer appears as one of the hundreds of thousands of other systems on the Internet. I wish that I could tell you that there aren't tons of nasty people and programs trying to break into your computer, but unfortunately, there's lots of them. A firewall is your first (but not only) protective barrier against cyber-hoodlums, viruses, worms, and a host of other items that might try to skulk in through doors that should have been kept closed; see the sidebar "Firewalls and you" for more information.

13. **Unless you are 100-percent sure that this computer is safe from both the Internet and other machines you may have on your home or office network (keeping in mind that before viruses and worms, most business computer break-ins happened from inside rather than outside), leave Enable Firewall as your firewall setting.**

    If you are absolutely determined to have your firewall off, select No Firewall. I wish you luck!

14. **Determine which of the available services you want to let through your firewall.**

    I recommend enabling Remote Login (SSH) so that you can access this computer remotely using the techniques discussed in Chapter 12. While I don't cover running your own Web server, if you intend to run one on this computer, you'll also want to enable the Web Server (HTTP, HTTPS) entry; if you just want to browse the Web, you don't need to enable this one, it's just if you want to run your own server on this computer. The same goes for FTP (which can be handy for moving files around) and SMTP. If you intend to run an FTP server or a mail server (SMTP), then you'll need to enable these.

15. **Next to each item you want to enable, click in the box so that it has a checkmark in it.**

    For my desktop machines, I tend to check the SSH and FTP entries. For how to use an FTP client to get files off of this machine later, see Chapter 8.

16. **Determine whether you want to use SELinux or not.**

    SELinux (otherwise known as Security-Enhanced Linux) is explained in great geekly terms at `http://people.redhat.com/kwade/fedora-docs/selinux-faq-en/`. For those who aren't interested in reading through such a document until their eyes cross, I give you a summary in the sidebar "Introducing SELinux." Keep in mind that if you've never used Linux or another form of Unix, you may find it difficult enough to learn your way through the usual user, group, and owner permission system used to control file and directory access. You can turn on SELinux later (I go more into SELinux in Chapter 12) if you decide it's time to get to know it.

Firewalls and you

Anyone connected to the Internet, especially using *broadband* (see Chapter 7 for more on the different types of connections available; broadband tends to be DSL and Cable), really should have a firewall of some sort. You can purchase a firewall *appliance* (a special little box that you use to connect to the Internet and then hook up your other computer[s] to) or have a Linux box doing your firewalling for just itself, or even for your whole home or business network. Although this is quite an extensive topic that can easily take an entire book of its own, I cover some of the basics in Chapter 7. In the meantime, protect at least this machine with a firewall of its own.

17. **If you intend to use SELinux, determine whether you want to actually activate it or put it into a warning state; otherwise, under Enable SELinux, select Disabled and skip to Step 19.**

    I highly recommend that if you do intend to play with SELinux, you for now set it to Warn. This way, you can see what it does without it getting in your way, which is a handy method of learning how it works.

18. **If you didn't disable SELinux, select Active or Warn.**

    I assume that you selected Warn for the remainder of this book.

19. **Click Next to proceed to the next stage of your installation.**

    The Additional Language Support screen appears, as shown in Figure 3-11. Your Linux system can support multiple languages at the same time. If you add languages, be sure to set which you want for your default.

20. **Select the languages for your Linux installation and click the Next button to continue.**

    The Time Zone Selection screen appears, as shown in Figure 3-12. If you don't find the exact name of the city you're in, choose another city in your same time zone that supports the same options, such as daylight savings time. You can also click the UTC (Universal Time, Coordinated) Offset tab at the top of the screen and select your offset from UTC time and whether you use daylight savings time. If your computer uses UTC, you can also choose this option.

    If it turns out that your computer is (or isn't) using UTC and you chose the wrong way, you can change this value after you've installed the computer, so don't sweat this setting too much.

21. **Choose the time zone in which your Linux system resides.**

    If you travel, set it to where you are now. You can change this setting whenever you need to later.

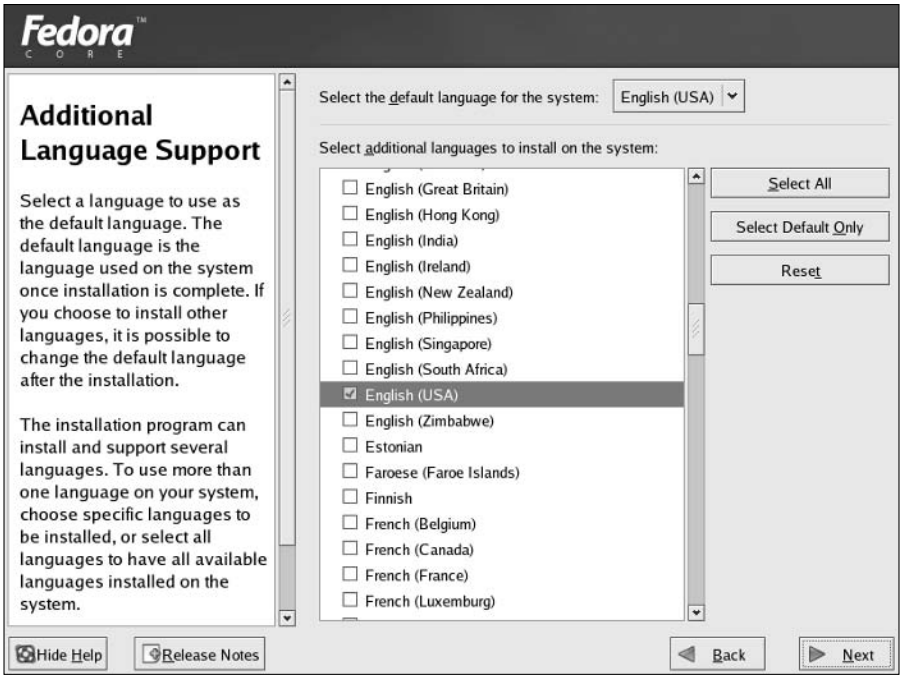


Figure 3-11: The Additional Language Support screen.

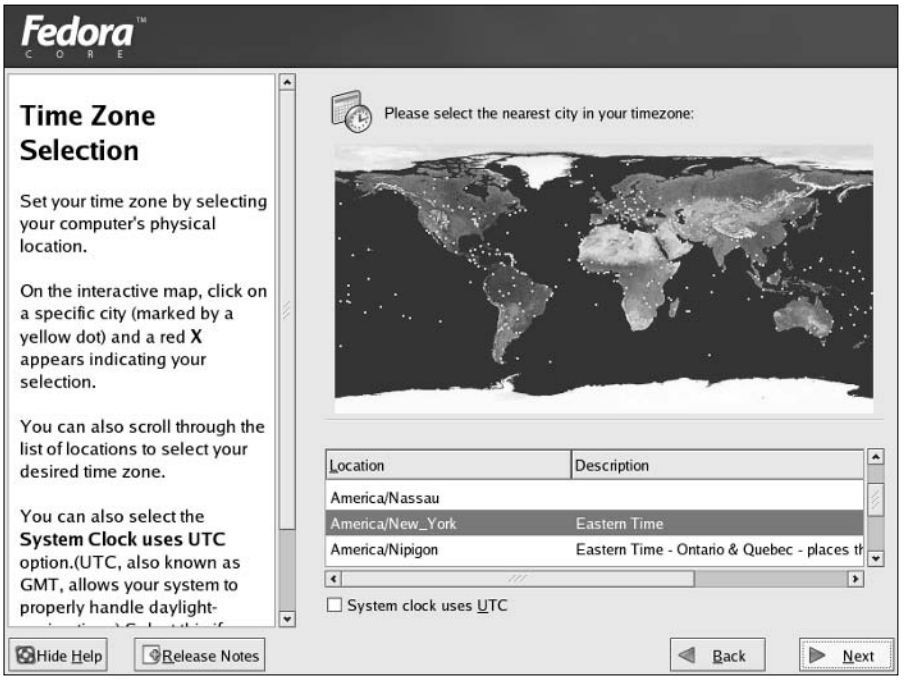


Figure 3-12: The Time Zone Selection screen.

Introducing SELinux

Security-Enhanced Linux (SELinux) was developed by the USA's NSA (National Security Agency, `www.nsa.gov/selinux/`) and gives you more fine-grained control over everything that's happening on your system than the standard user, group, and owner permissions used by default in the Linux world. SELinux is not limited to Fedora Core; it's available as an extension in a growing number of Linux distributions. In general, solid computer security policies involve giving people and programs only the amount of access that they strictly require, so those who have a heavy need for limiting what people and software can do because they're running mission-critical servers or are operating in a realm that has a need for serious security measures find that SELinux lets them have far more control of who can do what on their system. For the average home or small business user's desktop system, SELinux can be overkill, though if you're looking to play with this technology and become familiar with it for your resume or other reasons, your home desktop can be an ideal trial platform for such a purpose. Because SELinux is quite extensive, I only touch on it in Chapter 12, but I do give you enough information to get you started.

22. **Click Next to proceed to the next step in your installation.**

    The Set Root Password screen appears.

23. **In the Root Password screen, type the root (administrator) account password into the Root Password field and then type the same password in the Confirm field.**

    You don't see the password when you type it — just an asterisk for each character. The asterisks prevent unauthorized individuals from seeing the password. If you mistype something in one of the boxes, you're warned when you try to move on to the next step of the installation and have the chance to re-enter the values.

    Don't forget your root password! You need it to do to do any administration task on your Linux box.

24. **After you've entered your root password twice, click Next.**

    The Package Installation Defaults screen appears. You can choose to install the current default list of packages or choose to customize the set of packages

25. **Choose the Install Default Software Packages option or the Customize Software Packages To Be Installed option.**

    I recommend selecting the Customize option so that you can have more control over what you put on your system. I assume that this option is the one you selected.

26. Click Next to proceed to the next item in the installation process.

The Package Group Selection screen appears (see Figure 3-13). There are two different ways of selecting programs in the Fedora Core (and many other Linux distribution) installer: by group or individually. You start by choosing groups. For example, the first group is X Window System, which you can think of as the wireframe of your point and click interface. The second is the GNOME Desktop, which is one form of paper mache that can be placed on top of the X Window System for a consistent look and feel. Third is the KDE (K Desktop Environment), which is another version of papier mâche (see Chapter 6 for more on these and their differences). If you want access to both environments, be sure to click the box next to KDE to put a check in it.

Next to each group that you have marked with a check (or that's selected by default), you see the word Details with an underline beneath it. If you click Details, a dialog box appears with two different lists of packages: Base and Optional. The Base items are always installed when you select this group of software. The Optional items are up to you.

If you want to try everything available the first time around, you can scroll down to the bottom and select Everything (which in fact doesn't install *everything,* but *mostly everything*). Otherwise, play around and pick and choose. You can add more software later (see Chapter 12) if you realize you left something out.

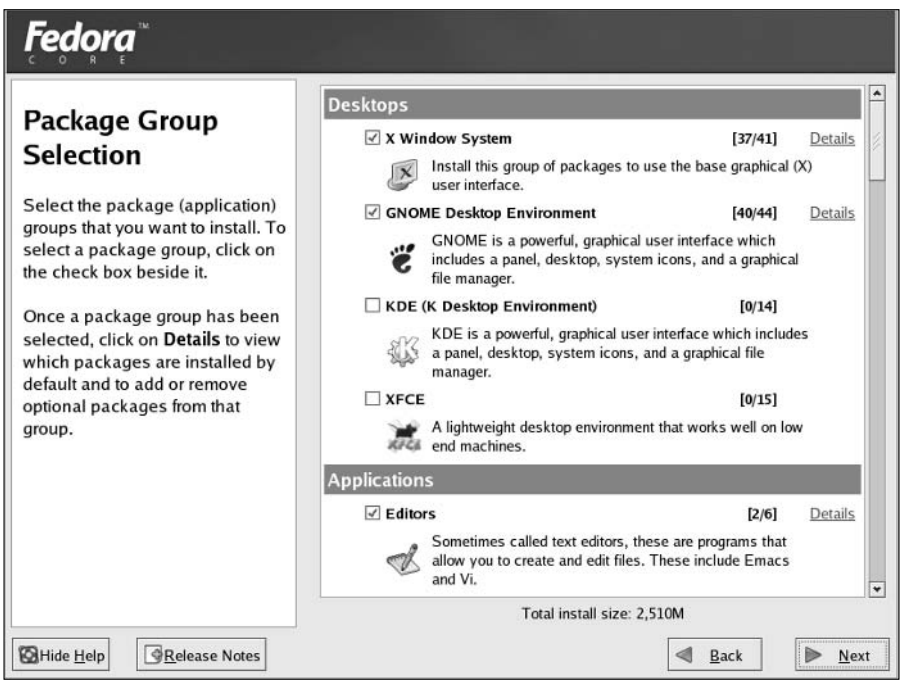


Figure 3-13: The Package Group Selection screen.

27. **When you have selected all the packages and package groups that you want to install, click Next.**

    First, a dialog box appears telling you that the installer is looking over your list of selected software. If it discovers that you have left out programs that software you chose depends on, it offers you the chance to add those, too. Say yes! Then, once that's done, the About To Install screen appears.

    If you fear at all that your machine may be too slow to run a regular desktop, make sure to click the XFCE box under Desktops. That way, if you find that GNOME or KDE slows your computer down too much, you can try using XFCE instead to speed things up. Chapter 6 explains more about these various desktops.

    If you want to stop your installation of Linux, the About To Install screen is the *last* place where you can stop without changing anything on your hard drive(s). To stop the installation, press Ctrl+Alt+Del, and your system reboots. Be sure to pull out the DVD or first CD if you don't intend to restart your installation.

28. **Once you're ready to commit to the installation, click Next.**

    The Required Install Media dialog appears. This handy dialog tells you exactly what DVDs (though there's just one if you're using a DVD!) or CDs (one through four) you need for the installation. If you're using CDs, you may not need all four of them, depending on the software you requested. Often, a desktop install only needs the first two.

    Okay, you can still stop or restart the install at this point without changing anything on your computer! If you chicken out or realize you messed something up, click Reboot.

29. **When you're ready to proceed, click Continue.**

    The Installing Packages screen appears. The system first prepares for the install and then starts the install. As the system is installing, you see progress bars for each individual package being installed and total installation progress. You're also given a "Remaining time" value that is more or less accurate. Obviously, if it takes you five minutes to notice that the installer has asked for another CD, then this delay adds to your total installation time!

    After the package installation has finished, you reach the final installation screen, which has text beginning with "Congratulations, the installation is complete." The CD or DVD is automatically ejected (if not, manually eject it); if you used a floppy disk, remove this as well. Once the media has all been removed, click Reboot to restart your machine and proceed to the next section, "Your First Boot."

Your First Boot

The first time your Fedora Core system boots, you have the first chance to see your new boot menu. Select the Linux entry and press Enter, or just sit back and let it boot on its own. If for any reason your computer fails to boot at this point, see Chapter 5.The first time your computer boots up, you see the first boot Welcome screen, as shown in Figure 3-14. Do the following in order to complete your machine's initial setup:

1. **Click Next to proceed to the setup routine.**

   The License Agreement screen appears, as shown in Figure 3-15.

2. **Read through this text, select Yes, I Agree To The License Agreement and then click Next.**

   The Date And Time screen appears.

3. **If you're on a computer network that is currently connected to the Internet, and is usually connected to the Internet (or your network administrator told you to use a time server), click the Network Time Protocol tab. Otherwise, skip to Step 7.**

   Letting a *time server* control your date and time makes sure that your computer gets regular input on what time and day it really is. Otherwise, over time your computer's clock actually drifts.

Figure 3-14: The Fedora Core Firstboot Welcome screen.

Figure 3-15: The Fedora Core License Agreement.

4. **Click the Enable Network Time Protocol check box to enable this feature and click the Use Local Time Source check box to disable local time control.**
5. **In the Server drop-down list box, click one of the time servers available, or enter the address for the time server your network administrator gave you.**
6. **Click Add to choose this server.**
7. **If you intend to control the date and time on the machine manually, verify that the date and time are accurate; if they're not correct, fix these settings now.**
8. **After you've finished adjusting the date and/or network time server, click Next to proceed.**

   If you told the system to use the Network Time Protocol (NTP), it may take a moment for the system to contact the server you selected. After a few seconds, the Display dialog box appears, as shown in Figure 3-16.
9. **In the Resolution drop-down list box, select the video resolution you want to use.**

   You're only offered the resolutions the installer thinks your monitor and video card support. If you find that you aren't offered a full range, go ahead and select the best you can get, and you can change the video settings later. A popular setting is 1,024 x 768.

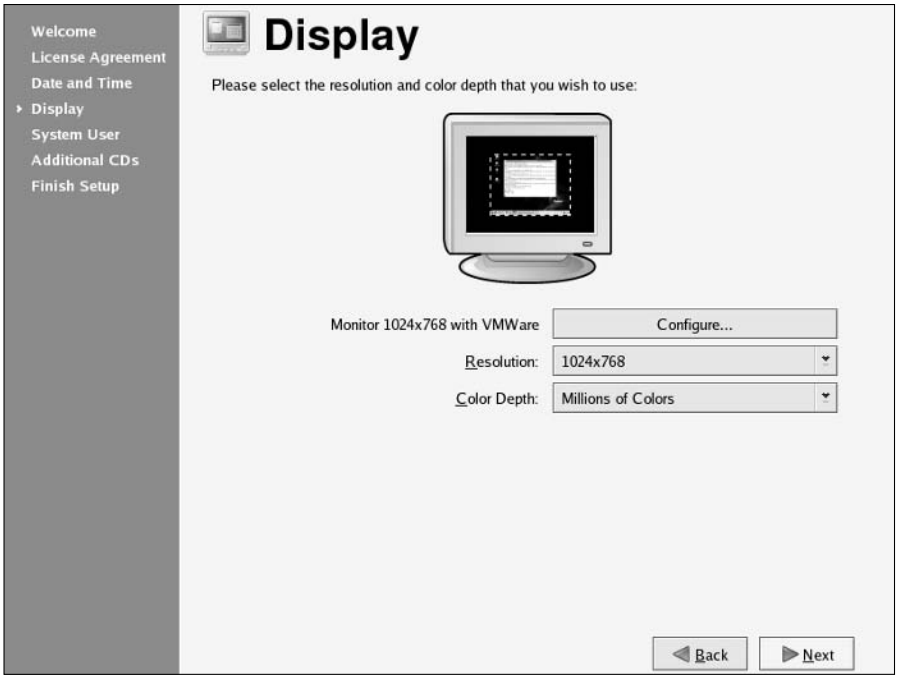


Figure 3-16: The Display first boot screen.

If it looks like your graphics capabilities were guessed wrong or if a specific monitor doesn't appear next to the first button in this dialog box, click the Configure button, which lets you open a set of dialog boxes allowing you to choose your graphics card and/or monitor.

10. **In the Color Depth drop-down list box, select the number of colors you want to be able to use.**

    Again, you're offered what the installer thinks your system supports. You'll probably want Millions Of Colors.

11. **Click Next to continue your firstboot machine setup.**

    The System User screen appears, as shown in Figure 3-17.

12. **Type the name you want for your personal account into the Username text box.**

    For example, `zorro`.

13. **Type your name into the Full Name text box.**

    For example, `Zorro the Dog`.

14. **Enter your account password both in the Password and Confirm Password text boxes.**

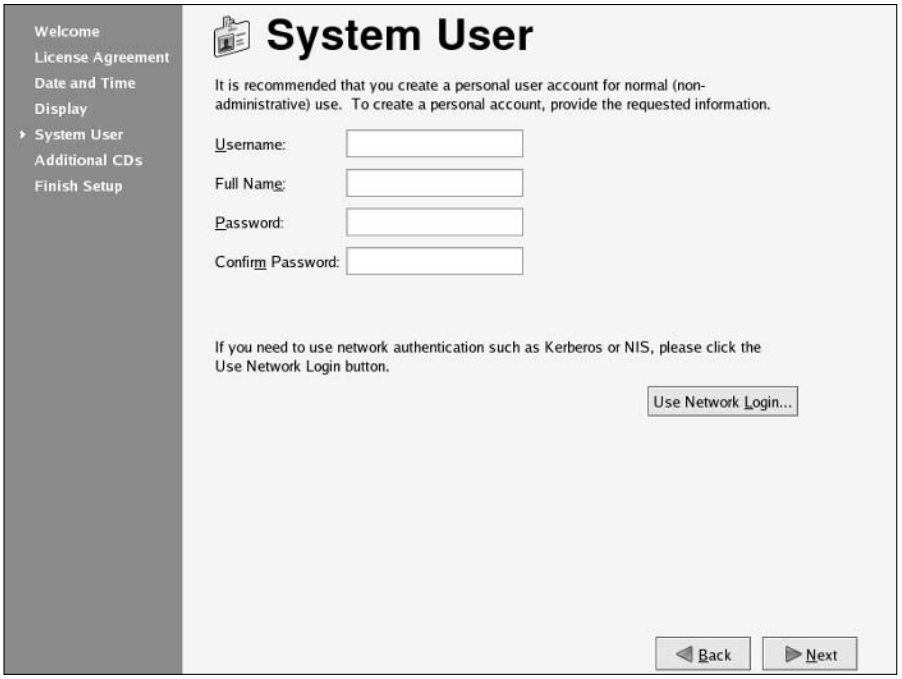


Figure 3-17: The System User first boot screen.

This password is the one for your personal account and has nothing to do with your root (administrator) account. Feel free to use a different password than you did for root. In fact, it's a good idea to do so. If you accidentally don't type the password the same both times, you're warned in Step 14 and returned to this step.

15. **Click the Next button to proceed.**

    The Sound Card screen appears.

16. **Make sure that your speakers or headphones are on and click the Play Test Sound button.**

    You should hear a sound from the right channel, the left, and then both at the same time.

17. **When asked whether you heard the sound properly, click Yes if you heard all three sounds and No if you did not.**

    If you didn't hear the sounds properly, see Chapter 18 for help with getting your sound working later.

18. **Click Next to proceed.**

    The Additional CDs screen appears. You probably don't have any extra CDs you want to install things from at this point. If you do, go ahead and click the Install button. I'll assume that you don't.

19. **When you're finished with the additional CDs, click Next to continue.**

    That's it! Click Finish Setup. You've just survived the second Linux gauntlet! Your computer now brings you to a graphical login prompt. See Chapter 5 for instructions on how to proceed.

Chapter 4

Installing Other Linux Distributions

In This Chapter

- Loving Linspire
- Demystifying Mandrake
- Getting to know SuSE
- Xapping your brain with Xandros
- Discovering even more Linux!

If you read any of the chapters in the book, you understand that Linux is more than just some newfangled computer program. Linux is a fully equipped workshop of software tools and building materials that you can use to construct any of a wide spectrum of computing solutions. Developing the killer Linux distribution has been the Holy Grail of the Linux community. This ultimate Linux distribution would provide all the support and capability that the preschooler, the rocket scientist, the housewife, and the crotchety old computer science professor would need to harness the power available with Linux.

However, it's just about impossible to make something that makes absolutely everyone happy. In this chapter, I survey four more of the most popular and easiest-to-install distributions. Some of these distributions are commercial products, so my hope is that if you're considering getting one of those, this chapter helps you decide which one of these (if not Fedora) meets your needs. I don't cover every aspect of the commercial items, such as how much support you get. For more information, see the appropriate Web sites.

Occasionally in this chapter, I mention burning an "ISO image" onto a CD-ROM or DVD-ROM. When this subject comes up, refer to the sidebar "Burning Your ISOs" for tips. When I refer to ISO images included on this book's DVD-ROM, you find these images in the DVD-ROM's `distros` folder.

Burning your ISOs

If you end up needing to use the ISO files on the DVD-ROM or that you download in order to create distribution CD-ROMs or DVD-ROMs, I have some handy tips that can make this process easier for you. First, you need CD burning software, such as the popular Nero program (`www.nero.com/en`). Once you have a CD burning tool, look at the file size of the ISO you need to burn. While most ISOs can be burned onto a standard 650MB/74 minute CD-R or CD-RW, some are large enough that you need to purchase 700MB/80 minute ones instead. Knoppix is one that needs the larger CD-Rs. Another is Mandrake.

When possible, use CD-RWs, because they're rewriteable and you're able to download and burn other distributions or newer versions onto them later. CD-RWs are just a great way to avoid having to throw out a lot of CDs to go to the landfills. However, your burner has to actually support rewriteable functions. Look on its front to see whether it says CD-R (it can't rewrite), or CD-RW (it can rewrite).

As you prepare to burn your CD or DVD, make sure that your software understands that you want to burn an ISO (often the word to look for is `image`) and not just a file. If you burn your CD or DVD, put it into the drive, open it up, and then see only one file, you have burned it incorrectly. An ISO should be unpacked onto the CD or DVD as a bunch of files and directories.

Finally, it's a good idea to burn these types of CDs and DVDs at a speed of four or less. You reduce your chance of introducing errors this way.

Kickstarting Linux with Knoppix

In Chapter 2, I explain that Knoppix is included on the DVD-ROM that came with this book. You can boot with the book's DVD-ROM and just press Enter from its main menu to boot into Knoppix Linux, skipping any need to install anything onto your computer. If you're concerned about messing up something on your computer with an installation, give Knoppix a try.

If the DVD-ROM included with this book doesn't work, see Appendix B. If you don't have a DVD-ROM drive, you can download the CD-ROM ISO image to burn onto your own CD by going to `www.knoppix.net/get.php`.

Living Large with Linspire

Linspire (`www.linspire.com`) — formerly known as Lindows — is especially designed for people coming over from the Windows world to Linux. This commercial distribution offers additional subscription services available that

I describe in the "About the various Linspire versions" and "Recognizing some special Linspire features" sections. Linspire is designed for ease of installation and ease of adding new software and contains many tutorials to help people get used to the system. Yet, Linspire isn't designed in particular for the aspiring Linux geek.

Linspire is built as a friendlier version of the more advanced, but popular, Debian (`www.debian.org`) distribution.

If you're curious, you're in luck — an ISO file to create your own CD-ROM of the full version of Linspire is included on the DVD-ROM that came with this book! (It's in the DVD-ROM's `distros` folder.) In Chapter 12, you can sign up for your free trial of the Click And Run Warehouse for getting and installing software so that you can decide for yourself whether it's worth paying for membership after that.

If you decide to purchase Linspire, you have a number of options:

- Purchase it online and download it immediately from the Linspire Web site.
- Purchase it online and have a physical box shipped.
- Purchase a boxed set in a store (`www.linspire.com/lindows_feature_reseller.php`).
- Purchase a computer with Linspire pre-installed (`www.linspire.com/lindows_feature_preinstall.php`).

Linspire offers a nice FAQ on burning the CD at `http://info.linspire.com/installhelp/`. The info is helpful whether you're burning it from the DVD-ROM that came with this book, or one you acquired from Linspire directly.

Installing Linspire

Linspire is primarily a commercial distribution, and you have access to this through the ISO image included on the DVD-ROM that came with this book. I cover this full Linspire 4.5 release. Differences between this and other versions are addressed in the "About the various Linspire versions" section.

To install Linspire 4.5:

1. **Place the CD into your CD-ROM drive.**
2. **Boot the machine.**

   If the machine ignores your CD-ROM and tries to boot normally, see Chapter 2 on how to make the necessary changes to your BIOS.

3. **At the initial screen, click Install and press Enter.**

   Linspire starts doing all the standard pre-installation tasks, such as scanning your computer's hardware and starting the installer. After a bit, the progress bar begins to fill. After it's done, your screen turns black. (Don't panic! It's supposed to!) You eventually reach the Install Method dialog box, shown in Figure 4-1.

4. **If you're installing Linspire on a computer by itself or letting it have an entire hard drive, select Take Over An Entire Hard Disk. Otherwise, if Linspire has to share a hard drive with another operating system, select Advanced Install.**

   Because the second option is more complex, I cover that one. If you choose the first option, the next step asks you which hard drive you want Linspire to use. Use the order that Windows sees them in, so the first drive is C:, the second is D:, and so on. If you have to, you can look in the BIOS at the sizes and other information to try to tell which is first, second, or third.

   You need existing free space before proceeding; otherwise, the installer won't let you get to the partition selection screen. See Chapter 2 for how to free up space.

5. **Once you've made your selection, click Next to proceed.**

   The Advanced Install dialog box appears, as shown in Figure 4-2.

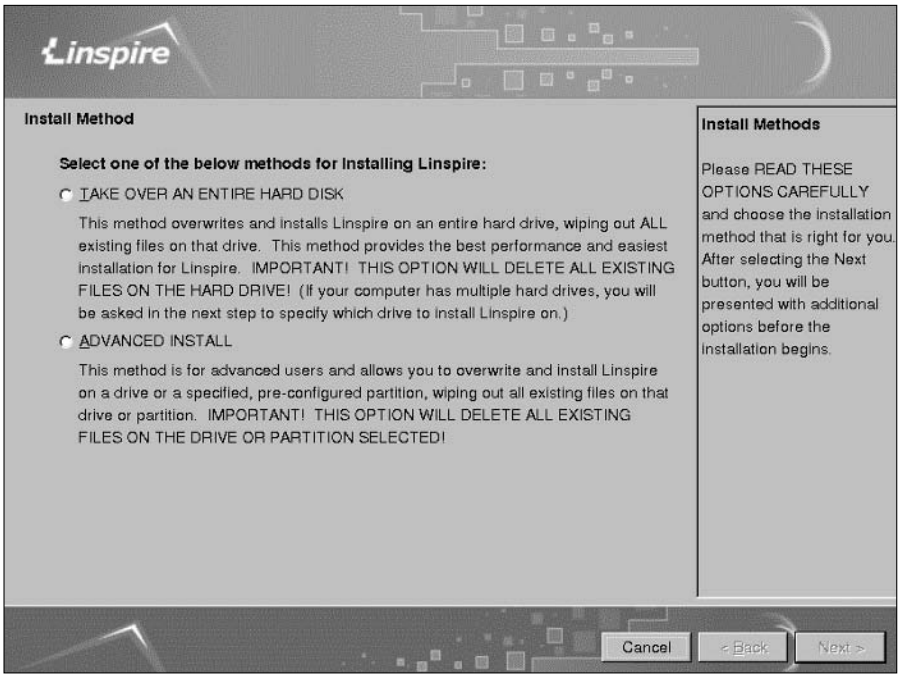


Figure 4-1: The Linspire Install Method dialog box.

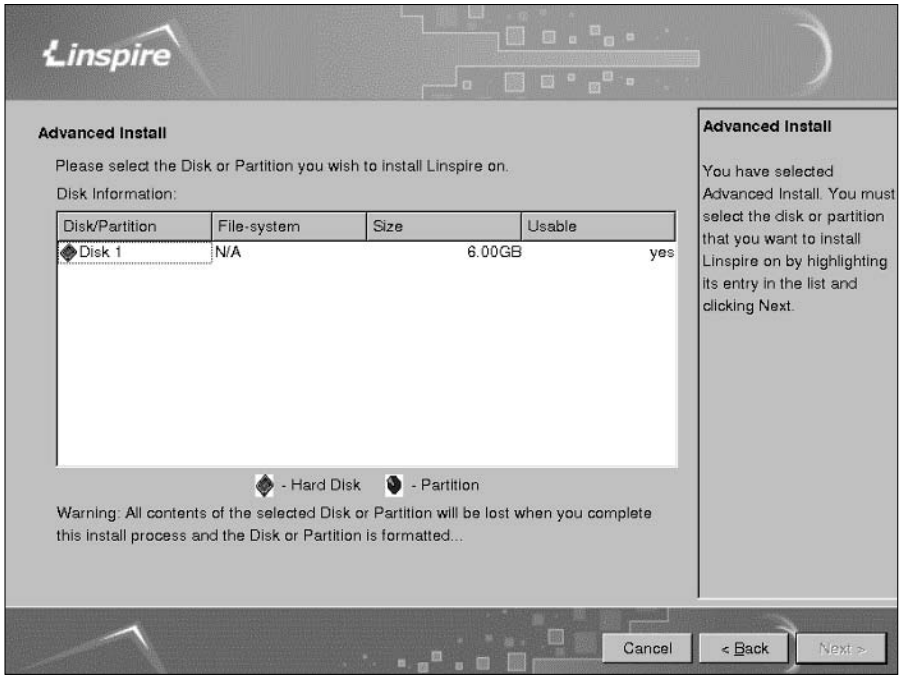


Figure 4-2: The Linspire Advanced Install dialog box.

6. **From the list, select the hard drive (if you want to install onto an entire drive) or partition (if you want to install in a particular emptied partition) you want to install Linspire onto and then click Next.**

   The Computer Name And Password dialog box appears, as shown in Figure 4-3.

7. **Type the name you want this computer to have into the Computer Name text box.**

   For example, maybe you want to name your computer Fred.

8. **Type your administrative password into both of the Password text boxes and then press Enter.**

   The Setup Confirmation dialog box appears.

9. **Read the values specified in the dialog box and then click Finish when you're ready to start the install.**

   Yes, that's it! Your install now begins. You may be asked to verify that you want to take over a hard drive or partition; if so, double-check the information it shows you and answer appropriately.

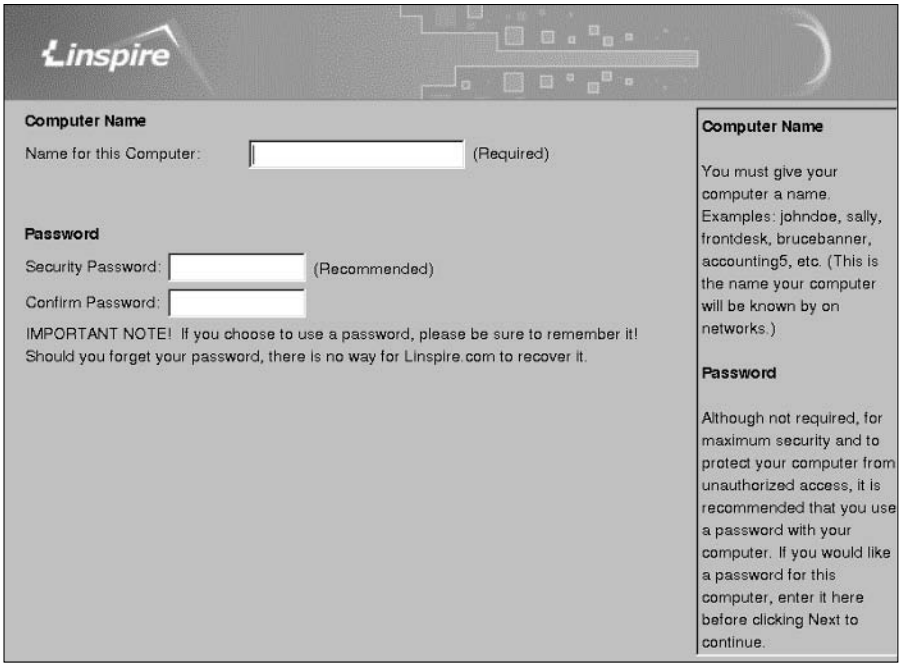


Figure 4-3: The Linspire Computer Name And Password dialog box.

10. **When the installation finishes, click OK.**

    The machine brings you to a screen that lets you remove the CD-ROM from the drive.

11. **When prompted, remove the CD from the drive and then press a key to reboot the machine; to boot it, select Linspire from the options and press Enter (or just let it do so on its own).**

Recognizing some special Linspire features

One of the most talked about special features of Linspire is its CNR (Click and Run) Warehouse. This online store allows you to surf through more than a thousand software programs and purchase, download, and install them with just a few clicks. Even better, if you subscribe to the CNR service — you get a free one-year membership when you purchase Linspire — a lot of the items in the Warehouse are free. (You don't need to keep your CNR membership up to date to keep using the software you downloaded; after you've got it, it's yours.) I cover how to add software using this service in Chapter 11.

Another cool aspect of some versions of Linspire is the audio/visual tutorials. After your installation is complete, the tutorials immediately launch to start walking you through how to use the system. You can stop them and come back to them at any time.

About the various Linspire versions

The folks at Linspire are pretty creative about putting together packaging options. In the section "Living Large with Linspire, earlier in this chapter, I address the various ways you can purchase this distribution. In this section, I look at the various ways Linspire is packaged for boxed sets and downloads. I'm not going to go into all the add-ons. (If I did that for every distribution, this book would end up an encyclopedia!) Instead, I look at the main versions available at the time of this writing:

- **Linspire 4.5:** The main Linspire product. This version has lots of software included, as well as the Click And Run Warehouse (see Chapter 12) and support. An ISO for this version is included in the `distros` folder of this book's DVD-ROM, though you do need to buy Click And Run Warehouse access and support separately in the included version.
- **Linspire 4.5 Laptop Edition:** Includes extra support for hardware that's typically in laptop settings.
- **Linspire 4.5 Developers Edition:** Includes more than 100 software development tools and utilities.
- **Linspire 4.5 Desktop Enterprise Assessment Kit:** A one-stop shop that can help you evaluate whether your company is ready to move to Linux on the desktop.
- **Linspire Live!:** A *bootable* CD-ROM that you can put in your hard drive, reboot your machine, and immediately have access to a Linspire desktop without having to install anything.

Maxin' Out the Fun with Mandrake

Mandrake (`www.mandrake-linux.com`) has a huge, enthusiastic fan base. This distribution, designed in 1998 with the goal of creating an easy and intuitive installation for everyone, specializes in ease of use for both server and home/office installations. To accomplish this objective, the creators of Mandrake focused on the goal of making an easy transition from your Microsoft Windows or Mac skills to Linux.

In this section, I focus on Mandrake Version 10.1. The ISO files required to install this distribution are included within the `distros` folder on the DVD-ROM that come with this book, so you just need to burn them onto CD-ROMs to get started. You can also download this distribution for free (from `www.mandrake-linux.com`) if you can't use the DVD-ROM, or you can purchase a boxed set with manuals and more from the Mandrake online store (`www.mandrakesoft.com`). To download Mandrake:

1. **Point your Web browser to `www.mandrake-linux.com`.**

2. **Click the Download link.**

   You are taken to the Mandrakelinux Downloads page. In this page, you're asked whether you want to sign up for its users' club (which, for a minimal monthly fee, gives you access to all kinds of extras and early downloads), or whether you already are a member or are thinking of becoming one. If you become a serious Mandrake fan, then joining the club is definitely something you'll want to consider!

3. **If you're not quite ready to join the club, click the Now button next to I'm Already A Member Of The Club Or Plan On Registering Soon, Please Send Me To The Download Page. Otherwise, go ahead and register for the club and then return to Step 1.**

   This action brings you to the main download page.

4. **Click the Mandrakelinux 10.1 Official ISOs/i586 link.**

   This action jumps down to the Mandrakelinux 10.1 Official ISO Images For I586 And Higher section of the Downloads page.

5. **Look through the list of countries and click the download location that's physically closest to you.**

6. **Download the three Mandrakelinux10.1-Official-Download files.**

   Each of these files is a full CD-ROM's worth of material, so if you're using dial-up or have bandwidth limits, you may find it easier to purchase the CDs from Mandrake or a third-party, such from `www.cheapbytes.com`. If you do download them yourself, see Chapter 2 for advice on properly burning Linux ISO files onto CD-ROMs.

In Chapter 2, I mention that Mandrake can resize your existing Windows partitions, so you don't need to do this task ahead of time.

Installing Mandrake

After you've burned or purchased Mandrake on CD-ROMs or a DVD, install it as follows:

1. **Place CD 1 or the DVD into your CD-ROM or DVD-ROM drive and reboot the computer.**

   If the computer ignores your CD-ROM and tries to boot normally, see Chapter 2 on how to make the necessary changes to your BIOS. The initial installer screen appears.

2. **Either press F1 to see more options (typically, if you know you need to use a special option) or press Enter to start the installation.**

   I assume that you press Enter. Lots of text scrolls by. The screen changes to a black-and-blue motif, with blue dialogs appearing as various devices are detected, and then finally you reach the Language selection dialog box, shown in Figure 4-4.

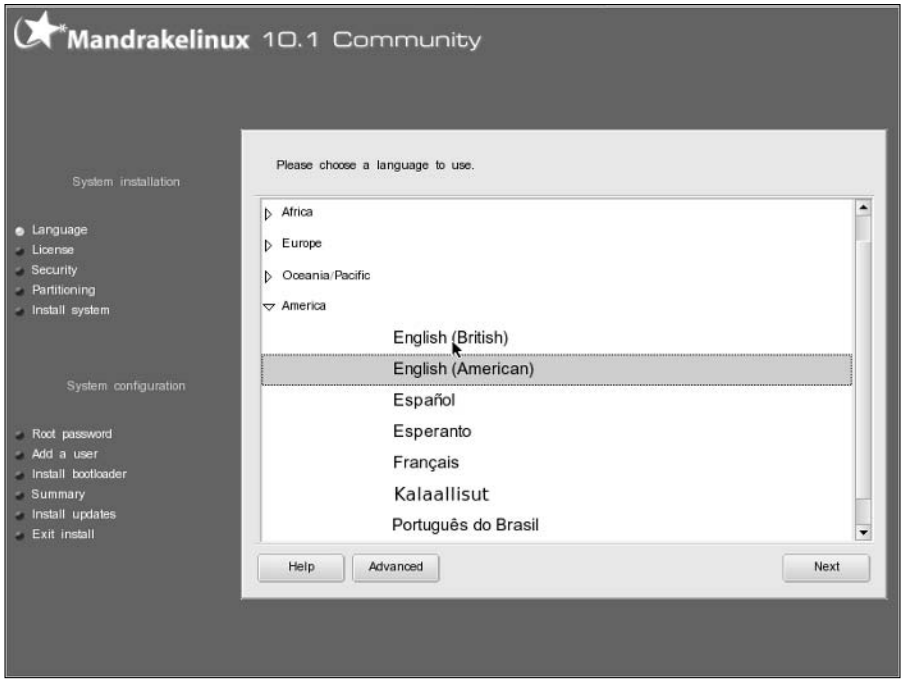


Figure 4-4: The Mandrake 10.1 Language Selection dialog box.

3. **If you want to use a language other than American English as your default language, select the appropriate language in the list and then click Next.**

   The License screen appears. Read the license, select Accept, and then click Next. The Security screen appears.

4. **Leave your security level at Standard, unless you want to experiment with High.**

   Going higher than High may make using the computer such a pain to use as a client that you'll be tempted to shut off security completely, which defeats the purpose! Still, some people like to play with the really paranoid level. It's up to you. I assume that you stayed with Standard.

5. **If you want to have a particular nonroot user on the system (or e-mail address) receive all security-related notifications (recommended), enter the login account you'll be creating for that user or the e-mail address to use in the Security Administrator text box; if not, skip to Step 6.**

   Remember, anything that reduces how much you have to log in as root is good, as long as it doesn't also reduce your security. I tend to choose an e-mail address for this text box.

6. **Click Next.**

   The initial disk partitioning screen appears. The options you see here depend on what the partitioning program (DrakX) finds on your hard drive(s), so you may see something different than what I'm seeing.

7. **Select the partitioning option you want to use.**

   Do *not* select Use Existing Partitions — if this option is even available — unless you went ahead and set up the machine's partitions ahead of time. Typically, you want one of the other options. If you're giving over an entire hard drive to Linux, then select Erase Entire Disk. If your Linux install has to share a drive with another operating system (or you know you want to set up your partitions a certain way) then select Custom Disk Partitioning or select Use Free Space if you have free space available. Other options may also appear, depending on what's currently on your system. For example, you may see Erase Entire Disk, which lets you wipe your Windows installation. If you choose Erase Entire Disk, accept the default partitioning and skip to Step 10.

8. **Click Next.**

   The Partitioning screen appears. You can choose existing partitions by clicking the partitions in the graphical listing. Each has a suggested mount point (see Chapter 3 for more on mount points) already attached. You can delete or resize a particular partition by clicking the appropriate button below the partition graphics. If you already have a bunch of free, unallocated space, you can click the Auto Allocate button to have Mandrake suggest a set of new partitions for you. To create a new one, click the empty space and then click Create. You can see an example layout in Figure 4-5.

9. **After you're finished laying out your partitions, click Done.**

   As the warning that appears says, the changes are made to your hard drive when you click Done. After the formatting is complete, the installer scans through its list of software. Then, the installation media dialog box appears.

10. **Only three CD ISOs are available for download, so if you downloaded those three, unselect CDs 4 and 5 in the list and then click OK. If you do have a CD 4 and 5, just click OK.**

    The Package Group Selection screen appears (see Figure 4-6).

11. **Choose the groups of packages that you want to install.**

    For a desktop, you might include each of the items in the Workstation section, plus both KDE and GNOME in the Graphical environments if you have the room. These items give you lots of software to play with.

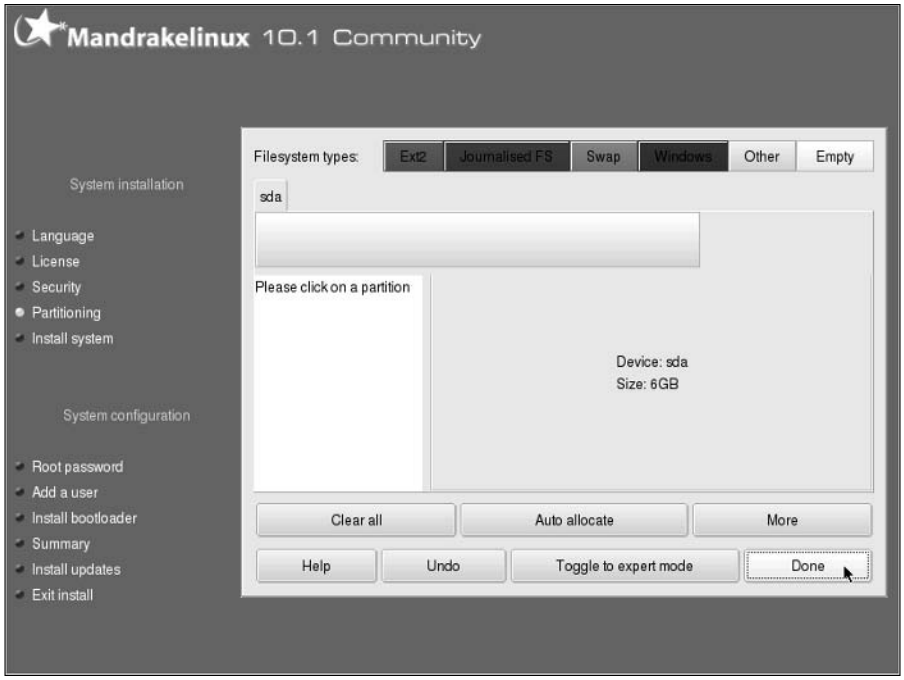


Figure 4-5: The Mandrake 10.1 Custom Partitioning dialog box with an example disk layout.

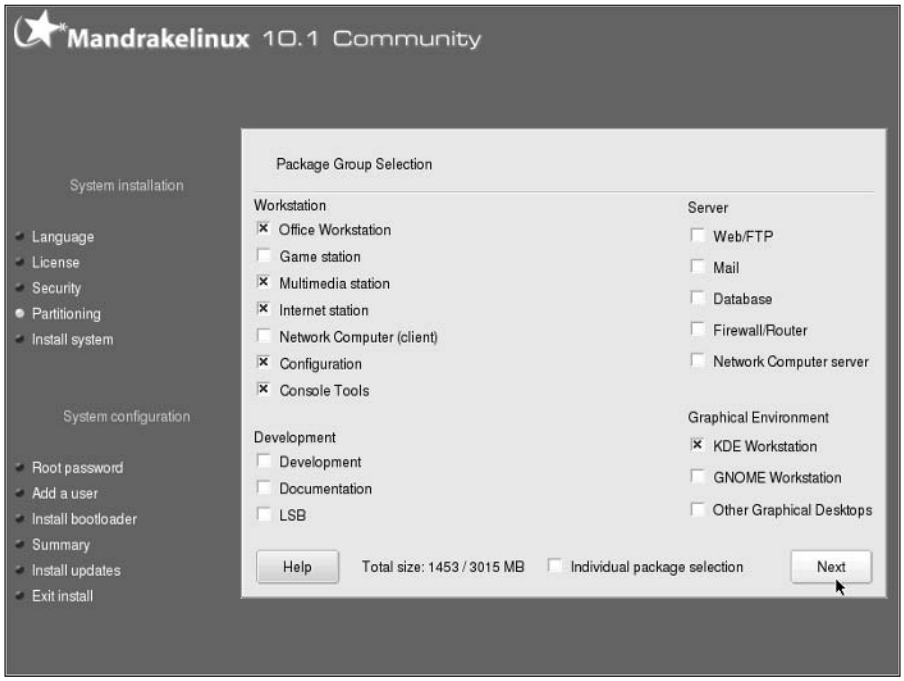


Figure 4-6: The Man drake 10.1 Package Group Selection dialog box.

12. **Select the Individual Package Selection box if you want to look inside each group and choose what you want.**

    I assume that you clicked this option.

13. **Click Next.**

    The Choose The Packages You Want To Install dialog box appears.

14. **Select and remove packages according to your needs.**

    In the left column, you can click a right-facing arrow to expand a category and see all the groups beneath it, or you can click a down-facing arrow to compress the category and clean up the list. A checkmark next to a group means that you selected that group, and a checkmark next to the category means you selected the whole category.

    You also find arrows next to groups. Expand a group, and you can see on the left all the software that will and won't be installed — you won't get *everything* from the group by default. You can then click any package in the list to see a description on the right. If you find that a package that you want isn't being installed, click the empty box next to its name to check it. If you don't want to install something that's checked, click the checkmark to unselect it.

15. **After you're ready to move on, click Install.**

    The installation begins. You're given a projection of how much time it will take. Keep in mind that if you need to swap CDs, you won't know until it asks you for the next one, so don't just walk away and ignore the system expecting it to be finished when you get back. You can click the Details button to see the progress for each individual package.

As with most mainstream Linux distributions, Mandrake has tasks to take care of after the main installation, before you start using the system. After the main files are placed onto your system (but before rebooting), you're asked to do things like enter your root (administrative) password. (See Chapter 3 for how to select a strong root (administrative) password and why you want to do so.)

After you choose your root password, you're asked to create a regular user account. When you do so, click the icon image and have fun selecting a picture to go with your user account. Speaking of users, do *not* configure the computer to automatically log in any account unless no one else could possibly have access to the machine. It's not a very secure practice, and it's a great way to set yourself up for some annoying practical jokes.

When you reach the Summary screen — which isn't entirely a Summary because it lets you configure things that you haven't looked at yet — make sure that everything is set properly. In particular, the Graphical Interface entry refers to your monitor and video card. If these devices aren't configured, then you'll definitely want to change that. In the Security section, click Configuration next to Firewall, uncheck the Everything checkbox, and add

checks only next to the services you'll run on this computer. For example, you may want to check SSH, FTP, and Echo (ping).

Finally, when given the chance to download updated packages, select Yes if you are already on a network that's connected to the Internet. Otherwise, you can do it later.

After you finish this part of the configuration process, you're asked to reboot. Then, believe it or not, there's a few more configuration tasks to take care of. First you'll see a user survey. If you want to fill it out, fine, otherwise skip it by just clicking Next. In the Choose Desktop dialog, click the dropdown list box and play with the various desktops and themes. Selecting something shows you what it will look like. After this, you can register for the Mandrake Club (`www.mandrakeclub.com`), and then finally you're done and can use the machine!

About the various Mandrake versions

Mandrake offers both server and desktop solutions, but I focus on the desktop here — which is considered by many to be Mandrake's real strength. You can see Mandrake's full range of commercial products by going to `www.mandrakesoft.com/products`, and you can see the full range of download options by following the instructions available in the earlier section, "Maxin' Out the Fun with Mandrake." I also focus only on items, as usual, that include the desktop itself rather than also covering add-ons.

At the time of this writing, you can purchase and/or download Mandrake for the desktop in the following versions:

- **Mandrake 10.1:** The full download version included with this book. You can use it for desktop, server, and everything in between.
- **MandrakeMove:** The *LiveCD* version of Mandrake, which allows you to pop the CD-ROM into any PC, boot the PC with this CD-ROM, and find yourself in a fully functional Mandrake environment without having to install anything.
- **Mandrake 10.1 Discovery:** A commercial package for people brand new to Linux. This package includes MandrakeMove.
- **Mandrake 10.1 PowerPack:** The "regular" full-featured commercial desktop package.
- **Mandrake 10.1 PowerPack+:** The power-user commercial desktop offering.

Mandrake also has commercial and/or free versions available for a number of other hardware architectures, such as AMD64, PowerPC, and SPARC. In addition to this, if you're a bleeding edge kind of person — which is how geeks refer to the "very latest and greatest that most people haven't started using" — you

may enjoy downloading the Mandrake Cooker (`www.mandrakelinux.com/en/cookerdevel.php3`), which is the development ("beta") version. Most people, though, are better off sticking with the main version of Mandrake, because betas, in general, are more full of bugs — hence, the term *beta test.*

Starting off with SuSE

The SuSE ("SOO-za", `www.suse.com`) company and Linux distribution were founded in 1992 and were purchased by Novell (`www.novell.com`) in 2004. The distribution is named after a German acronym for *Software und Systementwicklung* (Software and System Development). One SuSE claim to fame is its international support (most major distributions provide a level of support for users around the globe, but some have better language integration for particular groups than others; SuSE understandably excels in the German and western European space).

SuSE is primarily a commercial distribution, though it has a limited free option that I discuss in the section "About the various SuSE versions." Rather than compare a limited free version against other people's full versions, I walk you through the installation of the full SuSE Linux Professional 9.2. Also, while most distributions have one form or another of integrated configuration setup, SuSE's YaST is particularly extensive, and is equally so without a GUI — an unfortunate rarity. The manuals that come with the boxed versions are also nice and thick, serving as a nice add-on for this book, online help, user forums, and so on.

A Live CD containing SuSE 9.2 with KDE is included as an ISO file within the `distros` folder on the DVD-ROM that comes with this book. No install is required, so you can just burn the ISO onto a CD-ROM, put the CD into your drive, and boot your machine to experience this version of SuSE Linux.

Installing SuSE

The SuSE Linux 9.2 Professional boxed set comes with two thick manuals, five CDs, and two DVDs (for those who want to install instead from DVD). In Chapter 2, I mention that SuSE can resize your existing Windows partitions, so you don't need to do this step ahead of time. If you're using the version of SuSE included with this book, then you don't need to go through this installation procedure. I cover it here for those who purchased the full version of SuSE.

To install this distribution:

1. **Put either CD 1 or DVD 1 (the one on the left) in your CD-ROM or DVD-ROM drive.**

   If you're using the DVDs, make sure that Side A is facing up.

2. **Reboot your machine.**

   The Welcome screen appears, followed by the installer's menu.

3. **Choose Installation from the menu and press Enter.**

   A progress bar appears as the installer launches. After that, the initializing hardware screen appears. The process of figuring out what hardware you have on your computer can be a bit slow, so just be patient.

   Finally, the Welcome To YaST2 (the system's installer and administration program) screen appears.

4. **Select the primary language you want to use on this computer and then click Accept to proceed.**

   The Installation Settings screen appears (see Figure 4-7). It can take a minute or so for the system to complete its auto-detection routine and fill out all the entries.

5. **Look at the values beneath System and determine whether (to the best of your knowledge) they're correct. If not, click the System link and wait while SuSE autodetects all the hardware on your system in more detail. When it has finished, look through the list and then click OK.**

6. **If you're not using a U.S. layout keyboard (if you're in North America and have no idea, you're using a U.S. layout keyboard), click the Keyboard Layout link and select the appropriate setting. When you're ready to proceed, click Accept.**

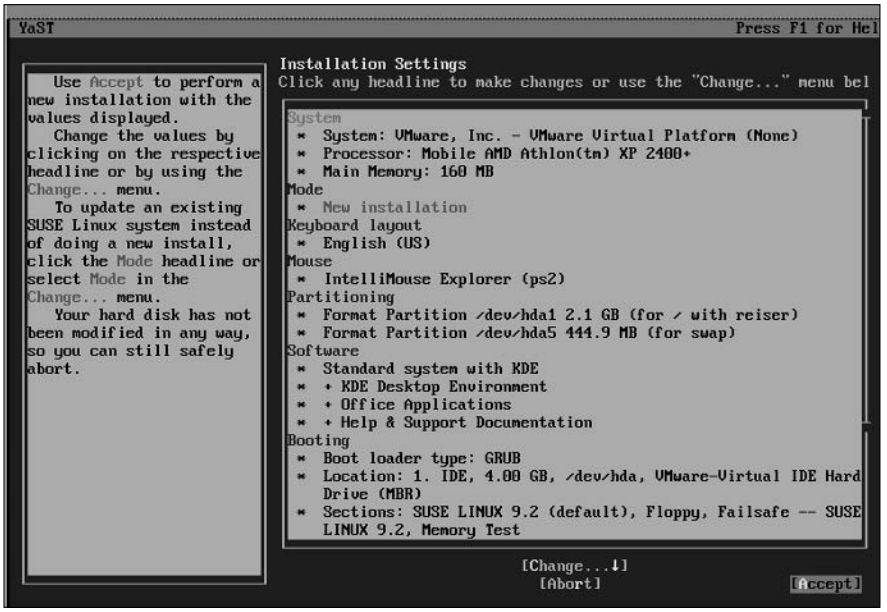


Figure 4-7: The SuSE 9.2 Installation Settings screen in text mode (there is also a graphical installer).

You can click in the Keyboard Test text box and then type to make sure that your keyboard is being recognized properly. If you like to heavily customize how your keyboard works, then click the Expert Settings button to do so.

7. **Look at the item listed under Mouse. If it is blatantly incorrect (it has chosen the best match it can find for your particular hardware), such as choosing a USB mouse when you have a PS/2, then click the Mouse link to go to the Mouse configuration screen.**

   Be sure to click the Test button to then test your new mouse setting if you change it.

   A USB mouse has a (around half-inch) wide but flat connector and a PS/2 mouse has a round one. A serial mouse is much bigger than both, being over an inch wide.

8. **In the Partitioning section, if you aren't happy with what you're being offered, click the Partitioning link. Otherwise, skip to Step 13.**

   Clicking the link brings you to the Suggested Partitioning screen.

9. **If you want to just make some adjustments, click the Base Partition Setup on this Proposal radio button. If you want to completely change the recommended partitioning setup, select the Create Custom Partition Setup button.**

   Because the last option is really for more advanced users, I assume that you chosen Base Partition Setup on this Proposal, to adjust what you were already assigned.

10. **Click Next to make your changes.**

    The Expert Partitioner dialog box opens (see Figure 4-8).

Figure 4-8: The SuSE 9.2 Expert Partitioner dialog box in text mode, rather than graphical mode.

11. **Make your changes.**

    You can change the size of a partition by clicking it in the list (ignore the whole drive entry, such as /dev/hda, focus instead on the partitions, such as /dev/hda1) and then clicking the Edit button to open the Edit Existing Partition dialog box. If you want to resize one of your NTFS or FAT32 partitions, then click that partition in the list and click the Resize button to get the job done.

12. **Once you're finished with your changes, click Next to return to the Installation Settings dialog box.**

13. **Click the Software link.**

    You probably do want to pick and choose what programs to install! This action brings you to the Software Selection screen.

14. **Click Detailed Selection.**

    Because I'm focusing on a point-and-click desktop setup, it's safe to assume here that you don't want Minimum system (no GUI at all) or Minimum graphical system (a very bare-bones, old-time GUI that doesn't take up much RAM but lacks many of the nice desktop bells and whistles many have grown to love). Clicking Detailed Selection takes you to the individual software selection screen (see Figure 4-9).

15. **Spend as much time here as you want, surfing through the options and selecting items to add.**

    Here's a recommended technique for working through this dialog box as a first timer. Start by looking to the left, under Selection, and picking the big groups you want to use. As a desktop user, you may want to add All Of KDE, GNOME system (picking both of these groups lets you have both GUIs to choose from and play with), Games, and Multimedia. Choosing these groups adds big chunks of programs to your list. You can look in the lower left to see how much of your disk all your selections take up.

Figure 4-9: The SuSE 9.2 Individual Software Selection screen in text mode, rather than graphical mode.

From there, to make it easier on yourself, click the Filter drop-down list box and select Package Groups. This action changes the listing on the left to software types. You can click the + marks to expand lists and – marks to shrink them. Then, on the right, you can look at the individual programs in the group selected on the left and then check them to add them to your installation list or uncheck them to remove them.

16. **When you think you're done, look on the bottom of the screen and select Check Dependencies.**

17. **If the response is All Package Dependencies Are OK, then click OK and proceed to Step 18. Otherwise, say yes to anything needed to fix dependency problems, and when you've got it all sorted out, then you can proceed to Step 18.**

18. **Click Accept when you're happy with your software selections.**

    You may be told that extra packages have been added to fix dependencies, even if you were told the dependencies are okay. Click Continue if this happens.

19. **If you know that you don't want to boot directly to the Linux-added boot menu, where you can choose what operating system and version to boot into, click the Booting link. Most people will want to leave the boot loader setting alone, so if you don't want to change these values, go to Step 20.**

    If you do click the Booting link, you see the Boot Loader Setup screen. To change a particular entry, click it and then click Edit to open the appropriate editing dialog box. Items of interest include

    - Boot Loader Location: If you want to use a different boot menu generator, you have to change the boot loader location to a different partition (a good spot is the /boot partition, so if you put /boot in /dev/hda1, that's what you'd select). However, you have to make sure to then tell your boot menu program where to find the Linux boot loader!
    - Default Section: This is the one you're most likely to want to change. Click this item and then choose Edit, and you see the screen where you can tell SuSE which option you want to boot into if you don't make a selection before the boot loader times out and starts booting automatically.
    - Available Sections: If you want to add a new boot menu option, click this one, choose Edit, and then click Add from the Boot Loader Setup – Sections Management screen.

    If you chose to make changes, once you're ready to move on, click Finish to return to the main Installation Settings screen.

20. **If your time zone is not set correctly, click the Time zone entry and change it.**

    Choose your region on the left and then the time zone on the right.

21. **If you want your default language to be something other than U.S.-flavored English, click the Language entry and make your changes.**

22. **If you want your machine to boot into command line mode, click Default Runlevel and select Full Multiuser With Network.**

23. **Finally, click Accept to open the Confirm Package License: flash-player dialog box.**

24. **Read the license and then click I agree to proceed to the Confirm Installation dialog box.**

25. **If you're sure you want to keep going, click Install. If you've changed your mind, click No to go back to the Installation Settings dialog box.**

    Let the installation begin! The SuSE installer shows you which disks it needs, how much material it needs from them, and a progress bar for each as it goes through the install.

After the install is finished, remove the CD or DVD and reboot. SuSE continues with its post-installation setup routine. The cool thing is that if you forget to pop out the CD or DVD, the system boots properly regardless — just remember to remove the CD or DVD before you reboot again, for good measure!

Because I don't have infinite space in this book, I give you some quick notes on how to walk through this initial boot setup routine. (Keep in mind that you can change the configuration for any of these items later if you need to.)

- See Chapter 3 on how to choose a solid password for the root (administrative) user.
- In the Network Configuration section, first check to see that your Ethernet card (Network Adapter), DSL modem, ISDN adapter, dial-up modem, or whatever you're using is properly detected. If it is, you see the make and model of the card. If not, you see Not Detected. If it's not detected, click the link for that section to go to its configuration section and under Available, select the Other (Not Detected) option. Click Configure to open the configuration interface. There, you can tell the interface the details of your device. You may need information from your ISP or hardware documentation in order to do so. (See Chapter 7 for coverage of the technology and issues you run into when setting up networking.) If the process gets overwhelming, just click Back until you return to the main Network Configuration section and select the Skip Configuration radio button so that you can go to Chapter 7 to set things up.

  I also suggest in Network Configuration that you change ssh to enabled. You can find out learn more about this option in Chapter 13.

- When you reach Test Internet Connection, select Yes (if you're able to access the Internet right now) and then Next. If your attempt fails, try connecting a few more times. Sometimes the tester just doesn't wait long enough for the connection to get through, so don't be discouraged if you need to give up and move on.
- When asked whether you want to get online updates, say Yes (if you're able to access the Internet right now.) That way, you'll be starting with a fully up-to-date system. In the Installation Source drop-down list box, select the physically closest site to you. Then, click the Manually Select Patches box so that it's empty; that way, it automatically updates everything and doesn't ask you annoying questions every few seconds. If you want, go ahead and click Configure Fully Automatic Update while you're at it so that you can make sure that your system keeps itself current on its own. (I look at how to do this in Chapter 12 as well.) This update can take a while, and sometimes it needs to ask you questions. If it says it's running into an error getting a patch, keep telling it to try again for a bit. Usually, the error corrects itself within five attempts or so. If you've tried ten times or more and it still doesn't go through, tell it to skip that fix. Again, if your Internet connection doesn't work, don't worry; you can update later using Chapter 12.
- One of the more confusing sections is the User Authentication Method (login) screen. Leave this setting as Stand-Alone machine unless you know for a fact that your machine is part of an NIS or LDAP network. Someone has to have set up NIS or LDAP, so if it's your network and you didn't, you're not using it.
- In the Add A New Local User screen, the User Login box is where you define the name of your login account. The Full User Name is where you put your full name so that it appears right in your e-mail From headers and all that fun stuff. Because you want to avoid the root account when possible (see Chapter 3), if the account you're creating now is the one that you'll use most of the time you're logged in, select the Receive System Mail box to put an X in it. This way, you get all the system warnings and whatnot here and don't have to log in as root to see them. On the other hand, I don't recommend leaving Auto Login checked. You should have to actually log into the machine, or it's too easy for people to use your account.
- The Release Notes can be worth reading just to see what little things crop up that might apply to you, and what tips you might find useful for dealing with your personal setup needs.
- The Hardware Configuration section works just like the others. If you want to fuss with something, click the appropriate link, and you can always just leave it as is and look at it later. I deal with sound (see Chapter 18) and printing (see Chapter 7) later, in particular.

After you're finished setting up things, you're brought to a login screen. Go ahead and start exploring! When you log in, the Welcome To SuSE Linux 9.2

dialog box opens. You can browse through its options by clicking the links or click the Close link to get rid of it and start playing with your new setup.

About the various SuSE versions

SuSE has a broad range of server and desktop products, from the home user to the enterprise. As usual, I focus on the desktop. You can examine the full range of SuSe offerings at its Web site, `www.suse.com`, if you're interested in finding out more information. The desktop versions available from SuSE include

- **SuSE Linux LiveEval:** The SuSE LiveCD. You can download this version from `www.suse.com/us/private/download/ftp/live_eval_int.html`, burn it to CD, and boot into a SuSE environment without having to install. An ISO for this version is included in the `distros` folder of this book's DVD-ROM. The LiveCD, however, comes in two versions: the KDE-based version (see Chapter 6), which is the default GUI in SuSE, and a GNOME version.
- **SuSE Linux 9.2 Personal:** The SuSE baseline desktop product. Comes with the LiveEval. You can purchase a boxed set with manuals or download the CD-ROM image from `www.suse.com/us/private/download/ftp/personal_iso_int.html`.
- **SuSE Linux 9.2 Professional**: A far more extensive version of SuSE, with five CDs' and two DVDs' worth of material. Useful for both desktop and server. This is the version of SuSE covered in this chapter.
- **SuSE Linux Download:** You can download and install SuSE free of charge beyond the Personal edition, but you're getting something in between the Personal and Professional, as some of the software included in the boxed sets requires license fees to other companies and so cannot be freely given away without significant cost to Novell. The installation process in this case isn't particularly simple, so I don't typically recommend it to beginners. If you want to find out more about this version, go to `www.suse.com/us/private/download/suse_linux/` and read the installation guidelines for the FTP install.

Zapping Frustration with Xandros

Xandros (`www.xandros.com`) is another commercial distribution especially designed for people coming over from the Windows world to Linux and is in particular designed to integrate well with existing Windows networks in the workplace. It's another Debian-based distribution that is not meant for those who want to become Linux geeks and is instead focused on people who just want to get their work done. An ISO of the free version of this distribution is included in the `distros` folder of this book's DVD-ROM.

If you decide to purchase Xandros, you have a number of options:

- Purchase it online and have a physical box shipped.
- Purchase a boxed set in a store. You can find a list of places that carry Xandros by going to www.xandros.com/partners/channelpartners.html.
- Purchase a computer with Xandros pre-installed (`www.xandros.com/partners/oempcs.html`).You also have a free option. See the section "About the various Xandros versions" for more information. Xandros is also particularly designed to make the transition from Windows to Linux as simple as possible. As such, you can expect to find the layout and other issues to be similar to those in Windows XP. One handy item Xandros has introduced is the Xandros Networks tool, which is accessible from the desktop as an icon you can double-click. Xandros Networks lets you see the latest news from Xandros, browse through an online store for software, some of which is free to registered users. Downloading and installation through Xandros Networks requires just a few clicks.

You can purchase, through Xandros Networks, a Premium Membership to get access to discounts, early access to software, and more.

Installing Xandros

Again, because I cover the full versions of everything else, I cover the full Deluxe Xandros Desktop OS Version 2.5 installation here. To install this version:

1. **Place the CD-ROM into your CD-ROM drive.**
2. **Reboot your computer.**

   If your computer ignores the CD, then you need to change your BIOS so that it looks at the CD-ROM drive before your hard drive(s). (See Chapters 2 and 3 for more information.) If your computer sees the CD but seems to have problems launching the installation program, reboot and press the Shift key as the Xandros screen comes up to see your troubleshooting options.
3. **When you reach the Welcome dialog box, click Next.**

   The End User License Agreement displays.
4. **Read the agreement, click I Accept This Agreement and then click Next.**

   The Installation Selection screen appears.
5. **Choose either Express or Custom Install and then click Next.**

   I assume that you've chosen Custom, because it's the more complex option. When you click Next, the Software Selection screen appears (see Figure 4-10).

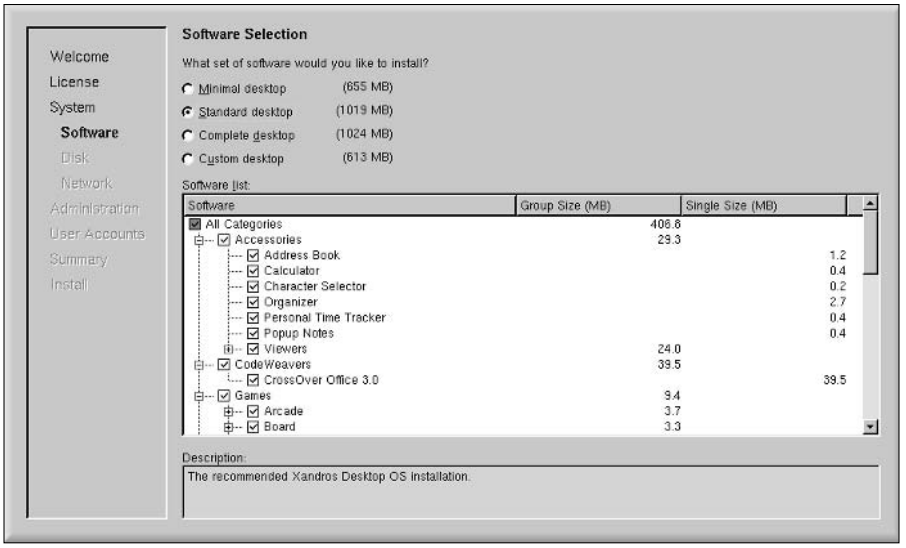


Figure 4-10: The Xandros 2.5 Software Selection screen.

6. **Select the software group you want to install.**

   Unless you're short on space, you might enjoy choosing the Complete Desktop because it gives you all the software — if you want, choose Complete to start with and then start removing items by clicking their checkmarks. Or choose Custom and then start adding things. When you click an item in the lower list, you see a description on the bottom of the screen.

   If you do choose Complete, do look in the Servers section and remove Apache (the Web server) from the list, along with FTP Server — unless you know for a fact that you intend to use an FTP server to let people get files.

7. **After you finish choosing your software, click Next.**

   The Disk Configuration screen appears.

8. **Select the disk configuration option that best represents what you need to do.**

   Handily, in some versions, you can resize Windows partitions, even NTFS ones. I assume that you have a free hard drive that you want to use for Linux, just to be different from the other sections in this chapter, so I assume that you selected Take Over Disk Or Partition.

9. **When you're ready to proceed, click Next.**

   The Disk Configuration dialog box appears, as shown in Figure 4-11.

Figure 4-11: The Xandros 2.5 Disk Configuration dialog box.

10. **If you want to give a partition over to Xandros, then click that partition in the listing.**

    For an entire hard drive, you see them listed as IDE2, IDE2, and so on (or SCSI1, SCSI2, and so on).

11. **Click Next to proceed.**

    The Disk Configuration Summary dialog box appears.

12. **Examine the summary and click Back if something's wrong, or Next if you're ready to move on.**

    The Network Connection Configuration dialog box appears.

13. **Select the network device you want to use.**

    Typically, a desktop machine has only an Ethernet card, modem, or wireless card.

14. **If you're supposed to use DHCP, just click Next and skip to Step 18. Otherwise, click Edit.**

    The Edit Interface dialog box opens.

15. **If you're using a dial-up modem, select Do Not Configure Network Interface, click OK, and skip to Step 17. Otherwise, select Static Address if you were told an IP address to use.**

    Modem setup is covered in Chapter 8.

16. **Fill in the IP Address and Subnet Mask fields as they were given to you by your ISP and then click OK.**

17. **Click Next to continue your installation.**

    The Administration Configuration dialog box appears.

18. **Type your Administrator (root) password in both of the password text boxes.**

    See Chapter 3 for a discussion on safe use of the root account.

19. **In case your computer needs to integrate with a Windows network, enter a name for it in the Computer Name text box.**

    You're typing the NETBIOS name if you're familiar with those. Follow the rules specified in that part of the dialog box. Traditionally, a NETBIOS name is in all capital letters.

20. **Click the Make User Home Folders Private checkbox.**

    This feature not only make it easier for each user to keep data private, but helps the layout conform to what Red Hat uses in Fedora, making it easier for this book to make sense for you.

21. **Click Next to proceed.**

    The User Account Configuration screen appears.

22. **Click the Add button to create a normal user's account.**

    The Add/Edit User Account dialog box appears (see Figure 4-12). Because you want to avoid the Administrator (root) account as much as possible (see Chapter 3), this regular account is the one you use most of the time.

23. **Enter your login name in the User Name text box.**

    Your login name might be something like `bob`.

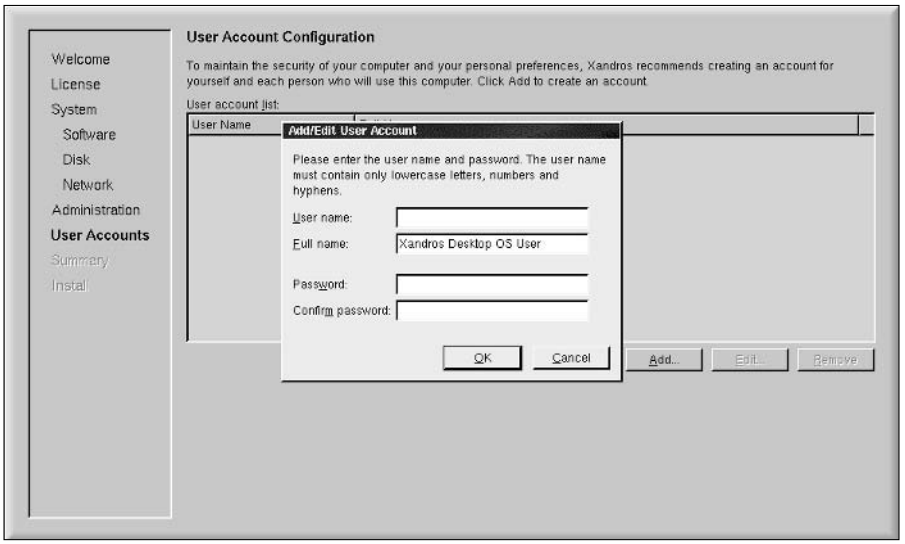


Figure 4-12: The Xandros 2.5 Add/Edit User Account dialog box.

24. **Enter your full name in the Full Name text box.**

    This name will, for example, as the full name field in your e-mail.

25. **Enter your password in both password text boxes and click OK to create the account.**

26. **Click Next to proceed.**

    The Installation Summary dialog box appears.

27. **Inspect the summary. If everything is as it should be, click Finish. Otherwise, click Back as much as you need to in order to fix things and then work forward to this step once again.**

    Up until this point, nothing has been changed on your computer. When you click Finish, your installation actually begins. After it's done, the Installation Complete dialog box appears.

28. **If you want to create a boot floppy disk (recommended), then put a floppy disk in your floppy drive and click Create. Otherwise, go to Step 29.**

29. **Click Exit once you're ready to reboot the computer into Xandros.**

30. **Eject the CD when prompted and press Enter to reboot.**

    When the Xandros boot screen appears, you can either select the Xandros option and press Enter, or wait until it starts up on its own.

As with the other distributions covered in this book, Xandros has a number of post-installation setup tasks for you to walk through. When you reach the login prompt, use your regular user account, which should automatically be selected. Type your password and click Login (or press Enter) to log into the account and start the First Run Wizard. Some notes for walking through this process:

- Under Regional Settings, Locale is just for your language issues. It doesn't have anything to do with your time zone and whatnot. Also, unless you know for a fact that you want a particular item in Character set, just stick with what you're assigned. It's chosen based on your language, because a character set is literally the characters you have available to type. It's the same with keyboard layout.
- You don't have to set up your printers right now, but if you want to, go ahead in the Printers dialog box. I look closer at printers in Chapter 6.
- Under System Behavior, you're choosing a combination of look and feel elements (will it look like Microsoft Windows, MacOS, Linux — referred to as KDE here rather than Linux, you find out more about KDE in Chapter 6 —, and so on?) along with how the system actually behaves. My coverage of Xandros in this book sticks to the default Xandros setting unless otherwise stated, but feel free to play with yours!

- Under Registration, it's up to you whether you want to register immediately. You can always register later. You need to register in order to get technical support, so you'll probably want to register *before* you run into trouble. Registration also lets you download some of the programs available in Xandros Networks (see the section "Recognizing some Xandros special features") for free!
- When you reach the Finish screen, if you're on a network that's already connected to the Internet, click the Xandros Networks icon to update your system. This action makes sure that you've got all the latest security and bug fixes. The updater is automatic.

When your update is complete, you're left with the Xandros Networks screen in the foreground and the First Run Wizard in the background. Click the First Run Wizard icon on your lower panel to pull this dialog box to the front and then click Finish to complete your first run process. You may get a message that your desktop has to be restarted. Click Yes, which logs you out of your account and restarts the GUI, bringing you back to a login prompt.

About the various Xandros versions

Xandros focuses on the desktop and has offerings for both home and business users. The free and commercial versions from Xandros include (at the time of this writing):

- **Xandros 2.5 Open Circulation Edition:** A free version, slightly different from the main commercial version, available through *bittorrent*, a P2P filesharing network popular with legitimate software distributors as a way to get CD and DVD images quickly to their users. See `www.xandros.com/products/home/desktopoc/dsk_oc_download_windows.html` for instructions.
- **Xandros Desktop OS Version 2.5 Standard Edition**: The primary home use version of the Xandros desktop.
- **Xandros Desktop OS Version 2.5 Deluxe Edition:** Includes additional software for interoperating with Windows and Windows software, including the ability to resize NTFS partitions.
- **Xandros Desktop Version 2.5 Business Edition:** Includes extra software on top of what you would get with the Deluxe Edition, which allows Xandros to better integrate as a desktop on a Windows network, along with Sun's StarOffice, the commercial product behind the `OpenOffice.000.org` suite covered in Chapter 17. However, Xandros 3 may well be available by the time you purchase this book. If so, it's well worth checking out.

Using LiveCDs

As I mention throughout this chapter (and book), *LiveCDs* (or *bootable distributions*) are versions of Linux that you can launch directly by rebooting a computer using a Live CD-ROM (or DVD-ROM). The beauty of these versions, from a Linux newbie's point of view, is that you can try something out without having to actually install anything on your system. Old-timers love LiveCDs, too. If a system is broken into, rebooting it with a LiveCD is a way of giving yourself a "known good" (undamaged) system to work from while repairing the damage on the computer itself. Also, many bootable distributions offer highly specialized environments for particular tasks . . . but I'm getting ahead of myself.

You also need to keep in mind that LiveCDs tend to be slower than a traditionally installed system. Everything has to run directly from the CD or DVD-ROM, after all.

Make sure, too, that you're able save things if you need to. Doing so can require some planning, or at least a bit of thought — see Chapter 21 for how to accomplish this. When all else fails, I quickly configure the mail client and just e-mail attachments to myself. That's how I got those NTFS resizing images (see Chapter 2) from Knoppix over to my Fedora machine while writing this book! You also can usually access your real hard drive space from a bootable distribution, though whether it supports NTFS or not depends on the version. Knoppix does support NTFS, though it's best to use it as read-only.

Another popular option with LiveCDs is to use portable storage like USB keychains. That way, you can carry around your keychain and your bootable distribution and have access to your preferred environment *and* your data at the same time. The important thing to know about USB storage is that Linux sees these items as SCSI drives, so if you have to access them manually (see Chapter 11) you'll access them as SCSI partitions. For example, if you've got your USB keychain plugged into the first SCSI slot, it would probably be /dev/sda1.

Finally, not all LiveCDs work with all PCs. The cool thing is that if one doesn't work with yours, you just shrug and download another!

Finding Even More Linux

More than 200 different Linux distributions are available today, with new ones being created every year while others fade from existence as the initial enthusiasm or funding behind them dwindles away. Many of these distributions are general purpose, or at least similar purpose (full desktop, full server, and so on), and so provide similar base software and surrounding

tools to one another with different configurations, documentation, GUI trappings, installation procedures, and other bells and whistles. Even then, some general-purpose distributions serve some markets better than others. For example, TurboLinux is popular in Japan, Red Flag Linux is the official choice in China, and Conectiva is popular in Spanish-speaking countries. More special-purpose distributions exist as well. LiveCDs fall under this category, but even they fall into subcategories, with some of them (like Knoppix) serving the general-purpose segment, while others are fine-tuned as multimedia centers, system-rescue environments, and other cool specialist toys. To dig through the many distributions available, check out DistroWatch (`www.distrowatch.org`) and let your mouse do the walking through over three-hundred distributions. If you can't find enough to choose from here, go to this site's Related Links section, and you can find plenty more.

If you don't want to download and burn all this stuff and don't know any helpful Linux geeks, you may want to look up a local Linux Users Group (LUG). You can find a list of LUGs worldwide, listed by geographic region, on the GLUE (Groups of Linux Users Everywhere) Web site: `www.ssc.com:8080/glue/groups`. These folks are always happy to help the technologically challenged. These user groups also regularly sponsor events, called *demo days* or *install-fests,* where you can bring your computer and get all the help you need. These events are usually lots of fun for computer enthusiasts — hot- and cold-running caffeine and enough know-how to do just about anything with a computer.

Chapter 5

Booting and Stopping Linux

In This Chapter

- Understanding what happens when you turn on your Linux machine
- Identifying and isolating boot problems
- Shutting down safely

I like work; it fascinates me. I can sit back and look at it for hours.

— Jerome K. Jerome

If you came here from Chapter 3 or 4, you likely just survived the first gauntlet of the Linux world: installing the operating system. I hope that booting for the first time worked well. If it did and you decide that most of this chapter isn't for you, at least skip to the last section in this chapter, "Don't Just Turn Off the Machine!" Otherwise, if you're interested in learning about what your machine does as it boots (this chapter can get pretty geeky!), read on.

Your Linux installation failing to boot properly is not necessarily an emergency. Much of this chapter is designed to help you deal with any problems you might run into. Before you curse Linux, remember that installing an operating system is no small task and that, because many technical variables are associated with such an installation, many computer manufacturers insist on performing the task at the factory. Companies such as Hewlett Packard and Wal-mart (believe it or not) have been offering Linux pre-installed, so if you're too discouraged at this point or are reading ahead and are too nervous to give it a shot, you can either use Knoppix (see Chapter 4 for how to use Knoppix without having to install it) or purchase a pre-installed machine from a vendor or a local computer builder.

To unravel the mystery of a Linux system that won't boot requires a bit of understanding of how your computer starts up.

Giving Linux the Boot

Let's face it: As enjoyable as the experience of staring at a dormant computer is, the real fun starts when you turn on the computer. As with any electronic device, opening the electron floodgate is the first step to fun. A computer, however, has much more stuff to do than your toaster oven. Rather than act as a simple heating element, your computer has to check all those gizmos that you (or the manufacturer) plugged into your computer's motherboard. After the initial power-up, the computer performs some simple hardware tests (called the POST, or Power-Up Self Test) to determine whether those various components are working properly.

Checking all your hardware is just the beginning. Between the time you turn the computer on and the moment the glowing phosphor on your monitor prompts you for a login name, the computer is building itself an empire. If you listen and watch carefully, your computer and monitor show signs of the boot process through bleeps, buzzes, whirring motors, clicks, messages on the monitor, and blinking lights.

Although you have heard the cliché "Rome wasn't built in a day," the boot process goes fairly quickly. This is pretty amazing, considering that the architecture of an operating system makes Rome's look like a stack of cardboard boxes and that each time you power up your computer, it must build its whole operating system in memory. (Remember that an *operating system* is the core software that makes your computer work.) This process can be broken into four main steps, which I discuss in the following sections.

Step 1: Power-On Self-Test (POST) leads to BIOS

The POST process really has nothing to do with the operating system. Your computer performs this step whether you're running Linux or another operating system such as Windows XP.

Some symptoms of a failed POST include

- An unusual series of long and short beeps.
- Nothing displayed on the monitor.
- No apparent activity other than the whirring fan on the power supply.
- A puff of smoke or the pungent smell of burning electrical components from your computer case.
- An error message, displayed on the monitor, indicating a hardware failure.

If you encounter any of these problems, you have hardware troubles that need to be resolved before you can proceed. Chances are, if your computer

was running properly before you began your Linux installation, your computer should be getting through the POST just fine — POST problems don't tend to be caused by installing a new operating system; they're far more fundamental to the computer itself.

For all but the last of these errors, it's time to question your nephew Mortimer, who was last seen lurking around your computer with a screwdriver. (Or take your computer into a computer repair shop!) If you see an error message indicating a hardware failure, you might have a shot of fixing the problem in the BIOS. As the POST does its thing and finishes up, it briefly displays (usually at the bottom of the screen) instructions on how to enter "setup." Typically, these instructions mention pressing the DEL key or a function key such as F1. When you press this key, if all goes well, you usually see a blue screen with black and white text. From here, if you're familiar with your hardware, you can try to figure out and fix the problem. However, many people would rather have a root canal with no anesthesia than mess with this stuff, so you may want to grab the nearest teenager or computer repair shop to take a look.

The good news is that if you can get to the BIOS at all, the problem *may* be easier to fix than one where the computer fails before you reach the BIOS.

Step 2: The BIOS passes the baton to the boot loader

After the BIOS gives the okey-dokey with a successful POST, the BIOS locates the first hard drive in your system and reads the first *sector* of that disk, which is often referred to as the MBR (Master Boot Record). On that first chunk of disk is a small program called a *boot loader.* The boot loader doesn't know much about anything, except how to start loading your operating system.

Two boot loader programs understand how to load a Linux operating system: LILO (LInux LOader) and GRUB (GRand Unified Boot loader). LILO has been a tried-and-true boot loader for as long as Linux has been a gleam in a geek's eyeball. GRUB is a newer and much more sophisticated boot loader program than LILO. Many distributions allow you to choose your boot loader. Typically, most people just stick with the defaults, which are as follows for the five distributions discussed in this book:

Distribution	***Default Boot Loader***
Fedora Core	GRUB
Linspire	LILO, with its own special routines on top of it.
Mandrake	LILO
SuSE	GRUB
Xandros	LILO, with its own special routines on top

Custom boot disks

You can protect against boot loader failures after you get your installation working by making a custom boot floppy disk, which you can use to boot the system if the boot loader on your hard drive gets corrupted. Many distributions have special programs or tools available to make custom boot disks for you, and some will offer to make the disks during installation. The programs to make a disk manually are mkbootdisk for Fedora Core and Mandrake, drakfloppy for Mandrake as well, yast for SuSE, and build-boot-floppy for Xandros. However, a custom boot disk won't help you if something goes wrong with the later boot steps. It's only good for boot loader problems. After you manage to boot with the floppy, open a terminal window (see Chapter 14), type `su -` to become the root (administrative) user, and then double-check which boot loader your distribution uses. For LILO, type `lilo -v` to try to repair your boot loader on your hard drive. For GRUB, look in the file `/boot/grub/menu.lst` and look for a line in the beginning with the text "boot=" — for example, it may say `boot=/dev/hde`. Then, type `grub-install bootdrive`, where bootdrive is the hard drive listed in the boot line, such as `grub-install /dev/hde`. Now you can try rebooting without the floppy in the floppy drive.

Sometimes "bad things" can happen to your boot loader. One common symptom of boot loader problems is a message saying that the operating system could not be found. Another hint that the problem is your boot loader is if you never see your *boot menu,* which is a screen that comes up during the boot process that lets you choose what operating system and version to boot.

The boot menu will look different from distribution to distribution.

If you suspect a boot loader problem, see the section "Entering Rescue Mode," later in this chapter. For another option, see the sidebar "Custom Boot Disks."

Step 3: The boot loader (GRUB or LILO) loads the system kernel into memory

Every computer (and electronic device) requires an operating system to run. The technical term for this operating system, or at least the core of it, is the *kernel.* If the kernel is your maestro, orchestrating all the components of your computer and delegating resources in a logical and cooperative manner, the boot loader is the red carpet on which the maestro arrives.

Many Linux distributions today actually put up a GUI progress screen during the kernel loading and *system initialization* phase (after the kernel finishes loading, when it finishes up the boot process). If you want to see what happens, you can typically click an icon or press a key. Just look for instructions on how to "see details."

This list shows some symptoms of a missing, incorrect, or corrupt system kernel — all would occur after you either make your menu selection and press Enter, or just let the boot loader do its thing automatically without choosing anything:

- The system freezes.
- A few dots appear across the top of the monitor, and then the system freezes.
- A few messages appear on the screen, and the final message reads `kernel panic`.
- The system reboots automatically.

You know when the kernel is loading because you start to see crazy text like:

```
Uncompressing Linux... Ok, booting the kernel.
audit(1092566112,337:0): initialized
```

Recovering from a kernel loading failure (aside from "operating system not found" — see previous section) is one of the more challenging issues in Linux. This task is unfortunately not for the faint of heart. On the other hand, the failed kernel may be an updated one. If you have more than one Linux option in your boot menu, look at the version numbers for each of the options and choose the second newest. Doing so lets you boot into the last working kernel and have a working system. Then you can open up `www.google.com` and search on the error messages or wait until the next kernel update comes out and ignore the bad one for now.

In the case where it's your original install that doesn't properly start, you unfortunately don't have a fallback kernel option. If this is your problem, I recommend either contacting your distribution's support address (if you purchased a commercial product) or joining the installation or beginner's help discussion list if you downloaded a free product. See Chapter 2 to find out where to locate help for each distribution discussed in this book.

Step 4: Control is handed over to init

Once the kernel's finished loading, it passes off the system initialization process to a program named `init`. The `init` program is responsible for starting all services and programs. You can see these processes starting as they scroll up the screen with `[OK]` or `[FAILED]` on the right side of the monitor. If you see these lines, you know that your kernel has finished loading.

The main problems you may encounter with `init` are *services* (programs that run in the background) that fail to start properly, as is indicated by the `[FAILED]` status shown during the boot process. Many of these services don't keep you from logging in and using your system. Services usually fail because of misconfigurations or unsupported hardware drivers. Sometimes a problem service takes a long time to start up, so you may need some patience while you wait it out. Once the machine boots up, you can use the techniques described in Chapter 12 to shut off the problem service if it's being a pain. If the machine can't boot because of this service, you'll need to access your distribution's rescue mode to shut off the service. Rescue mode is covered in the next section. Entering Rescue ModeHeavy-duty system repair tends to happen in *rescue mode,* which is a special boot selection that simulates your hard disk in what is called a *RAM disk,* holding the files entirely in memory. The benefit of this disk is that you can perform necessary system surgery without requiring utilities that are part of the installed system; everything you need is part of the rescue disk. The drawback is that this is a purely command-line interface, and you really have to know your stuff to find your way around.

Appendix A contains a list of Linux commands, roadmap to try to help you out. Chapter 20 addresses, among other things, how to fix your boot loaders from here if your problem is with the boot loader, and how to track down the error messages your kernel might have left behind. You may also be able to find helpful tips by reviewing your distribution's documentation and help forums.

Knoppix is quite popular to use for system rescues because it's a whole distribution on a CD. (For more on Knoppix and live CDs, see Chapter 2.) See Chapter 20 for more on using Knoppix for things like rescuing broken Linux (and even Windows) systems.

Just about every Linux distribution includes a rescue mode. Due to space restrictions, I have room to cover entering only Fedora's rescue mode in step-by-step detail, but at the very least, here's a quick reference to how to find the rescue mode in the distributions covered in this book:

- **Linspire:** The CD contains a rescue mode. When the installer starts, use your arrow keys to select Diagnostics and then press Enter.
- **Fedora:** The DVD, or the first installation CD, contains a rescue mode that you can enter by typing `linux rescue` at the installer's boot prompt.
- **Mandrake:** The first CD contains a rescue mode. When the installer starts, press F1 to access the command prompt, type `rescue`, and press Enter.

- **SuSE:** The DVD, or the first installation CD, contains a Rescue System menu option. Use your arrow keys to highlight this option and press Enter.
- **Xandros:** The CD contains a rescue mode. When the installer starts, press the Shift key. This action opens a list of menu options. Use the arrow keys to select Rescue Console, and press Enter.

To enter rescue mode in Fedora Core, place the DVD or your first CD into your DVD-ROM or CD-ROM drive and boot the machine. Then follow these steps:

1. **When the disk first loads, type** linux rescue **at the** boot **prompt.**

   This action begins booting the system into maintenance mode.

2. **Select your language and press Enter.**
3. **Select your keyboard type and press Enter.**

   The rescue system does its thing for a while, perhaps a minute or two on a slow system.

4. **When asked whether you want to start the network interfaces, answer No unless you know you need to download something.**
5. **At the Rescue screen, select one of the three options offered and then press Enter.**

   Your three options are

   - Continue: The rescue interface tracks down your installed Fedora Core system for you.

     If you select this option (or the next) and it fails, you may need to reboot and restart the rescue system. After restarting, choose Skip.

   - Read-Only: The same as Continue, but you aren't able to make any changes to your hard drive installation.
   - Skip: Don't bother trying to locate the filesystem, just give me a prompt!

   I assume that you chose Continue. If so, a *shell prompt* (the rescue command-line interface) appears, and you now have access to the rescue interface.

6. **If the rescue process was able to load your Fedora installation, type** `chroot/mnt/sysimage` **to be able to use your system without having to type** `/mnt/sysimage` **in front of everything.**

Don't Just Turn Off the Machine!

Even when you're not tapping the keyboard or clicking buttons, Linux is still running along in the background and doing lots of housekeeping chores. Some of these chores may involve swapping *cached data* to and from the fixed disk — a geeky way of saying that it's actually jotting down things onto your hard drive that before it had just been making sure to remember in RAM. When you shut off the power out of the blue, anything the computer was remembering but hadn't written is lost, kind of like when you or I fall asleep before making a to-do list for the next day.

If you're used to Windows 98, you need to recondition yourself from just shutting off the power when you're finished. For one thing, many Linux users leave their computers on when they're not using them; they just log out of their accounts so that no one can mess with their stuff and shut off the monitor because monitors draw a lot of power. When you do decide to turn off your Linux machine, for whatever reason, you must shut down the computer in an orderly manner.

You can use one of these methods to shut down Linux properly:

- If you're in the GUI, log out of your account using the main menu's Log Out option and then click the display manager option that says, strangely enough, Shut Down.
- If you have a command prompt open, enter the `halt` command at the shell prompt (#) followed by the root password, and Linux shuts itself down and tells you when it's all right to turn off the machine.
- If you have a command prompt open, enter the `reboot` command, and Linux goes through the motions of shutting itself down and then immediately reboots the machine.
- If you have a command prompt open, entering `shutdown -f now` is the most traditionally accepted method. The `shutdown` command optionally allows you to send messages to logged-in users and determine how long until the shutdown takes place. Another method is the `poweroff` command, which is just an alias to the previously mentioned `halt` command.

If you do accidentally cut the power to your Linux box, take heart; all is not lost. More often than not, you can reboot your computer and pick up where you left off. However, you may have to pay for your error by waiting during a quick file system check while the machine makes sure that nothing was damaged. This process is similar to the one in Windows, where, if you power off incorrectly, the operating system may need to scan its hard drives to make sure that everything is okay.

If you're plagued with brief power outages or spikes that cause your computer to reboot, look into getting a UPS (Uninterruptable Power Supply) for your computer. These heavy recharging batteries can not only protect your computer from damage — read the box to see what features a particular UPS offers — but can also provide an extra five minutes or more of power to give you a chance to properly close your files and shut down a machine when the power goes out. Better yet, for those really brief spikes, the only inconvenience you'll have to deal with if you have a UPS in place is listening to it complain with beeps. Your computer won't be affected by the spike at all!

Removing Linux from Your System

Although I'd hate to see you go, I'd also hate to see you get trapped in Linux if you don't want to use it! How to most easily get rid of Linux depends on what you want to do:

- If you want to replace Linux with Windows, just install Windows on the machine. It will overwrite all of Linux, including the boot menu.
- If you want to remove Linux from a dual boot setup, then boot into your Windows option, access a command prompt, and type `fdisk /mbr`. This action removes the Linux boot loader. It doesn't erase Linux, but you can then format the Linux drive(s) or partition(s) for Windows.

Windows XP and Xandros users have a special command they can use to remove this distribution. Boot your machine using your XP CD-ROM into the Recovery Console. Change to the Windows directory and then type `fixmbr`.

Chapter 6

Checking Out Those Desktops

In This Chapter

- Finding your way around Fedora
- Kicking around Knoppix
- Looking around Linspire
- Messing around with Mandrake
- Seeing what's what with SuSE
- Xightseeing around Xandros

A bus station is where a bus stops.

A train station is where a train stops.

On my desk, I have a workstation. . . .

— Steven Wright

A lot of people like to characterize Linux as a DOS-like environment, where all you can do is operate in this antique-feeling world where you have to type a lot of cryptic stuff and can't see any pretty pictures. However, the Linux desktop offers you quite a nice working environment, as you see throughout this chapter. The cool thing is that most of it is configurable. Those who like to customize their systems can have way too much fun changing things around.

Introducing the Interfaces

Linux has two interface types: the *command-line interface* and the *graphical user interface* (GUI). If you use other computer systems, such as Windows or the Macintosh, you're already familiar with a GUI. Most Linux distributions include different versions of the GUI (which takes up the majority of this chapter), which you can heavily customize.

If you've been using computers for many years, you may also be familiar with the command-line interface, which usually consists of a black screen with white text. The initial release and early development of Linux was all command-line-oriented; GUIs then grew as the icing on the Linux cake, making it a lot more colorful to use and easier for people who would rather point and click than type.

In choosing between the command-line and the GUI, you need to consider a number of factors. For a lot of people, this decision is pretty much a no-brainer issue. They have no intention of leaving GUIs behind. That's fine, but at the very least, you may want to become familiar with what's under the hood. Some day, your GUI might break and leave you at the ever-dreaded login prompt!

Deciding Which Interface to Use

One important factor when choosing between the command-line interface and a GUI is speed. Keep in mind that if you're a programmer who needs to compile programs or a scientist who needs to run software that does heavy number crunching, the GUI slows down your system. You also need to typically shut off the GUI when using Linux as a server, because it's mostly a waste of RAM and processing speed — more often than not, a server just does its thing with no one sitting there watching over it.

Readability can also be a big issue when choosing between the GUI and the command prompt. If you have a hard time reading text in those small command-prompt windows from within the GUI (Chapters 14 and 20 cover various ways to switch around), you can either make the windows and the font bigger, or work directly with the command prompt outside of the GUI. However, on a desktop that you want to use for word-processing or editing images, you'll want a point-and-click environment. This setup is the type I focus on, but I don't leave you without any clue about the command-line, just in case!

You also can choose from two major GUI versions: GNOME and KDE. Some people prefer one, and some the other, and I'm not here to tell you which to use. If you stuck with the defaults for your distribution, then you're using

- **Fedora:** GNOME
- **Knoppix:** KDE
- **Linspire:** KDE
- **Mandrake:** KDE
- **SuSE:** KDE
- **Xandros:** KDE

Most distributions come with both KDE and GNOME, so most users simply choose their preferred desktop. While it may look from here as though KDE is particularly popular compared to GNOME, this isn't necessarily the case. Both are excellent desktops with strong fan bases. It's a pretty personal preference, so I encourage you to install and experiment with both and to see which you like better. The cool thing is that you can run most KDE programs under GNOME and vice versa. This ability is vital when it comes to making it easier on developers (and users) in the Linux community. When you ask people why they chose one over another, often they really can't give you much of a good answer aside from "That's what I've always used." Keep this in mind when people try to convince you that one or the other is the best thing since sliced bread!

I cover how to switch between KDE and GNOME later in this chapter in the section "Switching between GNOME and KDE."

Making the Best of the Command Line

The Linux command-line interface provides a quick and easy way of entering commands and executing actions. Even if you're mostly a "GUI person," after you get the hang of using the command line, you discover that it's faster to perform some tasks at the command line than with a mouse in the GUI environment. However, if you prefer to use a GUI interface as your working environment, you can easily open a *terminal window,* which is a command-prompt window, to perform your command-driven tasks without having to completely leave the point-and-click environment (see Chapter 14).

There are some interesting things that you might find useful to know about using the command-line interface. One difference between the Linux command line and other interface command lines, such as the Windows MS-DOS prompt, is that Linux commands are case sensitive. Typing `LS` is completely different from typing `ls`, and, in fact, gives you an error because there is an `ls` command but there is no `LS` command. The Linux command line also has an *autocompletion* feature. If you know the first few characters of a command or filename, type part of it and press Tab to complete the rest automatically. For example, if you're trying to use the `less` command to view the contents of the file `/home/bob/grocery_list`, you can type `less /home/bob/gro` and press Tab to try and complete the filename. However, if you also have the subdirectory (folder) `/home/bob/group_projects`, you hear a beep. You can press the Tab key again, like double-clicking a mouse, to see the output:

```
grocery_list    group_projects
```

The cool thing here is that the command prompt beneath these items still has the text `less gro` so that you don't have to retype it! You can then see that typing a `c` makes it clear that you're referring to `grocery` and not `group`,

so you just add a `c` to make `less groc` and press Tab again to finish the autocompletion. This technique can save you a ton of typing, especially with really long filenames!

Most Linux distributions also keep a running *history* of the most recently used commands. To use this list, press the up-arrow key on your keyboard. This action pulls up the last command you typed. As you continue to press the up-arrow key, you step through the most recently entered commands from the most to least recent. If you accidentally pass what you're looking for, use the down-arrow key to go back. When the command you want appears at the command prompt, press Enter to execute the command, or edit it and then press Enter.

In Chapter 14, I cover the command-line environment in more detail.

When you installed Linux, you added a graphical login by default. (This addition is true for all the versions discussed in this book.) Some versions of Linux give you the option of choosing a graphical or command-line login, which can cause a lot of confusion for folks who accidentally choose the command-line option. If you did so (or think you did) and find yourself lost after the machine boots up, see Chapter 19.

GNOME Basics

GNOME stands for the GNU Network Object Model Environment — not that this expansion tells you much! Suffice it to say that GNOME is a full graphical environment. I focus here on Fedora since it is the only distribution I'm covering that uses GNOME by default. Figure 6-1 shows you what you see once you log into the system and the GUI finishes launching.

To find out more about GNOME, visit the main GNOME site, at `www.gnome.org`.

Keep in mind that the programs you have depend on the type of installation you chose and what customizations you made; if what you have is different from what you see in descriptions or the figures, don't panic!

The GNOME desktop environment is essentially broken into four separate parts:

- The menus
- The menu and icon panel at the top of the screen
- The desktop panel on the bottom of the screen
- The icons on your desktop

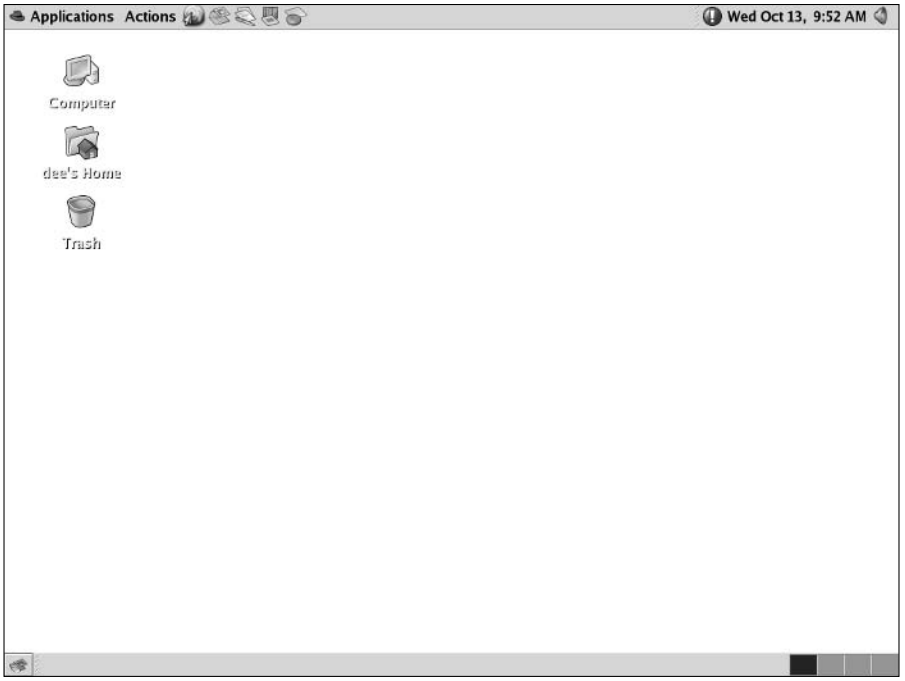


Figure 6-1: The default GNOME desktop in Fedora Core 3.

The menus

There are two primary menus in GNOME and Fedora Core 3. One of these is accessible through the Applications button on the upper panel, and the other is available by clicking Actions next to it. The Applications menu contains the options shown in Table 6-1, and the Actions menu's contents are shown in Table 6-2.

Menu items that have an arrow on their right offer submenus, which you can open by holding your mouse on that menu choice. Often, the submenus have their own submenus within that offer even more programs.

Table 6-1 Fedora Applications Menu Contents, Listed in the Order That They Appear

Menu Choice	*What You Find*
Accessories	Small, specific-function GNOME and X programs. Contains a calculator, character map, dictionary, file roller, Pilot/Handspring tool, and text editor.
Games	A collection of games.

(continued)

Table 6-1 ***(continued)***

Menu Choice	*What You Find*
Graphics	A variety of graphics programs, including The GIMP.
Internet	A few Internet tools, such as Evolution (e-mail and calendar program), Gaim (instant messenger), and Mozilla (Web browser).
Office	The OpenOffice.org suite of applications (word-processing, drawing, and more).
Preferences	Access to programs to control the look and feel of the GNOME and Linux graphical interface.
Sound & Video	Programs, such as a CD player and sound recorder, for working with your computer's multimedia hardware.
System Settings	Many tools for working with your computer's hardware, such as display settings and packages to view and configure the software packages installed on your system.
System Tools	Many tools for managing, monitoring, and updating your system, such as the Internet Configuration Wizard, Red Hat Network, and a System Logs viewer.
File Browser	The Nautilus file manager, defaulting to your home folder's contents.
Help	The Help Browser, for exploring the electronic documentation included in the Linux distribution.
Network Servers	The Nautilus file manager, defaulting to your network for file browsing — for example, your Windows network.

Table 6-2 Fedora Actions Menu Contents, Listed in the Order That They Appear

Menu Choice	*What You Find*
Run Application	The dialog box you can use to run a specific program without opening a virtual terminal.
Search for Files	The Search Tool window, for locating files in the file system.
Recent Documents	A selection of the last files you opened from the file manager.
Take Screenshot	Capture a PNG format image of your desktop.

Menu Choice	*What You Find*
Lock Screen	The capability to set your machine so that no one can use your GNOME login without entering your password. This feature is a good one if you need to walk away from the computer for a while (but don't want to log out of your account) and other people are around.
Log Out	The capability to exit the GNOME session, shut down, or reboot the computer — if you know the password of the root account.

The Run Application tool

After you choose the Run Application tool on the main menu, the Run Application dialog box appears, as shown in Figure 6-2. You can make this dialog box friendlier by clicking the Show List Of Known Applications arrow at the bottom of the dialog box, which gives you a point-and-click way to choose.

Figure 6-2: The GNOME Run Application dialog box with Show List Of Known Applications selected.

To run a program using this dialog box:

1. **Either select the application from the Known Applications list or type its full path by hand.**

   For example, you might type `/usr/bin/gimp`.

2. **If you want this program to operate on a particular file, click the Run With File button. Otherwise, skip to Step 5.**

   The Choose A File To Append To This Command dialog box appears (see Figure 6-3).

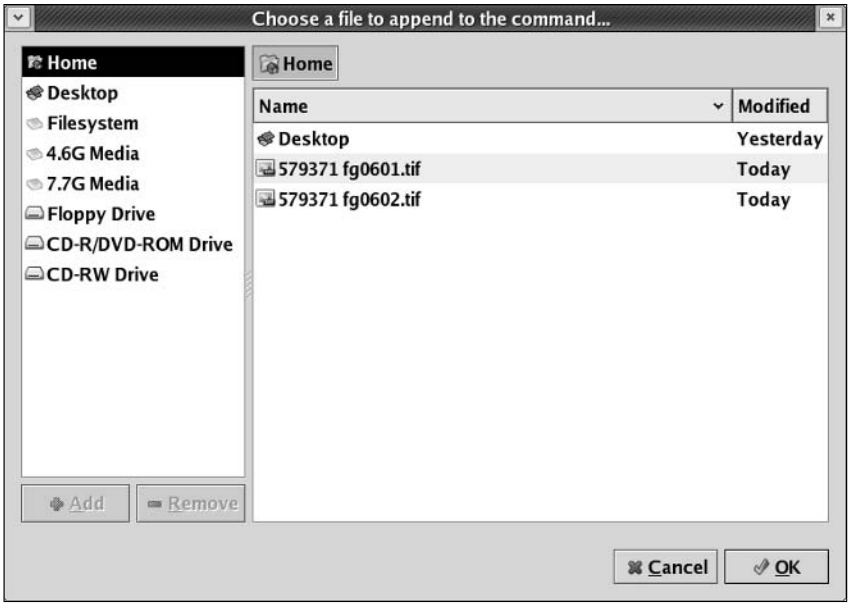


Figure 6-3: The GNOME Choose A File To Append To This Command dialog box.

3. **If the file is in your user home directory, navigate down to it. If the file is elsewhere on your system, double-click the Filesystem button and navigate to it.**
4. **After you have the file selected, click OK.**

   This action returns you to the main dialog box.
5. **Click the Run button to run the program.**

The Lock Screen tool

If you have your screensaver turned on (from the main menu, choose Preferences➪Screensaver to change this setting) and choose the Lock Screen option from the main menu, your screen fades to black, or your screen saver appears. Then, if anyone moves the mouse or uses your keyboard, a dialog box appears with your login name in it and a password field. You can get back to work by entering your password. Until then, you're safe in knowing that no one else can mosey up to your computer and send off a joke e-mail to your boss while pretending to be you. Note that if you're logged in as the root user, the Lock Screen option doesn't work.

I'm referring to just the GUI here, not the whole machine. Folks who know how to sidestep out of GNOME (something I discuss in Chapters 14 and 20) can start a virtual terminal session and do whatever they want. If you left yourself logged into one of the virtual terminals, they can then do something

there without trouble. Don't think of this feature as something that completely secures your computer! Your best bet if you're walking away is to check all the virtual terminals and make sure that you're not logged into any of them. Then you can either log out of your GUI or just use the Lock Screen option.

The Log Out tool

After you choose the Log Out option on the main menu, the screen darkens and the Are You Sure You Want To Log Out? dialog box opens. To use this dialog box, follow these steps:

1. **If you want GNOME to remember which items you have open and return you to its current state after you log back in, make sure that you select the Save Current Setup check box.**

   This feature doesn't work with all programs, just some (mostly the ones that are actually part of GNOME).

2. **Click Log Out, Shut Down, or Restart The Computer to set the appropriate action into motion or click Cancel if you don't want to do any of them.**

   These options do the following:

   - **Log Out:** Closes GNOME and returns to a login prompt.
   - **Shut Down:** Shuts the machine down and then off.
   - **Restart The Computer:** Shuts down the machine and then brings it back up.

3. **Click OK to go through with your choice or Cancel if you change your mind.**

The Panels

Along the top and bottom of your GNOME desktop lives a pair of panels. Since these bars are neatly divided into sections, take a look at what's in each section from left to right, starting with the top panel. On the far left side of the top panel is the Applications button discussed earlier in the section "The menus." To its right is the Actions button, also discussed in the same section.

As you continue your journey to the right, you run into the standard set of Fedora tools (refer to Figure 6-1). You can reach all these items through the main menu, but they're placed on the Panel so that you can find them quickly and easily:

- **Firefox:** The Worldplanet-with-a-mouse pointer icon opens the Firefox Web browser. See Chapter 9 for more.
- **Evolution:** Just to the right of the Web browser button; launches an e-mail and calendar program. See Chapter 9 for more.
- **OpenOffice.org Writer:** Resembles two pieces of paper (and a pen) and opens the OpenOffice.org Writer word-processing program. See Chapter 17 for more.
- **OpenOffice.org Impress:** Opens the OpenOffice.org Impress presentation creation program. See Chapter 17 for more.
- **OpenOffice.org Calc:** Opens the OpenOffice.org spreadsheet program. See Chapter 17 for more.

Then you see a large blank space where you can add new icons. After the blank space, you find, from left to right:

- **Updater applet:** This icon alerts you to available updates for your system. (See Chapter 12 for more information.)
- **Date and Time applet:** Here you can see the day and time.
- **Master Volume Control applet:** Click this to open the master volume control.

Now for the bottom panel. From left to right, you find on this panel:

- **Hide/Restore Desktop Applications:** This button lets you minimize all of your running programs immediately and then re-open them again with just one click.
- **Taskbar:** In this large space, you find entries for each program running on your desktop. You can change a program's status by using the boxes as indicated:
  - If a program is minimized, you can open its window by clicking its panel task box.
  - If a program is maximized but buried under another program, click its task box on the panel to bring this program to the front.
  - If a program is maximized and on top, you can minimize it by clicking its panel task box.
- **Workspace Switcher:** Allows you to work in four different desktop environments during a single login session. Each desktop environment has the same menus, panels, and background, but you can run different programs in each of the environments. It's an easy way to remain organized while you're working in multiple programs. Try it out. It's like having four monitors in one!

Want to move a program from one workplace window to another? Click the little arrow in the program's upper right corner and select one of the following options:

- **Put On All Workspaces:** Makes the window show up on all four.
- **Move To Workspace Right:** Slides the window horizontally to the right, into the "next door" workspace.
- **Move To Another Workspace:** Gives you the option of specifying Workspace 1 (far left), 2 (second in from the left), 3 (third in from the left), or 4 (far right).

You can see which workspace an open window is in at a glance by looking at the Workspace Switcher and spotting the little windows that match how your desktop is laid out.

The Panel menu

It's time to take a look at how to change the look and feel of your panels. You can customize your upper and lower panels individually through the Panel menu, which you open by finding free space on the panel you want to work with and then right-clicking to pull up the Panel's context menu. For a list of what this menu's items offer, see Table 6-3.

If you have so many programs open that you're using the whole width of the task box section, you may not have any free space to right-click in. You may need to close an application or two to open up space.

Table 6-3 GNOME Panel Menu Contents

Menu Choice	*What You Find*
Add To Panel	The applets, menus, and other objects you can add to your main panel
Delete This Panel	The capability to delete a secondary panel but not the main icon panel
Properties	The options for setting this panel's behavior
New Panel	The options for creating new panels that sit on different parts of the screen
Help	The Help browser for GNOME

(continued)

Table 6-3 *(continued)*

Menu Choice	*What You Find*
About Panels	A dialog box with some basic Panel information
About GNOME	A dialog box with some basic GNOME information

The Add To Panel menu option

The Add To Panel dialog box (see Figure 6-4) is accessible from the Panel menu (see the previous section). This dialog box contains a list of *applets* — small, specialized programs you can use to add particular functionality to a panel. To add one of these applets to your panel, open the dialog box, select the applet you want to use, and then click Add. The applet now appears on your panel. If you right-click the applet and choose Move, you can then slide the applet along your panel until you have it where you want it and then click to release it.

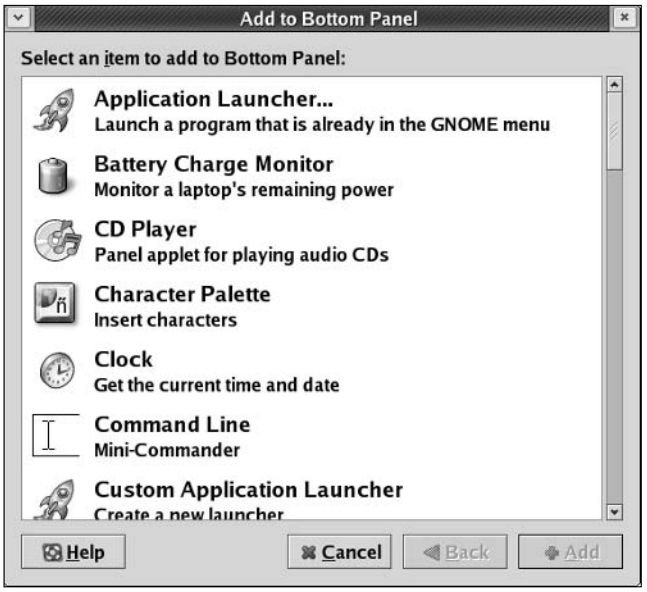


Figure 6-4: The GNOME Add To Bottom Panel dialog box.

Playing with desktop icons

Your initial desktop icons form a vertical line along the top left of your screen (refer to Figure 6-1). In order from top to bottom:

- **Computer:** Opens the Nautilus file manager (see Chapter 10) with a list of your CD-ROM drive(s), hard drive(s), and more.
- **Home:** Opens the Nautilus browser (Chapter 10) with your home directory's contents displayed.
- **Trash:** A GNOME shortcut that opens the Nautilus file manager to the Trash folder, which contains files that you dragged into it because you weren't sure if you wanted to delete them or not.

To use the trashcan, drag into it any files you want to delete. Later, if you're sure that you want to be rid of them, you can empty the trash in one of three ways:

- Empty the entire contents by right-clicking the trashcan icon and choosing Empty Trash from the context menu. When asked for confirmation, click Empty.
- Open the trashcan by double-clicking the icon. Then delete the entire contents of the trashcan by choosing File➪Empty Trash.
- Open the trashcan by double-clicking the icon. To delete an individual item from the Trash, right-click it to pull up the Trash context menu, and choose Delete From Trash from the pop-up menu. When asked whether you're sure, click the Delete button to finish the job.

  You can select more than one item by holding the Ctrl key to individually select them even if they're not next to each other; holding the Shift key to select a range of items; or left-clicking and then dragging to collect all the items that are in a box together.
- Another way to remove items from the trashcan is to delete them manually from `~/.Trash`.

KDE Basics

KDE, the *Y*, is the default in most of the distributions covered here. Therefore, I break out sections for each of the distributions so that you can see the differences and find your way around. I skip Fedora here because I'm only covering default desktops (Fedora, Mandrake, and SuSE all give you the option of choosing between GNOME and KDE if you installed both), and instead focus on Knoppix, Linspire, Mandrake, SuSE, and Xandros.

All the distributions share similarities, yet each one is organized in a unique way that its particular vendor or project group feels makes the most sense for their user base.

To find out more about KDE, visit the main KDE Web site, at `www.kde.org`.

Knoppix KDE

The default Knoppix desktop is shown in Figure 6-5. From the top to bottom, the desktop icons you see (with some variations depending on what drives you have on your machine) include

- **Trash:** Where you put those files that you aren't quite sure yet that you want to delete.
- **CD-ROM:** If you have a CD-ROM or DVD-ROM drive, it likely appears next. You can click this icon to open the Konqueror file manager (see Chapter 10) to the contents of your CD-ROM.
- **Floppy Disk:** Even if you don't have a floppy drive, this icon appears. You can click this icon to open the Konqueror file manager (see Chapter 10) to the contents of your floppy disk.
- **Hard Disk Partition [hda1]:** You have one of these icons for each hard drive partition on your system. Chapter 11 makes it more clear how to tell them apart.
- **KNOPPIX:** Click to open Konqueror to information about Knoppix.

At the bottom of your screen is your panel — if you came here from the "GNOME Basics," earlier in this chapter, note that KDE has only one panel compared to GNOME's two. Table 6-4 details the Knoppix panel's contents.

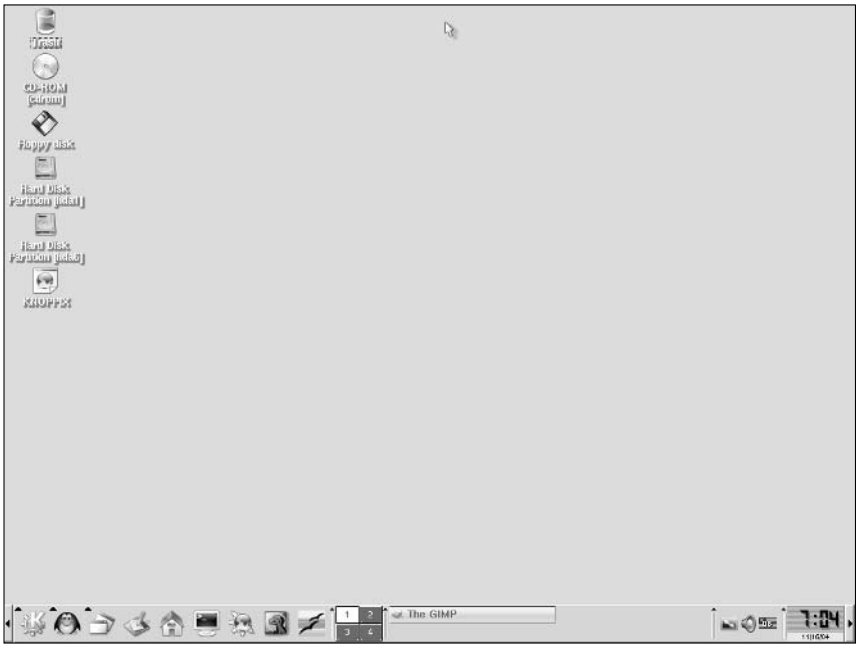


Figure 6-5: The default Knoppix 3.6 KDE desktop.

Table 6-4 The Knoppix 3.6 Panel Icons

Icon	*What It Opens*
Main Menu	The Knoppix main menu.
Knoppix Menu	A special menu with just the Knoppix-specific items, which contains the same entries as the main menu➪ KNOPPIX menu.
Window List	Pops up a menu helping you to organize your desktop windows.
Show Desktop	Minimizes or maximizes all open programs.
Personal Files	Opens the Konqueror file browser to your home directory's contents.
Terminal Program	Opens a command-line window.
Web Browser	Opens the Konqueror program, which also serves as a Web browser.
Mozilla Browser	Opens the Mozilla Web browser.
Open Office	Opens the OpenOffice.org Writer word processor (see Chapter 17).
Workspace Switcher	Lets you pretend to have four different monitors, by running different programs in different workspaces. You can move programs from one workspace to another by clicking the down arrow in their upper left corner and selecting To Desktop.
Taskbar	Contains an entry for each program you currently have open.
KLaptop applet	If you're using a laptop, the KLaptop applet shows if your laptop is plugged in or not and what its battery level is.
Language applet	Shows you what language you are set to and lets you change languages. See Chapter 15 for more on applets.
Monitor Settings applet	Lets you change your screen resolution and other display information.
KMix applet	Launches the KDE mixer (see Chapter 18).
Time and Date applet	Shows you the time and day.

The right-facing arrows to the left and right of the Panel allow you to contract it to the left or right, so you can use the extra screen real-estate.

When you open the Knoppix main menu, you're faced with an impressive amount of software when you consider that it's all got to run off of a single CD-ROM. This main menu includes

- **Recently Used Applications:** The recent programs you opened using the menu so that you don't have to go digging for them again.
- **Development:** Software development tools.
- **Editors:** Various text editors.
- **Edutainment:** Educational games.
- **Emulators:** Software used to emulate other platforms.
- **Games:** Lots of games.
- **Graphics:** Image editors.
- **Help:** The help menu.
- **Internet:** Internet-related software.
- **KNOPPIX:** Knoppix-specific menus.
- **Multimedia:** Sound, video, and other multimedia software.
- **Office:** Various office productivity programs.
- **OpenOffice.org 1.1.2:** The OpenOffice.org office suite (see Chapter 17).
- **Settings:** Various system settings.
- **System:** System and administration tools.
- **Toys:** Silly but fun stuff.
- **Utilities:** More interesting tools.
- **Find Files:** The search program.
- **Help:** The help interface.
- **Home:** The Konqueror file manager open to your home directory.
- **WINE:** The Windows software handler (see Chapter 19).
- **Bookmarks:** Bookmarks you've set in your Web browser(s).
- **Quick Browser:** Quick way to open various points in your filesystem in Konqueror (see Chapter 11).
- **Run Command:** An interface for starting programs by hand.
- **Lock Screen:** The same as the lock screen application in Table 6-2.
- **Logout:** Log out of your account, reboot the machine, or shut it down.

Linspire KDE

The default Linspire desktop is shown in Figure 6-6. From top to bottom, the desktop icons you see on your default installation are shown in Table 6-5. Some of these icons are similar or identical to what you find in Knoppix KDE, and others depend on what hardware you have on your system (such as the CD-RW/DVD-ROM item in the table).

Table 6-5 The Linspire 4.5 Desktop Icons

Icon Name	*What It Launches*
My Computer	The Konqueror file manager with a list of places in your computer including your desktop, documents, programs, network shares, and your system (the base directory of your computer's filesystem).
My Documents	The Konqueror file manager with your My Documents directory.
Network Browser	The Konqueror file manager with your network shares, if you have any available.
CD-RW/DVD-ROM	The Konqueror file manager with the contents of your CD-ROM, DVD-ROM, or whatever you have if you have one inserted; otherwise, the session this icon opens is empty. This icon is named according to what kind of drive you have.
Floppy	The Konqueror file manager with the contents of the floppy disk inserted if you have one inserted. Otherwise, the session this icon opens is empty. Even if you don't have a floppy drive, this icon appears.
Printers	The KDE Printer Control Module. (See the Printing section for more information.)
Trash	The KDE trash can. Its works similarly to the GNOME trash can, which I cover in the earlier section "Playing with desktop icons."
Internet Connection Tools	Opens the Konqueror file manager to a collection of various connection tools. (For more detail, see Chapter 8.)
Mail	Opens the Linspire Internet suite to its e-mail program (see Chapter 9).

(continued)

Table 6-5 *(continued)*

Icon Name	*What It Launches*
Web Browser	Opens the Linspire Internet suite to its Web browser (see Chapter 8).
CNR	Opens the browser to the Click N Run Warehouse (see Chapter 12).

Looking at the Linspire Panel, you see, from left to right:

- The Linspire main menu.
- The Linspire help menu, which has a number of help options available.
- The Konqueror file manager (see Chapter 10).
- The Click N Run Warehouse, Web browser, and e-mail client (see Table 6-5).
- The GAIM instant messenger (see Chapter 9).
- The Desktop icon, which instantly minimizes everything.
- The task box section (see the earlier section, "The Panel").
- The CNR icon again.

Figure 6-6: The default Linspire 4.5 KDE desktop.

- The VirusSafe icon (see Chapter 13).
- The SurfSafe icon (see Chapter 13).
- The volume controller.
- The battery level indicator if you're using a laptop.
- A top/bottom pair of icons. The top is the Lock Screen tool (refer to Table 6-1). The bottom is the End Linspire Session tool where you can select whether you want to Logout, Shutdown, or Restart. The Quick Restart option is an automated logout that logs you right back in.
- The clock and calendar applet.
- A right-facing arrow that lets you contract your Panel so that you can use the rest of your screen's real-estate.

When you click the main menu icon (the fancy L on the left of your Panel), you see the menu items shown in Table 6-6.

Table 6-6 The Linspire 4.5 Main Menu

Menu Entry	*What You Find*
Programs	All the applications on your system.
My Documents	Your default document saving directory.
Settings	Your system settings.
Search	A tool to search your filesystems.
LindowsHelpAndSupport	All the Linspire help options, the same as you find if you click the Help icon on the Panel.
Recent Documents	The documents you opened most recently through your file manager.
Run Command	The Run Command dialog box, which is similar to that covered in the section "The Run Application tool."
Configure Panel	Panel configuration options (see Chapter 15).
Terminate Application	A cool program that finds and stops a program that has hung and is just sitting there, frozen.
Lock Screen	The same as the Lock Screen menu item discussed in Table 6-1.
Logout/QuickRestart	The same logout utility used in the Linspire Panel.

Mandrake KDE

The default Mandrake desktop is shown in Figure 6-7. From top to bottom, the desktop icons you might see on your default installation are

- **Home:** The Konqueror file browser with the contents of your account's home directory.
- **Welcome:** The Welcome To Mandrake Linux utility.
- **Floppy:** The Konqueror file browser with the contents of your floppy disk, if you have one in your floppy drive.
- **Trash:** The KDE trash can. It works similarly to the GNOME trash can. (see the earlier section, "Playing with desktop icons.")

Figure 6-7: The default Mandrake 10.1 KDE desktop.

The contents of the Panel are, from left to right:

- The main menu star icon.
- Instantly minimize or maximize every window on your desktop.
- The Emacs text editor.
- The command-line terminal.
- The system configuration program.

The tiny little up arrow to the right of the system configuration program opens the task bar menu, which lets you slide the section of your Panel that shows the icons for open programs in order to make room for more Panel shortcuts. Next is the task bar itself, where you see a box for each program you have open. After the task bar appears, again from left to right, you see

- The Workspace Switcher. (See the earlier section "The Panel.") The tiny arrows to the left and right of the Pager bring up the Pager context menu, which you can use to move and configure this tool.
- The network connection status tool.
- The MandrakeOnline launcher, for keeping your system current (see Chapter 12).
- The master volume control, which launches the KDE audio mixer (see Chapter 18).
- The KDE Organizer calendar tool.
- The screen adjustment tool.
- The KDE CD player (see Chapter 18).
- The amaroK audio player (see Chapter 18).
- The Kaffine media player (see Chapter 18).
- The clock applet, which also has tiny arrows next to it to allow you to pull up its configuration menu.

Mandrake's main menu is detailed in Table 6-7. Many of these contents may be familiar if you have read the GNOME and other KDE sections in this chapter. As usual, exactly what you find here depends on the software you selected when you installed Mandrake.

Table 6-7 The Mandrake 10.1 Main Menu's Contents

Menu Entry	*What You Find*
Office	Work-related utilities such as word-processors.
Internet	Internet-related tools, like IRC and FTP clients.
Multimedia	Graphical, sound, and video tools.
System	Configuration-related tools and utilities.
More Applications	Less popular but just as important programs, including software development tools, games, text editors, and financial tools.
Home	The Konqueror file manager open to your home directory's contents.
Find	The search interface.
Recent Documents	A menu of the documents you opened most recently through your file manager.

(continued)

Table 6-7 *(continued)*

Menu Entry	*What You Find*
Run Command	The Run Command dialog box, which is similar to the one covered in the earlier section "The Run Application tool."
Start New Session	A secondary GUI login, which is great if you need to let someone log in for a moment to do something without having to shut off all your programs.
Lock Screen	The same as the Lock Screen menu item discussed in Table 6-1.
Logout	The chance to End Session Only (log out), Turn Off Computer (shut down), or Restart Computer (restart).

SuSE KDE

Figure 6-8 shows you the default SuSE KDE desktop. If you put many of these the KDE desktops side by side, you would notice a lot of similarities. As with Knoppix, SuSE is set up for you to open desktop items with a single-click rather than a double-click in many cases, which is default KDE behavior but not used by Mandrake, Linspire, or Xandros.

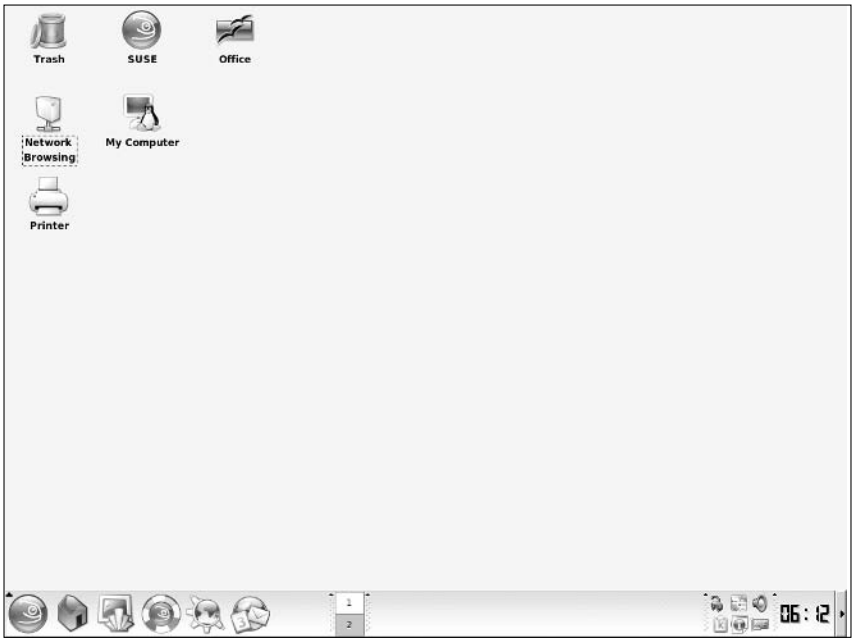


Figure 6-8: The SuSE 9.2 default KDE desktop.

The desktop icons are, starting with the horizontal row on the left:

- **Trash:** The KDE trash can, which works similarly to the GNOME trash. (See the section "Playing with desktop icons," earlier in this chapter.)
- **SuSE:** The Welcome to SuSE Linux 9.2 tool.
- **Office:** The OpenOffice.org launcher (see Chapter 17).

Beneath the horizontal row is another row of desktop icons, which are (from left to right):

- **Network Browsing:** Opens the Konqueror file manager to a list of all your network file shares, including Windows Network shares.
- **My Computer:** Opens the Konqueror file manager to a list of removable media, such as your CD-ROM drive.

Beneath these icons, you see the Printer icon, which opens the KDE print manager.

Moving down to your panel, you find, from left to right, many familiar items if you look up at the Mandrake section:

- The SuSE main menu.
- The Konqueror file manager opening your home directory.
- The KDE command-line terminal.
- The SuSE Help Center.
- The Konqueror Web Browser.
- The Kontact e-mail program (see Chapter 9).
- The Workspace Switcher (described many times throughout this chapter).
- The taskbar, where each program has an entry.
- A sextet of tiny icons. The top left is the battery monitor if you're using a laptop. The bottom left is the Klipper clipboard tool. The top middle is the PCMCIA profile manager. The bottom middle is the SuSEWatcher updater tool. The top right is the volume control, and the bottom right is the SuSE hardware management tool.
- The KDE clock.

The SuSE main menu is detailed in Table 6-8. As always, what you find in this menu depends on which software you have installed.

Table 6-8	The SuSE 9.2 Main Menu Contents
Menu Entry	***What You Find***
Games	Games!
Graphics	Drawing tools, image editors, and more.
Internet	Internet-related tools.
Multimedia	CD, DVD, jukebox, TV and other multimedia tools.
Office	Work-related office tools.
System	Tools for managing your system.
Utilities	Handy utilities.
Control Center	The KDE Control Center, which is a great central place to customize your system.
Find Files	The filesystem searching utility.
Home	The Konqueror file browser open to your home directory.
SuSE help-center	SuSE help information.
Bookmarks	Your Web browsing bookmarks.
Run Command	The Run Command dialog box, which is similar to the one covered in the GNOME section "The Run Application tool."
Switch User	The same as Mandrake's "Start New Session" option.
Lock Session	The same as everyone's Lock Screen option.
Logout	The same as Mandrake's Logout option.

Xandros KDE

Figure 6-9 displays the default Xandros desktop. As you can see, Xandros offers another customized version of KDE.

A vertical row of icons sits to the left of your desktop. These icons are, from top to bottom:

- **Trash:** The KDE trash can, which works similarly to the GNOME trash can. (See the earlier section "Playing with desktop icons.")
- **Home:** The Xandros File Manager (see Chapter 10) opening to your home directory's contents.

Figure 6-9: The default Xandros 2.5 desktop.

- **Quick Start Guide:** Launches the Xandros Quick Start Help guide.
- **Web Browser:** Launches the Mozilla Web browser (see Chapter 9).
- **Xandros Networks:** Launches the software update and adding tool (see Chapter 12).

Your Xandros Panel, from left to right, launches

- The main menu.
- Mozilla Web browser.
- The Mozilla e-mail client.
- The Xandros file manager to your home directory.
- Xandros Desktop Help.
- The desktop clearing tool, letting you minimize everything on your desktop all at once.
- The task bar, where the programs you're running appear.
- The Workplace Switcher, as discussed earlier in this chapter in the section "The Panel."
- The desktop locking tool.

- The logout, restart, or shut down tool.
- The Switch User tool, as discussed in the "Mandrake KDE" section.
- The clock and calendar.
- The Panel compression arrow.

Table 6-9 breaks down the Xandros main menu.

Table 6-9 The Xandros 2.5 Main Menu

Menu Entry	*What You Find*
Applications	All your programs.
Find	Two search utilities, one to search your filesystem and the other to search for particular computers if you're on a large network.
Control Center	The Xandros/KDE Control Center, which is great for customizing your system.
Xandros File Manager	The file manager, open to your home directory.
Xandros Networks	The system updater and software installation interface.
Help	The Xandros Desktop Help Center.
Recent Documents	Menu to open documents you recently opened using the file manager.
Run Command	The Run Command dialog box, which is similar to the one covered in earlier section "The Run Application tool."
Switch User	The same as Switch User in the previous sections.
Log Out	The same as Log Out in the previous sections.

Switching between GNOME and KDE

When a distribution offers you a choice between desktops, and you installed both desktops, you can typically select which one to use when you log in. Here's how you do so from the login window in the distributions that support this feature:

- **Fedora Core:** Click the Session icon on the lower part of your login screen to bring up a dialog box where you can choose which GUI you want to use.
- **Mandrake:** After you select your username, you're given more login options. Choose the GUI you want to use from the Session Type drop-down list box.
- **SuSE:** After you enter or select your username, click the Menu button to open its context menu. Choose Session Type and then, from that sub-menu, choose GNOME, KDE, or one of the others if you want to play around with your options.

Chapter 7

Configuring Linux

In This Chapter

- Creating user accounts
- Setting up your printing
- Finding cool configuration tools

The doctor can bury his mistakes but an architect can only advise his client to plant vines.

— Frank Lloyd Wright (1869–1959)

Unlike both the architect and the doctor, the computer user isn't stuck with configuration mistakes. You can tweak and change things until you're happy with them! Because the first thing a lot of people like to do with a new system is get it set up just right, I thought I'd spend this chapter sharing some of the core bits of knowledge that can help you do just this. You start by finding out more about user accounts and why I am so insistent that you create a special one for your own personal use in Chapter 3. Then, you find out how to set up your machine to talk to your printer. I also show you where the cool configuration tools are for your distribution so that you can get down to some serious customization.

Accounts Great and Small

Linux is a *multiuser* operating system. It allows everyone to have a unique account and allows more than one user to log on at the same time. Typically, even if you're the only user on a system, you need an account of your own that isn't the root user's. (I explain why in the next section). In addition, having multiple accounts is especially fun for experimenting with different user setups. That way, you can create a main account to be more careful with and a goofing around account to completely mess around with.

Avoiding root

The *root user,* also known as the *superuser* or just *root,* has access to anything and everything on your machine. There is no blocking root from a directory, file, command, or device. Because of this factor, many Linux beginners figure that they may as well use the root account all the time because it's so convenient.

However, for lots of good reasons, you shouldn't use the root account for everyday use:

- You don't always need root-level access.
- Root-level access is as much a curse as it is a blessing. If you mess up as a regular user, you mess up only the stuff in your account. If you mess up as the root user, you can wipe out everything — *all the files on your entire Linux system!* That's why some Linux distributions like SuSE give you a nasty red background when you're in the root account (in the GUI) — as a dire warning. In fact, Mandrake doesn't even give you root as one of the options to select in the GUI login. SuSE doesn't give you a graphical option for root, but you can type it into the Username text box.

  Don't think that you can wipe out everything? Many experienced Linux administrators tell horror stories about the day they made a fatal typo or weren't paying attention to what they were doing and completely destroyed an installation.
- If you send e-mail or news posts as root for anything other than serious administrative business, people think that you don't know what you're doing or are showing off.
- Root comes with too much temptation. The superuser can read other people's e-mail messages and files, which introduces a few "tiny" ethical issues.

Linspire has a slightly different philosophy. You have only one account when you're using Linspire, by default. However, in the next section, I show you how to create new accounts so that you don't have to use root — or let someone who's borrowing your computer for a moment to browse the Web do it under root!

Creating user accounts

Most Linux distributions include a graphical interface application for creating and managing user accounts. Here's how you can find this application for your distribution:

- **Fedora Core:** Choose Applications➪System Settings➪Users And Groups opens the User Manager.

- Knoppix: From the main menu, choose ➪System➪KUser to open the KDE User Manager.
- **Linspire:** From the main menu, choose Settings➪User Manager opens the KDE User Manager.
- **Mandrake:** From the main menu, choose System➪Configuration➪ Other➪ User Administration opens the Userdrake tool.
- **SuSE:** From the main menu, choose System➪YaST opens up YaST. (See the upcoming section "SuSE tools" for more on YaST.) On the left, choose Security and Users. Then, on the right, choose Edit And Create Users to open the User And Group Administration dialog.
- **Xandros:** Choose Launch➪Control Center opens up the Xandros Contol Center. From here, click the plus next to System Administration to expand this menu and then click User Manager to open the KDE User Manager.

While these tools aren't identical from distribution to distribution, they're all quite similar and work in essentially the same way. After all, each application has pretty standard steps to creating user accounts. I walk you through how to create user accounts in Fedora Core, and most of the same steps apply elsewhere.

To create a new user account in Fedora:

1. **Choose Applications➪System Settings➪Users And Groups.**

   Because you're (hopefully) using a regular user account, the Password for root dialog appears.

2. **Enter the root password and click OK.**

   The User Manager window opens, as shown in Figure 7-1. When the application opens, the user account you created during installation already appears.

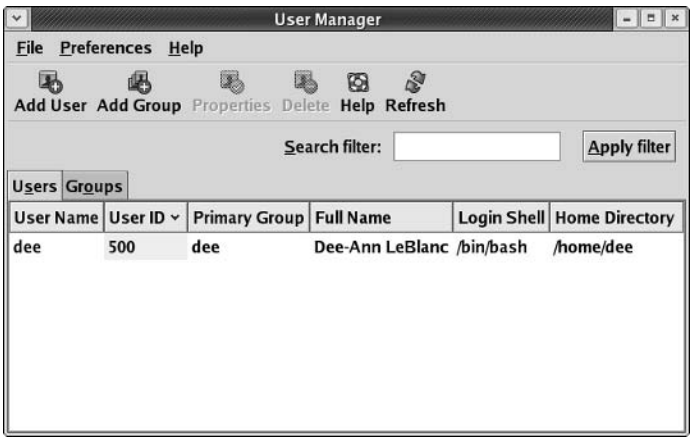


Figure 7-1: The User Manager application, in Fedora Core 3.

3. **Click the Add User button.**

   The Create New User dialog box opens, as shown in Figure 7-2.

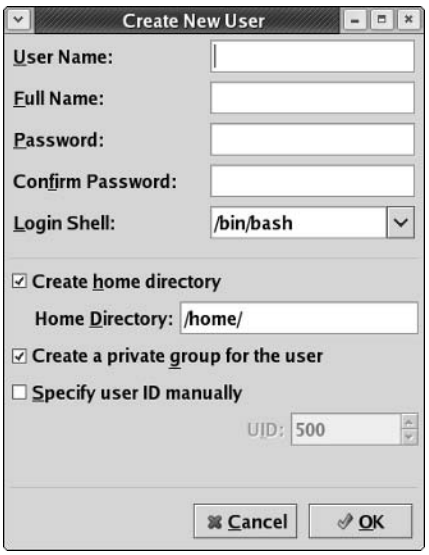


Figure 7-2: The Create New User dialog box in the User Manager application, in Fedora Core 3.

4. **Enter a name for your new user in the User Name field.**

   In Linux, the case of the user account is important, so note the case as you type the information. Typically, people use all lowercase so that they don't have to keep track.

5. **Fill in the user's full name (as you want it to in an e-mail From header, for example) or nickname in the Full Name field.**

6. **Enter the password in both Password fields.**

Creating good passwords

Good passwords consist of the following:

- A combination of numbers, letters, and even punctuation marks
- Uppercase and lowercase characters
- No dictionary words
- Six or more characters
- No family or pet names, friends' names, birthdays, anniversaries, or other items that someone can easily guess about you

The remaining items are more advanced, so you can ignore them for now.

7. **Click OK to save the new account.**
8. **If you want to create another account, repeat Steps 3 through 7; if you're finished, choose File➪Quit to close the user creation program.**

Printing

Unless you live in a paperless environment, you most likely need to print something (such as a letter, a picture from your digital camera, or an invoice) from time to time. Therefore, you need to set up your Linux system to print. It can be helpful to know, before you continue, the make and model of your printer and how it's connected to your computer:

- Is it a *local printer,* meaning that it's connected directly to your computer through a parallel, serial, or USB port?
- Is it a *network printer,* meaning that it doesn't have to be connected to a computer and sits on the network as its own machine?
- Is it a *remote printer* but not a *network printer,* meaning that it's connected to another computer on your network? If so, is this a Windows, Linux, or OS X computer?

You can find your printer configuration tool by:

- **Fedora:** Choose Applications➪System Settings➪Printing to open the Printer Configuration tool.
- **Knoppix:** From the main menu, choose KNOPPIX➪Configure➪Configure Printer(s) to open the Configure - Printers tool.
- **Linspire:** Double-click the Printers desktop icon to open the Printers KDE Control Module and then click the Add Printer/Class button (the icon on the left in the top row) to open the Add Printer Wizard.
- **Mandrake:** From the main menu, choose System➪ Configuration➪ Configure Your Computer items to open the Mandrake Control Center. Within this dialog box, click Hardware and then Printers to start Printerdrake.
- **SuSE:** From the main menu, choose System➪YaST to open the YaST tool discussed later in this chapter, in the section "SuSE tools." From here, select Hardware on the left, and then Printer on the right, to open the Printer Configuration tool.

> **Xandros:** You had the option to add a printer with the First Run Wizard the first time your system booted, though, of course, you can skip this with no problem. If you skipped printer setup, go to the main menu and choose Control Center to open the Xandros/KDE Control Center. Click the plus sign next to Peripherals to expand this menu and then choose Printers. Choose Add to open the Add Printer Wizard dialog box.

In this section, I describe how to set up a printer only in Fedora due to space restrictions. Although each application is different, they all involve the same basic steps for configuration, even though these steps may be in different orders or worded a little bit differently. Follow these steps for Fedora (or if you're using another distribution, read through here and use what you learn to set up your printing through the appropriate tool):

1. **To access the printing setup tool, from the main menu, choose Applications➪System Settings➪Printing.**

   The Printer Configuration window appears, as shown in Figure 7-3. If you're not logged in as root, you're prompted to enter the root password.

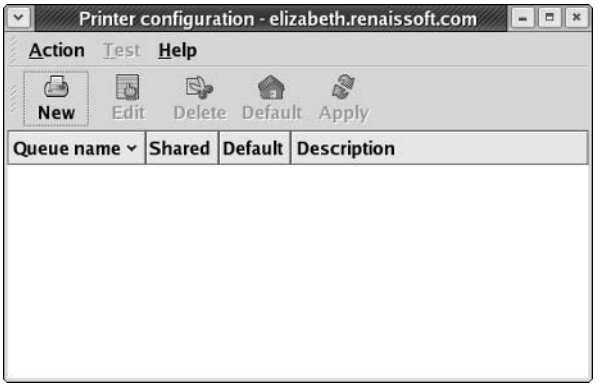


Figure 7-3: The opening window of the Printer Configuration tool.

2. **To begin setting up your printer, click the New button.**

   The Add A New Print Queue window appears. Click the Forward button to advance to the next step.

3. **In the Queue Name window, type the name you want to assign to this particular printer.**

   If you have multiple printers, add something in the Short description text box to help you tell them apart later.

4. **When finished, click the Forward button to advance to the next step.**

   The Queue Type dialog box appears, as shown in Figure 7-4.

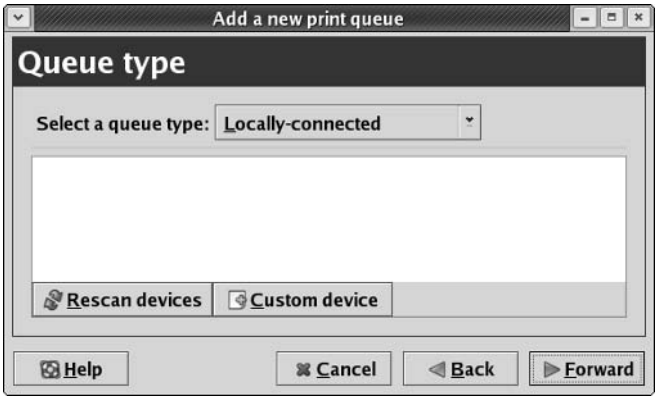


Figure 7-4: The Queue Type dialog box in the Printer Configuration tool.

5. **Using the drop-down list, select the type of queue you need.**

   The queue type corresponds to how the printer is connected:

   - If the printer is directly attached to your Linux system, choose the Local Printer option (Locally-Connected)
   - If yours is a networked printer that understands the Internet Printing Protocol (IPP), or is attached across your network to another Unix (including Linux and OS X) machine, select Networked CUPS (IPP)
   - If yours is a printer connected to another UNIX machine that's using LPD, choose Networked UNIX (LPD)
   - If the printer is attached to a Windows machine on your network, select Networked Windows (SMB)
   - If the printer is attached to a Novell Netware machine on your network, select Networked Novell (NCP)
   - If the printer has HP JetDirect networking technology, then choose Networked JetDirect

   The dialog box changes format depending on which of these items you selected.

6. **Enter the additional information required for your particular choice.**

   For example, if you chose Networked CUPS (IPP), you need to fill in the print server's name (or IP address). You can ignore the Path text box and keep the defaults. Each of these options explains what information it needs from you. Click the Help button, if necessary.

7. **After you've entered the information, click Forward.**

   The Printer Model dialog box appears.

8. **Click the Generic bar to open the list box that allows you to select your printer's manufacturer and then scroll to the appropriate option.**

   The selection of models changes, according to your manufacturer's list.

   Choosing the correct make and model of your printer is important because Linux loads and associates a specific print driver that corresponds to the information you supplied. If the wrong printer make and model are specified, the wrong print *driver* (the software the operating system uses to talk to the printer) is used. The result of this mismatch is usually garbled characters and symbols when you attempt to print to your printer.

9. **Select your printer model and then click Forward.**

   The Finish And Create New Print Queue dialog box appears.

10. **In the Finish And Create The New Print Queue dialog box, click Finish to enable your new printer.**

    You're offered the opportunity to print a test page.

11. **Click Yes to print a test page.**

    If this page doesn't print properly, make sure that you set the proper make and model for your printer. Some manufacturers assign similar model numbers to very different printers, and it's easy to get them confused.

12. **If the test page comes out great, click Yes when you're asked whether it looks okay; if it doesn't come out at all or it looks garbled, click No.**

    If your answer was No, you're shown a copy of all the data that went to the log file when you tried to print. Scroll down to the last few lines to find hints to what your problem is. This situation happened to me once, and it turned out to be a problem with my networking, not a problem with my printer! If you're having problems, return to the beginning of this process and make sure that all your selections are correct.

    If your test page is okay and you clicked Yes, the main Printer Configuration window appears, and your new printer is listed in the tool.

13. **Choose Action➪Quit➪Save to close the printer configuration tool.**

Zen and the Art of Linux Configuration

One of the items that makes each distribution stand apart from the others is its collection of configuration tools. The friendlier the tools, the more likely that folks new to Linux will flock to that distribution. Mind you, old timers don't mind having easy tools around either when they're moving from one distribution to another. It saves them from having to re-learn where each distribution keeps their configuration files.

In this section, I look at the configuration tools available in each version of Linux covered in this book. An important thing to note is that the Control Panels in each of the KDE-default distributions (all but Fedora) all look (and work) in very similar manners because they're all based on the main KDE Control Panel.

Knoppix tools

Knoppix comes with so many tools that it's easy to get lost as you stagger around the menus, overwhelmed. The main place to find configuration tools in this distribution is by choosing KNOPPIX from the main menu (the K in the bottom left corner). Inside this menu is a set of submenus, some of which offer configuration options:

- **Configure:** Options for setting up your computer's TV card, printers, a real home directory that sticks around between the times you boot with this distribution (see Chapter 21), and more.
- **Network/Internet:** Internet connection (see Chapter 8) programs for everything from modems to ISDN.
- **Services:** Options for starting various servers useful on the desktop, such as SSH (see Chapter 13) and Samba for offering Linux files to your Windows machines over your network.

In addition to this location, you also find configuration programs by choosing Settings from the main menu:

- **Change Password:** This program lets you set a password for the account you're logged in under. However, it doesn't accept a blank password, and the defaults for Knoppix logins (the regular `knoppix` account and the `root` account) are both empty passwords. You'll want to open a virtual terminal (see Chapter 14) and type `passwd` in order to set an initial password for your account before you can use the GUI tool.
- **Configure The Panel:** This program lets you customize your panel — moving it elsewhere, hiding it, changing its appearance, and so on.
- **Control Center:** This option opens the KDE Control Center.
- **Desktop Settings Wizard:** This option opens the KDE setup wizard.
- **Menu Editor:** This option opens the KDE Menu Editor, where you can customize your main menu's contents.
- **Menu Updating Tool:** This option searches your system for particular programs and adds them to your menus if they're not there.
- **Printing Manager:** This program (see Figure 7-5) opens a handy print manager that can help you do things like printing to PDFs, sending to fax machines, and so on.

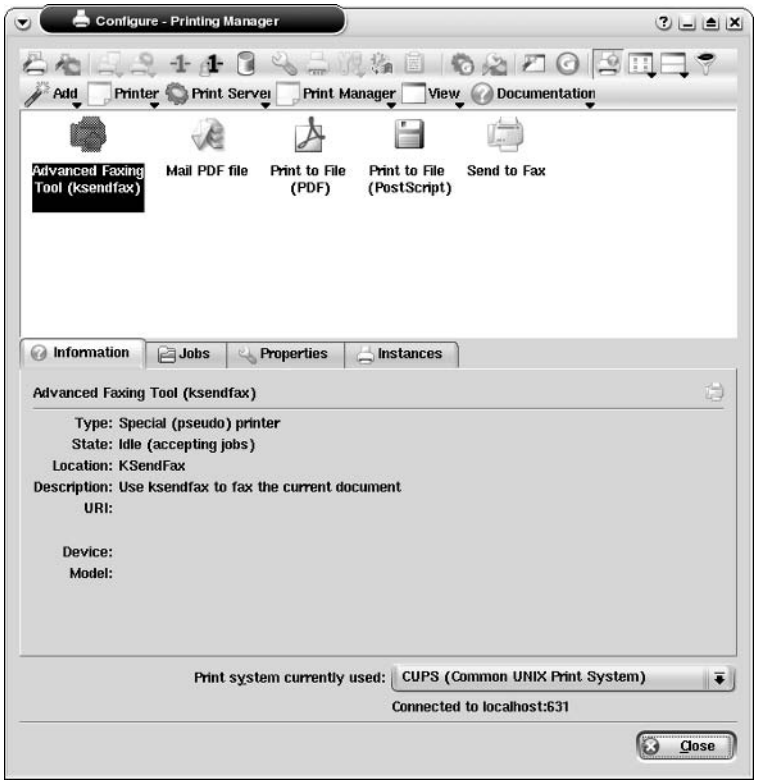


Figure 7-5: The Konqueror 3.6 Printing Manager.

Linspire tools

The first time you run Linspire, the First Time Setup dialog box appears, and it will keep appearing until you check the I Agree To License checkbox. In this tool, you have the option of walking through a system configuration process, setting values like your time zone, date, time, resetting your main password, changing your screen's resolution, creating new user accounts, and renaming the machine. Clicking Finish closes the tool and launches the Linspire Audio Assist Tutorials. Feel free to listen to (and watch) these as long as you like before moving on!

If you want to bail out immediately from the Audio Assist Tutorials, click the X in the upper-right corner to close the tutorials.

To find the remaining configuration tools, choose settings from the main menu (the L in the bottom left corner) and then choose one of the following commands:

- **Change Password:** Change the password for the account you're currently using.
- **Programs To Autostart:** Contains shortcuts for the programs you want to start automatically when you log in. Add items to this folder (once it's open):
  1. **Open the main menu.**
  2. **Browse to the program you want to launch when Linspire starts.**
  3. **Drag the program into the Autostart window.**
  4. **When the context menu pops up, select Copy Here, and your new Autostart shortcut appears.**
- **Rename Computer:** Change the name you assigned to this computer.
- **User Manager:** Create and remove user accounts.
- **Control Panel:** The Linspire Control Panel (see Figure 7-6) is the central point for configuring this distribution for everything except adding and updating your software. You find out how to do work with this panel in Chapter 12.

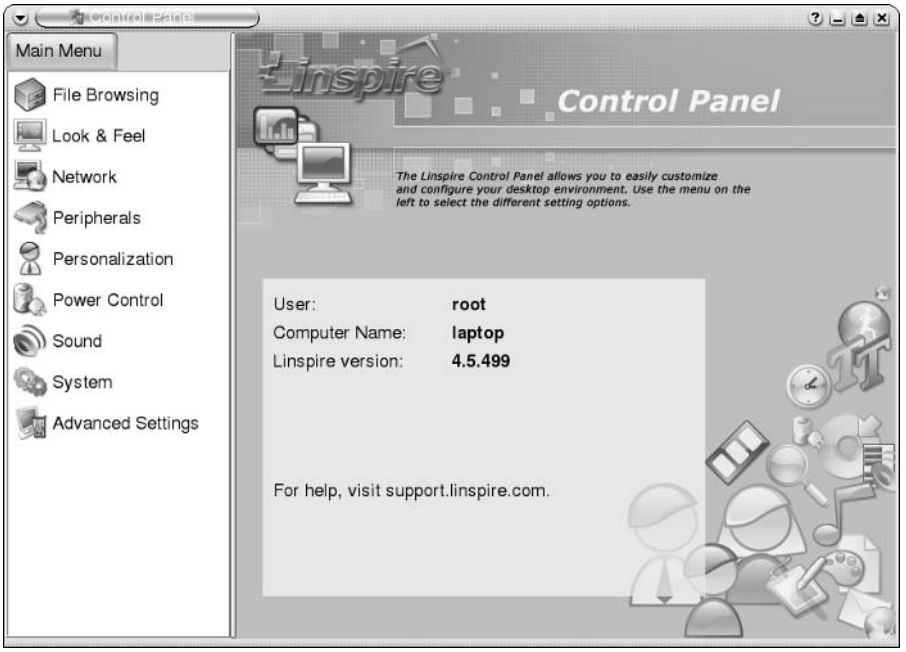


Figure 7-6: The Linspire 4.5 Control Panel.

Mandrake tools

Mandrake includes many configuration tools, though actually some of them are duplicates — you often have the option of running a large tool, or just the small component of that tool that you want to deal with. You can find most of the Mandrake tools by going to the main menu and choosing System➪Configuration. This submenu contains the following options:

- **Configure Your Desktop:** The KDE Control Center contains many, many options for tweaking your desktop settings. Each user on your system can change things according to their own preferences.
- **KDE:** Each individual option here maps to one of the choices in the KDE Control Center. It's a handy way to avoid having to open up the whole tool just to make one change.
- **Hardware:** A number of the hardware-related settings from the Mandrake Control Center are available here, eliminating the need to always open that tool.
- **Packaging:** This may be one of your more popular options as you use Mandrake over time. Here's where you find many of the Mandrake Control Center options for managing your software. (See Chapter 12 to find out more about these options.)
- **Printing:** This option leads you to printer-related programs and utilities.
- **Other:** A smattering of tools— some available in the Mandrake Control Center and some just plain handy by themselves.
- **Configure Your Computer:** The Mandrake Control Center (see Figure 7-7) is usable only by the system administrator (root), who can alter system-wide settings here.

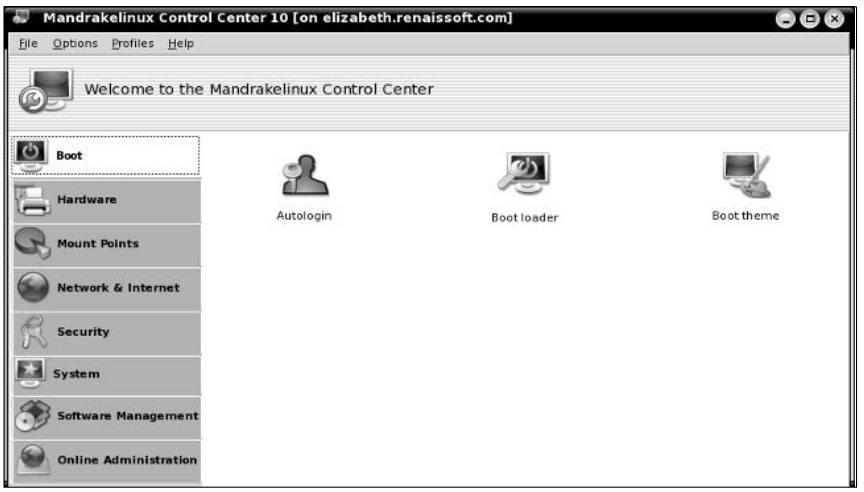


Figure 7-7: The Mandrake Control Center in Mandrake 10.1.

Red Hat and Fedora Core tools

Red Hat's Fedora Core community project comes with a number of tools developed by Red Hat for its commercial products, as well as a variety of tools built by the community, such as the GNOME Project's tools. When it comes to customizing your desktop, you can find most of what you're looking by choosing Applications➪Preferences. Rather than having a large control center, GNOME has opted to keep the configuration tools broken into smaller, individual programs. You find this layout in other GNOME installations as well.

Keeping with the theme of smaller, more specialized tools, your various system-wide configuration options are available by choosing Applications➪ System Settings.

SuSE tools

Like Mandrake, SuSE offers two primary places to configure your system. One of them is (again) the KDE Control Center, which is available by going to the lizard (geek-o) head in the lower left corner (the main menu) and choosing Control Center. This version of the KDE Control Center is slightly different than the standard one as it's got support for YaST's (Yet Another Setup Tool's) *modules* — each of the individual configuration routines within YaST — built in. However, to use YaST directly, you can go to the main menu and choose System➪YaST (see Figure 7-8).

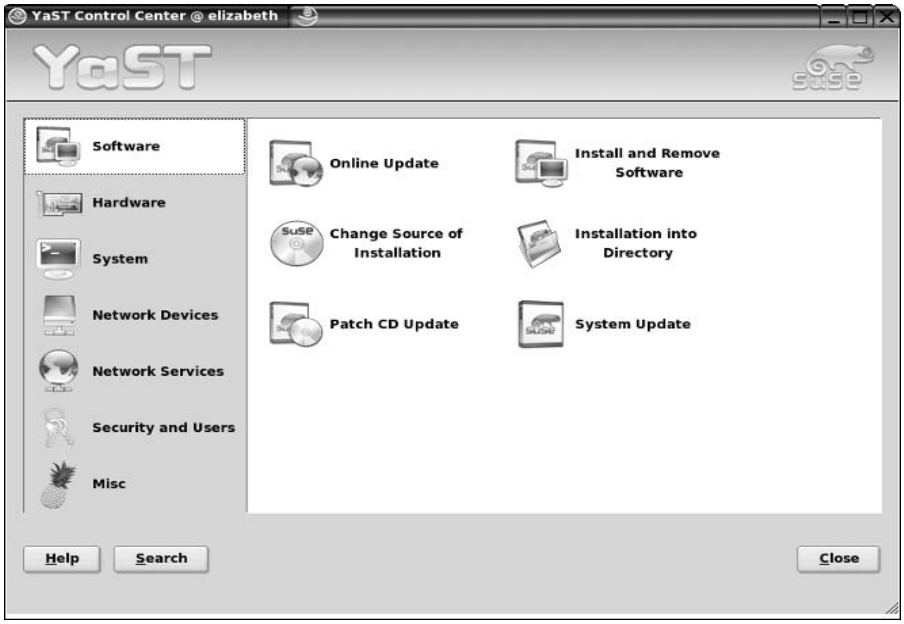


Figure 7-8: The YaST interface in SuSE 9.2.

You can use many of the tools discussed in this chapter at the command prompt, though not all of them. YaST actually has a full command-line version in case you're not using a GUI!

Finally, you can look in one more place. From the main menu, choose System➪ Configuration:

- **OpenOffice.org Printer Administration:** See Chapter 17 for more about this tool.
- **SaX2:** The base GUI configuration tool.
- **YaST:** The system configuration tool.

Xandros tools

Xandros offers a customized version of the KDE Control Center called the Xandros Control Center, available by choosing Launch ➪ Control Center (see Figure 7-9). Both your system-wide and your individual look and feel settings are available in this tool.

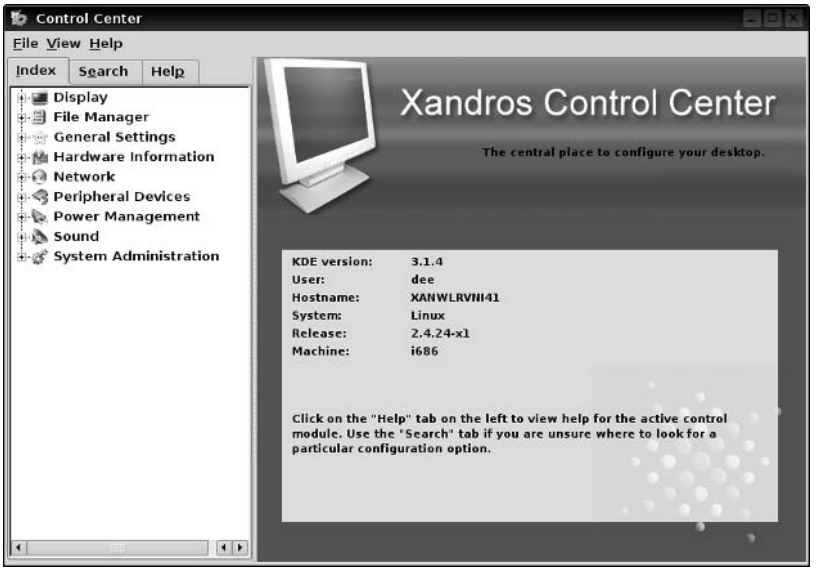
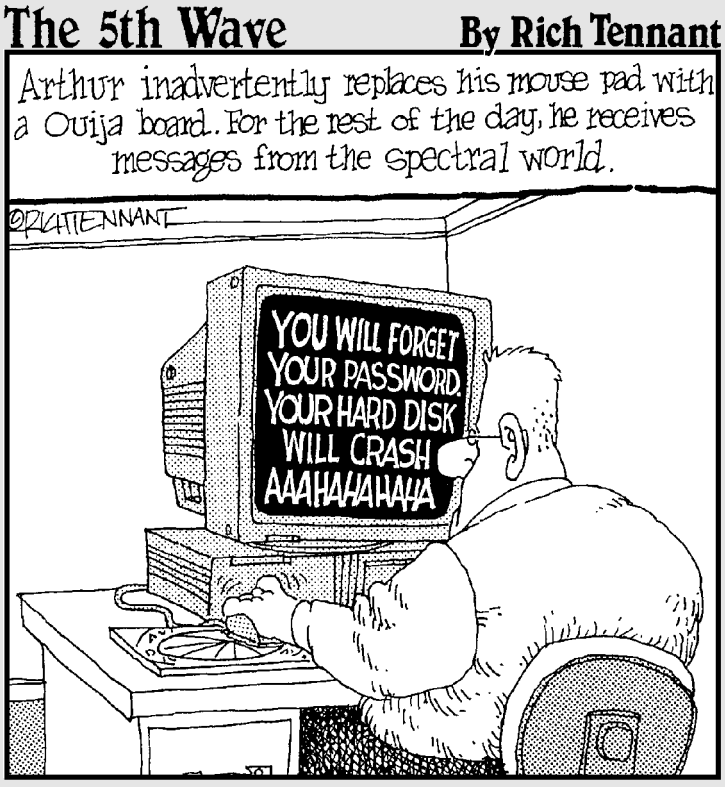


Figure 7-9: The Xandros Control Center in Xandros 2.5.

As you can see, the cool thing about learning one Linux distribution is that you're learning useful things to help you survive another version of Linux. Remember that all of these distributions are relatives, like cousins. Now get out there and have some fun tweaking your system!

Part II
Internet Now!



In this part . . .

In this part, you make the necessary mental and physical connections to hook up your Linux machine to the Internet, including configuring telephone dial-up to an Internet Service Provider (ISP). You also discover how to do some basic network troubleshooting, just in case things don't go perfectly. Next, you set up your Web browser, e-mail client, and newsreader software so that you can surf the Web, send and receive e-mail, and access newsgroups. Armed with the facilities you install in this part, you enable yourself to extend and customize your Linux system to your heart's content. You also find out how to travel on the electronic highways and byways of the Internet to get things done!

Chapter 8

Connecting to the Internet

In This Chapter

- Understanding common Internet connection methods
- Setting up your Internet connection
- Connecting to your Internet Service Provider (ISP)
- Understanding enough TCP/IP to be dangerous

Every improvement in communication makes the bore more terrible.

— Frank Moore Colby

You may already be connected to the Internet if you're on a machine that's connected to a LAN and configured the networking during installation. To test whether you have a connection, open up a Web browser and try to go to an outside Web site (like `www.linuxworld.com`). If it works, you're up! No need for this chapter. Otherwise, read on.

Internet Connectivity 101

A few words regarding the broadband options (DSL and cable) are in order before I begin. The word *broadband* has a technical definition, but I just use it to mean high-speed Internet access. Although a dial-up modem can typically transmit information at speeds up to 56 kilobits (thousand bits) per second, broadband connections can reach 50 times that speed. Nowadays, the Web contains lots of images and multimedia elements, and enjoying these features through a 56 kbps dial-up modem is similar to drinking a cold glass of water with an eyedropper when you're dying of thirst.

Don't let high-speed providers discourage you from using Linux with their services. Just because they don't support Linux directly doesn't mean that the technology doesn't work with Linux. TCP/IP (the set of traffic rules for the Internet) was developed for the Unix operating system, from which Linux descends.

If you have the luxury of dual-booting to Windows, your ISP can help you install your broadband connection, and then you can tinker with getting Linux connected as you have the time and inclination. I point you to some sites that can help you configure your broadband connection as you look at the types available:

- **Cable modems:** Many cable television companies have expanded their product lines to include Internet access over their cable infrastructure. When you subscribe to a cable Internet service, the installation technician often can provide you with a special device, called a *cable modem,* along with a standard network adapter (like an *Ethernet card*). The technician then installs the network adapter into your computer and connects the cable modem to it. As far as speed goes, to get the exact speeds available, you need to talk to your cable provider. The following Web page provides a document that contains helpful information about various cable providers and Linux:

  ```
  www.tldp.org/HOWTO/Cable-Modem
  ```

- **Integrated Services Digital Network (ISDN):** Not too long ago, ISDN was one of the only residential high-speed options. It appeared when 28 Kbps (half the speed of today's regular dial-up modems) was about all that you could milk from the copper strands that connected your telephone to the telephone company. ISDN is still available in some areas and promises a steady 128 Kbps — as long as you're within 3.4 miles of the telephone company's central office. You need two special devices to use ISDN: an ISDN modem (typically provided by the ISDN ISP) and a network adapter (sometimes an Ethernet card). Because ISDN is used so little these days, not many specific sites are devoted to it. The overall modem HOWTO (`http://tldp.org/HOWTO/Modem-HOWTO.html`) does contain pointers to the latest ISDN information, as well as just being plain interesting to read.

- **Digital Subscriber Line (DSL):** DSL works much like ISDN in that it carries data to your telephone jack in a digital format. DSL is popular because it provides a faster connection with lower installation and service costs than ISDN, and it utilizes the existing copper telephone wiring provided by your telephone company. You can even use the same phone line as a regular phone line! A DSL connection requires additional communication hardware, which your Internet Service Provider (ISP) should provide.

  Note that several variants of DSL exist:

  - IDSL (over an IDSN line) ISDN line
  - Symmetric Digital Subscriber Line (SDSL)
  - Asymmetric Digital Subscriber Line (ADSL)
  - Generic DSL (XDSL)

You can find out from your ISP how fast your DSL connection would be, because it varies. For an overview of DSL and Linux, visit the following Web page:

```
www.tldp.org/HOWTO/DSL-HOWTO/
```

- **Satellite modems:** Those who live in particularly remote or low-infrastructure areas might go the route of satellite modems (`http://tldp.org/HOWTO/Sat-HOWTO.html`). You can consider this service equivalent in many ways to cable, in that you get it typically through the same providers that you get your satellite television signals from. Satellite has some drawbacks in that if your satellite television service is unreliable, your Internet service suffers the same fate. The upload and download speeds can also vary dramatically.
- **Dial-up modems:** The dial-up modem is still widely used in areas where broadband is either not available or not affordable. It translates the *digital* signal from the computer into an *analog* signal required for transmission from the wall jack to the telephone company. Because the modem utilizes existing voice telephone service, you don't need any special setup beyond subscribing to an ISP. However, you can't use the same phone line for both dial-up and a conversation at the same time. See the sidebar "Beware of devices posing as modems" for additional concerns if you're going the dial-up route.
- **Wireless:** The realm of wireless networking is where Linux today may give you the most trouble, depending on what kind of wireless you're using. Four major types of wireless exist, and they're often referred to as a group as *WiFi*: 802.11a, 802.11b, and 802.11g, and Bluetooth, which are also referred to as just A, B, and G. A and B are the best supported, both being older than G, but G is the one most people should aim for because it has the best security. A and B are also the best supported in Linux so far, because again, they've been around the longest. G's security also adds levels of complexity that require more cooperation from the manufacturers of the cards. Many wireless cards today are, in fact, capable of doing more than one of these types.

  The best advice I can give here is to do a Web search on the make and model of your wireless card (or the one you're thinking of buying), plus the word Linux, and see what you find — and, of course, you can check the hardware compatibility pages for the distributions as well. Because this area is one where technology is quickly advancing, always check the dates on the resources you find and make sure that they're recent. Even being six months old can mean you're getting out-of-date information. Some useful links (some are more advanced than others) for this topic include the following:

  - Wireless LAN resources for Linux: `www.hpl.hp.com/personal/Jean_Tourrilhes/Linux/`
  - A method for using Windows wireless drivers in Linux: `www.linuxant.com/driverloader`
  - Network Topology Guide: `www.homenethelp.com/network`

Beware of devices posing as modems

I try to save you from some frustration — and your computer from your ball-peen hammer. Many Linux newbies have become irritated by not being able to communicate with their internal modems. "After all," the newbie reasons, "the same hardware works when I was running Microsoft Windows."

Well, here's the story: Years ago, hardware manufacturers developed a device, called a *software modem,* in an effort to reduce hardware costs. The idea was to trim some responsibility from the modem and relegate these tasks to the operating system. The result was an inexpensive modem that routed signals to proprietary software that operated only under Microsoft Windows. In short, these so-called modems, also known as *WinModems,* aren't really modems at all, but, rather, are telephone cable interfaces to Windows.

The following list shows methods you can use to determine whether you have a software modem:

- The model number has a HCF-, HSP-, or HSF- in front of it.
- The packaging refers to the device as a WinModem or designates that it works with only Windows (though sometimes these labels can be misleading because some manufacturers just don't bother to list other operating systems even though their hardware will work with those operating systems).
- Windows recognizes your modem, but Linux doesn't.

In short, if you determine that you have a software modem, Linux simply doesn't work with it. For the adventurous out there, the LinModem project (`linmodems.org`) has successfully written Linux drivers to work with a few of these software modems. I encourage you to become involved in this type of project, if you're so moved. These explorers drive the wonderful world of *freedom* software, which Linux is a prominent part of.

The bummer in all this is that, although you probably saved a few bucks by buying a machine with a software modem, you most likely need a real modem to use with Linux (unless you are lucky enough to have a LinModem). Your best bet is to purchase an external modem so that you can leave the software modem in place and have the external one just for Linux (or any other computer you may want to move it to later).

Setting Up the Hardware

Before you get too comfortable in your chair, you must physically check some items that may require you to do some low-level maneuvers (such as crawling under your desk):

- **Cable modem, DSL modem, or any other fancy contraption:** If you have one of these babies, you need to make sure that:
  - An Ethernet cable (like a phone cable but the connector is wider) is plugged into your computer's Ethernet card and into the special cable, DSL, satellite, or ISDN modem your ISP installed.

- The fancy modem thing is powered on. (These contraptions often have their own power supplies.)

- **External modem:** If you have an external modem (one that's independent of your computer case), you need to verify that:
  - A cable is securely connected from the modem to the proper port on the computer.
  - The modem is powered on. (External modems have their own power supply.)
  - One end of a telephone cable is plugged into the wall jack, and the opposite end is plugged into the modem.
- **Internal modem:** If you have an internal modem, you need to verify that:
  - The modem is *not* a software modem. See the sidebar "Beware of devices posing as modems" if you're not sure what a software modem is or whether you have one.
  - One end of a telephone cable is plugged into the wall jack, and the opposite end is plugged into the phone plug on the back of your computer.
- **Wireless cards:** If you have a wireless card, you also have to have a wireless *router* to collect and direct your wireless traffic between computers and/or *bridge* to let your wireless card talk to your Ethernet network. How far and through what (walls, floors, and so on) a wireless router or bridge can be from the card depends on the technology you're using. Some handy primers on wireless hardware and setup include
  - How WiFi Works: `http://computer.howstuffworks.com/wireless-network.htm`
  - Creating a Wireless Network: `www.wi-fi.org/OpenSection/design.asp?TID=2`

Okay, now you can climb back into your chair.

Selecting an Internet Service Provider (ISP)

Because of the meteoric rise in the popularity of Linux, many ISPs are training their support staff in the ways of Linux. If you already have a dial-up service, give one of them a call to let them know of your Linux pursuits. Chances are, that person already has information pertinent to Linux subscribers and can provide you with that information. If you're shopping for a new ISP, this section offers some practical selection advice.

Some ISPs provide their own proprietary software that you must install on your PC to connect to the Internet. The software they provide is likely to run only on Windows. Several free dial-up services don't work with Linux because of this fact. The proprietary software meddles with the operating system to ensure that banner advertising isn't hidden or that you stay dialed in for only a specified duration.

If you're shopping around for an ISP, consider these questions:

- **Can you get local dial-up numbers across the country and around the world?** If you travel often and need Internet access from different cities, this service is a handy money (and headache) saver.
- **Does it provide technical support for Linux?** If you're planning on running Linux, this consideration is an important one. However, it doesn't have to be a deal breaker.
- **Can you get a recommendation?** Ask a friend. An ISP's best friend is an endorsement from a satisfied customer.
- **Will you have trouble dialing in?** Although a subscriber-to-line ratio of 7-to-1 (an average of seven or fewer subscribers per line) or better isn't an entirely accurate measure of how often you'll get busy signals, it's probably the easiest measure for consumers.

Getting Information You Need from Your ISP

Most reputable ISPs provide you with a customer information sheet after you sign up for its services. This sheet should include the following information at the minimum:

- Local telephone dial-in numbers
- User login name
- User login password
- E-mail address
- E-mail outbound host or Simple Mail Transport Protocol (SMTP) server
- E-mail inbound host or Post Office Protocol (POP) server
- News host
- Whether your computer address will be
    - **Static:** You always have the same IP address. Static addresses are more common for servers than for desktops. If you're using static,

your ISP needs to give you your nameserver IP addresses, your gateway address, the network address, and the netmask. This information should all be on the customer information sheet.

- **Dynamic:** Your IP address changes each time you connect, or at regular intervals. On most desktops, you just don't always need to have the same address, and it makes life easier on ISPs. It also makes life easier for computer like laptops, which get moved around often from network to network. If you're using dynamic addressing, you're told that you need to connect using DHCP.

With this information, you can establish an Internet connection by using your Linux system.

Hooking Up

Fortunately, the Linux vendors provide tools that reduce the complexity of hooking up with Linux. It's not that networking has changed, but rather that many of its details have been hidden so that you just have to click here and press a key there. Not long ago, configuring dial-up networking (in particular) on a Linux machine was nothing short of debugging a defective Rube Goldberg contraption.

The Internet connection configuration tools available in the distributions covered within this book are:

- **Linspire:** Double-click the Internet Connection Tools icon on your desktop to open the Connection Tools folder. Then double-click the appropriate icon from there.
- **Fedora:** Choose Applications➪System Settings➪Network to open the Network Configuration dialog box. Click New to start the Configuration wizard.
- **Mandrake:** From the main menu, choose System➪Configuration➪Configure Your Computer to open the Mandrake Control Center. Choose Network & Internet➪New Connection to access the Connection Creation wizard.
- **SuSE:** From the main menu, choose System➪YaST to open the YaST configuration tool. On the left, select Network Devices. On the right, choose the type of hardware you have in order to start configuring your setup.
- **Xandros:** From the main menu, choose Control Center to open the Xandros Control Center. Click the plus next to Network to expand that menu and then choose Internet Connection to open your connection listing — you might need to click the Administrator button to enter your root password. Click New to launch the Connection Wizard.

Sometimes the choice isn't as obvious as you think. For example, maybe you have DSL, but because the DSL connection is going through your Ethernet card, your system sees it as a LAN/Ethernet connection. So if you can't get your connection to work, play with these factors.

Again, because I have only so much space, I walk you through setup using Fedora. Many of the decisions and required pieces of information are the same from distribution to distribution, so again, if you're not using Fedora, read through this section and use what you find out here to work on your own computer.

Configuring Your Connection

With your ISP's information in hand and a glowing monitor in front of you, follow these steps to configure your dial-up connection to the Internet in Fedora:

1. **From the GUI desktop, choose Applications➪System Settings➪Network.**
2. **Enter your root password in the dialog box, if necessary.**

   If you're logged in as a regular user (not root), you're prompted to enter the root password.

   The Network Configuration dialog box opens (see Figure 8-1).

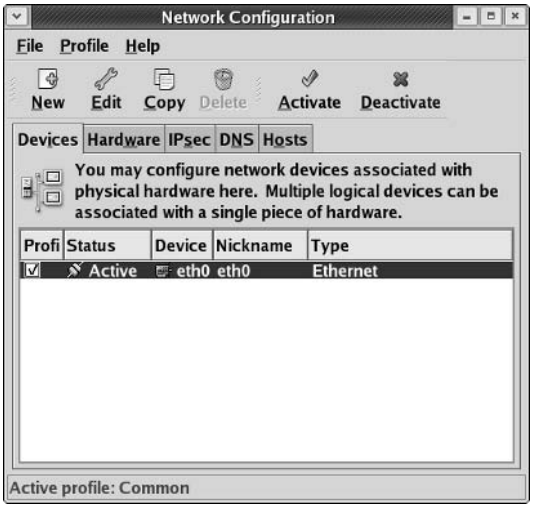


Figure 8-1: The Network Configuration dialog box in Fedora Core 3.

3. **In the Network Configuration dialog box, click the New button.**

The Select Device Type dialog box appears, as shown in Figure 8-2. Because I can't cover all network connection types at once, and the dial-up modem is the most complicated, I follow the dial-up option from here. Choose the right hardware type for yourself and proceed.

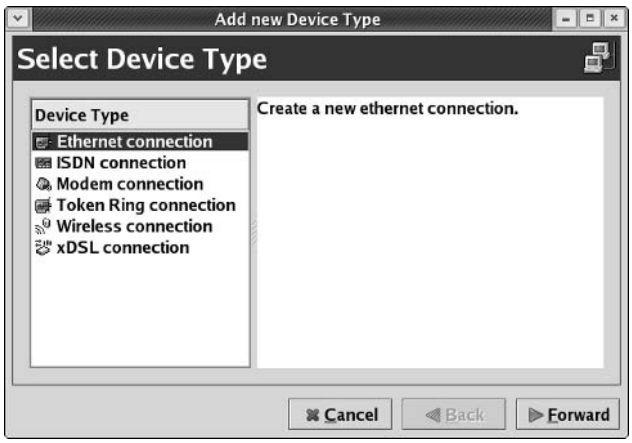


Figure 8-2: The Select Device Type dialog box in Fedora Core 3's Network Configuration tool.

4. **To set up a dial-up modem, select Modem Connection from the Device Type list box and then click the Forward button.**

   After you click Forward, the tool probes for your modem. If your modem can't be found (again, I follow through the most difficult option), the Select Modem dialog box appears, as shown in Figure 8-3. I assume that you're staring this dialog box in the face. If it doesn't appear, proceed through your configuration until it matches these steps again.

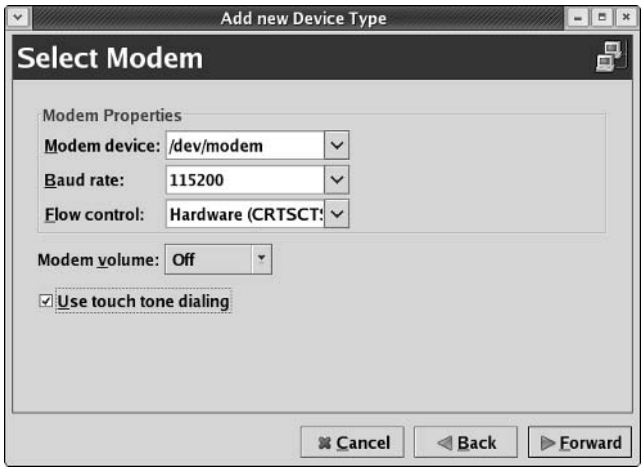


Figure 8-3: The Select Modem dialog box in the Network Configuration tool.

5. **Select the proper device from the Modem Device drop-down list.**

   If you know your modem is on COM1 or COM2 in Windows, translating this techno-talk to Linux isn't hard: You just need to subtract 1. So, it's ttyS0 for COM1 and ttyS1 for COM2. If you're not using a USB mouse (it has a flat, rectangular connector), then your modem is probably on COM2. If you're using a USB mouse, your modem is probably on COM1.

6. **Select your modem's speed from the Baud Rate drop-down list.**

   If you were told to use a specific speed, choose that speed here. Otherwise, choose the highest number available. The key is to try the highest setting and, if that doesn't work, start choosing slower and slower ones until you're able to properly make the connection.

   Leave the Flow Control setting alone. Only change this setting if you're having a hard time getting your modem connection to work, or you're told by your ISP that you specifically need to select either Software Flow Control or No (None) Flow Control.

7. **Turn on your modem volume so that you can hear what it's doing while testing it.**

   You'll want to come back later and shut off the volume. (Well, most people do; some like to leave it on. I think the 56.6kbps modems sound like an alien game of Pong, personally, while they're connecting). It's up to you how loud you want to set the sound, as long as you can hear it.

   Leave Touch Tone Dialing activated unless you live in an area that only supports rotary phones.

8. **Click Forward to proceed.**

   The Select Provider dialog box appears, as shown in Figure 8-4.

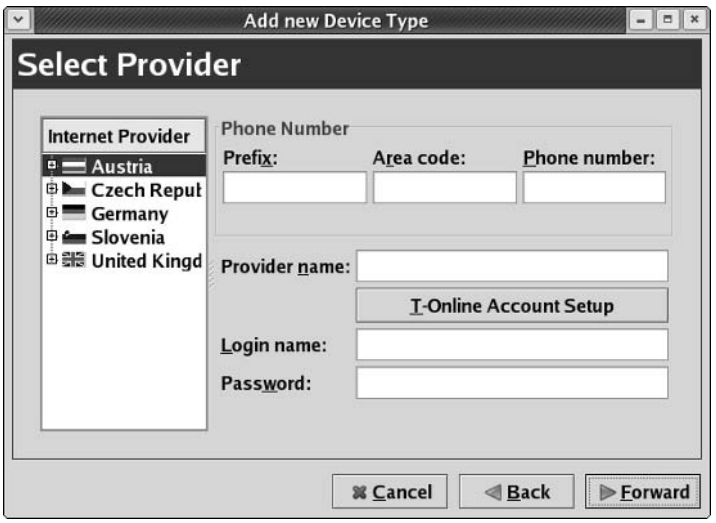


Figure 8-4: The Select Provider dialog box in Fedora Core 3's Network Configuration tool.

9. **Enter your ISP information and then click Forward.**

   The default list of countries that your ISP may be from is pretty limited. If you live in one of these regions, select your country, then the ISP — at which point the dialing entries are completed for you — and then skip to Step 16. Otherwise, proceed to the next step.

10. **In the Prefix text box, enter any dialing prefix you have to dial before the actual phone number.**

    This prefix may be a long distance item, such as 1 for North American long distance calls, or a 9 to dial out of your building — or even 91 if you need to dial 9 to get out and you're dialing long distance. If you don't need a prefix, leave this box blank.

11. **In the Area Code text box, enter the area code your modem needs to dial if it needs to dial one.**

    In some places, you have to dial the area code even if you're dialing a local number. If you don't have to use an area code, leave this box blank.

12. **In the Phone Number text box, enter the phone number (minus prefix and area code) your modem needs to dial.**

    Dashes aren't necessary.

13. **In the Provider Name text box, type the name of your ISP.**

    You just use this name as a description for this dial-up entry.

14. **In the Login Name text box, enter your dial-in account login name.**

15. **In the Password text box, enter your dial-in account login password.**

16. **Click Forward.**

    The IP Settings dialog box appears, as shown in Figure 8-5.

17. **In the IP Settings dialog box, select the appropriate radio button for whether your modem needs to obtain its IP addressing information from the ISP (*DHCP,* as discussed in the section "Getting Information You Need from Your ISP," earlier in this chapter) or whether you need to tell it what its IP data is (*static*).**

    Your ISP should have given you which of these you require. DHCP is the default. If you choose Static, the lower portion of the dialog box becomes available.

18. **If you selected DHCP, and your ISP told you to automatically get your nameserver settings from its equipment, leave the Automatically Obtain DNS Information From Provider box checked. Otherwise, uncheck it.**

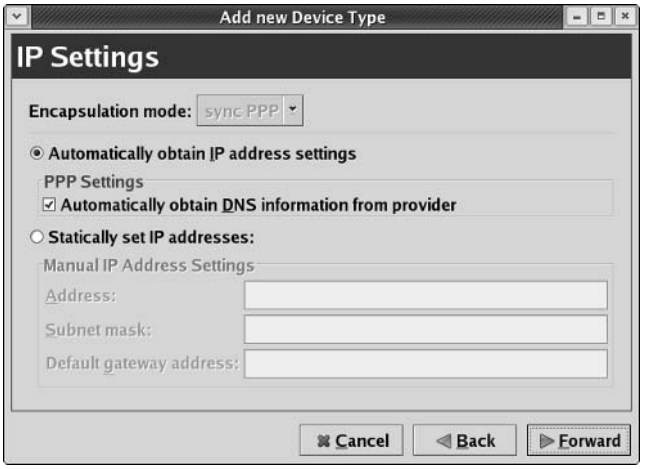


Figure 8-5: The IP Settings dialog box in Fedora Core 3's Network configuration tool.

19. **If you selected static, fill in the Address, Subnet Mask, and Default Gateway Address as given to you by your ISP.**

20. **Click Forward to proceed to the summary dialog box and then click Apply to add the modem you have just set up to your main Network Configuration dialog box.**

    You now have a modem entry (look in the Type column) in your Network Configuration tool.

Connecting to (and Disconnecting from) the Internet

To connect to the Internet, highlight the modem entry you just created (see preceding section) and click the Activate button. With any luck, your modem springs to life with some beeps and then buzzes along with a dialog box indicating that a connection is being made. After a successful connection, the Network Configuration dialog box appears again; this time, the Status column of the modem device reads Active. Congratulations; you're now connected to the Internet!

To disconnect, click the Deactivate button in the Network Configuration dialog box. Your settings remain; the next time you want to connect, just open this dialog box and click Activate. If all is not well, skip to the section "It's All Fun and Games until Something Doesn't Work" to find out how to get help.

It's All Fun and Games until Something Doesn't Work

In a perfect world, the dial-up configuration steps in the preceding section would work 100 percent of the time. The Linux vendors have truly hidden all the mystery that has traditionally surrounded networking. Unfortunately, in many situations (mostly related to modems and hardware), a simplified configuration doesn't work. If you can't connect to the Internet after following these steps, an excellent site to find help is LinuxQuestions.org (`www.linuxquestions.org`). It's simply impossible for me to anticipate the wide range of problems people can run into, and this site is well known for its helpful community members.

Also, go to your favorite Web search site and search on the error message you're getting from the system, or some keywords involved with the error, such as the network hardware's make and model, and the name of your distribution. You can use two cool tools when you're trying to figure out what's wrong with your network connection or trying to gather information that can help someone else figure out what's wrong: the handy command line programs `ping` and `traceroute`. Together, you can use these commands to figure out where the problem might be when you can't reach something over a network. These commands are discussed in the next two sections.

Some firewalls block the kind of traffic sent with `pings` and `traceroutes`, so these commands don't always work as expected, even with a good connection.

Checking whether you can talk to a specific address with ping

The `ping` command is akin to a submarine using sonar to detect other objects in the ocean. Sonar sends out a `ping` signal, which reflects off a hard surface. By measuring the amount of time between sending the `ping` and the `ping`'s return, the submarine's engineer can determine whether an object is out there and how far from the submarine the object is.

The `ping` command in Linux provides information similar to what sonar provides. If you consider the Internet to be your ocean, you can determine, by pinging, what other network computers exist and also how long it takes for your `ping` to return. You use this command in the format `ping` *`hostname`* or `ping` *`ipaddress`*, such as `ping bob.example.com` or `ping 192.168.1.5`. If you can't ping another computer in your house or office (assuming that you have them all connected with Ethernet and not on separate dial-up connections), then something is wrong with the machine you're pinging from. On the

other hand, if you can ping another machine in your house or office but you can't ping a machine elsewhere on the Internet, then something may be wrong with your connection to your ISP.

Latency, or the amount of time it takes for a signal to travel on the Internet, has little to do with physical distance. Rather, factors such as network traffic, bandwidth, and network hardware all contribute to a slow latency. These factors determine whether a `ping` to your neighbor's computer takes longer than pinging a host at the South Pole.

For example, try pinging Yahoo! by opening a command prompt (see Chapter 14) and typing the following command:

```
ping www.yahoo.com
```

Press Ctrl+C to stop the `ping`; otherwise, your computer continues to `ping` the target.

The output, as shown in Figure 8-6, provides information about what `ping` is doing. If the ping can't reach the host, you receive a message that the host is unreachable. If the ping can reach the host, you receive feedback that provides how long it takes — in milliseconds (ms) — for the signal from your computer to get to the destination computer and back again — the lower the numbers, the better. For computers connected through Ethernet, a `ping` time of 1 ms to 3 ms is an acceptable response time. For dial-up connections, expect somewhere around 150 ms. When you start seeing `ping` times climbing to 900 ms or higher, the network is likely under heavy use (or you have something wrong with your cables).

Following in your traffic's footsteps with traceroute

Another fun command is `traceroute`, which allows you to see all the computers your data goes through on its way to a destination. Simply type the command **traceroute *hostname***, such as `traceroute bob.example.com` or `traceroute 192.168.1.5`. After a few moments, you receive a list of all computers between you and the designated hostname and how long it took for the data to travel to each one of them in turn, as shown in Figure 8-7.

Try Yahoo.com! again as an example. Open a command prompt (see Chapter 14), type **traceroute yahoo.com**, and press Enter. It can take a moment for the data to start filling in, but when it does, each line of your `traceroute` results represents a *hop.* Each hop represents a physical machine your data must travel through in order to get where it's going. You can identify heavy network congestion and other problems by making note of the larger numbers in the list.

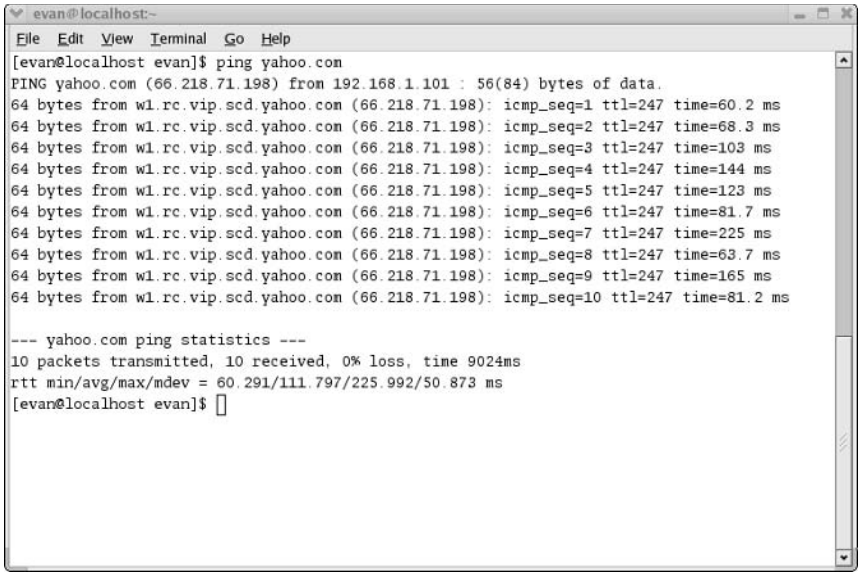


Figure 8-6: Sample results of the `ping` command.

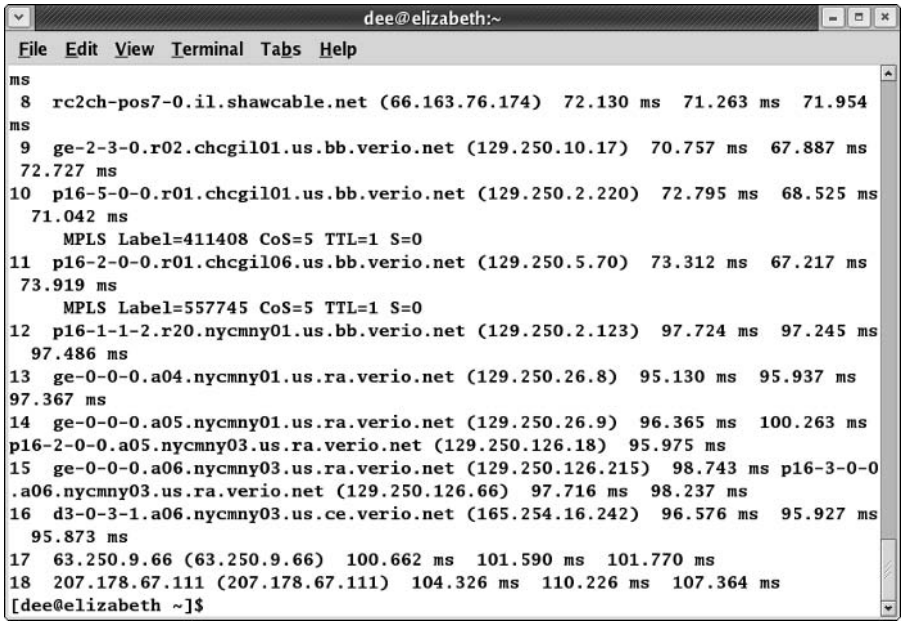


Figure 8-7: The end of a set of results from the `traceroute` utility.

Sometimes, especially when you're troubleshooting the reason that you can't access your intended Web site, you perform a `traceroute` that *times out* somewhere along the way. This situation usually indicates that a "traffic accident" has occurred somewhere along the information superhighway. Give it a few minutes and try again. If you get this problem consistently, it may mean that a site is down or that a firewall is blocking the traffic.

After You're Connected

After you're connected, you'll probably want to leap straight to Chapter 9 for how to use the various Internet programs available to you. In the meantime, let me offer you a number of sites you might find useful when you need help, have questions, or otherwise want to explore the Linux world further — some of these are pretty geeky, but you'll grow into them! You also may want to update your machine (see Chapter 12), add new software (also Chapter 12), and give extra thought to system security (see Chapter 13) to protect yourself from nasty people and programs.

Useful sites include

- `www.linuxsecurity.com`: A somewhat geeky but useful place where you can track what's going on in the world of Linux security.
- `www.kerneltraffic.org`: Everything you never wanted to know about what's happening with the Linux kernel but were afraid to ask. This place is great for tracking what new features are being added, if you're interested in things like bleeding-edge hardware or just like to be "in the know."
- `www.linuxquestions.org`: I mention this one elsewhere in the book, but it's worth a mention again. This site is a popular hangout for people who have questions to ask, and those who like to help them.
- `http://linux-newbie.sunsite.dk/`: The Linux Newbie Administrator Guide is a massive collection of information that you may find useful.
- `www.tuxfiles.org`: A collection of short help files on individual topics of interest.
- `www.tldp.org`: Contains lots of help documentation written for various user levels.
- `www.slashdot.org`: Uber-geek (with a rather hostile culture, unfortunately) hangout with lots of pointers to interesting articles online. Best used to view the articles and skip the arguments in the comments section.

In addition to these recommendations, your favorite search site can be very handy.

Chapter 9

Using the Internet

In This Chapter

- Browsing the Web
- Reading newsgroups
- Checking and sending e-mail
- Sending instant messages

Give a man a fish and you feed him for a day; teach him to use the Net, and he won't bother you for weeks.

— Anonymous

The *Internet* is a vast network of computers that spans the globe. Many different types of computers and operating systems work together to allow you access to information across the Internet. Linux, along with its related Unix operating system, has long supported and worked with the Internet. Practically all the different services available on the Internet are available from your Linux desktop.

When you install Linux (see Chapters 3 and 4), one or more Web browsers, mail programs, and instant messaging tools are placed onto your new system. In this chapter, I introduce you to some tools you can use to access different services on the Internet, such as accessing Web sites, using e-mail, investigating newsgroups, and utilizing FTP — assuming that your Internet connection is configured (see Chapter 8).

Meet the Popular Browsers

Many people attribute the explosive growth of the Internet to the graphical Web browser. The Internet has been around for much longer than the invention of the browser. It's just that most of the work done on the Internet was in plain old text, which held little attraction for those people who like pretty pictures.

A number of graphical Web browsers are available for Linux. The default browser included with each of the distributions covered in this book is:

- **Fedora:** Firefox (`www.mozilla.org/products/firefox`, based on Mozilla)
- **Knoppix:** Konqueror (`www.konqueror.org`), though Mozilla is also included by default
- **Linspire:** Customized Mozilla
- **Mandrake:** Konqueror, though Mozilla and Epiphany (`www.gnome.org/projects/epiphany`, which is based on Mozilla as well) are also both included by default
- **SuSE:** Konqueror
- **Xandros:** Mozilla

You can easily add the browsers that aren't included by default to most of these distributions (see Chapter 12). Another popular browser in Linux is Opera (`www.opera.com`).

Many browsers are based on Mozilla, aren't they? And Mozilla is a branch off of Netscape. Because Mozilla is included with so many of these distributions (and can be easily added to the rest), I focus on it here. Mozilla is actually more complex than both its Epiphany and Firefox love-children, and so you'll find those other options easier to figure out — and Epiphany and Firefox also work very similarly to Mozilla. In fact, Firefox doesn't have the same huge pile of configuration routines in its Preferences dialog box because it doesn't have mail and news to contend with.

Mozilla, Firefox, and Opera are all available for Windows and OS X as well!

Configuring Mozilla

You can start surfing right now, if you want. You don't need to customize your browser. However, you may want to take a moment to tell Mozilla your preferences, such as the default Web site to show when it starts up, what font sizes to use by default, what colors to use, and many other options.

The following steps introduce you to the Preferences window, where all the Mozilla configuration parameters are stored:

1. **Start Mozilla.**

   How you start Mozilla depends on which distribution you're using. Typically it's either a shortcut on your Panel (Knoppix, Linspire, and Xandros) or is available in the Internet portion of your main menu. Be patient; Mozilla is a large program, and it usually takes a few seconds to start up.

2. **Choose Edit➪Preferences.**

   The Preferences window appears, as shown in Figure 9-1. While this dialog box may look different from distribution to distribution, I've double-checked that all the options are the same and point out any place where they aren't.

   Notice that many configuration options are available. Throughout the rest of this chapter, I guide you through configuring a few of the essential settings. In addition, I encourage you to explore the many other options available along the way!

3. **Use the left pane of the Preferences window to access the various preferences categories.**

   You can expand any of the major categories by clicking the small plus sign (+) or right arrow next to them, and contract them again by clicking the small minus sign (-) or down arrow. Each category has a main menu and submenus, so don't forget to click the category names as well as the subcategories.

4. **If you get tired of reading through menus, just click OK (if you made changes you want to keep) or Cancel (if you made no changes or don't want to keep your changes) at any time to close the Preferences dialog box and get back to surfing.**

Figure 9-1: The Mozilla Preferences window in Fedora Core 3.

Appearance preferences

Selecting the Appearance main menu option — Figure 9-2 — allows you to determine how you want Mozilla to look and act when it loads. Its basic setup is governed by three separate sections: When Mozilla/Internet Suite Starts Up, Open; Show Toolbars As; and the miscellaneous section at the bottom. The first section determines what parts of Mozilla should launch when you start up the browser. The options here are

- **Navigator:** The browser itself. This one is selected by default.
- **Composer:** The Web page creation part of Mozilla.
- **Mail & Newsgroups:** The e-mail and newsgroups part of Mozilla. (This one is only available in some distributions by default.)

You can have more than one of these selected at a time, and all the ones you've chosen start when you open your browser. Or, you can choose to launch the additional pieces separately through the Window menu, just when you need them.

The second section allows you determine how you want to see your toolbars:

- **Pictures and text:** Show buttons on your Mozilla toolbars and text with them.
- **Text only:** Don't bother showing the pictures.
- **Pictures only:** Don't bother showing the text.

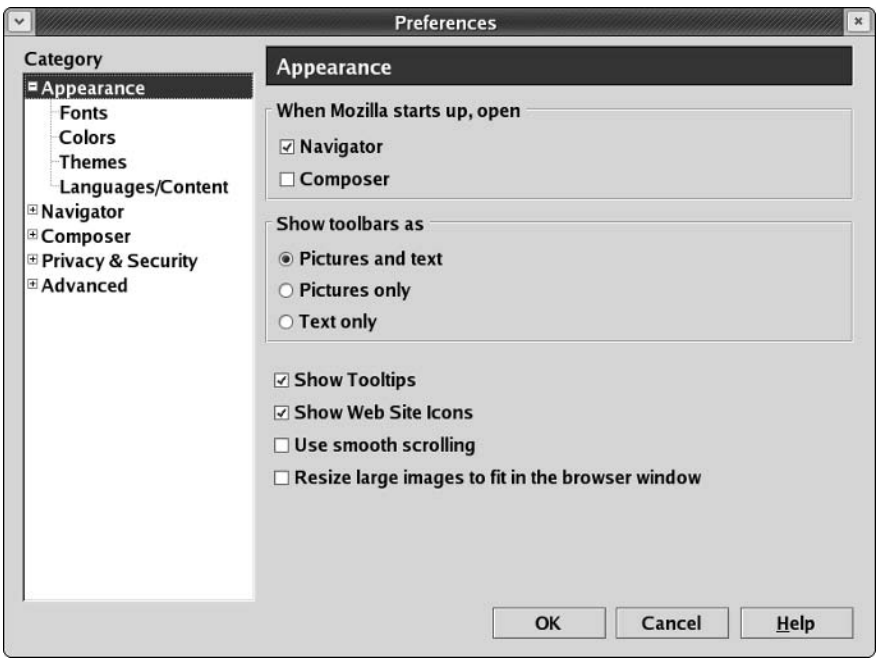


Figure 9-2: The Mozilla Appearance Preferences window in Fedora Core 3.

Finally, the bottom section of this dialog box allows you to make a few more customization tweaks:

- **Show Tooltips:** When you hover your mouse pointer over a Mozilla option, a little tip pops up onto your screen.
- **Show Web Site Icons:** Grabs and uses the tiny little icons some Web sites put next to their URLs, showing them in your bookmarks next to the labels.
- **Smooth Scrolling:** Makes sure that when you scroll, you're doing so. Available in Fedora Core 3 but not Linspire or Xandros.
- **Resize Large Images To Fit In The Browser Window:** Doesn't force you to scroll around a big image to see the whole thing at once, but instead fits it into the window. Underneath Appearances, the remaining menu entries are:
- **Fonts:** Enables you to set your preferred typeface. For desktop resolutions of 1024 x 768 and higher, I recommend jacking up your font sizes immediately. (Otherwise, become very familiar with the key combinations Ctrl-+ to make all the fonts in the browser bigger, and Ctrl— to make them smaller. Use the + and – on your number pad and not your main keyboard.)
- **Colors:** Sets your text colors and whether you want to override explicit Web page settings. This setting is an important one for color-blind people.
- **Themes:** Allows you to put a custom paint job on your Mozilla installation.
- **Languages/Content:** Allows you to set the sidebar preferences of your browser to a particular locale's language.

If you aren't sure about how to use a particular setting, click the Help button to open the Mozilla help interface.

Navigator preferences

The Navigator category (see Figure 9-1) enables you to select the behavior of your browser when it's first started. These settings are divided into three sections: Display On, Home Page, and Select The Buttons You Want To See In The Toolbars. In the first section, the first thing you do is choose which aspect of Mozilla you're setting by choosing one of the following from the drop-down list box above the radio buttons:

- **Navigator Startup:** Specify what to do when the main browser window opens.
- **New Window:** Specify what to do if you click a link that launches a new window or choose File➪New➪Navigator Window.

- **New Tab:** Specify what to do if you have your browser/Navigator set to use tabbed browsing and open up a new tab or choose File➪New➪ Navigator Tab. Tabbed browsing reflects the latest craze in Web browser capabilities, especially among those who hate having their desktop cluttered with windows. It allows you to have multiple surfing destinations, all in one window, and change between them by clicking tabs. See later in this same section for more on tabbed browsing.

After you've selected which item you're configuring, you can then choose one of the following for its default behavior when it launches:

- **Blank Page:** Open this item without opening any pages.
- **Home Page:** Open this item to my home page.
- **Last Page Visited:** Open this item to a copy of an open page or the last one I visited.

In the Home Page section, you can specify the home page to use for the times that you want to have a default page loaded. You have one of the following options for choosing this page:

- Enter the URL you want to use in the Location text box.
- Click Choose File and browse to the file (on your computer) that you want to use as your default and then click Open to add it to the Location text box.
- Surf to the page you want to use for your home page and click the Use Current Page button to add it to your Location text box.
- Open up multiple tabs and, in each of them, surf to the pages you want to open by default. Then click Use Current Group to have all these tabs added to the Location text box. (It actually says "Home Page Group Is Set" in the text box.)
- Change the home page back to the last setting you had by clicking Restore Default. For me, it defaults to the hard-coded Fedora Project page.

Finally, in the bottom section, you can choose which buttons should show up in your top two Mozilla toolbars, from Bookmarks (lower toolbar), Go (upper toolbar), Home (lower toolbar), Search (upper toolbar), and Print (upper toolbar).

You can actually control what's in the lower toolbar with quite a bit of detail, by choosing Bookmarks➪Manage Bookmarks and then changing what you find in the Personal Toolbar Folder. That's a really fun option to play with!

Underneath Navigator, you can also check out:

- **History:** The History text box enables you to designate how many days you want your browser to remember where you've been. You can click the Clear History button to clear the history manually at any time, or click the Clear Location Bar button in this same dialog box to remove the list of sites it suggests whenever you're trying to type a new URL.
- **Languages:** No, this option doesn't automatically translate the content of a Web page into the preferred language. Rather, some Web page authors provide their Web pages in more than one language. If it's an option, this one merely lets you decide language preference.
- **Helper Applications:** In this table, you designate applications to intercept special file types. An example is a `.pdf` file, which requires the Adobe Acrobat Reader in order to view it. You can specify the application and optional arguments that need to be passed to the program.
- **Smart Browsing:** With this option, you can set the characteristics of the What's Related tab, which is on the Sidebar (located in the left pane of the browser window). The What's Related tab provides a drop-down menu listing sites that may be related to the displayed Web site.
- **Internet Search:** Search engines have become an integral part of Web browsing. To accommodate searching, Mozilla can integrate your favorite search engine right into your browser. You can click the drop-down button under Default Search Engine and choose your preference.
- **Tabbed Browsing:** You can customize how your tabbed browsing functions, if you like to play with this feature.
- **Downloads:** Mozilla provides you with a helpful download manager that lets you watch the progress of multiple files, all in a single window. You can even see the last items you downloaded.

Other preferences

Other preferences you may want to check out before you start using Mozilla include

- **Composer:** If you like to build Web pages, you may want to check out Mozilla's Composer feature and its preferences. Of course, other Web page-building programs are out there. Your version of Linux probably offers one or more of the following: Bluefish (`http://bluefish.openoffice.nl/`), N|Vu (`www.nvu.com/`), Quanta Plus (`http://kdewebdev.org/`), or others.
- **Mail & Newsgroups:** If you intend to use Mozilla for your e-mail and newsgroups (the default in Linspire and Xandros), you can set up cosmetic and other look-and-feel issues for how these features behave in this section. However, you actually tell Mozilla what your e-mail account is and what newsgroups to read, among other things, elsewhere.

- **Privacy & Security:** Network security has become a very big issue for everybody connected to the Internet. Although the typically nontechnical media often sensationalizes this issue, security should still be a consideration for all users of the Internet. Every time you send an e-mail or click a Web site, you're exchanging information across a network. Although you don't need to lose sleep over it, you should be conscious of every request you make on the Internet. Even though completely securing your information is impossible, you can feel reasonably confident that your exchanged Internet information is safe because of the default options that Mozilla has provided. See the Popup Windows portion in particular for how to keep these annoyances from cluttering your screen!
- **Advanced:** This category provides options that affect the entire Mozilla user environment. Options include whether you want to enable Java applets or XSLT Web pages. This area is also where you can flush your cache — your browser's memory of what you've been doing and where you've been, but not your bookmarks — and establish your proxy settings in the Cache and Proxies submenus. (If you've never before been told to use a proxy, you don't need one.)

Them dad-gum browser plug-ins

Do you ever get irritated at those Web sites that insist that you download a *plug-in,* or additional piece of software, just to view the site? The difference between a plug-in and an external program is this: A plug-in displays the results in the browser, and an external program runs outside the browser. Although these plug-ins are annoying if you're just looking for some basic information, they can provide some pretty cool stuff, such as streaming video and music through your Web browser.

Plug-ins provide *browser capability extensions,* which are programs that interface with the browser to provide nonstandard features, such as sound and video. The digital age is still in its infancy, so the industry hasn't yet adopted these multimedia formats as standard. In turn, the developers have chosen not to build support into the Mozilla browser. Rather, the plug-in architecture enables software developers to innovate without requiring the supporting browser to know what to do with newly emerging media formats.

Chapter 12 explains how to add the popular plug-ins (like Macromedia's Flash plug-in) to your system for each of the distributions covered in this book. You may also be interested in is "helper applications," (programs Mozilla launches to handle particular types of contents, like PDF viewers) which you can configure in the Preferences dialog box by opening up the Navigator menu and choosing Helper Applications. This section lets you tell Mozilla

what programs to launch in order to open particular types of files, so if you find that you're often having to do something manually, you can go into this dialog box to automate the process of accessing file types you use all the time.

Surfing the Web

Mozilla is your viewing window into the wonderful World Wide Web. Mozilla's primary purpose is to fetch Web pages on your command, download all their graphics and related files into your computer's memory, and, finally, render the page for your interactive viewing pleasure.

If you're used to using Internet Explorer or Netscape, using Mozilla should be a snap. It has all the familiar navigation tools, such as an address bar; Back, Forward, Reload, and Stop buttons; and a feature that stores links to your favorite Web sites (bookmarks).

Mozilla, like Netscape, also has a Sidebar feature — press F9 to show and hide it (see Figure 9-3) — which you can use to find sites related to the one you're visiting, search for a word or phrase on the Internet, access bookmarked Web pages, or access a Web page you recently visited (through the History option).

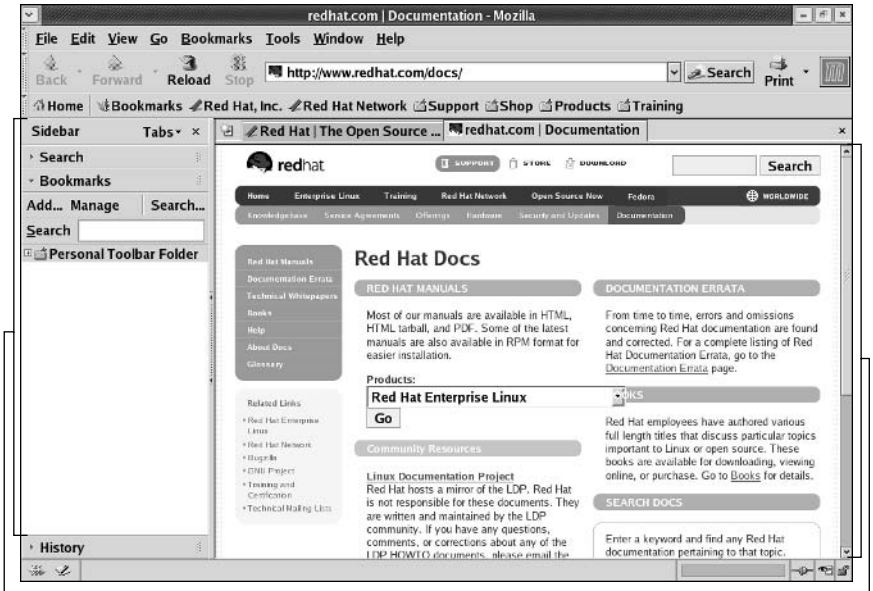


Figure 9-3: Mozilla with the Sidebar open, in Fedora Core 3.

Sidebar

Web pages

Navigating Newsgroups

Although e-mail is usually directed at an individual, you can think of *newsgroups* as public-message bulletin boards where people with similar interests come together to discuss a topic. Newsgroups (like Web forums) are also great places to find technical support.

Newsgroup support isn't included in Firefox, but you can use the information in Chapter 12 to install Thunderbird (`www.mozilla.org/products/thunderbird`, an e-mail and newsgroup reader based on Mozilla, so it's similar to what's shown in this book) or Pan, which is another popular choice.

Configuring Mozilla to read newsgroups

With the newsgroup server information that your ISP provides, follow these steps to access the world's largest cork board:

1. **Choose Window➪Mail & Newsgroups (Fedora users, choose Window➪Composer).**

   The first time you open this menu option, you immediately see the Account Wizard, shown in Figure 9-4. After you set up your newsgroups, selecting this option brings you to the (mail and news) message center window with your Inbox selected by default.

2. **Select the Newsgroup Account radio button and click Next.**

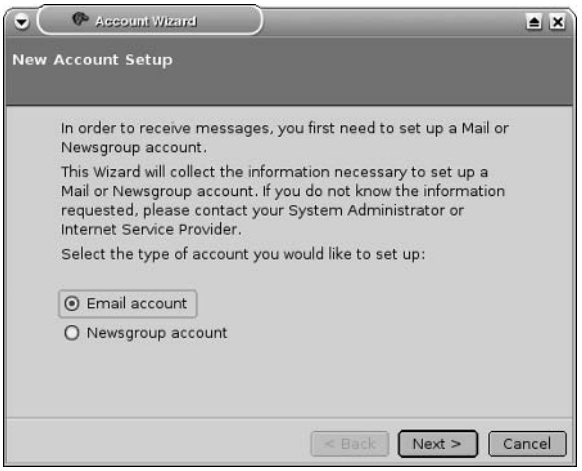


Figure 9-4: The Mozilla Account Wizard in Knoppix 3.6.

3. **Enter your full name or the nickname you want to use into the Your Name text box.**

4. **Enter your e-mail address into the Email Address text box.**

   Because spammers *harvest* (collect) e-mail addresses of people to spam through newsgroup postings, many people like to "mangle" their e-mail address in their posts so that humans can make changes but a computer can't easily tell what the real e-mail address is. Typically, you would set your e-mail address to something like `meatexampledotcom` and leave a note at the end of all your posts (in your signature, usually) to convert it — for this example, it would be `me@example.com`.

5. **Click Next and then enter your newsgroup server address into the Newsgroup Server text box.**

   If your ISP didn't give you this information already, check its Web site or contact its support team to find out what to use here.

6. **Click Next and then type a descriptive name in the Account Name text box.**

7. **Read the summary and verify that it's correct. If not, click Back and go fix what's wrong. If correct, click Finish.**

   The Mail & Newsgroups portion of Mozilla opens (see Figure 9-5).

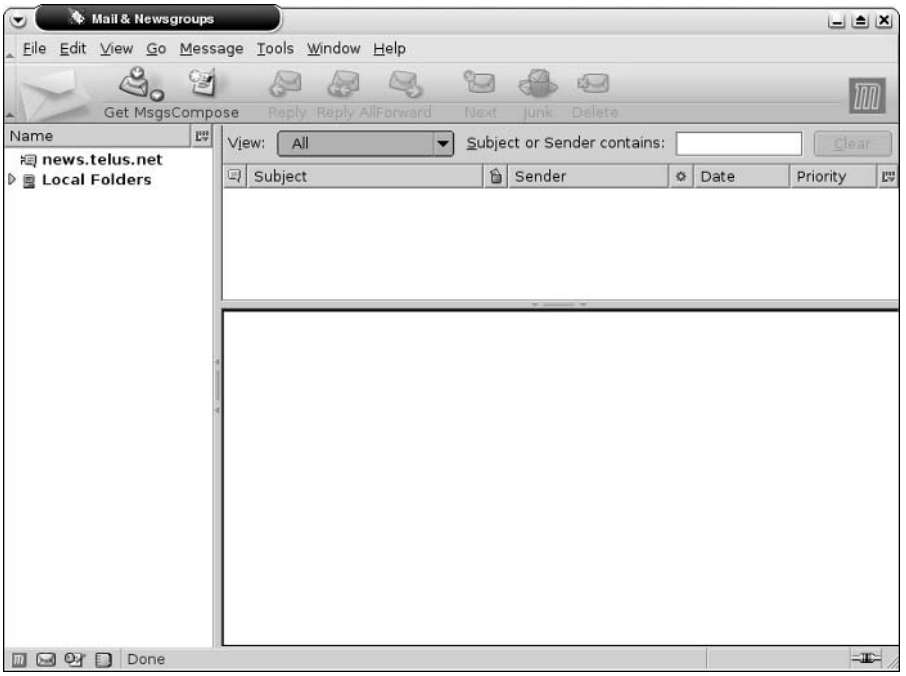


Figure 9-5: The Mozilla Mail & News groups interface in Knoppix 3.6.

Subscribing to newsgroups

To read newsgroups, you first must subscribe to the ones you want to check out, and then you have to load their new *posts* (individual messages). To activate these subscriptions:

1. **Click your newsgroup server in the list on the left (the Local Folders entry beneath it is your e-mail interface).**

   The settings and configuration screen appears, as shown in Figure 9-6.

2. **Click Manage Newsgroup Subscriptions.**

   The Subscribe dialog box appears. The first time open this dialog box, you're in for a wait as an index of all the newsgroups downloads to your browser. Tens of thousands of newsgroup titles are out there, so even though the browser is downloading only the newsgroup names, the process takes some time. The status bar at the bottom of the dialog box indicates progress.

3. **After all the newsgroup titles have loaded into your browser, scroll through the list for topics of interest. When you find a newsgroup you want to subscribe to, click in its Subscribe box in the listing to put a checkmark in it.**

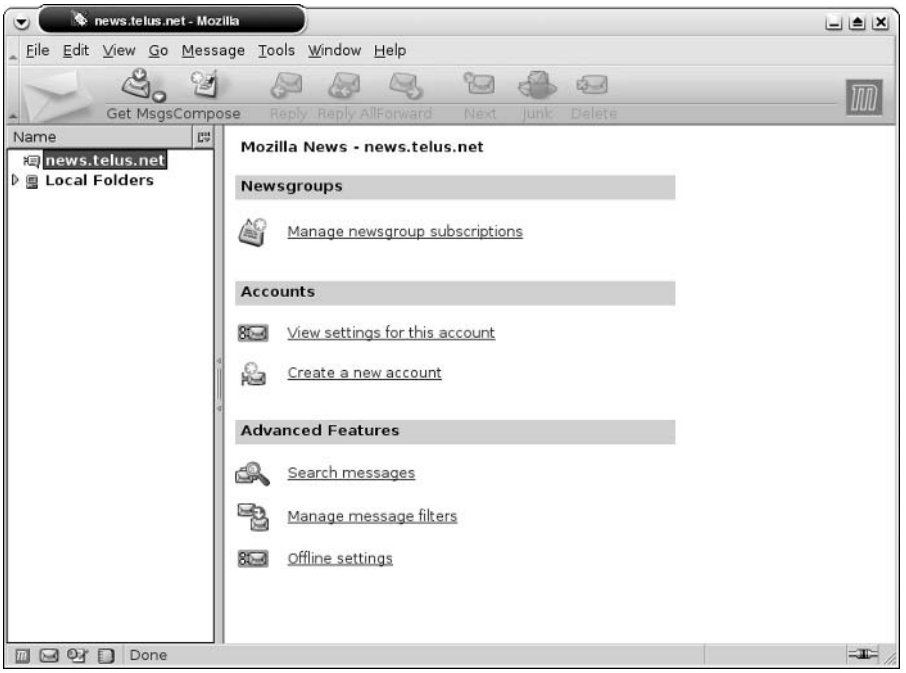


Figure 9-6: The Mozilla News groups settings interface in Knoppix 3.6.

Newsgroups tend to be in hierarchies, so when you see a triangle to a listing's left, click it to expand and see the subgroups inside that group. The section `comp.os.linux` (so that's comp➪os➪linux) contains a number of Linux newsgroups you may be interested in.

4. **Click OK.**

   You're now back at the Manage Newsgroup Subscriptions dialog box.

Reading news

To read your news after you've configured Mozilla for this purpose (by following the instructions in the previous section):

1. **From the main Mail & Newsgroups dialog box or the Manage Newsgroup Subscriptions dialog box, click the newsgroup you want to read.**

   The Download Headers window pops up with a message stating that needs to load *headers* (for each post, the name of the person who posted and the subject assigned to the post) for this group. If it's a busy newsgroup or it's the first time you've read this one, you may be prompted for the number of message headers you want to download.

2. **If you are asked how many headers to download, select either Download All Headers or specify how many headers to download.**

   The default of 500 is a good number. If you don't want to see any of the others (not a bad idea when you're just starting in a group, or you'll never get to the new stuff), click the Mark Remaining Headers as Read checkbox.

3. **Click Download.**

   The program goes to the news server and grabs the basic information about the news posts. You can now scroll through the messages and read or contribute to this newsgroup by clicking one of the headers. Seeing what your peers are doing around the world is educational, if nothing else!

You need to be aware of the written and unwritten rules for newsgroup etiquette, which vary wildly from group to group. I recommend that you read the Frequently Asked Question (FAQ) page for the newsgroup and lurk for a while before posting questions and comments.

Evolving into E-Mail

While most people think of the Web when they think of the Internet, e-mail may, in fact, be the most used and beloved of Internet applications.

A multitude of e-mail programs is available for Linux users. The defaults in the various distributions discussed in this book are

- **Knoppix:** KMail (`http://kmail.kde.org/`), although Mozilla Mail is also included
- **Fedora:** Evolution (`www.novell.com/products/evolution`
- **Linspire:** Mozilla Mail
- **Mandrake:** Kmail, with Kontact and Evolution also installed
- **SuSE:** Kontact (`www.kontact.org`)
- **Xandros:** Mozilla MailEvolution and Kontact should both remind you very much of Outlook, so if you like being able to integrate your calendar, address book, task manager, and e-mail, you should like these programs. Mozilla Mail and KMail are more single-purpose. Because Evolution is the default client in the distribution included with this book (Fedora Core 3), I cover this program in the most detail in this chapter. This program should also be simple to add (see Chapter 12) to most distributions because it's so popular.

Another popular mail program is Thunderbird (`www.mozilla.org/products/thunderbird`), which is a spin-off of Mozilla Mail.

Setting up Evolution

The first time you open Evolution, the program walks you through the setup process, so be sure to have the following information on hand:

- Your assigned e-mail address, in the format `username@example.org`.
- The type of mail server used for incoming mail: for example, `POP`.
- The name of the mail server used for incoming mail, in the format `servername.example.org`.
- The type of mail server used for outgoing mail: for example, `SMTP`.
- The name of the mail server used for outgoing mail, in the format `servername.example.org`. This name may be the same as for the incoming mail server.
- Any special type of *authentication* required, for both mail coming in and going out. This authentication is typically just passwords for incoming mail and may be nothing for outgoing mail.

After you start Evolution for the first time, the Evolution Setup Assistant launches.

Click Forward to proceed past the Welcome screen, after which the Identity dialog box (see Figure 9-7) opens. To fill in this dialog box, complete the following steps:

1. **Change the Full Name field, if you want.**

   Some people don't want to use their real name and opt to use a nickname. There may or may not be default values assigned, depending on what other programs you've configured on your machine.

2. **Change the E-Mail Address field if it doesn't match the address your ISP gave you (it probably doesn't).**

3. **If you want this particular account to be your default mail account, make sure the Make This My Default Account check box is checked. Otherwise, make sure it is unchecked.**

4. **Click Forward to proceed.**

   The Receiving Mail dialog box opens.

5. **In the Server Type list box, select the type of incoming e-mail server your ISP uses.**

Figure 9-7: The Evolution Identity dialog box in Fedora Core 3.

Leave it as None if you don't want to receive e-mail on this computer — this setting is useful if you only want to be able to send or only want to use the calendar and task management features in Evolution. Depending on which item you choose, the dialog box changes to ask for the appropriate information. I assume that you're using a POP mail server to receive mail, so what you'll see when you select POP is shown in Figure 9-8. If you're not using POP, then complete the dialog box you do see and then proceed to Step 17.

The latest versions of Evolution have support for Microsoft Exchange servers available. If you need this, it may or may not be already installed in your distribution. For Fedora, use the information in Chapter 12 to add the "evolution-connector" package to your system and then restart the Evolution setup process.

6. **Enter the full name for your POP mail server in the Host text box.**

   The name may be something like `pop.example.com`.

7. **Enter your login name for checking mail in the Username text box.**

   If your e-mail address is `jane@example.com`, your username is `jane`.

8. **If you were told to use SSL for security, in the Use Secure Connection (SSL) drop-down list box, select either Always or Whenever Possible, depending on what your ISP has specified.**

Figure 9-8: The Evolution Receiving Mail dialog box, with POP selected, in Fedora Core 3.

9. **Under Authentication Type, select the appropriate authentication option.**

   If you don't know what kinds of authentication your mail server uses, click the Check For Supported Types button. Typically, it's just Password.

10. **Check the Remember This Password checkbox so that you don't have to enter your e-mail password every time you check mail.**

    If you're going to walk away from your computer and someone else may possibly access it, protect yourself from outgoing prank e-mails by going to the main menu and selecting Lock Screen. Doing so makes sure that no one can use your GUI until you type in your login password.

    You have to have your screen saver turned on for this feature to work. Screen savers are on by default.

11. **Click Forward to proceed to the secondary Receiving Mail dialog box (see Figure 9-9).**

    Whether or not this dialog box exists is determined by which type of incoming mail server you're using. If you're not using POP and you get a secondary dialog box, it may not match the one shown here, though it does share some of the options shown.

12. **If you want to check for new e-mail automatically, check the Automatically Check For New Mail check box.**

Figure 9-9: The secondary Evolution Receiving Mail dialog box, for POP mail users in Fedora Core 3.

If you don't have a permanent connection to the Internet, you may prefer to check mail manually. If so, leave the box unchecked and skip to Step 14.

13. **In the Minutes text box, set how often you want to automatically check for new e-mail.**
14. **If you check mail from multiple computers, you may want to check the Leave Messages On Server check box so that you can access the same messages from all your machines.**

    If you select this option, you'll end up with copies of messages on multiple machines, but it also means that you'll have access to your e-mail no matter where you're checking it from. Keep in mind that occasionally you'll need to uncheck this box and check mail, just to clear out all the space that your e-mail is taking up on the server. You don't want to run out of space.
15. **If your ISP told you not to use POP3 extensions, then check the Disable Support For All POP3 Extensions check box.**
16. **Click Forward to proceed.**

    You're now finished setting up for incoming mail. In the Sending Mail dialog box, shown in Figure 9-10, do the following:

Figure 9-10: The Evolution Sending Mail dialog in Fedora Core 3.

17. **Change the Server Type entry if yours isn't SMTP.**

    I assume that you're sending e-mail with SMTP.

18. **Enter the full name of the SMTP mail server in the Host text box.**

    The name may be something like `smtp.example.com`.

19. **If you were told to use SSL for security, in the Use Secure Connection (SSL) drop-down list box, select either Always or Whenever Possible, depending on what your ISP has specified.**

20. **If you were told to use additional authentication for sending mail, check the Server Requires Authentication check box.**

    Typically, nothing is required here. If you don't check this box, skip to the next set of instructions. Otherwise, proceed to the next step.

21. **Under Authentication, select the appropriate type as instructed by your ISP.**

    If you're not sure, click Check For Supported Types.

22. **Under Username, enter the login name you're supposed to use to authenticate with your outgoing mail server.**

    This name may be different from the one you use for incoming mail.

23. **Check the Remember Password check box so that you don't have to enter your password each time you send mail.**

    Just make sure, again, to log out or use the Lock Screen option so that no one can send joke e-mails at your expense!

24. **Click Forward to proceed.**

    You have now reached the wonderfully simple Account Management dialog box.

25. **Either leave the Name entry as it is (your e-mail address) or change it to something descriptive so that you can tell which account you're looking at if you have a list of accounts you need to use.**

    It's common for your e-mail address to appear in this final box as something like `jane@computer5.example.com`. If this happens for you, you'll want to edit this entry so that it matches your real e-mail address, which in Jane's case is `jane@example.com`.

26. **Click Forward to proceed to the Timezone dialog box.**

27. **Click a city that's in the same time zone you're in or use the drop-down list box to select your location or time zone.**

28. **Click Forward to proceed to the Done dialog box.**

    Here you see just a quick message saying that you're finished.

29. **Click Apply to save your settings.**

    The Evolution program opens, as shown in Figure 9-11.

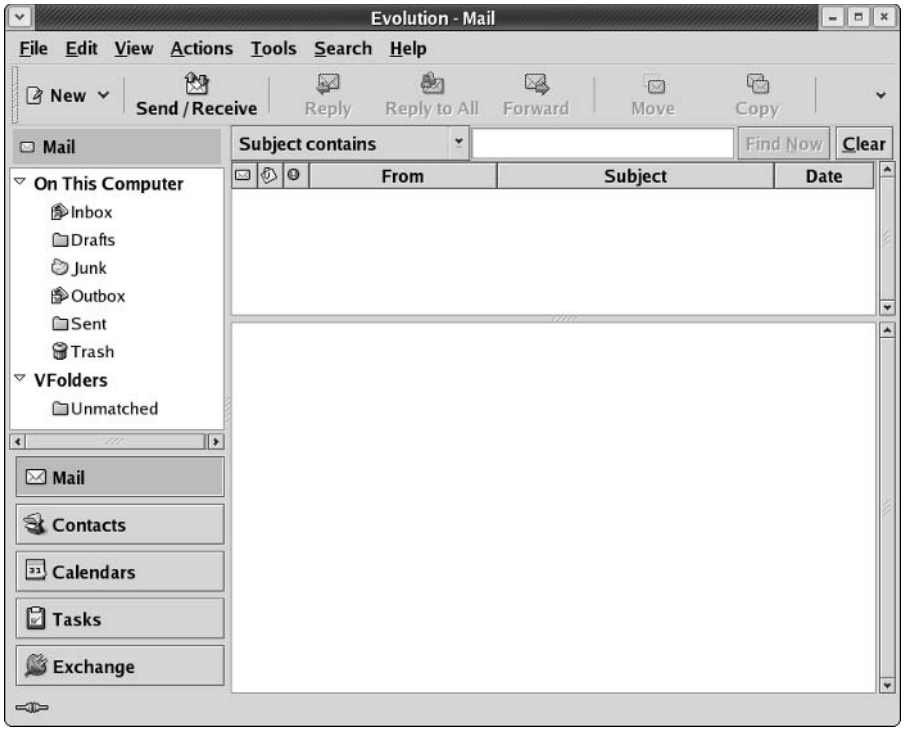


Figure 9-11: The Evolution application window in Fedora Core 3, with the Microsoft Exchange connector installed.

Sending and checking e-mail

The following steps outline how to create a new e-mail message and send it:

1. **Click New.**

   A Compose A Message window opens, as shown in Figure 9-12. If you want to open another new item such as a new contact list entry or a new calendar appointment, click the arrow next to New to open the list of options to choose from.

2. **Type the recipient's e-mail address (such as** `bob@example.net`**) or a list of addresses separated by commas (such as** `bob@example.net, tom@example.org`**) in the To text box.**

3. **If you need to add a CC (Carbon Copy) or BCC (Blind Carbon Copy) to the list of recipients, open the mail message's View menu and select the appropriate field(s) to appear and then enter the appropriate address(es) into those fields.**

4. **Type the topic of your e-mail into the Subject text box.**

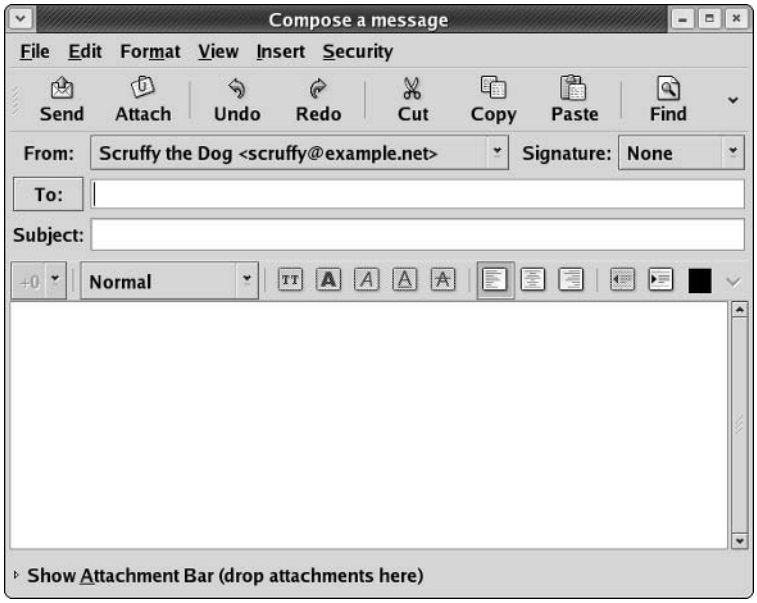


Figure 9-12: An Evolution Compose A Message window in Fedora Core 3.

5. **In the lower window, type the body of your e-mail.**

   Use the handy formatting buttons and the Format menu if you want to "pretty up" your e-mail. If you want to use the formatting buttons, set your Format type to HTML first.

6. **If you want to add a signature to the bottom of your e-mail, click the drop-down list box next to Signature and select Autogenerated.**

   To create custom signatures, go to the main Evolution window and choose Tools➪Settings to open the Evolution Settings dialog box (see Figure 9-13). Select the account you want to create the signature(s) for and then click the Edit button to open the Evolution Account Editor. In this dialog box, in the Identity tab, click Add New Signature. Here, you can create and format your new signature, and after you click the Save and Close button, you can choose which signature should be the default in the Identity tab's Signature drop-down list box. Get rid of the extra dialog boxes by clicking OK or Close on each one.

7. **When you finish typing your message, click the Send button.**

   The e-mail is now added to your Outbox, where you can edit it if you want.

8. **Click the Send/Receive button.**

   Your e-mail goes out, and Evolution checks for new incoming mail.

Take some time to really explore Evolution. As you can see just from the figures in this chapter, this program has many features, including the ability to filter junk mail.

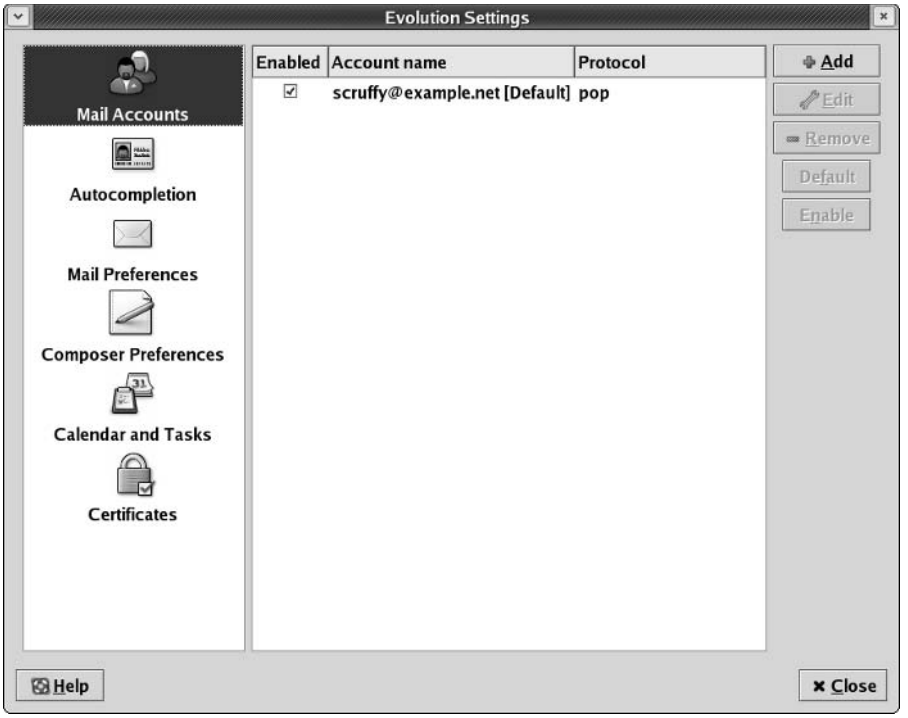


Figure 9-13: The Evolution Settings dialog in Fedora Core 3.

Taking Advantage of Instant Messaging

Instant messaging between people is like using a telephone — except that you type your conversation rather than speak it. In addition, you can simultaneously hold multiple instant messaging conversations without the need for additional connections to the Internet. America Online (AOL) provides one popular instant messaging service, named AOL Instant Messenger, or AIM. Others are ICQ and MSN. A wide variety of computer operating systems, including Linux, support these various services (and, in fact, GAIM runs on more than just Linux).

The distributions covered in this book use the following instant message programs by default:

- **Fedora:** Gaim (`http://gaim.sourceforge.net/`)
- **Knoppix:** Gaim
- **Linspire:** Gaim
- **Mandrake:** Kopete (`http://kopete.kde.org/`)
- **SuSE:** Kopete
- **Xandros:** Kopete (`http://kopete.kde.org/`)

Because Gaim is the default in Fedora, that's what I cover in detail.

Using the Gaim Instant Messenger

You launch Gaim with the following menu selections:

- **Fedora:** Choose Applications➪Internet➪IM (GAIM Internet Messenger).
- **Knoppix:** From the main menu, choose Internet➪Gaim Instant Messenger.
- **Linspire:** From the main menu, choose Programs➪Internet➪Instant Messenger.

After the application starts for the first time (see Figure 9-14), its main and account management dialog boxes both appear. To tell GAIM about one of your IM accounts:

1. **Click the Add button in the Accounts dialog box.**

   The Add Account dialog box, shown in Figure 9-15, appears.

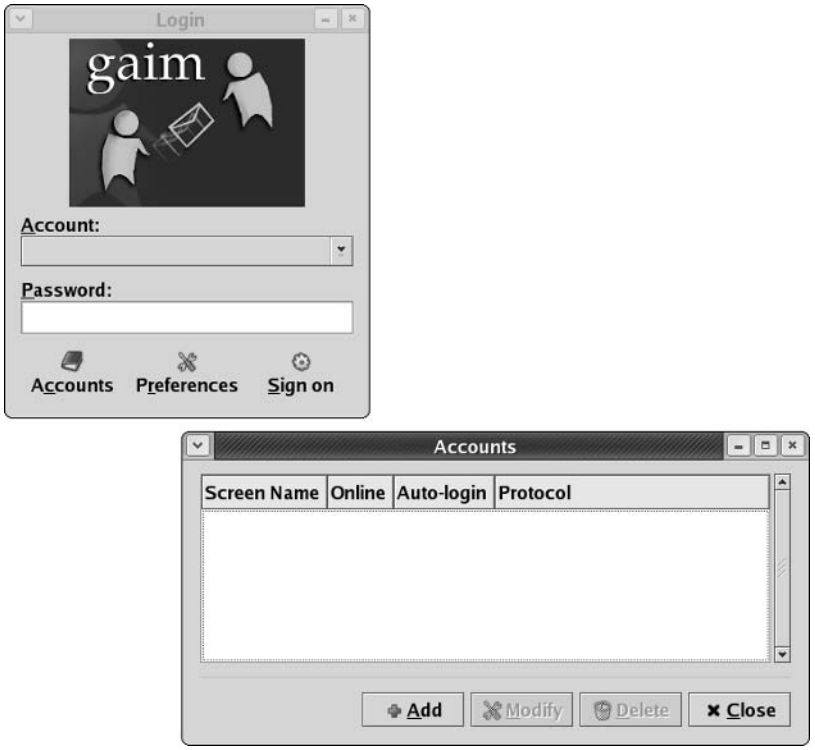


Figure 9-14: The GAIM IM client with its main dialog box plus Accounts dialog box open in Fedora Core 3.

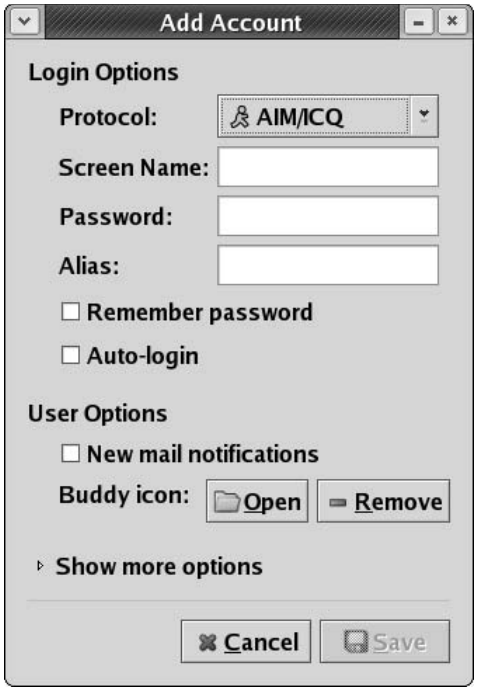


Figure 9-15: The GAIM Add Account dialog box in Fedora Core 3.

2. **In the Protocol drop-down list box, select the IM network you want to use.**

   Your options are AIM/ICQ (if you need to use either AIM or ICQ, choose this option), Gadu-Gadu, Groupwise, IRC, Jabber, MSN, Napster, SILC, Yahoo, and Zephyr.

3. **In the Screen Name text box, enter the login name for your IM account.**

   If you're using ICQ, use your membership number.

4. **In the Password text box, enter your IM password for this account.**

5. **In the Alias text box, enter the name you actually want to have show up in people's IM clients, unless you want to use your screen name.**

6. **Click the Remember Password check box to put a check in it so that you don't have to enter your password every time you connect to this IM service.**

   Remember to log out or use the Lock Screen option if you walk away from your computer, just in case someone gets it in his head to go play a trick on you and send messages to people using your IM client.

7. **Check the Auto-Login box if you want GAIM to automatically log this account on when you start it.**

8. **If you get e-mail through this service and want to know when new mail has arrived, check the New Mail Notifications check box.**
9. **If you want to use a tiny picture as a *buddy icon* (of yourself, your dog, or whatever else you might want to use), click the Open button next to the Buddy Icon label and then navigate to the picture you want to use.**
10. **If you want access to the more advanced options for this IM service, click the Show More Options arrow to expand the Add Account dialog box.**
11. **When you finish entering your information, click Save to add this IM account to your accounts list.**

Go through this process for each account you want to use with GAIM. Then, in the main dialog box , click Sign On to log into all the accounts that you selected as Auto-Login. You can also open the Accounts dialog box by clicking Accounts from the main dialog box and then clicking the individual check boxes next to the accounts to log into them one by one. After you connect, you can alter your preferences in the Buddy List dialog box by choosing Tools➪Preferences. Again, GAIM has more to it than this, so it's definitely worth playing around with this tool.

Troubleshooting your IM connections

If you've been using most of these IM clients with other operating systems, after your Linux system has successfully connected to the IM service, your existing buddy lists are automatically imported. If you haven't ever used AIM or MSN, you can now set up buddy lists. *Buddy lists* contain the usernames of people you want to communicate with through the instant messaging service. Your buddy list lets you know when your "buddies" are online and available to receive an instant message.

Sometimes, your Linux system is unable to connect properly to the IM service. When this problem happens, an error message pops up on your screen and indicates a failure to connect. You may be unable to connect to the IM service for several reasons:

- You may have entered the wrong password for your IM account or chosen the incorrect IM account name.
- Your computer may not be connected to the Internet. Try opening your Web browser to see whether you can get to a Web site, which tells you whether you're connected to the Internet.

- If you can open a Web site but can't get IM to work, the IM system may be unavailable. This problem occurs at times because of maintenance of the IM service or an excessive amount of traffic on the Internet or on the IM service.
- If you attempt to access the IM service from your computer at work, your company or organization may block the IM service for security or productivity reasons. If using IM at your work is permitted, check with your network administrator to see whether he can help you out.
- Often, companies use firewalls between the company's network and the Internet to keep out unwanted traffic on the company's network. If the firewall is configured to block IM traffic, you cannot use IM across the Internet.

Working with Other Internet Tools

You may want to explore a variety of other types of tools, depending on your needs. This section covers some pointers to get you started, so if you go to Chapter 12 and want to add the appropriate software (or find yourself digging through menus and wondering what the program may be called), you aren't completely lost.

- **FTP programs:** If you want to FTP, a commonly used program in the Linux world is GFTP. This program is available for all five distributions discussed in this book, although it's only installed by default in Mandrake. The KDE equivalent is KBear.
- **IRC programs:** While the IM clients support IRC these days, you may prefer a program that's used only for IRC. Common programs for this purpose are X-Chat and KIRC.
- **File sharing:** LimeWire is a popular one if you want to use the Gnutella network.
- **RSS readers:** Firefox has a number of RSS extensions designed for it. In addition, Straw is a popular RSS program.

In general, if you're not sure what programs to use, do a Web search on the type of thing you want to do (like RSS) and the word Linux. So, to find all the Linux-based file-sharing programs that handle BitTorrent (a popular network for distributing, among other things, legal copies of Linux distributions), you can search on

```
file sharing bittorrent linux
```

Part III

Getting Up to Speed with Linux

The 5th Wave By Rich Tennant

"We're much better prepared for this upgrade than before. We're giving users additional training, better manuals, and a morphine drip."

In this part . . .

In this part of the book, I expand my coverage of Linux beyond what's part and parcel of the operating system to include its many other facilities and capabilities. These components are critical to making Linux the raging monster of productivity that a well-constructed, properly configured system can represent.

Here you read about the Linux file system and how to manage its constituent files and directories, as well as how to control which users or groups are permitted to access these vital system resources. You also can read about using the Linux command-prompt environment, known as the *shell,* along with some key capabilities that should be part of any savvy Linux user's standard repertoire.

In addition, you find out how to keep your system current and install new software. You also get the inside scoop on all that security stuff that computer experts are always going on about. Those who like working without a net can dabble with working on the command line, while those who want nothing to do with (gasp) typing can leap straight to the fun of customizing the look and feel of your GUI.

Chapter 10

Manipulating Files and Directories

In This Chapter

- Encountering Linux file types
- Managing Linux file permissions
- Maneuvering through the file system
- Working with file system contents
- Referring to multiple files at once using wildcards

There is no need to do any housework at all. After the first four years, the dirt doesn't get any worse.

— Quentin Crisp

There's no avoiding it. At some point, you have to work with the files and directories in your system. Fortunately, after you get familiar with the rules and commands, you feel more comfortable (even if you find yourself being reminded from time to time of working in good old MS-DOS). Because many people find that working at the command line is easier when dealing with files, in this chapter I cover both the typed commands and the graphical tools you have at your disposal.

Working with Files in the GUI

People who prefer to stay graphical like to work with the GUI *file managers* offered in Linux instead of having to access a command prompt to work with files. A *file manager* is a program, such as Windows Explorer, that enables you

to dig through and manipulate your files and directories with your mouse and sometimes just a bit of typing. In this section, I take you on a tour of the file managers that, by default, come with popular Linux distributions.

Sailin' with Nautilus

In the GNOME desktop environment (so in Fedora Core if you're using the distribution defaults), the file manager is *Nautilus.* To find this program, double-click the Home icon on your desktop. Figure 10-1 shows an example of what you can see with Nautilus open in an example home directory.

If you want to play with a more sophisticated version of Nautilus, select Applications➪File Browser.

Finding your way around

Moving through the file system in Nautilus involves a couple of different skills. In the first place, you need to know where you want to begin. This factor decision isn't as difficult as it sounds, however. In the Places menu, you find the following options:

- **Home:** Your home directory, which is where all (or most of) of your files and documents go.
- **Computer:** All your hard drives, floppy drives, CD and DVD-ROM drives, and other permanent and removable storage devices.
- **Templates:** Your document templates. Copy or move a document into this section (I tell you how in the section "Copying and moving files," later in this chapter). When you right-click on your desktop and choose Create Document from the context menu that appears, you're able to choose the items in your Templates folder as a basis for the document that you want to make.
- **Trash:** The contents of your trash bin. I address how to empty it in the section "Taking out the trash," later in this chapter.
- **CD Creator:** Your CD waiting room. If you want to make a CD that contains a bunch of files (as opposed to creating an ISO image), move those files to this location. You can find out about creating CDs in Chapter 18, because many people create CDs in the context of multimedia.

After you choose one of the preceding commands, a separate window opens, leaving the window you were already working in open as well. You can close the original window if you want by choosing File➪Close or clicking the X in the window's upper right corner.

Figure 10-1: Nautilus displaying Dee's home directory in Fedora Core 3.

Navigating your filesystem

To open a directory in Nautilus, locate its name in the list and double-click it. A new folder that contains the directory's contents opens. As you move through subdirectories, a new folder opens each time. If you find that you've got way too many directories open, choose one of the following commands:

- **File➪Close Parent Folders:** Closes all the folders used to get to this directory.
- **File➪Close All Folders:** Closes all the file browser folders you have open.
- **File➪Close:** Closes just this folder.

You can also return to a folder previously accessed, if you want. (For example, maybe you're in `/home/jane/documents/invoices` and want to go back to `/home/jane` without opening and closing multiple folders). To do so, look at the very bottom of the folder window to find the name of the subdirectory you're in (such as `invoices`). Click that name, and you open a list that has all

the parent directories plus the current one. The list might look like the following for the example:

```
home
jane
documents
invoices
```

Then, to back up, you can select the spot in the directory tree (for example, `jane` to go to `/home/jane`) you want to move to.

Setting how much you see in a folder

Are you getting too much information about each file or not enough? Experiment with the View menu. The major listing options under the View include the following commands

- **View As Catalog:** This command is available only when images are in the folder, as shown earlier in Figure 10-1. It shows all the images as though you're looking through a photo album and doesn't show anything else.
- **View As Icons:** This default option shows all files as icons with names beneath them (see Figure 10-2).
- **View As List:** This command gives you a list of information about the file, as well as its icon and name (see Figure 10-3).

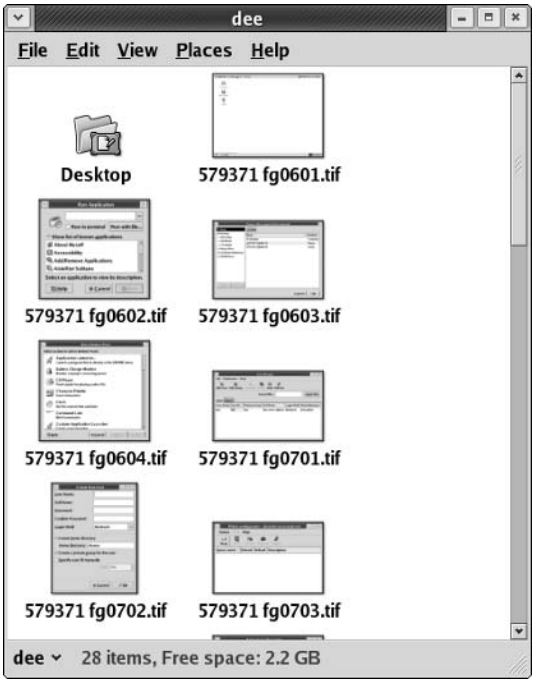


Figure 10-2: Nautilus with the View As Icons option in Dee's home directory in Fedora Core 3.

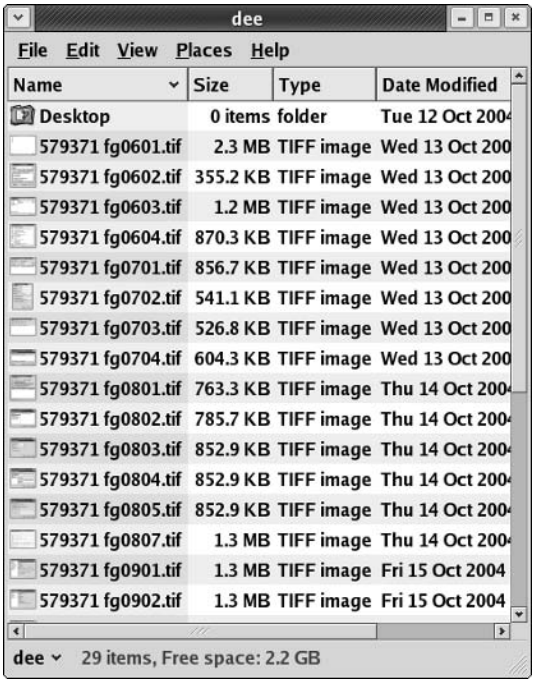


Figure 10-3: Nautilus with the View As List option in Dee's home directory in Fedora Core 3.

Along with these View menu commands, you can also use

- **Reload:** If you just created a file and don't see it in the folder, select this option.
- **Show Hidden Files:** All files in Linux whose names start with a dot (for example, `.profile`) are *hidden files*, meaning that you have to explicitly tell Linux you want to see them.
- **Visible Columns:** Opens the folder's Visible Columns dialog box, which you can use to pick the information (and its order) that appears when using View As List.

Along with these commands, you can choose the View menu's Zoom In, Zoom Out, and Normal Size options if you need to change the size of the folder's contents.

Opening files and running programs

To open a file or run a program in Nautilus, double-click it. That's it! Well, not entirely. You can also right-click a file to open the context menu and then choose one of the following from the context menu:

- **Open with *program*:** If the file is associated with a particular program already, choosing this option is the same as double-clicking the file.

More than one of these options may be listed, if your system knows that you have more than one program installed that can do the job.

- **Open with Other Application:** Choosing this option opens a submenu that (often) contains a list of installed programs that can handle this file. You can select one of these programs or choose Open With Other Application to open the Open With dialog box. From this dialog box, you can
  - Type in the full *path* to the application (the full directory path, like `/usr/bin/konqueror`)
  - Click the Browse button to open a file browser and surf to the program you want to use

After you select the program to open the file with, click Open to proceed.

Copying and moving files

You can copy and move items using two different methods in Nautilus. The first is by using the usual method you're probably familiar with from Windows or the Mac OS — clicking and grabbing a file or folder and then dragging it where you want to go. You can click and drag between folder windows and into folder icons. Following are some handy tips:

- Hold down the Ctrl key while you drag if you want to make a copy rather than just move the file.
- If you want to drag the file into a folder icon, make sure that the folder icon is highlighted before you release the mouse.
- If you want to drag the file into a folder window but not into one of the folder icons, make sure that the folder icons are *not* highlighted before you release the mouse.

The other method for copying and moving files and directories involves the following steps:

1. **Right-click the file or directory you want to copy or move.**
2. **From the context menu that appears, choose Cut File if you want to move the file or Copy File if you want to copy it.**

   The file doesn't disappear after you make your selection if you're trying to move it.
3. **Select the folder you want to move the file into.**

   Don't double-click it; just click it.
4. **Do one of the following:**
   - If you want to move or copy the file into a folder window, right-click inside that window (just make sure that nothing is highlighted) and then choose Paste Files.

- If you want to move or copy the file into a folder icon, right-click the icon and then choose Paste Files Into Folder.

Creating files and folders

To create a new file or folder in Nautilus:

1. **Browse to the folder you want to create the item in.**

   You need to open a window for that folder and work from within that window.

2. **Right-click on an empty spot inside that folder.**

   Make sure that you didn't highlight anything in the folder.) A context menu appears.

3. **Depending on what you want to accomplish, choose either Create Folder or Create Document.**

   The Create Folder command creates a new folder in this directory. The **Create Document command** opens the submenu that lets you choose to create either a document from a Template (top section, if you already have templates created) or an Empty File.

   The folder or file appears, highlighted.

4. **Type the name you want to assign to this folder or file and then press Enter.**

   The name is assigned to the folder or file.

Deleting files and folders

To use Nautilus to delete either a file or a directory from the file system, follow these steps:

1. **Browse to the file or directory's location.**
2. **Select the file(s) or folder(s).**

   You can select the file or folder by doing one of the following:

   - Clicking the item to highlight its name.
   - Holding Shift down and then clicking at the end of the row or column you want to select. (These items all must be lined up straight.)
   - Holding Ctrl down and clicking each individual item you want to select.
   - Clicking and dragging your mouse button so that you make a box that contains all the items you want to select.

3. **Press the Delete key or right-click and select Move To Trash.**

   The file or folder vanishes from view. Keep in mind that if the folder contains other files or folders, they go right along with it.

These deleted items aren't fully deleted yet. Deleting with Nautilus puts the files in the Trash folder, which you can open by double-clicking the Trash icon on your desktop or choosing Places➪Trash in the Nautilus window.

Taking out the trash

You can permanently delete the contents of your Trash folder by following these steps:

1. **Right-click the Trash icon.**

   This action opens a shortcut menu with options listed.

2. **Choose Empty Trash from the shortcut menu.**

   A confirmation dialog box opens.

3. **Click Empty in the confirmation dialog box to delete the contents of the Trash folder.**

   Linux permanently removes the items in the Trash folder. You can tell whether the Trash folder is by looking at the Trash waste can. If it's empty, it contains no files. If you see papers in it, it contains trash.

Viewing and changing permissions

Every file in Linux (and other forms of Unix) has a set of *permissions* that govern who is allowed to view it, run it, delete it, and so on. These permissions are used to make sure that people can't mess with the system's or each other's files, so they're pretty important. In this section, I focus on how to work with files in the GUI. See the section "A permissions primer," later in this chapter, for a breakdown of how file permissions work.

To view and change a file or directory's permissions in Nautilus, you need to follow these steps:

1. **Browse to the file or directory's location.**

   Opening the folder window that contains this item is sufficient.

2. **Right-click the file or directory.**

   A context menu appears.

3. **Choose Properties from the context menu.**

   The Properties dialog box appears with the Basic tab open.

4. **Click the Permissions tab.**

   The Permissions portion of the Properties dialog box appears, as shown in Figure 10-4.

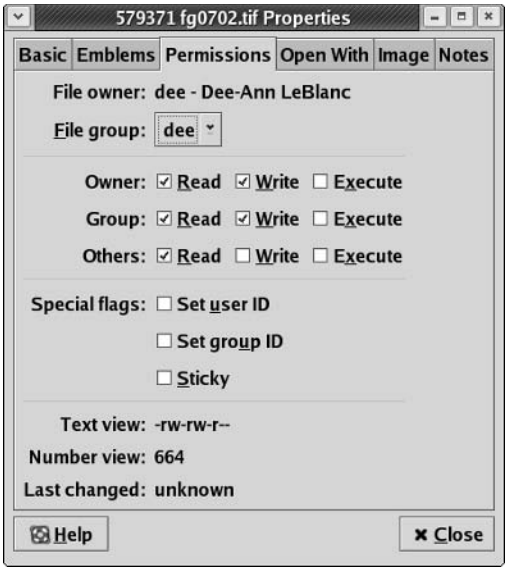


Figure 10-4: The Nautilus file manager's Properties dialog box with the Permissions tab displayed, in Fedora Core 3.

5. **Set the new permissions and ownerships.**

   See the section "A permissions primer," later in this chapter, for a breakdown of what all this stuff means.

6. **Click Close to close the dialog box.**

   The file's permissions are now changed.

Rulin' with Konqueror

In KDE (and thus Linspire, Mandrake, and SuSE), the default file manager is Konqueror, shown in Figure 10-5. You can access this program in these distributions by doing the following:

- **Linspire:** Double-click the My Documents icon.
- **Mandrake:** Double-click the Home icon.
- **SuSE:** Single-click the My Computer icon.

Keep in mind that Konqueror looks slightly different from distribution to distribution and may have different default settings as well. For example, SuSE has a little side pane, while Linspire and Mandrake do not. You can turn the side pane on and off by pressing F9 or choosing Window➪Show Navigation Panel.

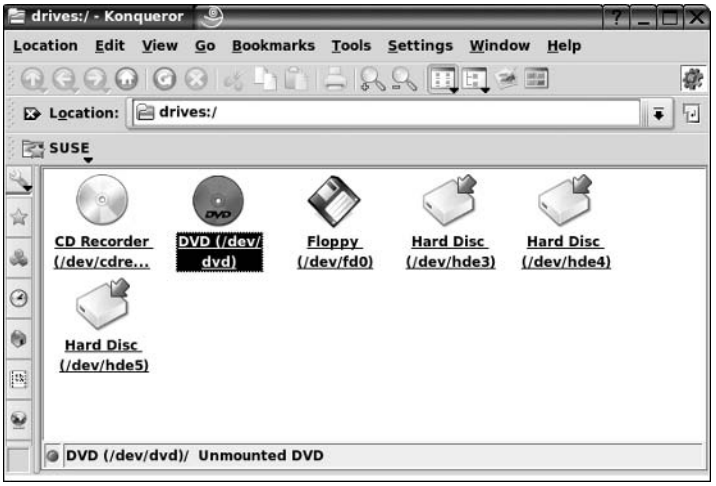


Figure 10-5: The Konqueror file manager open to My Computer in SuSE 9.2.

Navigating your filesystem

Moving through the file system in Konqueror mostly involves being familiar with the main row of icons beneath the top menus. These icons are, from left to right:

- **Up arrow:** Go up a directory. For example, from `/usr/bin` to `/usr`.
- **Left arrow:** Go back to the last directory you visited.
- **Right arrow:** If you went back previously, takes you to the directory you went back *from*.
- **Home:** Shows the contents of your home directory.

Some of the distributions, such as SuSE, offer extra shortcuts in the Go menu.

To open a directory in Konqueror, locate it in the list and click or double-click it, depending on how your system is set up to behave. (In Linspire and Mandrake it's double-click, while in SuSE, it's just a single click.) The window changes to that folder's contents.

Setting how much you see in a folder

If you want to see more or less information about each file, experiment by choosing View➪View Mode (or find the icons to the right of the Konqueror icon bar, below the menus). The major listing options in View➪View Mode may include (depending on the version of Konqueror you're using):

- **Icon View:** Shows all files as icons with names beneath them (refer to Figure 10-5). It's the default option
- **MultiColumn View:** Lines your icons up in columns instead of rows.

- **Tree View:** Shows a list of information about the file, as well as its icon and name (see Figure 10-6). You can expand each folder in this list by clicking the plus sign next to it; to collapse the list, clicking the minus sign next to it.
- **Info List View:** Shows the icons and names in small list format.
- **Detailed List View:** Works like Tree View, but lacks the ability to expand and collapse directories.
- **Text View:** Works like Detailed List View but without the pretty icons.
- **GwenView Image Browser View:** Lets you use an image browser embedded in your file browser (Figure 10-7). If you choose this view option, use the left hand tabs to click on the Home icon and browse to the folder you want to view.
- **File Size View:** Shows a funky graphical representation of your filesystem (Figure 10-8), with directories in blue, files in brown, and programs you can run in green. It's not available in all the distributions covered in this book, as this feature is pretty new. When you add new files, they don't show up unless you choose View➪Reload or click the Reload icon.

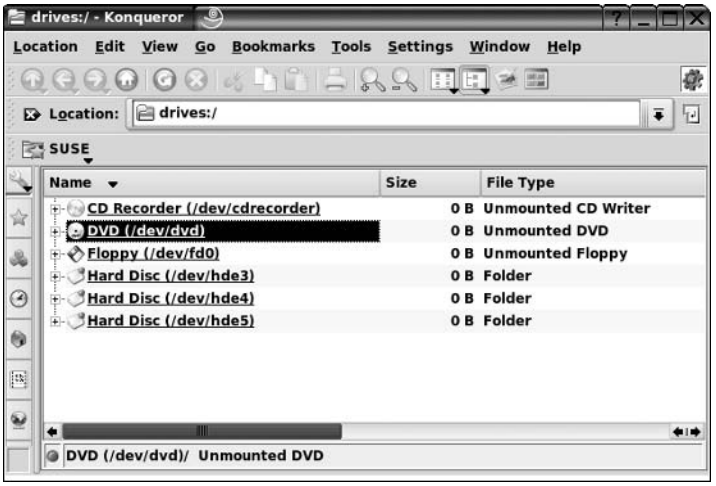


Figure 10-6: Konqueror with the Tree View option in dee's home directory in SuSE 9.2.

Along with these View menu settings, you can also use

- **Reload:** If you just created a file and don't see it in the folder, choose this option.
- **Show Hidden Files:** All files in Linux whose names start with a dot (for example, `.profile`) are *hidden files*, meaning that you have to explicitly tell Linux you want to see them.
- **Specialty menus:** Each view type has an additional configuration menu available toward the bottom of the View menu.

Chapter 11

Checking Out the Linux Filesystem

In This Chapter

- Discovering the `root` directory and subdirectories
- Discerning partitions from directories
- Adding removable media to the filesystem
- Caring for your filesystem
- Accessing shared files on Windows computers

I have an existential map. It has "You are here" written all over it.

— Steven Wright

One of the most frustrating things about learning a new operating system can be figuring out where it keeps files. Rather than keep all important system files in a single directory, such as the `C:\Windows` directory in Microsoft Windows, Linux follows the lead of its Unix cousins and spreads things out a bit more. Although the Linux and Windows setups involve different methods, they are both logical, though it may not feel that way until you understand where to look.

Another issue you come across is adding new *media* — hard drives, floppy disks, CD-ROMs, DVD-ROMs, zip disks, and more — to the existing filesystem. In this chapter, I focus on how the filesystem is organized and other handy topics, such as how to access data on a floppy disk. (In Chapter 10, you can find hints on how to do this when looking through the file managers.)

Introducing the Linux Filesystem

Linux may be all by itself on your hard drive, or maybe it's sharing your hard drive with another operating system, such as Microsoft Windows. All the hard drive space you allocated for Linux during the installation process

is the majority of your Linux *filesystem.* Because you're running your own Linux machine, you need to be familiar with how it's put together — especially the sections that are dangerous to mess with!

Meet the root directory

Everything in the Linux filesystem is relative to the *root directory,* which is referred to as `/` and is the file-system base, a doorway into all your files — don't confuse this with the `root` user, which is the system administrator. The `root` directory contains a mostly predictable set of subdirectories. Each distribution varies slightly, but certain standards exist to which they all conform. The standards keep us all sane.

If you're interested in these standards, go to `www.pathname.com/fhs` and look at the latest version of the rules.

Rather than flood you with everything at once, I start by talking about the *base directories*, meaning the items you find in `/`. Table 11-1 lists what you might find in this base location. (This list can vary some from distribution to distribution.) An asterisk (*) at the end of a description indicates that you shouldn't mess with this directory unless you have a *really good reason* because it contains files that are *very important* to the functioning of your system.

Table 11-1 Standard / Contents in Linux

Directory	*Contains*
`/bin`	Essential commands that everyone needs to use at any time*
`/boot`	The information that boots the machine, including your kernel*
`/dev`	The device drivers for all the hardware that your system needs to interface with*
`/etc`	The configuration files for your system*
`/home`	The home directories for each of your users
`/lib`	The *libraries*, or code that many programs (and the kernel) use*
`/media`	A spot where you add temporary media, such as floppy disks and CD-ROMs; not all distributions have this directory
`/mnt`	Another spot where you add temporary media, such as floppy disks and CD-ROMs, along with networked drives and other items you aren't permanently adding to your filesystem

Directory	*Contains*
/opt	The location that some people decide to use (and some programs want to use) for installing new software packages, such as word processors and office suites
/root	The superuser's (root user's) home directory
/sbin	The commands the system administrator needs access to*
/srv	Data for your system's *services* (the programs that run in the background)*
/tmp	The place where everyone and everything store temporary files
/usr	A complex hierarchy of additional programs and files
/var	The data that changes frequently, such as log files and your mail

Some of these directories have some equally important subdirectories, which I cover in the upcoming sections.

Meet the /etc subdirectories

Although the exact subdirectories that exist in /etc can change from distribution to distribution, the following two are fairly standard:

- The /etc/X11 directory contains configuration details for the X Window System (X), which runs your Graphical User Interface (GUI). See Chapter 15 for more on the GUI.
- The /etc/opt directory contains configuration files for the programs in the /opt directory, if you decide to use it.

An important addition in Fedora is /etc/sysconfig, which contains configuration information for the *services* that start at boot time, including things like your networking.

Meet the /mnt and /media subdirectories

You may or may not have any subdirectories in /media or /mnt by default (and you may not have both of these directories at the same time). Typically, however, you do have the following:

- The /mnt/floppy or /media/floppy directory is used for adding a floppy disk to your filesystem — instead of the word floppy, you might see fd0 instead.

- The `/mnt/cdrom` directory is used for adding a CD-ROM to your filesystem in some distributions, and others use `/media/cdrom` (or `/media/dvd`, `/media/cdrecorder`, and so on, depending on what type of hardware you have).

In the "Adding Media to Your Filesystem" section, later in this chapter, I show you how to add these items for each of the distributions.

Meet the /usr subdirectories

The `/usr` directory is often referred to as its own miniature filesystem hierarchy. This directory has lots of important or interesting subdirectories, as shown in Table 11-2. An asterisk (*) at the end of a description indicates that you need to leave that directory alone unless you have good reason to mess with it — *after* you gain lots of experience with Linux and know exactly what changes you need to make — so that you don't accidentally alter something your system needs in order to function correctly. An important thing to remember about this segment of the filesystem is that many advanced Linux users often use `/usr` to store programs that can be shared with other machines.

Table 11-2 Standard /usr Subdirectories

Subdirectory	*Contents*
`/usr/X11R6`	The files that run the X Window System (the wireframe for your GUI)*
`/usr/bin`	The commands that aren't essential for users but are useful*
`/usr/games`	The games that you install on your system, except for those that you can choose to place in `/opt`
`/usr/include`	The files that the C programming language needs for the system and its programs*
`/usr/lib`	The code used by many of the programs in this `/usr` subhierarchy*
`/usr/local`	The programs and other items that you want to keep locally, even if you're sharing everything else in `/usr`
`/usr/sbin`	The commands that aren't essential for administrators but are useful*

Subdirectory	Contents
/usr/share	The information that you can use on any Linux machine, even if it's running incredibly different hardware from what this one is running*
/usr/src	The source code that you use to build the programs on your system

Finding CDs and More in Your GUI

Chapter 10 covers how to use the file managers that come with the distributions covered with this book (and most other Linux desktop-based distributions, for that matter) — Nautilus and Konqueror. In this section, I take a look at how to use these tools to find your way around the filesystem. Some distributions make this process more intuitive than others, mostly due to tons of handy shortcuts that mean you have to know less of what's happening under the hood — a pretty handy thing for desktop users.

Navigating the filesystem in Fedora

Because Fedora's default GUI is GNOME (see Chapter 6), which is different from all the other distributions discussed in this book, you use Nautilus (see Chapter 10) to find your way around. Some things are made pretty easy for you:

- When you insert a data CD-ROM or DVD-ROM, an icon may or may not appear on your desktop. If it doesn't appear, double-click the Computer icon and then the drive's icon within the Nautilus window in order to access the CD-ROM's or DVD-ROM's contents and add an icon to your desktop. You can later remove these items by right-clicking and choosing Eject from the shortcut menu.
- When you plug in a USB storage device such as a keychain, Fedora automatically adds an icon onto your desktop for that item, which you can double-click to open. Once you're finished working with the USB device, close all of the windows that were using it, right-click its icon on the desktop, and choose Unmount. Now it's safe to remove the keychain.
- When you insert a music CD, Fedora opens a music player and begins playing it.
- When you insert a video DVD, Fedora is not configured to auto-run its contents. See Chapter 18 for more on watching DVDs.

To turn on or off auto-run or auto-loading for these various items, from the main menu, choose Preferences➪Removable Storage. If you shut off auto-loading for something, you can access a device's contents from any Nautilus window by choosing Places➪Computer and double-clicking the appropriate icon in there. This action adds an icon onto your desktop as well.

- When you insert a blank CD or DVD writeable or re-writeable, Fedora opens Nautilus to the CD/DVD Creator window. (You can find out more about burning in Chapter 18.)
- When it comes to floppies, the computer can't reliably detect that a floppy was put into the drive. So, put the floppy into the drive and then, from any Nautilus window, choose Places➪Computer➪Floppy to access its contents and add a floppy icon on your desktop. To remove the floppy, right-click the floppy icon on your desktop or in your Nautilus Computer window and then choose Unmount Volume. Wait until the floppy drive light is off before removing the floppy.
- If you want to access a network drive from Windows or that someone has set up on another Linux computer, double-click the Computer icon on your desktop (or choose Places➪ Computer) from any Nautilus window) and then double-click the Network icon. This action lets you browse through your network to the computers that are offering files.
- If you want to access part of your Linux filesystem, double-click the Computer icon on your desktop (or choose Places➪ Computer) from any Nautilus window) and then double-click the Filesystem icon.
- If you want to access something on one of your hard drives that isn't part of your Linux installation (maybe a Windows drive).

For the last option listed, follow these steps:

1. **Open a command line terminal.**

   See Chapter 14 if you're not sure how to do so.

2. **Type `su -` to become the root (administrative) user.**

3. **Type `fdisk -l` to see all your hard drives and partitions.**

   If you're looking for a Windows partition, then you can find it right here. Ignore the items that have text similar to Windows 95 Ext'd; they're not really a data partition. Anything that has NTFS or FAT32 or VFAT is a Windows partition and is what you're interested in. If you're looking for a Linux partition (maybe you have more than one distribution installed on your system), then you want the ones that have the word *Linux* in their description and not the word *swap*.

4. **If you need to access an NTFS partition, see Chapter 12 for how to use yum to add NTFS support.**

   You can search to see whether you have NTFS support in your current set of yum repositories by typing `yum search ntfs`. If no matches are found, then you may need to add another repository.

5. **When you think you know what partition you want to try, type `mount -t` *type* `/dev/`*partition* `/mnt` to add it to your filesystem, where *type* is the filesystem type as shown in Table 11-3 and *partition* is the letter and number combination you saw in `fdisk` (such as `hde2`).**

   So, for example, after adding NTFS support, you might type `mount -t ntfs /dev/hde2 /mnt`. Once you do so, you can find all of that partition's contents under the `/mnt` directory.

Table 11-3 Common Filesystem Types

Type	*Description*
`ext2`	"Older" Linux filesystem type
`ext3`	"Newer" Linux filesystem type, used by default in Fedora and Red Hat, among others
`ntfs`	"Newer" Windows filesystem type, started with Windows NT and commonly used in Windows XP
`reiserfs`	Another "newer" Linux filesystem type, used by default in Mandrake and SuSE, among others
`vfat`	"Older" Windows filesystem type, such as FAT32 and MS-DOS

6. **Browse as you need to.**

   You may find that you have read-only access to your NTFS partition and can't change anything on it.

7. **When you're finished, type `umount /mnt` to remove the partition's contents from your filesystem.**

The preceding steps work for all distributions, except for Step 4. You just need to find out how your distribution handles NTFS.

Navigating the Filesystem in Knoppix

Knoppix is another distribution that makes things as easy as possible, with a few little bumps along the way. When your system starts up, it automatically

has icons along the left of your desktop for every drive and partition it finds. To help you find your way around:

- It's important to realize that because Knoppix is a bootable distribution, you already have a CD-ROM in use in the drive! If you only have one CD/DVD-ROM drive, you're stuck. You can't eject Knoppix, because the CD is acting as your hard drive, containing all your programming. Here's where a portable drive can come in handy.
- To use a floppy, place it in your floppy drive and then click the floppy icon to access its content. (If you're using a machine without a floppy drive, Knoppix fools you and puts a floppy icon on the desktop anyway!) You can then right-click the floppy and choose Actions➪Unmount to save everything before removing it from the drive.
- To access drives on your network:

  1. **Click the monitor icon on your panel to open a command line terminal window.**
  2. **In the terminal, type** `su -`**.**

     You are now in Knoppix as the root user. There's no password by default, but you can set one if you want.
  3. **Type** `/etc/init.d/lisa start`**.**

     This action starts one of the two programs necessary to get easy network browsing working.
  4. **Click any of the drive icons on your desktop.**

     The Konqueror file browser opens.
  5. **Look to the left panel of icons on your Konqueror window and click the bottom one (Services).**

     The Services section of Konqueror appears.
  6. **Click LAN Browser.**

     Now you have access to the computers that are offering shared folders on your network!
  7. **Browse away.**

- To access your Linux filesystem:

  1. **Click any of the drive icons on your machine.**

     The Konqueror file browser opens.
  2. **Look to the left panel of icons on your Konqueror window and click the icon above the bottom one (Root Folder).**

     Your root folder's contents appear.
  3. **Navigate at will!**

- To access partitions and drives on your machine that aren't part of your Linux installation (like a Windows drive), click the various Hard Disk Partition icons until you find the one you're looking for.

Navigating the filesystem in Linspire

Because Linspire is designed for the absolute newcomer, you expect its filesystem navigation to be a point-and-click snap, and indeed they've made it pretty easy on you. To navigate your filesystem in this distribution:

- When you insert a data CD, CD-ROM, DVD, or DVD-ROM, Linspire opens a file browsing window with the item's contents. To remove the item from your system, right-click its icon on the desktop and choose Eject.
- When you insert a music CD, the CD player launches with the CD loaded.
- When you insert a video DVD, if you don't have the (commercial) DVD player installed, Linspire opens a CNR window where you can purchase this player. If you're a CNR member, the price is less than $5!
- When you insert a blank CD or DVD writeable or re-writeable, Linspire doesn't do anything automatically. See Chapter 18 for how to burn CDs and DVDs.
- When you insert a floppy, you need to double-click the Floppy icon to access its contents — this icon exists even if you don't have a floppy drive. When you're finished with the floppy, right-click the icon and choose Unmount before you remove the disk. Don't remove the disk until the drive light turns off, when you can be sure that all the data is saved properly.
- To access something on your network, double-click the Network Browser icon and browse away. Another option is to double-click the My Computer icon and then double-click Network Shares.
- To access something in your Linux filesystem, double-click the My Computer icon and then the System icon.
- To access something on one of your other partitions (maybe a Windows partition), double-click the My Computer icon and then the appropriate drive.

Navigating the filesystem in Mandrake

Mandrake doesn't offer quite as many obvious shortcuts as the others. To find your way around:

- When you insert a data CD, CD-ROM, DVD, or DVD-ROM, Mandrake adds an icon to your desktop. You can then double-click that icon to access

the item's contents. To remove the item from the drive, right-click the icon and choose Eject.

- When you insert a music CD, the CD player launches with the CD loaded.
- When you insert a video DVD, nothing happens. See Chapter 18 for more on multimedia.
- When you insert a blank CD or DVD writeable or re-writeable, burning software opens. See Chapter 18 for more details.
- When you insert a floppy, you need to double-click the Floppy icon — one of two filesystem icons on your desktop — to access its contents. To remove it, right-click the icon and choose Unmount.

Accessing files on your network is a bit more complex:

1. **Open the Mandrake Software Installer (see Chapter 12).**
2. **In the Search text box, type `lisa` and then click Search.**

   The installer shows you all packages that have the text "lisa" in their name.
3. **Click the lisa box and click Install.**

   The program asks you for the appropriate CD.
4. **Place the CD into the drive, close the drive, and click OK.**

   The installer adds the `lisa` program to your system.
5. **Close the installer.**
6. **Click the monitor icon on your panel to open a command line terminal window.**
7. **In the terminal, type `su -`**

   You're now in Mandrake as the root user. There's no password by default but you can set one if you want.
8. **Type `/etc/init.d/lisa start`**

   This action starts one of the two programs necessary to get easy network browsing working.
9. **Open the Konqueror file browser from anywhere (see Chapter 10).**
10. **Choose Settings➪Toolbars➪Show Extra Toolbar.**

    A new toolbar appears.
11. **In the new toolbar, click the leftmost icon (Show Navigation Panel).**

    The Navigation Panel appears. You can get rid of the extra toolbar now if you want.
12. **In the Navigation Panel, click the bottom icon (Services).**

The Services section appears.

13. **Click LAN Browser.**

    The contents of your LAN appear.

14. **Browse away.**

    Continuing through the list of how to access various parts of your filesystem:

    - To access something in your Linux filesystem, open the Konqueror file browser. In its Location text box, type a `/` and press Enter.
    - To access something on one of your other partitions (maybe a Windows partition), open the Konqueror file browser and type `/dev/hd` and select the appropriate option from the list. This may take some trial and error at first (and it makes more sense in the section "Partitions versus Directories," later in this chapter).

Navigating the filesystem in SuSE

SuSE is another distribution that offers some handy icons to make the browsing process more intuitive. To find your way around in SuSE:

- When you insert a data CD, CD-ROM, DVD, or DVD-ROM, a Konqueror window opens with the item's contents. You can remove the CD by closing the window and pressing the eject button on your computer.
- When you insert a music CD or a video DVD, SuSE recognizes it as such and asks whether it should open the item with a particular tool. Click Yes if you want it to do so, and No if not. If you want your choice to be your default answer, make sure to click the Do Not Ask Again check box to add the X. You may receive a message that DVD playback for all or particular DVDs is disabled due to legal reasons. If so, see Chapter 18.
- When you insert a blank CD or DVD writeable or re-writeable, burning software opens. See Chapter 18 for more on burning CDs and DVDs.
- When you insert a floppy, click the My Computer icon on your desktop, and then the Floppy icon, to access its contents. When you're finished, close the window and press the ejection button on your computer to remove the floppy.
- To access something on your network, click the Network Browsing icon on your desktop.
- To access something in your Linux filesystem, click the My Computer icon on your desktop and look to the left hand vertical row of icons on the window. Click the second up from the bottom (Root).

- To access something on one of your other partitions (maybe a Windows partition) click the My Computer icon on your desktop and then browse through the contents of your hard drive(s) — which are represented here with a separate icon for each partition. It may take some trial and error to figure out, but you'll find what you're looking for.

Navigating the filesystem in Xandros

Because Xandros is another distribution aimed at newcomers, you expect it to be easy to navigate. Here's how to find your way around in this one:

- When you insert a data CD, CD-ROM, DVD, or DVD-ROM, the Xandros File Manager opens to its contents. You can remove this item by closing the window and pressing the eject button on your computer.
- When you insert a music CD, a music player opens.
- When you insert a video DVD, a video player may or may not open. See Chapter 18 for more on using multimedia.
- When you insert a blank CD or DVD writeable or re-writeable, a CD creation window appears.
- When you insert a floppy, to access its contents, open the Xandros File Manager (see Chapter 10) and click the Floppy entry on the left. When you're finished, close the window and eject the floppy using the button on the computer.
- To access something on your network, open the Xandros File Manager (see Chapter 10). Either select Windows Network or NFS (Unix/Linux) network on the left.
- To access something in your Linux filesystem, open the Xandros File Manager (see Chapter 10) and choose Go➪All File Systems.
- To access something on one of your other partitions (maybe a Windows partition), look for it on the left.

Partitions versus Directories

One very important thing to understand about the Linux filesystem is that it may not all be on one single hard drive or hard drive partition, and yet you don't have to keep track of what drive or partition it's on like you do in other operating systems. In the Microsoft Windows world, if you use separate hard drives or partitions, you have a specific letter designation for each one. The primary hard drive is C, the next is D, and so on. Under Linux, each of these drives and partitions quietly blends together.

If you partitioned your hard drives on your own, you know that you needed to specify a *mount point* for each partition — which is like an empty spot in a puzzle, where the outside partition or media can be plugged into the rest of the filesystem. In the case of a hard drive partition that's part of your primary filesystem and added at boot time, the mount point isn't in the `/mnt` or `/media` part of the filesystem. It's an item in the `root` directory — maybe `/boot` or `/` or `/usr` — or anywhere else in your directory hierarchy (like `/usr/share`). Later, when you're working on the computer, you don't need to know or care about whether the directories or files are all on one drive or are on multiple drives. You just do your thing.

The times you do need to know how Linux sees the hardware are when you're trying to add new hard drives, install the machine while not using automatic partitioning, or access temporary media. Table 11-4 lists a common breakdown of popular hardware designations. Note that these designations aren't in `/mnt` or `/media`; they're in `/dev`. They're the actual device driver shortcuts — which point to the real drivers. These names are typically used for convenience so that you don't have to remember exactly which driver to deal with.

Table 11-4 Common Drive Designations

Designation	*Description*
`/dev/cdrom`	CD-ROM drive; if you have more than one, then you may have `/dev/cdrom1` and so on, and you also may see `/dev/cdwriter`, `/dev/dvd`, or even a hard drive designation such as `/dev/hda`
`/dev/fd0`	Floppy drive 1
`/dev/fd1`	Floppy drive 2
`/dev/hda`	First IDE hard drive
`/dev/hda1`	First IDE hard drive, first primary or extended partition
`/dev/hda2`	First IDE hard drive, second primary or extended partition
`/dev/hdb`	Second IDE hard drive
`/dev/hdb1`	Second IDE hard drive, first primary or extended partition
`/dev/hdb2`	Second IDE hard drive, second primary or extended partition
`/dev/sda`	First SCSI hard drive
`/dev/sda1`	First SCSI hard drive, first primary or extended partition, and often also a small USB drive like a thumbnail/keyring storage device

You probably see a pattern by now. A hard drive has a three-letter designation:

- An IDE drive's designation starts with `/dev/hd`; the first drive of this type is `a`, the second is `b`, and so on. The third IDE drive looks like this: `/dev/hdc`. If you're using something like a Promise controller that bypasses the main IDE controllers (I know, this is technical stuff), then your first IDE hard drive will, in fact, show up as `/dev/hde`. I know this one from personal experience!
- A SCSI drive's designation starts with `/dev/sd`; the first drive of this type is also `a`, the second is `b`, and so on. The fourth SCSI drive looks like this: `/dev/sdd`. USB drives are also seen as SCSI devices. A little item like a USB keychain is often seen as `/dev/sda1` by your system if you don't have any permanent SCSI drives attached.

The number that follows the three-letter designation represents the partition you're referring to. I cover partitioning your hard drive in Chapter 2.

In Figure 11-1, I break down this concept, hopefully making it a bit more accessible. In this case, the user created three partitions for Linux. The first IDE drive is a single partition, allocated for the `root` partition. The second IDE drive is broken into two partitions. The first was given `/usr`; and the second, `/var`.

If you move around the filesystem, you can't tell (and don't need to know) which of these directories is on which drive. The prompt, for example, doesn't change based on which drive each directory is on; the commands used for moving around the filesystem (see Appendix A) don't care about the underlying hard drive or drives.

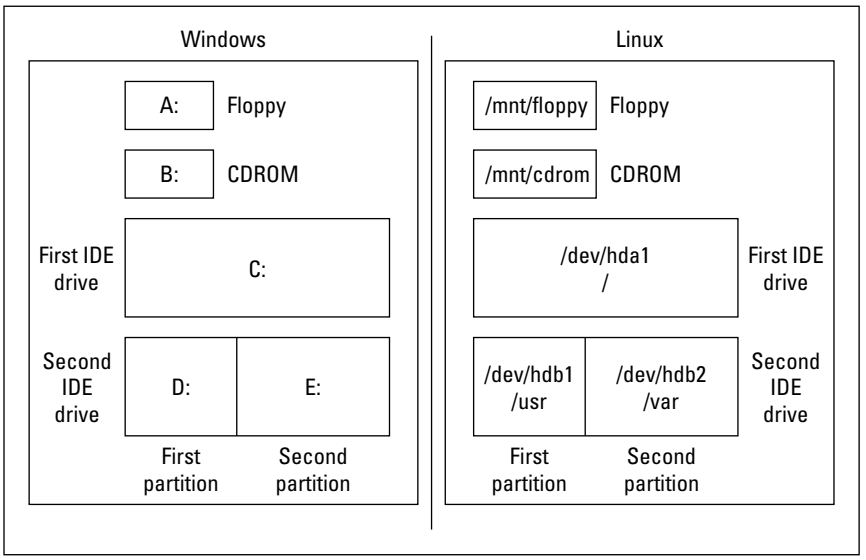


Figure 11-1: Linux versus Windows in handling partitions and hard drives.

Formatting Disks

A floppy disk, USB keychain, and any other small(ish) storage device often comes as a blank slate *or* formatted for Windows or Macintosh use (most often these days they come formatted for Windows). If the item is a blank slate, no computer can use it for anything. You can actually just use the item in Windows format with no problem, or you can *format* — change its base setup — for Linux. (The handy thing about leaving it as a Windows disk is that you can then use it to share things with Windows users).

To format a floppy, place the floppy into your floppy drive and do the following:

- **Fedora:** Choose Applications➪System Tools➪Floppy Formatter.
- **Knoppix:** Right-click the floppy icon on the desktop and choose Actions➪Format Floppy Disk.
- **Linspire:** From the main menu, choose Programs➪Utilities➪Floppy Formatter.
- **Mandrake:** From the main menu, choose System➪Configuration➪Hardware➪KFloppy.
- **SuSE:** From the main menu, choose System➪Filesystem➪KFloppy.
- **Xandros:** Open the Xandros File Manager (see Chapter 10), right-click the Floppy entry in the left section, and choose Format. You may have to click the Floppy item first to open its contents before you can format it.

Typically, the defaults are what you'll want to choose. If you want to format the disks for Linux, use the Linux Native (ext2) format. To share disks with Windows users, choose DOS (FAT). Another setting you may want to choose is Thorough rather than Quick.

Care and Feeding of Your Filesystem

Regardless of which operating system you're using, you need to keep your filesystem healthy and happy. Everything that you need to operate the machine and do your work (or play) on it exists in that filesystem. Keep it in good shape, and it's sure to treat you well in return. Fortunately, Linux does some of it automatically for you.

If your machine fails to reboot

If your machine didn't shut down cleanly (a nice euphemism meaning that it either crashed or you shut the power off without properly telling the machine to shut down, as discussed in Chapter 5), the system checks the filesystem if

necessary at boot time, taking the need to do this out of your hands. Sometimes, however, if something went really wrong, you get this unnerving prompt that tells you to enter your password or press Control-D to continue. If this prompt appears, type your root (administrative) password, press Enter, and the follow these steps. Don't worry; more often than not, you can actually fix this problem:

Because it's a bit of an art at times trying to figure out which partition may be damaged, I walk you through a process where you check the most likely ones to bring you to this state and then work through the rest in turn.

1. **Type `df -h` to see a list of all your partitions.**

   The `df` command lists the mounted partitions and media in addition to some statistics about them. You may, for example, see something like the following:

```
Filesystem            Size  Used Avail Use% Mounted on
/dev/hde2              54G   27G   24G  54% /
/dev/hde1              99M  6.0M   88M   7% /boot
none                  506M     0  506M   0% /dev/shm
/dev/hdf3              54G   39G   13G  76% /mnt/FC1
```

2. **Look for an item with `/boot` in the right column.**

   If you find one, great. Proceed to Step 3. Otherwise, skip to Step 10.

3. **On that same line, look on the left column to see what partition `/boot` is on.**

   In this example, `/boot` is on `/dev/hde1`.

4. **Type `mount`.**

   This command gives you something even more cryptic looking. In my example, it may be

```
/dev/hde2 on / type ext3 (rw)
none on /proc type proc (rw)
none on /sys type sysfs (rw)
none on /dev/pts type devpts (rw,gid=5,mode=620)
usbdevfs on /proc/bus/usb type usbdevfs (rw)
/dev/hde1 on /boot type ext3 (rw)
none on /dev/shm type tmpfs (rw)
/dev/hdf3 on /mnt/FC1 type ext3 (rw)
sunrpc on /var/lib/nfs/rpc_pipefs type rpc_pipefs (rw)
```

5. **Locate the line with `/boot` on it once again and look at what "type" is being used.**

   In this case, `/boot on /dev/hde1` is formatted as type ext3. Keep this in mind. You'll need to use this information in Step 8.

6. **Type `umount /boot`.**

   This command should release the partition.

You never, never, never, never, never want to run the command I'm about to use on a partition you're using or you will mess it up badly!

7. **Type `df -h` again to make sure that this partition is no longer listed.**

   In the example, you should now see:

```
Filesystem            Size  Used Avail Use% Mounted on
/dev/hde2              54G   27G   24G  54% /
none                  506M     0  506M   0% /dev/shm
/dev/hdf3              54G   39G   13G  76% /mnt/FC1
```

   See, no /boot partition!

8. **What you type now depends on what type setting /boot had:**

   - **ext2 or ext3:** Type `e2fsck -fy` *`partition`*, such as `e2fsck -fy /dev/hde1`
   - **reiserfs:** Type `reiserfsck --fix-fixable` *`partition`*, such as `reiserfsck --fix-fixable /dev/hde1`, and if this gives you more errors, follow with `reiserfsck --rebuild-tree` *`partition`*, such as `reiserfsck -rebuild-tree /dev/hde1`

9. **Type `exit` and let the machine try to reboot.**

   If the machine can reboot, you're done, yay! If not, return to Step 6 and run through the process again. Sometimes, you actually need to try the fix more than once. If you reboot again at the end and it still fails, proceed.

10. **Repeat Steps 1 and 4, but this time look for the lines that correspond to the / directory.**

    In my example, `/` is mounted from `/dev/hde2` and is formatted using ext3. Unfortunately, you can't remove the / filesystem since it's got all of your commands! But, there is still a safe way to do this.

11. **Type `mount -o remount,ro /`.**

    This command releases the root (/) partition and then adds it again, but this time as read-only so things won't be changing as you're working on it. That makes what you're about to do safe.

12. **Repeat Step 8 for the / partition.**

    So, for my example, the / partition is `/dev/hde2`, so you'd be starting with `ext2fsck -fy /dev/hde2` or `reiserfsck --fix-fixable /dev/hde2`

13. **Repeat Step 9.**

    Again, if it fails to reboot, repeat Steps 10 through 12 to see whether that fixes things.

Unfortunately, at this point, if the problem still occurs, it could be many, many things. Now is a good time to go to your local Linux Users' Group (see Chapter 4) or online help site.

3. **Enter your e-mail address in the Email Address text box.**
4. **If you haven't set up your CNR account yet, then click No, I Need To Create A New Account. Otherwise, click Yes, I Have An Account Password and enter that password in the text box.**

   I'm going to cover created accounts, because it's just an issue of filling out forms to set up for CNR.
5. **Click Go! to proceed.**

   Remember, I'm assuming that you've set up your account at this point. After you click Go, you suddenly start seeing notices that you have updates available. When these messages appear, notice that a new icon appears to the right of your panel. It's a green circle with a blue arrow pointing up. You can click this icon to load the update for that piece of software immediately rather than proceeding through the rest of these steps. I'm going to focus on updating the whole system at the moment because you may have more than one update available.
6. **Click the My Products tab.**

   The My Products section appears (see Figure 12-6).
7. **Click Available Updates to see what software updates are available.**

   You may not have many at all, or you may have a lot.
8. **Select the update(s) you want to apply.**

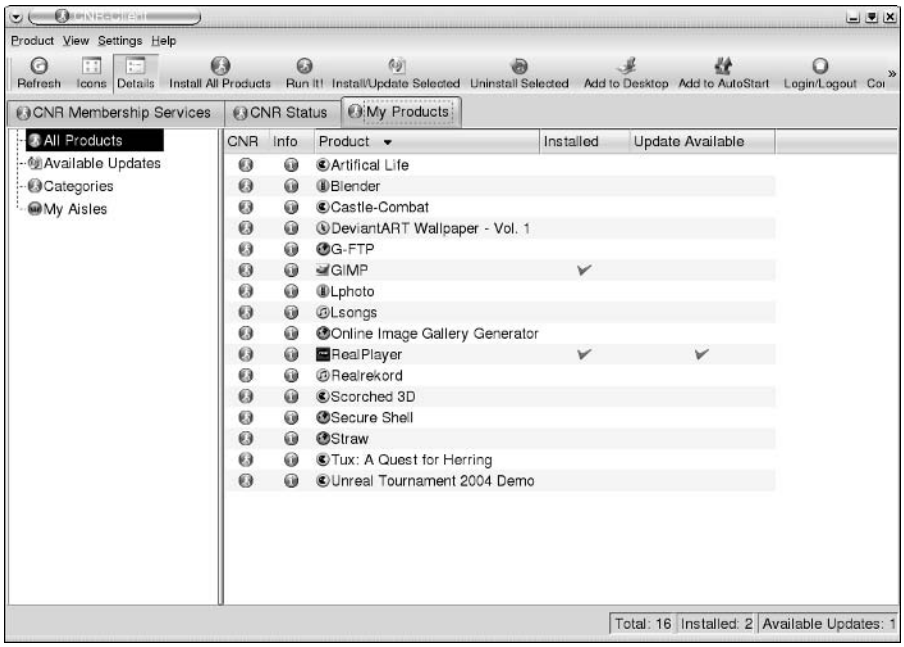


Figure 12-6: The My Products tab of Linspire 4.5 CNR Client.

9. **Click Install/Update Selected to begin the update.**

   The Install/Update Products — CNR Client dialog box appears to let you know that the item(s) have been added to your download queue. If you don't want to receive this notice again, click the Do Not Show This Message Again check box.

10. **Click the X in the upper right hand corner to close the CNR Client.**

Updating Mandrake

To update your Mandrake system, do the following:

1. **Choose System➪Configuration➪Packaging➪ Mandrakelinux Update.**

   You may be asked for your root (administrative) password. The rpmdrake dialog box then appears to ask whether you really want to update your system.

2. **Click Yes when asked whether it's okay to continue.**

   Another question dialog box appears, asking whether you're connected to the Internet.

3. **When you're sure your Internet connection is on, click Yes to continue.**

   After rpmdrake finds the list of mirrors — sites you can use for updates — the Please Choose The Desired Mirror dialog box appears.

4. **Select the location closest to you and then click OK.**

   Once the update server can be contacted, the Software Packages Update dialog box appears (see Figure 12-7).

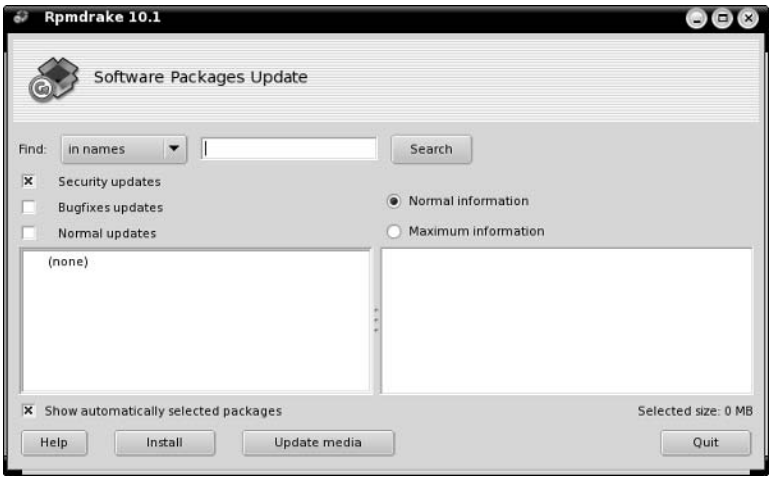


Figure 12-7: The Software Packages Update dialog box in Mandrake 10.1.

5. **Click Bugfixes and Normal Updates to add these two update groups to your selections.**
6. **Click All to choose everything you can update.**

   You may be told that some packages can't be updated due to dependency issues. That's fine; just leave them for now.
7. **Click Install to proceed.**

   A progress dialog box shows you how far you are with each selected package.
8. **When the update is complete, click OK to close the notification dialog box and then Quit to close the updater.**

Sometimes this process can be slow, freeze up, or be a bit of a pain, depending on how many people are trying to do it at the same time. If you have problems, cancel out of the update and restart it (though first give it a few minutes to see whether the program unfreezes on its own). You also may want to try a different update source, even one in another country, if you continually have problems with a specific one. If the update didn't succeed, you're offered the chance to select one again if you start over from Step 1.

Updating SuSE

If you look on your SuSE panel, toward the right, you find a collection of tiny icons. One of these icons is probably a blue circle containing a white exclamation point. This is the SuSE Watcher, which is your friend when it comes to system updates:

1. **Click the SuSE Watcher icon.**

   A Question dialog box opens, asking if you want to activate the update service.
2. **Click Yes.**

   The susewatcher dialog box, shown in Figure 12-8, appears.
3. **Click Start Online Update.**

   You may be asked for your root (administrator) password, enter it and click OK if you are. After this, the YaST Online Update dialog box appears, as shown in Figure 12-9.
4. **In the Installation Source drop-down list box, select the update server closest to you.**
5. **Click Manually Select Patches to remove the X from the box.**

   Otherwise you have to keep telling the updater Yes to various updates.

Figure 12-8: The susewatcher system updater dialog box.

6. **If you want to set up SuSE to automatically update itself (recommended if you're permanently connected to the Internet), click the Configure Fully Automatic Update button; otherwise, skip to Step 11.**

   The YOU Automatic Mode Setup dialog box appears.

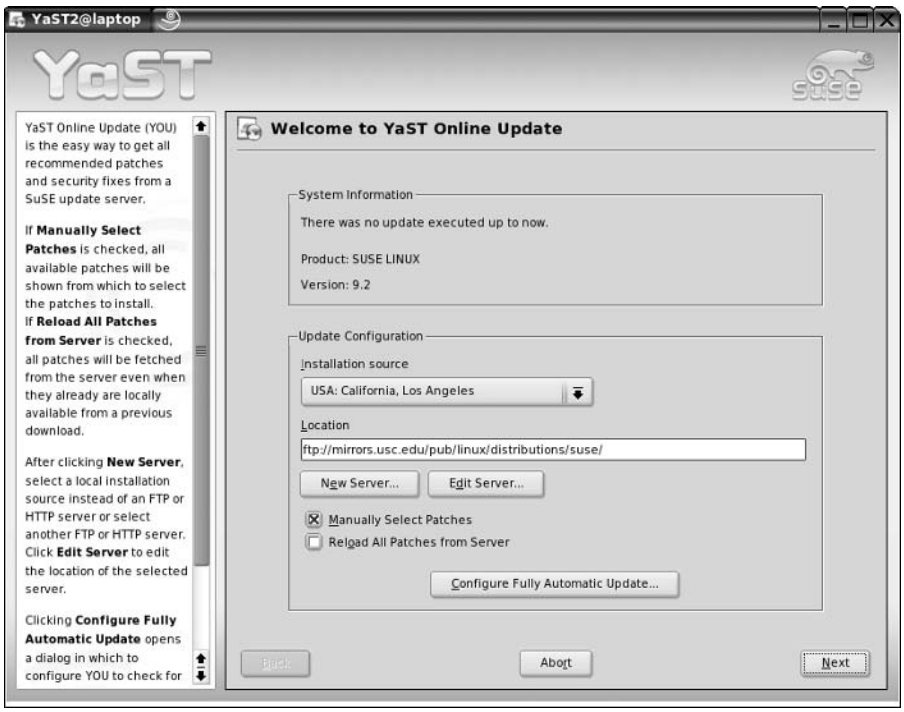


Figure 12-9: SuSE's YaST Online Update dialog box.

7. **Click Enable Automatic Update to add an X to its box.**

   The rest of the dialog box's settings become available.

8. **Change the hour (in 24 hour format) to the hour of the day you want to have this update run.**

   It's handy to run updates late at night when you're not using the computer.

9. **If you don't want the updater to install the updates, only download them so that you can add them yourself, click Only Download Patches.**

10. **Click OK to close the YOU Automatic Update Mode Setup dialog box.**

11. **Click Next to check for updates.**

    For many reasons, this process may fail when nothing is actually wrong. If it fails, make sure that you're connected to the Internet. If you are, then try again. If it fails five or ten times in a row, choose another update server and then try again — a failure actually leaves you in the proper dialog box to make the change immediately so you don't have to fuss around. Changing servers typically solves your problem.

    Once the check begins, the Retrieving Information about New Updates dialog box shows you a progress bar. Then, when all the information has been gathered, the Patch Download And Installation dialog box appears. You see two progress bars here, one labeled Patch Progress for the particular update being applied (which is described in the upper portion of the dialog) and the other for Total Progress so that you can see how long you have remaining.

    If you want SuSE to erase the intermediate items it downloads during the update process, click Remove Source Packages After Update.

    When the update is complete, the Finish button becomes available.

12. **Click Finish to proceed to the Writing System Configuration dialog box.**

    Here SuSE is just making sure that it knows where everything is. After this process is finished, the YaST Online Update dialog box closes. You can close the SuSE Watcher dialog box by clicking the Close button.

From now on, if you've automated updates, you won't have to do this by hand. If you elected to do it by hand, watch for that little icon (which turns into a green circle with a face in it once you've updated) to turn red again.

Updating Xandros

Xandros has added the Xandros Networks in order to help its users update their system and add new software with ease. To use this tool to update your operating system and software:

1. **Double-click the Xandros Networks icon on the left of your desktop.**

   The Xandros Networks dialog box opens (see Figure 12-10).

2. **When told the tool needs to download information, click OK.**

   After the download is complete, the Xandros Networks dialog box fills in. You have the option of installing all updates at once (recommended) or selecting them much as you do in Microsoft Windows. If you want to select them, click the Application Updates item on the left and follow the instructions. I walk you through how to do them all at once.

3. **Choose File⇨Install All Latest Updates From Xandros to install all available updates.**

   A progress bar lets you see how far along you've come in grabbing the list. When the full list is downloaded, the Get Latest Updates dialog box appears.

4. **Click OK to proceed.**

   The password dialog box appears.

5. **Enter your Administrator/root password and press Enter.**

   The update begins. When it's complete, the Enter button goes away, and the animations stop.

6. **Click Close to close the Updater dialog box.**

7. **Choose File⇨Quit to close the Xandros Networks client.**

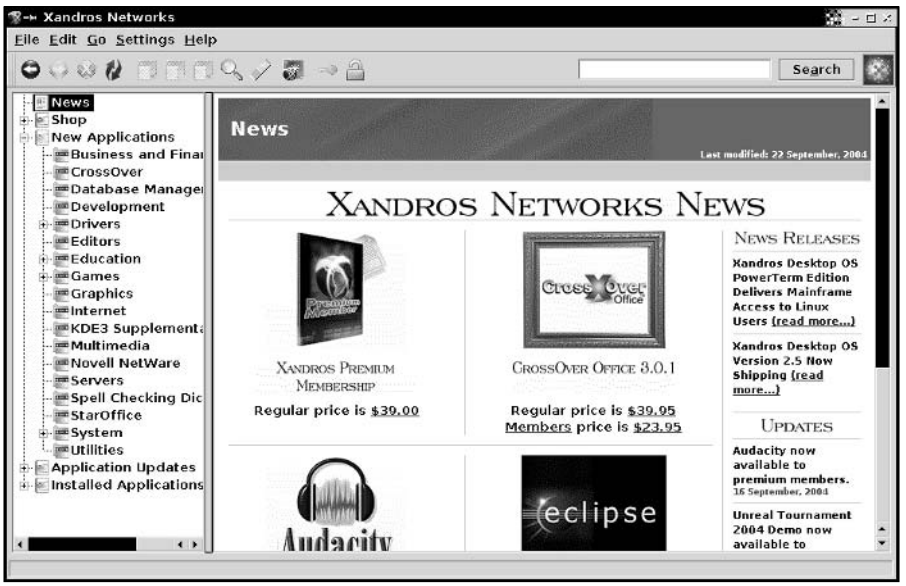


Figure 12-10: The Xandros Networks dialog box.

Installing New Software

In many cases, installing new software isn't much harder than updating; it just depends on the distribution and what tools have been incorporated for this process. My focus in this section is on using these tools. Later, in the section "Finding More New Software" I address how to add programs that aren't included in these tools. Within each distribution's section, I also tell you how to add many of the programs discussed throughout this book.

Again, Knoppix isn't included here, since you can't permanently install new software onto a CD!

Eating it up with Fedora's yum

Fedora doesn't offer a graphical software installation program, but you can download a very cool one from the FedoraNEWS site called GYUM. To download and install this program:

1. **Point your Web browser to** `www.fedoranews.org/tchung/gyum/`.
2. **Look through the page for a link to this software for "FC3" (Fedora Core 3).**
3. **Click through the link. You see something similar to:**

```
Parent Directory                                -
gyum-1.0-1.fc2.noarch.rpm 30-Jul-2004 14:49   25K
gyum-1.0-1.fc2.src.rpm    30-Jul-2004 14:49   23K
gyum-1.0.tar.gz           30-Jul-2004 14:49   20K
gyum.spec                 30-Jul-2004 14:49  2.8K
```

4. **Download the file with the word "noarch" in it.**
5. **Double-click your home directory icon on your desktop.**
6. **Double-click the Desktop icon and then the Downloads icon.**
7. **Double-click the RPM to install it.** After you have this handy program installed, you can add some software sources and then discover how to use Gyum!

If, for whatever reason, you prefer to add software from the command line rather than through gyum (maybe you just don't like the program), you can use the yum command directly in text. See the `www.fedoranews.org` site for helpful articles and tutorials to get you through this process.

Adding yum repositories

Yum uses what's called *repositories* (sites that offer software in a way that yum can understand) in order to track what's available and grab what it needs. By default, only the main Fedora repository is available for many

reasons, some legal, so the first thing most people do is go add a bunch of repositories to their list. To add some cool repositories, do the following:

1. **Point your Web browser to `www.fedoratracker.org`.**
2. **Click Repositories.**

   The repository search page appears.
3. **In the For Fedora Version drop-down list box, select Release 3.**
4. **In the Show Results As drop-down list box, select Apt/Yum Config Files.**
5. **Click Submit Query.**

   The tracker searches for all the repositories it knows about for Fedora Core 3.
6. **Scroll down past the Global Options and Fedora Core Repositories sections.**

   You already have global options set (to find out more about these, access a command prompt — see Chapter 14 if you're not sure how to do so — and type `man yum.conf`).
7. **In the sections below the ones you just skipped, select the repositories you want to add.**

   I typically recommend `fedora.us` and `rpm.livna.org` (note the warnings for users within the US) at the very least, along with Macromedia's site, which doesn't show up in the tracker. For Macromedia's Flash plugin, hold onto the following information, which you need in Step 12:

   ```
   [macromedia]
   name=Macromedia Flash
   gpgcheck=0
   baseurl=http://sluglug.ucsc.edu/macromedia/apt/fedora/$releasever/
   ```

   You can ignore the indentations; the indented item is actually part of the line above it.

   You may want to try other repositories as well.
8. **Open a command line terminal.**

   If you're not sure how, see Chapter 14.
9. **Type `su -` to temporarily gain root access and then enter your password when prompted or log into the GUI as root.**
10. **Open the `/etc/yum.conf` file in your preferred text editor.**

    Chapter 16 covers text editors, if you need help.
11. **Go down to the bottom of the file, below all the existing text.**
12. **Add the required text for the repositories you chose from the tracker site.**

For example, you might add:

```
 [livna-stable]
name=Livna.org Fedora Compatible Packages (stable)
baseurl=http://rpm.livna.org/fedora/$releasever/$basearch/yum/stable

[fedora-us]
name=Fedora.us The Non Red Hat Fedora packages (stable)
baseurl=http://download.fedora.us/fedora/fedora/$releasever/$basearch/RPMS.
           stable

[fedora-us updates]
name=Fedora.us Updates
baseurl=http://download.fedora.us/fedora/fedora/$releasever/$basearch/RPMS.
           updates/

[macromedia]
name=Macromedia Flash
baseurl=http://sluglug.ucsc.edu/macromedia/apt/fedora/$releasever/
```

13. **Save and exit the file.**

You now have access to a ton of software!

You won't be able to update these programs through the graphical updater discussed earlier unless you add them to its configuration as well. To do so, you'll need to edit the file /etc/sysconfig/rhn/sources and follow the instructions in that file. However, you *will* be able to update these programs using `gyum`, the program discussed in the next section, so don't worry if you don't want to mess with editing more files! If you want to update from the command line, type `su -` to become the root user and then type `yum -y update`.

Getting new software with Gyum

If you've already installed Gyum, you're ready to have some fun. To add new programs using Gyum, do the following:

1. **Open a command line terminal.**

   See Chapter 14 if you're not sure how.

2. **Type `su -` to temporarily gain root access and then enter your password when prompted or log into the GUI as root.**

   Chapter 6 covers how to create your own desktop icons and program launchers so that you don't have to always go through this typing stuff.

3. **Type `gyum`.**

   The Gyum tool (see Figure 12-11) appears. Expect this tool to take a long time to load the initial list of software! After this first time, it will be faster, I promise.

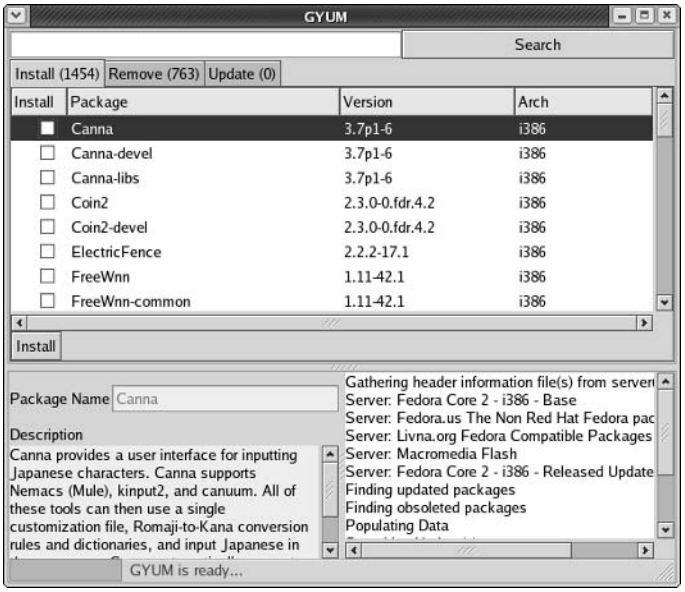


Figure 12-11: The Gyum tool in Fedora Core 3.

4. **Scroll through the Install section to find what you're looking for or type a keyword in the Search text box and then click the Search button to cut down on the possibilities.**

5. **Click the item you're considering.**

   A description of the package appears in the dialog box's bottom left panel.

6. **If you want to install this package, click in the box to add a checkmark.**

7. **Return to Step 4 and work back through for each package you want to add.**

8. **When you're ready to install your selections, click the Install button.**

   The message Resolving Dependencies appears in the bottom of the dialog. That means that yum is making sure that nothing else needs to be added in order to install these programs.

9. **If any requirements have to be met, a Proceed dialog box opens, asking whether it's okay to install the additional programs listed; click Continue if this dialog box appears.**

   You can watch the progress messages in the dialog box's bottom right and the bottom of its screen. Eventually, text such as:

```
Installed:  Canna-devel 3.7p1-6.i386
Dep Installed:  Canna-libs 3.7p1-6.i386
Transaction(s) Complete
```

appears, and then more text comes up as gyum adjusts its software listing. Seeing the last line shown tells you that the installation went okay.

10. **When you're finished, click the X at the top-right corner to close this tool.**

From time to time, the yum repositories can get overworked, and gyum freezes up. If this happens, just close it and try again. Gyum is a pretty new program, so it should get nicer over time. For example, readers of *Linux For Dummies,* 5th Edition, had to use yum by hand!

Adding the software in this book

I discuss a number of programs in this book, and you may want to give them a try. Some are already installed if you did a default Desktop installation of Fedora Core 3. Others you need to add. You can add many through yum:

- To add Mozilla to Fedora Core 3, type `yum install mozilla`
- To add Konqueror (and the KDE desktop along with it) to Fedora Core 3, type `yum install kdebase`
- To add Kmail and/or Kontact (and the KDE desktop along with it) to Fedora Core 3, type `yum install kdepim`
- To add Thunderbird to Fedora Core 3, type `yum install thunderbird`
- To install the Macromedia Flash plugin to Fedora Core 3, make sure that you've added the Macromedia repository listed in the section "Adding yum repositories" and then type `yum install flash-plugin`

Two major items you may want to add are not available through the yum repositories, but aren't too terrible to install either. The first of these is support for Java stuff you'll run into on the Web and elsewhere. To add Java support to Fedora Core 3:

1. **Point your Web browser to `www.java.com/j2se/1.5.0/download.jsp`.**

   The *Java Runtime Environment* download page appears.

2. **Scroll down to the section entitled J2SE 5.0 JRE.**
3. **Click the Download JRE button in this section.**
4. **Double-click your home directory icon on the desktop to open your file browser.**
5. **Right-click on the file that looks similar to j2re-1_4_2_05-linux-i586-rpm.bin and choose Properties.**

   The file's Properties dialog box appears.

6. **Click the Permissions tab.**

   The Permissions section of the file Properties dialog box appears.

7. **Under Owner, select Execute and then click Close.**

   This file can now be run as a program.

8. **Right-click on your desktop and select Open Terminal.**

   A terminal window appears.

9. **The file similar to j2re-1_4_2_05-linux-i586-rpm.bin should be in your default directory; type `ls` to make sure.**

10. **Type `./j2re-1_4_2_05-linux-i586-rpm.bin` to start the extraction process.**

    You get Sun's Java license, or at least part of it. You may at some point also be asked for your root (administrative) password. Enter it when asked and click OK.

11. **At each screen that ends with MORE, press the space bar to proceed.**

    You eventually reach the text Do You Agree To The Above License Terms?

12. **Type `yes` and press Enter to proceed.**

    A file similar to j2re-1.4.2-05.i586.rpm now appears in the directory.

13. **In your file browser, double-click the j2re RPM file.**

    The RPM is installed for you. You now have Java support.

Another item you may want to add support for is RealPlayer, which gives you MP3 support and can handle lots of different multimedia formats. To add this software:

1. **Point your Web browser to `www.real.com/linux`.**

   You see Real's Linux page.

2. **Click the Download RPM link beneath the big Download RealPlayer button.**

   The Opening RealPlayer dialog box appears.

3. **Make sure that the Save To Disk option is selected.**

4. **Click OK to download the file.**

   The Download Manager dialog box appears. It's safe to close your browser now or to browse to another site. Once the download has finished, you can close this dialog box, too.

5. **Double-click your home directory icon on the desktop to open your file browser.**

6. **Navigate to the folder where you saved the file.**

7. **Double-click the RealPlayer RPM.**

   You're asked for your root password.

8. **Type your root password and click OK.**

   The Completed System Preparation dialog box appears.

9. **Click Continue to install the program.**

   Once this process is complete, RealPlayer 10 appears in the Sound & Video menu.

Clicking and running with Linspire

Playing with Linspire's CNR Warehouse can be a lot of fun. To add new software with CNR, do the following:

1. **Double-click the CNR icon on the bottom left of your desktop or to single-click the one on left of your panel.**

   These two icons look identical; they're running men on a green background. When you activate it, the CNR-Client dialog box appears, as shown earlier in this chapter (see Figure 12-5).

2. **Look on the left for the section labeled CNR Warehouse.**

3. **Click the + next to it, if you see one, to expand this menu.**

   The contents of the Warehouse appear, if they were hidden.

4. **Browse!**

   Browsing is the fun part! CNR actually allows you to download free software and to access commercial (pay for) software in the same interface, making it easy to install, which is pretty cool. So, find something you want to add.

5. **Once you've located a program you want to add, the listing looks something like what's shown in Figure 12-12.**

6. **Install the program or read more about it.**

   What you do in this step depends on how much you know about the program:

   - If you know you want to install this program immediately, click the green running man icon to add this software with just one click.
   - If you want to know more about this program, click the blue I button to access an information page. From there, you can click the CNR button to add the program or click Back to change your mind and not install it.

What's this Aisle stuff you're seeing? You can create Aisles to group similar programs together in a menu and then let other Linspire users access them.

Figure 12-12: The CNR listing for Java (IBM).

Believe it or not, that's it. If you followed these instructions, you probably just installed a program! Of course, if you chose something that you have to purchase, there's a bit more involved, but it's not bad.

You can also actually add things using the Programs menu and its submenus. If you know, for example, that you're looking for a Multimedia application, choose Programs➪Multimedia & Design➪CNR More. Then, you can just select the application that you want to add to open the CNR tool directly to that program's page and then click the CNR button to install it.

Adding the software in this book

You can add most software for Linspire through the CNR Warehouse. To find the packages discussed in this book and add them, open your CNR client, click the CNR Membership Services tab, and look in the following CNR Warehouse sections:

- **Macromedia Flash support:** Choose Multimedia & Design➪Animation➪Flash 7 Plug-In.
- **Java support:** Choose Internet➪Browsers➪Java (IBM).
- **Ximian Evolution:** Choose Internet➪Email➪Ximian Evolution.
- **Kmail:** Choose Internet➪Email➪Kmail.

To add Firefox or Thunderbird, go to `www.mozilla.org` and follow the instructions there.

Making it happen with Mandrake

If you read the Fedora section earlier in this chapter, you're familiar with the idea of finding *software repositories* that contain handy prepackaged software just waiting to be added to your computer. Such repositories also exist for Mandrake, adding to this distribution's ease of use. First, you must locate these repositories, add them to your system so that it knows where to look, and then finally you can dig around for whatever software you're interested in.

Finding Mandrake repositories

To add repositories to Mandrake, you need to locate those that interest you most:

1. **Point your Web browser to `http://easyurpmi.zarb.org/`.**
2. **In section one, in the Version drop-down list box, choose 10.1 Official.**
3. **In Architecture, choose i586.**
4. **Click Proceed to Step 2.**

   You advance to the second portion of the Web page.
5. **Under Core Distribution, check the box labeled Source Contrib. Then, in its corresponding drop-down list box, choose the location closest to you.**
6. **In part 3, decide whether to check the box under External Add-Ons.**

   See the legal concerns section in Chapter 18 to help you determine whether to check the box under External Add-Ons. If you check this box, then choose a download location to use along with it. (You won't be able to find one in North America.)
7. **If you do a lot of stuff in Java, then go under Other Sources, check the first box, and select the location for jpackage (`www.jpackage.org`) downloads.**
8. **Click Proceed to Step 3.**

Rather than typing the stuff listed in Step 3 at the command line, you're going to enter it into the GUI. Proceed to the next section to find out how. (However, you are welcome to just type the items as described on the page, if that's what you want to do.)

Adding Mandrake repositories to your system

After you have the list of repositories you want to add open in your browser (see the previous section for how to do so), choose System➪Configuration➪

Packaging➪Software Media Manager (see Figure 12-13) and then do the following:

1. **Click Add.**

   The Add A Medium dialog box, shown in Figure 12-14, appears.

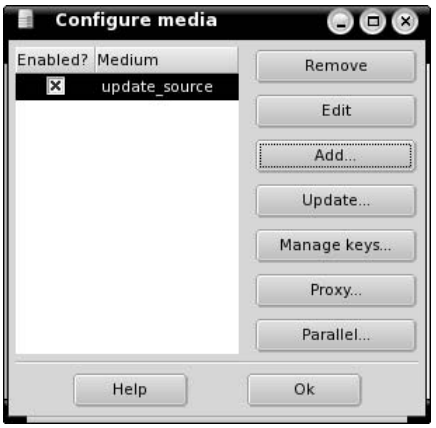


Figure 12-13: The Mandrake 10.1 Software Media Manager.

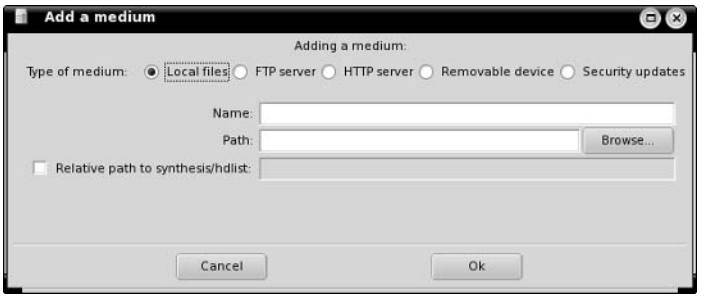


Figure 12-14: The Mandrake 10.1 Software Media Manager's Add A Medium dialog box.

2. **Look at the beginning of the URL you were given to determine what it starts with.**

   For example, if you see the line:

   ```
   urpmi.addmedia plf ftp://ftp.cica.es/mirrors/Linux/
   plf/mandrake/10.1 with hdlist.cz
   ```

   you're interested in the `ftp://` part. In this case, it's an FTP URL; you can tell by the `://` bit.

3. **Select the appropriate radio button along the top.**

   Following the example, I would select FTP server.

4. **In the Name text box, enter a short but descriptive name for this repository.**

   Typically, I stick with the short name shown in the listing, such as `plf` in the case of the example.

5. **In the URL text box, enter the URL you got from the Web site.**

   For example, type `ftp://ftp.cica.es/mirrors/Linux/plf/mandrake/10.1`.

6. **Click the Relative path to synthesis/hdlist box.**

7. **Add the text that appears on the Web site's output for this entry, after the word "with."**

   Given the preceding example, I would add `hdlist.cz`.

8. **Click OK.**

   The tool downloads pertinent information from the site you just added.

9. **If you want to add more repositories, return to Step 1. Otherwise, click OK to close the tool.**

Installing software in Mandrake

After you've added your repositories (by following the instructions in the previous section), you can start adding new software using the Mandrake GUI tools. To do so:

1. **Choose System➪Configuration➪Packaging➪Install Software.**

   The Software Packages Installation dialog box appears (see Figure 12-15).

2. **Type a keyword into the text box next to Find.**

   For example, you might type `mp3`.

3. **Click Search.**

   The tool now searches through all the package descriptions and displays a list of those that contain the keyword.

4. **In the package listing, select a package you think you might be interested in.**

   More information about that package appears to the right.

5. **If you want to add the program, click in its box to add a check.**

   If it turns out that the program you select needs other programs, a dialog box pops up notifying you that they'll be added as well. Click OK to proceed if this happens. Then, return to Step 2 if you want to look for more programs.

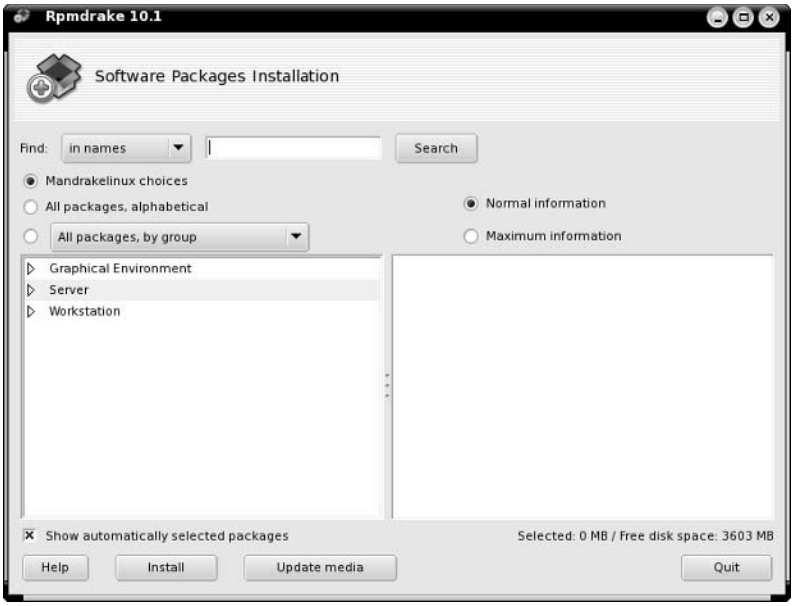


Figure 12-15: The Mandrake 10.1 Software Packages Installation dialog box.

6. **When you're ready to add all the software you've selected, click Install.**

   If some of the software comes from your Mandrake CDs, you're asked to insert the appropriate CD when it's needed.

7. **Once you're finished, click Quit.**

Adding the software in this book

To add the particular programs discussed in this book, add the following packages using the Installation Manager:

- **Firefox:** mozilla-firefox (search on mozilla)
- **Thunderbird:** mozilla-thunderbird (search on mozilla)
- **Flash plugin:** swfdec-mozilla (search on mozilla)

For RealPlayer and browser support for Java, however, see the Fedora section for how to add these items by hand.

Sassing with SuSE

SuSE's boxed sets come with an amazing amount of software. Just navigating the maze of what's included can be enough to make you tear your hair out if you don't know how to use the software management tools. Don't worry. I

don't want to see any of you go bald (or more bald than you already are!) So, here's how you use it.

As with most SuSE administration functions, start by choosing System➪YaST to pull up the SuSE administration tool. From there:

1. **Choose Software➪Install And Remove Software.**

   The software management dialog box appears, as shown in Figure 12-16.

2. **Under Search in, click Description to make sure that you're searching in program descriptions for your keywords.**

3. **Enter your keyword in the Search text box.**

   For example, maybe you want to see what SuSE offers involving the `quicktime` movie format.

4. **Click Search.**

   A progress bar probably appears to let you know that SuSE is searching through all the program names and descriptions. When the search is complete, a list of possibilities appears in the top right of the dialog box.

5. **Click a program to learn more about it.**

   More information appears on the lower right portion of the window.

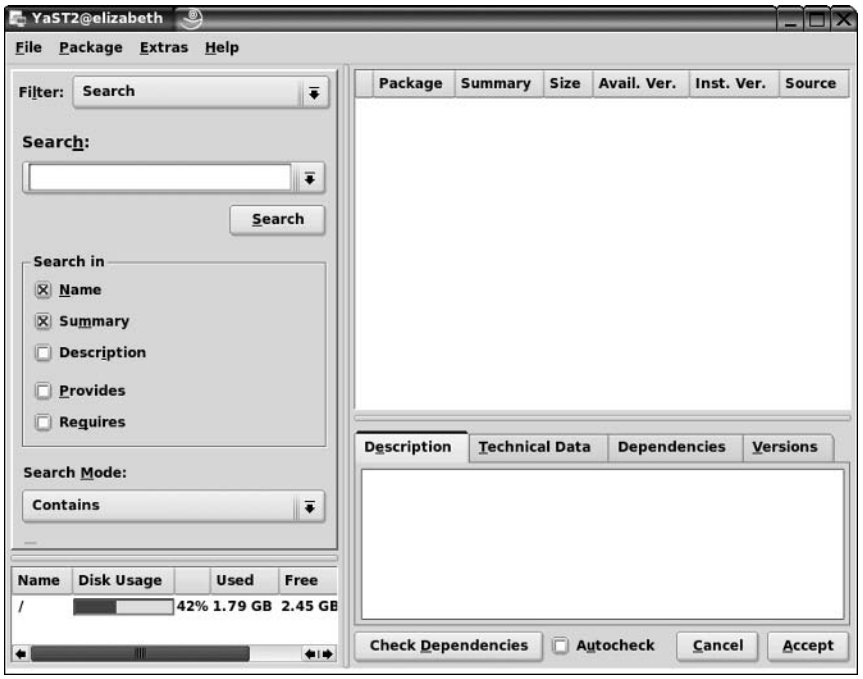


Figure 12-16: The SuSE YaST software management dialog box.

6. **For the programs you want to install, click the box next to the item to add a checkmark.**
7. **Continue searching and selecting software.**
8. **When you're ready to proceed, click Accept.**

   If there are no dependencies, then the installation begins. If other programs need to be added in order to satisfy dependencies, the Changed Packages dialog box appears. Click Continue to accept these additional packages.
9. **Insert the appropriate CDs as they're requested.**

   After everything is installed, SuSE rebuilds the necessary configuration files, and then the software installation tool closes.

Prefer to use the DVDs? When you first enter YaST, choose Software ➪Change Source Of Installation. In the Software Source Media dialog box, choose Add➪ DVD to add the DVDs to the list. Then select the DVD entry in the listing and click Up so that it's in the list before the CDs. Click Finish, and you're ready to move on!

After you've added the software, because you're adding it from the installation media, you will probably want to update your system so that you get the latest versions of what you just added.

Adding the software in this book

To add the various programs discussed in this book, open up the YaST software management tool as discussed in the previous section, and then, in the Filter drop-down list box, choose Package Groups. Now you can see on the left a list of all the major package groups; and on the right are the contents of the selected group. You can find the programs you're looking for in the following Package Groups locations:

- **Macromedia Flash plug-in:** Choose Productivity➪Networking➪Web➪ Browsers➪flash-player.
- **Java support:** Development➪Languages➪Java➪java2-j2re.
- **Firefox:** Productivity➪Networking➪Web➪Browsers➪MozillaFirefox.

Xipping with Xandros Networks

Just as Linspire users can use the CNR Warehouse to add software, Xandros users can use Xandros Networks. To add software using this tool:

1. **Double-click the Xandros Networks icon on your desktop.**

   The Xandros Networks dialog box opens.

2. **Click the plus next to New Applications to expand that section of the menu.**
3. **Browse through the categories.**
4. **When you find a program you want to install, click the Install Product link next to it.**

   The Install Software dialog box appears.
5. **Click OK in the dialog box to download and install the program.**

   You may be asked to enter your root (Administrator's) password. Then, the software is downloaded and added to your machine. No muss, no fuss! When the update is complete, the Updating System dialog box stays open.
6. **Click Close to close the Updating System dialog box.**
7. **If you want to add more software, return to Step 3. If you're finished, choose File➪Quit.**

Adding the software in this book

Many of the programs discussed in this book are either already installed (such as the Flash and Java plugins) or aren't offered through Xandros Networks. You can find Kmail by choosing Internet➪KDE Mail in the New Applications section. To add more software to your system, see the section "Finding More Software."

Finding More Software

What if you can't find what you're looking for through the official (and not so official) sources discussed in the previous section? Those aren't your only options. While I can't anticipate every situation you might find yourself in, I can at least give you some tips for how to find extra software and how to install much of it.

The general steps for finding new software involve

1. **Find out what you want by opening your favorite Web search engine and searching on a feature and the word `linux`.**

   For example, maybe you want something comparable to the program irfanview from the Windows world, so you would search on `irfanview linux`.
2. **Sort through the search results and see whether a particular program is suggested. If not, then add the word `equivalent` to your search and search again.**

So, to continue the example, you would search again but this time using `irfanview linux equivalent`. Now you start to see a program called `xnview` mentioned. It wouldn't hurt to turn around and look and see whether your distribution's software installation manager offers this program, before you bother installing it by hand.

3. **Do a Web search on the Linux program you're interested in.**

   You more often than not find the program's home page.

4. **Click through to that program's home page.**

5. **Click through the Download link on that page.**

6. **Locate and download the most specific version matching your distribution.**

   You may be offered, say, Windows, Unix, and Linux options. You would choose Linux in that case. If offered Linux x86 versus Linux ppc, choose x86 unless you're using Linux on an Apple Macintosh computer (which is not covered in this book). If you're offered an RPM or a tarball (see the beginning of this chapter for more information on these), then choose an RPM if you're using Fedora, SuSE, or Mandrake, and a tarball if you're using Linspire or Xandros — or if you tried the RPM on your Fedora, SuSE, or Mandrake system and it didn't work.

7. **Once you have the program downloaded, install it as follows:**

   - If it's an RPM, open your file manager and double-click the download in order to install it.
   - If it's a tarball, open your file manager and double-click the file in order to open it up and look at its contents. There should be a file in there called README or INSTALL. This file contains instructions on what you need to do, and there may be more instructions available on the Web site itself. Working with tarballs just requires practice; it gets easier over time, so extract the file and get to it!

Upgrading Your OS

When a new version of your Linux distribution comes out, you may find that you want to upgrade to it. Typically, you can upgrade by downloading or purchasing the new version, starting it just as you would start a new installation but choosing Upgrade instead of Install. That's it!

Chapter 13

A Secure Linux Box Is a Happy Linux Box

In This Chapter

- Implementing strong passwords
- Keeping your system up to date
- Plugging security holes
- Using the System Logs Viewer
- Securing your system by using best practices

I am Inspector Clouseau, and I am on official police business.

— Inspector Clouseau

You don't leave the front door of your house open when you go to work, do you? How about leaving it shut and locked but with a few nice, big windows open? The problem is that many people do this every day with their computers, and they don't even know it! In this chapter, I take a look at where your open doors and windows are and what you can do to secure them.

Every user's actions affect your overall system security. If your family members or officemates need access to your Linux machine, take the time to sit down and explain the facts of secure life to them. They can then apply this information to the other computers they use, because these issues aren't specific to Linux.

Choosing Secure Passwords

The first line of defense from intruders is the collection of passwords used on your system. For each account you have set up on your system, the passwords must be strong and difficult to figure out. If even one of the accounts has a weak password, you may be in for some trouble. Amazingly enough, in 70 percent of the cases where unauthorized individuals gained access to

systems, the password for an account was the word *password* itself! When choosing good passwords, follow these rules:

- Don't use any part of your name.
- Don't use the names of friends, loved ones, or pets.
- Don't use birthdays, anniversaries, or other easily guessed dates.
- Don't use dictionary words.
- Don't keep your password written down near your computer, unless it's buried in something else, such as writing it into an address.
- Don't tell anyone your password. If someone needs to access specific files, give the person an account and set up permissions and groups properly so that they can do so.
- Do use a mix of lowercase letters, capital letters, and numbers.
- Do ensure that your password contains a minimum of eight characters.
- Do use acronyms made from sentences, such as having the password `M8yodniT` to stand for "My eight-year-old dog's name is Tabby."

Every person on your system needs to follow these rules, including you! Consider keeping a sheet of paper with these rules on it next to the machine.

I can't stress this advice enough: *Never* give out your password. Make sure that the people using your machine understand this rule. You can always find alternative methods to accomplish a task without giving out your password. If someone wants to use your machine, make an account for that person. Then they can have their own password!

Updating Software

All users can download and install new software. Of course, the programs they install are limited to the user's own permissions. The thing to be careful of here — with any operating system — is that you don't get a version of a program that has been tampered with or is even an all-out fake trying to trick folks into installing it.

Most Linux applications and other Linux software programs are distributed by way of the Internet. In fact, the development cycle of new (and updates to) Linux software revolves around the Internet for file exchange, e-mail, and forum or newsgroup discussions. Make sure that you and other users of your Linux system are comfortable with the Web sites that are used and visited. You need to develop a *list* of trusted sites that provide you with the information you need and are not misleading in their presentation. As a starting point, you can *trust* all the Web sites referenced in this book because I have accessed them all. If either you or a user of your Linux system is unsure

whether you can trust a particular Web site, do some research and perhaps ask others for their opinions.

Chapter 12 details how to keep your distribution and its software up to date. Please, please, please, do so! After all, as the person in charge, your job is to make sure that this computer stays intruder-free. In addition to making sure that you do all the same things a user would do for both your user accounts and the superuser (root) account, no matter which Linux distribution you're running, you must keep up-to-date with security problems.

Network holes

On a Linux server or workstation — or any computer at all, using any operating system — you should not have any network services running that you don't intend to use. Think of each network program running as a glass window or sliding glass door in your house. Each network service is a weak spot, and many nasty folks are out there on the Internet who like to go up to all the houses and make note of how many windows and glass are on them, what kinds they are, and how easy they are to breach.

Controlling your services

The more flexible your distribution — as far as its ability to run desktops and many types of servers — the more services it may have running in the background by default. To open the network service management program for your distribution:

- **Fedora:** Choose Applications➪System Settings➪Server Settings➪Services (see Figure 13-1).
- **Knoppix:** From the main menu, choose KNOPPIX➪Services. There is no central service control unit, but because this distribution is designed as a desktop, few services are available. This menu contains each service you have access to.
- **Linspire:** There is no central service configuration point, but this distribution is designed to be purely desktop, so there is little to do here anyway.
- **Mandrake:** From the main menu, choose System➪Configuration➪Configure Your Computer➪System➪Services.
- **SuSE:** From the main menu, choose System➪YaST➪Network Services. There is no central service control unit, but in this section, you can select each service individually to see whether it's on and find out more about it. If you're asked to install software when selecting a service, say no if you don't intend to use it! Clicking Cancel does the trick.
- **Xandros:** Choose Launch➪Control Center➪System Administration➪Services. There are few services here to deal with, however, because this system is designed strictly as a desktop.

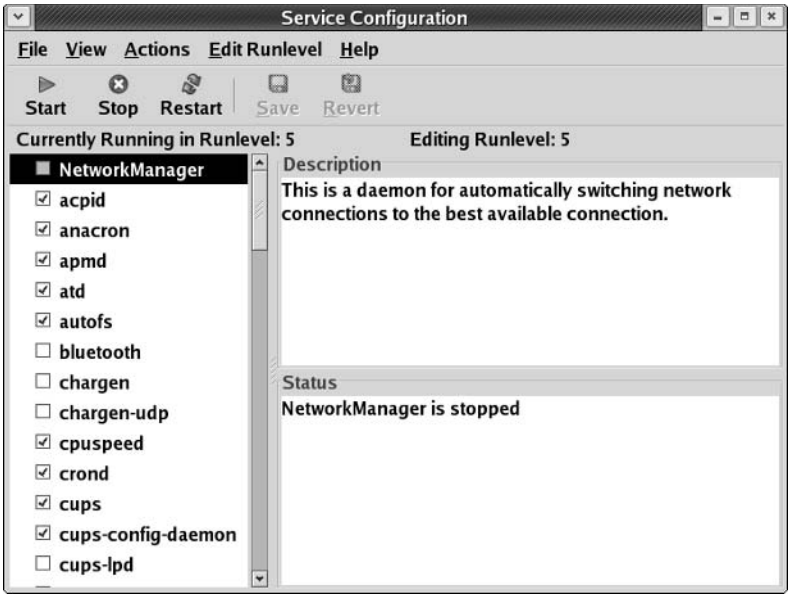


Figure 13-1: The Fedora Service Configuration dialog box.

Services you may be interested in turning on or off include

- **apmd:** This service may not be necessary in anything but a laptop. It's used for monitoring battery power.
- **iptables:** This service is your firewall (more on the firewall in the section "Controlling and adjusting your firewall" later in this chapter). If you need to momentarily shut it down, you can do so using the service control dialog box.
- **isdn:** This daemon is typically on by default in some distributions "just in case," but if you're not using ISDN networking (see Chapter 8) you don't need it.
- **kudzu:** If you're using Fedora and keep getting bugged about hardware stuff at boot time, shutting off this service will stop those messages. You can run it manually as root if you change hardware later.
- **lisa:** Discussed earlier in Chapter 11 in conjunction with network browsing in certain distributions.
- **mDNSresponder:** Shut this service off unless you're a Howl (`www.porchdogsoft.com/products/howl`) devotee. The nifd service should also be on or off (matching) with this one since it's related.
- **mdmonitor:** Shut this service off unless you implemented software RAID during your installation. (You had to go out of your way to do so, so if you don't know, you probably didn't!) If you change this service to on or off, make sure that mdmpd is also on or off (matching) as well.

- **pcmcia:** You only need this on laptops. It's for PCMCIA card support.
- **sendmail:** Even though you're probably not in need of a full-fledged mail server, shutting this service off can have unintended consequences since it's used to even handle internal mail on your system. Leave it on.
- **smartd:** If you're getting errors for this one at boot time, shut it off. It only works with certain IDE hard drives, so if you're not using that type of drive, it gives a (harmless) error.
- **spamassassin:** If you want to use this program in conjunction with your mail program, go for it! This program is used by default with Evolution in Fedora (see Chapter 9), so if you're using this combination of tools leave this service on.
- **yum:** On Fedora, lets you run a nightly automatic update for those whose machines are connected overnight.

In Fedora, when you check or uncheck a service, you make sure that it does or doesn't turn on when you reboot. You need to use the Start and Stop buttons to deal with it immediately. Use the bottom right part of the dialog to see whether Fedora is running right now.

Controlling and adjusting your firewall

Even better (but just as essential) than turning off unnecessary services is to make sure that you have a firewall in place. A firewall is like putting a big bunker around your house. It would then have openings that only fit people wanting to do certain kinds of things. Friends could fit in through one door, family another, and package deliveries to another.

In computer networks, each of the services discussed earlier always comes in through the same door (*port*, in computer-world lingo). You use firewalls to prevent anyone from being able to so much as touch a door, or port, unless you've explicitly set it up so that they can do so. This technique is especially important if you're on a cable network (see Chapter 8), where there's always some overactive jerk out there using his computer to knock on every other computer on the network's doors to see where it can get in.

You probably already did some basic firewall setup during installation. If you ever want to make changes, do the following:

- **Fedora:** Choose Applications➪System Settings➪SecurityLevel (see Figure 13-2).
- **Knoppix:** None. But, then, what could they change on a system running from CD-ROM? Not much.
- **Linspire:** From the main menu, choose Programs➪Utilities➪CNR More➪ Firestarter. This tool helps you set up your firewall and is installed under the Utilities menu.

- **Mandrake:** From the main menu, choose System➪Configuration➪Configure Your Computer➪Security➪Firewall. Uncheck the first box and when asked if you want to install Shorewall, say yes.
- **SuSE:** From the main menu, choose System➪YaST➪Security and Users➪Firewall.
- **Xandros:** Go to the Xandros Networks tool (see Chapter 12) and choose New Applications➪System➪Administrator Tools➪Firestarter. This tool helps you set up your firewall and is installed under Launch➪Applications➪System➪Administrator Tools➪Firestarter.

Figure 13-2: The Fedora firewall control dialog box.

Your options are typically something like Enable Firewall and Disable Firewall. If you have your computer directly connected to the Internet — and most computers are — make sure to use Enable Firewall. The only time that you should not have this firewall in place is when your machine(s) are behind a strong firewall already, or you have a critical application that won't work otherwise. For just one application, though, that's one huge risk! You can find out how to open up the proper doors in the firewall for that one program instead.

Firewall lingo you may find handy includes

- **eth0:** Your first Ethernet (network) card.
- **ppp0:** Your first modem.
- **HTTP and HTTPS:** Web stuff; only needed if you're running a Web server.

- **FTP and FTPS:** FTP server stuff; you don't need it if you're not running an FTP server.
- **SSH:** Select this one to keep open. I explain it in the next section.

Additional "security" products from Linspire include (in their Click And Run Warehouse under Services) SurfSafe parental controls and VirusSafe antivirus software.

The Secure Shell game (SSH)

One cool thing about Linux is that you can use the command line to connect to your account from anywhere, as long as you have the right software (and the machine you're connecting to isn't behind some kind of blocking software). Some people tell you to use the `telnet` program to do this, but I beg you not to. Do not open the Telnet port in the security tool and do not use the `telnet` program. It sends information across the Internet in nice, raw text that anyone can snoop through.

First, you need to make sure that you enable SSH in your firewall. (See the section "Controlling and adjusting your firewall," earlier in this chapter). In Linspire, you need to add the program to connect *out from* your machine using SSH:

1. **Open the CNR Warehouse (see Chapter 12).**
2. **Choose Install CNR Warehouse➪Utilities➪Security & Encryption➪ Secure Shell.**

In some other distributions, you need to do the following to let people `ssh` *into* the machine (the distributions not mentioned here are set up to do so by default):

- **Knoppix:** From the main menu, choose KNOPPIX➪Services➪ Start SSH Server.
- **Mandrake:** Use the software installer (see Chapter 12) to add the `openssh-server` program. Then, use the services control interface (see the section "Controlling your services," earlier in this chapter) to activate `sshd`.
- **Xandros:** Do the following:
    1. **Choose Control Center➪Services.**
    2. **Click the Administrator button and enter your root (administrator) password.**
    3. **Select ssh in the list.**
    4. **Click Properties.**

5. **In Start Mode, select System Startup.**
6. **Click OK.**
7. **If in the Status column, the ssh row doesn't say Running, click Start to start the server.**
8. **Choose File➪Quit.**

Installing a Windows SSH program

If you want to connect to your SSH-enabled Linux box — or, actually, to any computer set up to accept SSH connections, not just a Linux one — from a Windows computer, go to `www.siliconcircus.com/penguinet/` and get the PenguiNet telnet and SSH client for Windows (please don't use this for telnet, just SSH). A 30-day trial version is available, and if you like it, the full version is only around $25.

To install PenguiNet under Windows after downloading `PN2setup.exe`, just follow these steps:

1. **Open your file manager (such as Windows Explorer), browse to where you saved the download, and double-click the `PN2setup.exe` program.**

   This action opens the PenguiNet Setup Wizard.

2. **Click Next to proceed.**

   The License Agreement dialog box opens.

3. **After you read the agreement (something you should always do), click I Accept This Agreement and then click Next to proceed.**

   The Select Destination Directory dialog box opens. I usually just stick with the defaults.

4. **After you select the directory in which to install PenguiNet, click Next.**

   The Select Start Menu Folder dialog box appears.

5. **After you select the proper folder, click Next.**

   The Select Additional Tasks dialog box appears. If you want to create a desktop icon or Quick Launch button, select the appropriate check boxes.

6. **After you have chosen your additional tasks, click Next.**

   The Ready To Install dialog box appears.

7. **Click Install to begin your PenguiNet installation.**

   An installation progress dialog box appears. When the installation is finished, the final installation screen appears.

8. **Select one or both of the final items.**

   I recommend that you check at least Run PenguiNet. You may also want to select View The PenguiNet Documentation if you like to get familiar with programs by reading their manuals.

9. **Click Finish.**

   The PenguiNet window appears (if you checked Run PenguiNet), as shown in Figure 13-3.

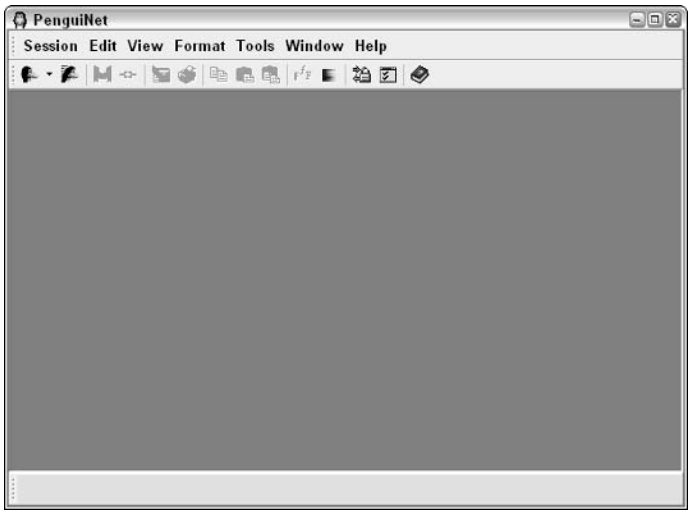


Figure 13-3: The PenguiNet connection program in Windows.

Setting up and making your SSH connection in Windows

Either you have PenguiNet open from having installed it, or you need to open it now from your desktop shortcut or the Start menu. After you have done so, follow these steps:

1. **Choose Session⇨Connection Profiles.**

   The Connection Profiles dialog box opens, as shown in Figure 13-4.

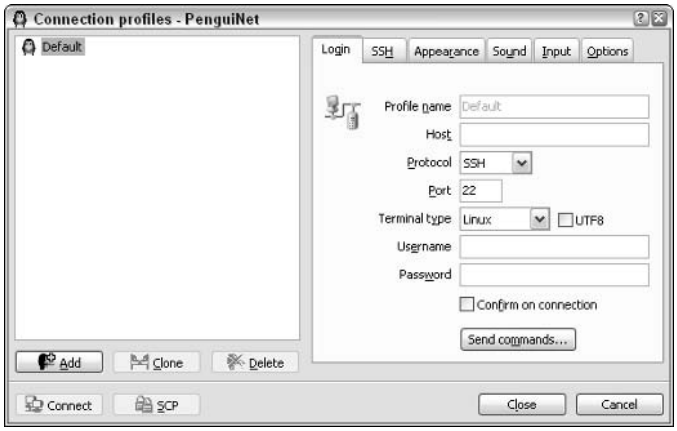


Figure 13-4: The PenguiNet Connection Profiles dialog box.

2. **Click Add to open a new profile.**
3. **Enter the name for this profile in the Profile Name text box.**
4. **Enter your Linux box's IP address in the Host text box.**
5. **Enter your Linux login name in the Username text box.**

   You cannot use the root account here. Doing so is terribly bad for security.
6. **Enter your Linux login password in the Password text box.**
7. **Click Connect to make the connection to your Linux machine.**

   The Host Key Not Found dialog box opens the first time you connect this way. Click Connect and save the host key. You don't have to do this step again from this Windows machine. Check out Figure 13-5 to see a Linux command-line interface window on a Windows box! (I'm not sure why this default font is so "freehand"; you can change it for all your sessions by choosing Format➪Change Font or per Connection Profile in the Preferences menu by selecting the profile and clicking the Appearance tab.)

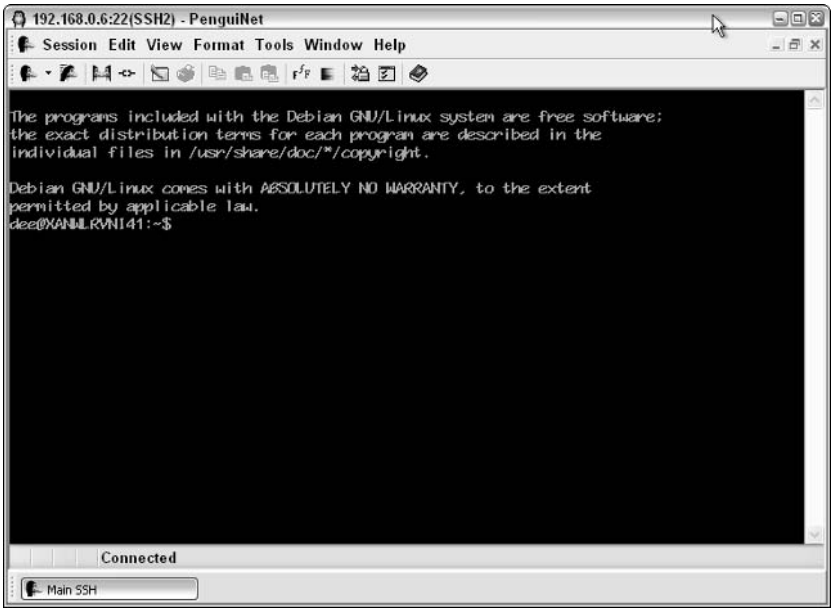


Figure 13-5: Your Linux command line in Windows!

When you're finished, type **logout** at the command line, and your connection closes.

Connecting to your Linux box from another Linux box with SSH

Yes, you can connect from another Linux box, too. This task is a bit less complicated. Open a terminal window (see Chapter 14) and follow these steps:

1. **Type** `ssh username@ipaddress` **to open the connection.**

   For example, type `ssh dee@192.168.1.6`. After you do this step, the following text appears:

   ```
   The authenticity of host '192.168.1.6 (192.168.1.6)'
           can't be established.
   RSA key fingerprint is
           ed:68:0f:e3:78:56:c9:b3:d6:6e:25:86:77:52:a7:66.
   Are you sure you want to continue connecting (yes/no)?
   ```

2. **Type** `yes` **and press Enter.**

   You now see these lines:

   ```
   Warning: Permanently added '192.168.1.6' (RSA) to the
           list of known hosts.
   dee@192.168.1.6's password:
   ```

3. **Enter your login password and press Enter. Now you're in!**

Close the connection by logging out of the account (type **logout**).

Connecting to your Linux box from a Macintosh running OS X with SSH

The process from a Macintosh is similar to that under Linux. Go to Applications➪Utilities➪Terminal.app, which opens a command line window for you. Then type

```
ssh IPaddress
```

to access the same user account on the remote machine, or type

```
ssh login@IPaddress
```

if you want to access the account *login* instead of the same account you're using on the Mac.

Software holes

When someone is already in your system — whether or not they're allowed to be there — you have additional security concerns to keep in mind. One of these involves what software you have on the machine. Believe it or not, each piece of software is a potential security hole. If someone can get a program to crash in just the right way, they can get greater access to your system than they should. That's a very bad thing!

One way to close software holes is to remove all programs you don't need. You can always add them later, if necessary. How exactly you do this task depends on the package-management scheme your distribution runs:

- **Fedora:** You can use yum at the command line or gyum's Remove tab (see Chapter 12).
- **Knoppix:** You run it off CD, so it's hard to remove anything!
- **Linspire:** Open the CLICK and Run client (Chapter 12), click the My Products tab, select the program you want to remove from the list, and then click Uninstall Selected.
- **Mandrake:** From the main menu, choose System➪Configuration➪Packaging➪Remove Software. In the dialog box, check the boxes for the programs you want to remove. When you're ready to proceed, click Remove.
- **SuSE:** Choose System➪YaST➪Software➪Install And Remove Software. Locate the program you want to remove (see Chapter 12). Installed software has a checkmark next to it. Click the mark until it becomes a trash can and then click Accept.
- **Xandros:** Open the Xandros Networks client as discussed in Chapter 12. Choose Installed Applications, browse to the program you want to remove, and click the Remove link.

If it turns out that, as a result of dependencies, you lose other software that you want to keep, make sure to cancel the removal.

Introducing SELinux

SELinux, or Security-Enhanced Linux (`www.nsa.gov/selinux/index.cfm`) was developed by the National Security Agency (NSA) in the United States to add a new level of security on top of what's already available in Linux. To use SELinux in your distribution:

- **Fedora:** Open the firewall control tool (see the section "Controlling and adjusting your firewall," earlier in this chapter) and click the SELinux tab. If you want to just see what SELinux *would* do, check the Enabled check box (if it isn't already checked). If you want to enforce the policies you've created, check the Enforcing Current check box. To completely deactivate it (which will probably speed up your boot time), make sure that both boxes are unchecked. My best advice for playing with this advanced feature is to go and read the site mentioned at the beginning of this section and then the Fedora-specific FAQ at `http://people.redhat.com/kwade/fedora-docs/selinux-faq-en/`.
- **Knoppix:** Not available.

- **Linspire:** If you open the CNR client (see Chapter 12) and search for `selinux`, you find a number of options. These packages are still in development as of this writing.
- **Mandrake:** Use the software installation tool (see Chapter 12) and install the program libselinux — this step requires you to have added external repositories (see Chapter 12). However, utilizing this tool has been left a fairly advanced exercise for the truly curious.
- **SuSE:** Installed by default.
- **Xandros:** Not available.

SELinux is overkill for the average desktop user, but using it on your desktop can be useful when it comes to learning how SELinux works.

Keeping an Eye on Your Log Files with the System Log Viewer

One other security issue you may want to configure concerns *log files.* Your network programs, kernel, and other programs all run log files, which contain records of what has been happening on your system. You may be amazed at just how much information gets put in them! They're mostly in `/var/log`; take a look sometime.

Fortunately, tools are available that can help mere mortals sift through the wheat to look for the chaff of bugs and intruders.

To find your distribution's System Logs viewer:

- **Fedora:** Choose Applications➪System Tools➪System Logs (see Figure 13-6).
- **Knoppix:** None.
- **Linspire:** From the CNR Warehouse (see Chapter 12), choose Utilities➪XWatch.

Sometimes the fastest way to find a program in the CNR Warehouse is to use the Search text box.

- **Mandrake:** Using Chapter 12, install swatch. Then, from the main menu, choose System➪Monitoring➪System Log.
- **SuSE:** Use Chapter 12 to install kwatch, and then start it by choosing the main menu➪System➪Monitor➪kwatch.
- **Xandros:** None.

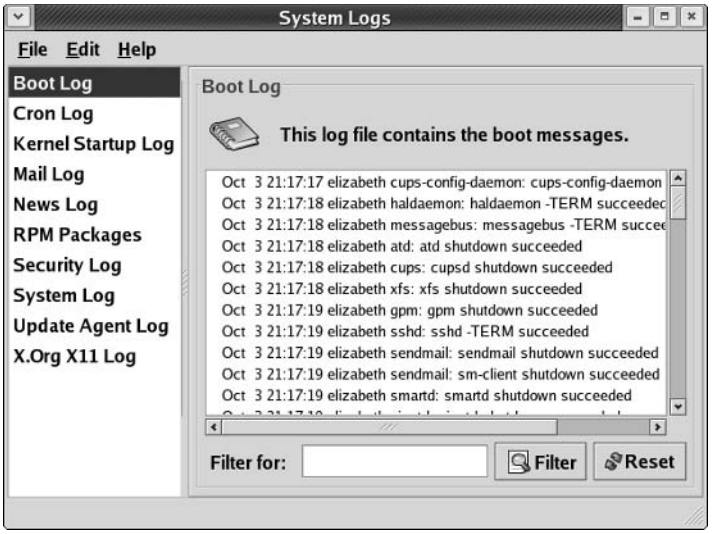


Figure 13-6: The Fedora System Logs watcher.

Locating Security Resources

You can find a plethora of information on the Internet about desktop, network, and Linux security. Because of the massive volume of information available, I list some Web sites I like for security issues:

- `www.sans.org`: One of the major security-related sites on the Internet.
- `http://grc.com/intro.htm`: Provides some interesting tools, such as tools to test which ports are open on a system. Also, this site features many excellent articles dealing with system and network security.
- `http://seifried.org/lasg/`: Contains the *Linux Administrator's Security Guide.*
- `www.linux-firewall-tools.com/linux/`: Offers tips for firewalls and security on Linux systems.
- `www.linuxsecurity.com/`: Presents a plethora of information from Linux Security.com.
- `www.securityspace.com/sspace`: Has lots of information about security issues and tools for different operating systems

Chapter 14

Working without the GUI

In This Chapter

- Understanding the user shell environment
- Customizing the `bash` environment
- Working with commands
- Tinkering with variables
- Using redirection and pipes
- Using yet more wildcards
- Using a variety of commands

Whom computers would destroy, they must first drive mad.

— Anonymous

Many computing old-timers speak fondly of the command line. Others who developed their skills by pointing and clicking refer to the command line as some antiquated tool used by crusty old-timers. The truth is that most skilled computing professionals recognize the merits of both the graphical user interface (GUI) and the command-line interface (CLI). You must understand that the command line provides a powerful lever for operating your computer. If you ever watch over the shoulder of a skilled Linux geek, you notice that, after logging in, he doesn't take long to start tapping out seemingly cryptic instructions on a command line.

In this chapter, I explore the Linux program that provides the CLI, which is called the `bash` shell. Although many shells are available for Linux, `bash` is the most common, and for good reason. Basically, the creators of `bash` rolled many good features of other shells into one terrific package.

Each shell has its own way of handling commands and its own additional set of tools. I start by explaining what a shell really is, and when you understand that, you're ready to get down and dirty with `bash`. I cover specifically what you can do with some of the best features of the `bash` shell. Then, I continue with working at the command prompt and get into `bash` shell interior decorating.

Shells come equipped to perform certain functions. Most of these features have evolved over time to assist the command-line jockey with myriad tasks. Although I only scratch the surface here, you're encouraged to read the `man` page for `bash` because it's likely one of the more complete and readable `man` pages in existence. You can read all about how to use `man` pages (the online Help system in Linux) in the "Help!" section, later in this chapter.

Playing the Shell Game

You need a way to tell the computer what you want it to do. In Linux, one of the ways to communicate with the computer is through something called the shell. A *shell* isn't a graphical thing; it's the sum total of the commands and syntax you have available to you to do your work.

The shell environment is rather dull and boring by graphical desktop standards. When you start the shell, all you see is a short prompt, such as a `$`, followed by a blinking cursor awaiting your keyboard entry. (Later in this section, I show you a couple of methods for accessing the shell.)

The default shell used in Linux is the `bash` shell. This work environment is based on the original Unix shell, which is called the Bourne shell and is also referred to as `sh`. The term `bash` stands for the *B*ourne *a*gain *sh*ell. The `bash` shell comes with most Linux distributions.

If you installed your Linux distribution to log in to a graphical desktop, such as GNOME or the KDE environment, you're likely not looking at a shell prompt. Rather, you interact with your computer via a mouse. You can start a `bash` session from within the GUI desktop in a couple ways.

The quickest method to activate a `bash` session is to:

- **Fedora:** Right-click on your desktop and choose Open Terminal from the context menu that pops up.
- **Mandrake:** Click the Terminal Program icon on your Panel. (It looks like a computer monitor.)
- **SuSE:** Click the Terminal Program icon on your Panel. (It looks like a computer monitor with a shell on it — get it? shell?)

Notice that not all the distributions covered here offer a shortcut on the panel or desktop. Instead, you can also choose commands from each program's main menu unless otherwise specified:

- **Linspire:** Choose Programs➪Utilities➪Console.
- **Fedora:** Choose Applications➪System Tools➪Terminal.

- **Mandrake:** Choose System➪Terminals➪Konsole.
- **SuSE:** Choose System➪Terminal➪Konsole.
- **Xandros:** Choose Applications➪System➪Console.

Often, your shell prompt includes helpful information. For example, if you're logged in as `evan` on the machine `deepthink` in Fedora Core 3, your prompt looks like this:

```
[evan@deepthink evan]$
```

Before surveying a few of the shell capabilities, I need to tell you about another method for starting a shell session. First of all, notice that your shell prompt is merely inside a window that is part of your GUI desktop. Suppose that you want to start a shell session in a character-only or text environment.

To switch to a text environment, press Ctrl+Alt+F2. Don't be alarmed when your familiar graphical desktop disappears. It's still running in the background, and you can get back to where you left off in a moment. But first, a few words about the boring text screen you're looking at now (I hope).

You're looking at a virtual terminal, one of several available with your default installation. You probably see something like this:

```
deepthink login:
```

Go ahead and type your username and password, which you're prompted for. You see a message indicating your last login date followed by the `bash` prompt:

```
[evan@deepthink evan]$
```

Notice the similarity between this prompt and the open window you left behind in the GUI desktop. Both prompts are an indication that you have a `bash` session open. Note that, although it's accurate to say they're both the results of using the `bash` shell, they're distinct and separate *instances* of the same program. In other words, the environment you're working with here is exclusive of the `bash` environment you still have open in the GUI terminal window.

Are you wondering where your GUI desktop has gone? Just to settle your nerves a bit, do some jumping around. The GUI desktop is located at virtual terminal (VT) number 7 by default. You now have VT-2 open. Position your piano-playing fingers and strike the chord Ctrl+Alt+F7. Within a second or two, your screen should flash and return you to your graphical desktop. Neat, huh? And guess what? The `bash` session you left open on VT-2 is still there; you never logged out. Go back again by pressing Ctrl+Alt+F2. Voilà! — right where you left it. Feel free to jump back and forth a few times and try some other VTs (F1 through F6). Whoopee! This virtual terminal stuff rocks.

Okay, when you have grown weary and bored with this little trick, exit (literally, type `exit`) to log out from each VT you may have opened and return to the graphical desktop and your `bash` prompt. Then you can explore what all the fuss is about with this *shell* doohickey.

Understanding bash Command Syntax and Structure

Many people happily skip through their Linux use without understanding the fundamentals of commands in the `bash` shell. Note that this approach makes you lose out on some cool capabilities available in `bash`. The more you know about how this shell's "language" works, the more interesting things you can do with it.

The basics of using `bash` at the command prompt often involve typing a command and any of its flags and values. For example, you enter the `ls -la ~` command to see a long-format listing of all files in your home directory, including those that start with a dot (.), which are *hidden files*. That other mysterious squiggle character is technically called a tilde. The *tilde* is a `bash` shortcut character that points to a user's home directory. For this example, I merely list the contents of my home directory.

You can break a command into three distinct components:

- The command name
- The options or flags
- The arguments

Consider this example.

Start with a simple command. The `du` command lists the contents of the directory you're now in, and its subdirectories, and how much hard drive space each item takes up, with a total at the end. Try typing just the `du` command by itself:

```
du
```

That's neat, but it probably raises more questions than it answers. The output gives you a long listing of data, but of what? Are those numbers in bytes, kilobytes, or messages from outer space? To clarify, try adding a simple option to your command:

```
du -h
```

You're still issuing the same command, but now you're providing additional direction on what you want displayed. The `-h` option tells `du` to show you the information in terms that humans can read more easily. Now *M*s, *K*s, and *G*s appear next to the numbers so that you can see how big these numbers actually are. But, wait — there's more. What if you just want to know the total amount of disk space this directory and its subdirectories are taking up? That calls for the `-s` flag:

```
du -s
```

What if you want the total for a different directory? Or just one of your subdirectories? In my case, I keep a Music subdirectory for the items I have copied from my CDs into Oggs (see Chapter 18). I can type the following command to see how much hard drive space that directory takes up in a human-readable way rather than have to count zeroes:

```
du -sh ~/Music
```

In this example, `du` is the command name, `-sh` indicates the flags (options), and `~/Music` is an argument. The `-sh` flags can be accompanied by many more flags that provide various options applicable to the command.

Are you wondering where to find all the available options and arguments of a particular command? Most commands offer `man` pages, which are discussed in the "Help!" section, later in this chapter. Another good place to turn is the `--help` option, available with many commands. Note that `--help` displays a terse list of options, but it's nice and quick if you already know about an option but just can't remember exactly which one it is. Try it by entering the following command:

```
du --help
```

Cool, huh?

Starting Programs from the Shell

The most obvious, but perhaps not so apparent, use of the shell is to start other programs. Most utilities you use in Linux are separate and distinct executable programs. Users need a method to start these programs. In the GUI, you can associate an icon with a particular program, and the graphical environment contains the intelligence to start the program. Note that programs often require information drawn from environment variables, which are a part of the shell environment. (I discuss environment variables in more detail in the section "Working with Variables," later in this chapter.) For this reason, the GUI often calls the intended program via the `bash` shell. So you see, even the GUI finds the shell a necessity — although the GUI does its best to hide this detail from users.

For example, in the GUI after you have a terminal window open, type the following command at the prompt:

```
mahjongg
```

After a few seconds, the Mahjongg game is displayed. You can start any program at a command prompt that you can click from the GNOME menu if you know what the underlying program name is. Note that if you're in a virtual terminal (press Alt+F1) instead of the GUI, you may see an error message. Some programs require a graphical environment in which to run, which a character-based terminal obviously doesn't have.

Putting Wildcard Expansion to Good Use

Computing life would be tedious if you had to repeat the same command on multiple files. After all, aren't repetitive tasks what the computer was designed to do? *Wildcard expansion* refers to the ability of one command to be executed against many files. The asterisk (*) and the question mark (?) are two wildcard characters that are used to match any filename, or a portion of a filename. For example, you can use the following command to see a long directory listing that includes only files that end with a `.doc` filename extension:

```
ls -l *.doc
```

The files listed may include `resume.doc`, `cover_letter.doc`, and `to_editor.doc`, for example.

Working with Long Commands

As you become used to the command line, you should learn some shortcuts to ease your typing chores. In this section, I show you some features of the `bash` shell designed to make your life on the command line as pleasant as possible. These features include command-line completion, editing, and using the history of previously entered commands.

Asking Linux to complete a command or filename for you

Considering that you do much more typing on the command line in Linux than you may normally do in a GUI environment, a feature that provides typing shortcuts wherever possible is great. Command completion is a function of the shell that completes filename and system commands.

The capability of the Linux file system to deal with practically unlimited sizes of filenames means that many filenames can become huge. Typing these long filenames can become cumbersome. Fortunately, with command completion, typing a command or a long filename is short work.

You may want to use command completion in two situations: to enter a command or to complete a filename.

Completing a command

Suppose that you want to type a command, but you can remember only that it begins with the letters `up` and is supposed to return the length of time that has passed since the system was rebooted. Type `up` at the command prompt and then press Tab:

```
[evan@deepthink evan]$ up[TAB]
```

One of two things happens:

- If only one matching command is in the *search path* (directory locations for searching for programs; type `echo $PATH` to find out what yours is), your command line is completed with that command, and the system waits for you to press Enter to execute the command.
- If you hear a beep, it means that more than one command begins with `up`. Simply press Tab a second time, and all the possibilities are displayed. Locate the command on the list and continue typing it until the first letters are unique, at which point you can press the Tab key to complete the command.

Completing a filename

Command-line completion isn't only for commands; if you're typing a filename on your command line, you only need to type the first few characters and then press Tab. The shell usually searches the current working directory for filenames that match what you have typed and subsequently completes the filename on the command line. This feature behaves the same way as the command-completion feature in that, if more than one file contains the letters you type, you hear a beep and need to press Tab again to see a list of choices.

It takes a little getting used to, but after you have control of the Tab key and the shell command-line completion feature, you may wonder how you ever got along without it.

Accessing your command history

It's nice of the shell to remember what you have done, for better or worse. Having the shell keep track of the commands you enter makes it easy to

return to those gawd-awfully long commands you pecked at a while ago — even days ago! Let me give you an example. Suppose that yesterday you managed to issue a command to find all the *core dump* files in your system (core dump files are massive files containing debugging data that only an expert programmer or your computer can understand) and delete them. The command looked something like this:

```
find / -name core -exec rm {} \;
```

To re-execute the command, all you need to do is fish it out of your shell history and rerun it. The simplest way (if you're repeating the exact same version of the command you used last time, which in this case would be the `find` command) is to type `!find` and press Enter. Doing so tells your system to look through your history and rerun the last instance of `find` in the list.

On the other hand, if you have run the `find` command more than once and want to make sure that you're re-executing the right version, you need to read through your command history. You can do so line by line by pressing the up-arrow key repeatedly until you locate the command you want to re-execute. Then just press the Enter key to run the command again.

The `history` command lists your last 20 commands (by default) when you enter it at the prompt, in case you're curious about what they were.

Working with Variables

Variables in the `bash` shell are words or strings of text that computers use to represent a piece of data. An example of using a variable is setting the variable `fruit` to contain the text `apple`. A number of standard variables contain information about your account and environment settings.

Variables versus environment variables

The first thing I need to make clear is that the `bash` shell has two classes of variables:

- **Variables:** A variable can be referenced in a program or shell session, but it's visible and available to only that session or program.
- **Environment variables:** An environment variable can also be referenced by the shell or program. However, it has the added behavior of having its value copied to any other program or shell that is created from its environment.

You can usually tell at a glance the difference between a variable and an environment variable in `bash`. The normal convention is to name local variables in all lowercase or in mixed-case characters. An environment variable, however, is usually always in all uppercase letters.

Checking out commonly used environment variables

The bash shell has many environment variables. You may be amazed at the range of items these variables store. The handy thing is that, if something is stored in a variable, you can change it to suit your needs! In Table 14-1, I list the environment variables you're most likely to want to work with.

Table 14-1 Commonly Used bash Environment Variables

Environment Variable	*Purpose*	*Value*
`HISTSIZE`	Determines the number of previously typed commands that are stored.	Number of commands
`HOME`	Sets the location of your home directory.	The path to your home directory
`MAILCHECK`	Sets how often the `bash` shell checks for new mail in your mailbox. If mail has arrived, you see a message similar to `You have new mail` the next time you do something at the command prompt.	Number of seconds to wait between checks
`PATH`	Sets the directories that `bash` looks in, and the order to look in them to find a program name you type at the command prompt.	Colon-separated directories
`PS1`	Sets your command prompt.	Command and formatting characters used to form the prompt

Most environment variables are established for you by the system administrator or perhaps by the shell itself. These variables are mostly read by programs to gather information, and you don't need to change their values. However, you may want to alter the value of some environment variables. For example, in Table 14-1, the first entry, `HISTSIZE`, determines the number of lines of command-line history that are kept on file. You may have read the discussion, earlier in this chapter, of re-executing a command from yesterday. (If not, refer to the section "Accessing your command history.") By setting a higher number for `HISTSIZE`, you can save an even longer list of previously executed commands.

Storing and retrieving variables' values

To assign a value to a variable, you just use the variable name followed by an equals sign (=) followed by the value to store:

```
MyVariable=MyValue
```

To retrieve the value represented by that variable, you need to precede the variable name with a dollar sign ($). Look at a variable, created by the shell, that determines what your prompt looks like. This variable is named PS1. First, you view the value being held by PS1:

```
echo $PS1
```

You likely see something like the following line:

```
[\u@\h \W]\$
```

Each of the characters preceded by a backslash represents a special instruction to the shell to return specific information when the shell prompt is referenced. See Table 14-2 for examples of special slash-characters you can use in customizing your prompt.

Table 14-2 Pieces of the PS1 Puzzle

Component	*Result*
`\!`	Prints the position of the command in your history list.
`\#`	Prints the number of commands you have used during the current shell session.
`\$`	Prints a $ for user accounts or a # for the superuser.
`\d`	Prints the date in the following format: *day month date*.

Component	*Result*
\h	Prints the name of the machine you're logged in to.
\n	Moves down to the next line.
\s	Prints bash for the bash shell.
\t	Prints the time in 24-hour format.
\u	Prints your username.
\w	Prints the lowest current directory level.
\W	Prints the entire current directory.

Okay, on with the example; to change your shell prompt to something more amusing, enter the following line:

```
PS1='Hello \u, what can I do for you? => '
```

Note the single quotes. Immediately after pressing the Enter key, you see that your prompt has changed into something more inviting. Don't worry if you would rather have the original prompt: You can either reassign to the original prompt the value stored in PS1 or simply log out and log in again, and you're back to familiar territory.

Are you wondering which other variables your system has in store for you? You can view all environment variables at one time by typing env. Note that you may not have any reason to access variables on the command line as a casual use of Linux. However, after you get more proficient, you may want to journey into the shell programming capabilities of bash, in which case variable storage is quite handy, just as it is in any computer programming language.

What's with those single quotes? You have to be careful of some details when changing environment variables. If you're just assigning something to a number, you could just use, for example, HISTSIZE=250. However, if you want to use something with spaces in it, you need to use quotes. Which kind of quotes you use depends on what else you want to do.

If you want to display *exactly* what you have specified, use single quotes to create a *literal text string.* For example, type the following line at a command prompt:

```
echo 'Hello, my name is $USER'
```

Kinda goofy, huh? Take a look at a different kind of string that the shell interprets differently: an *interpolated string.* An *interpolated* value is one in which

the shell interprets special characters before processing the value. Rather than use single quotes, this time you use the same example with double quotes:

```
echo "Hello, my name is $USER"
```

Notice what the output is this time. Rather than display the exact text you provided, the shell replaces the variable name, designated with a dollar sign, with the actual value stored in that variable.

Why did I use single quotes in the PS1 example? The items with the backslashes (\) are *interpreted* one way or another. However, if you use double quotes with PS1, they're interpreted only once, so that item that lists what directory you're in changes only the first time. With a single quote, the variables are interpreted every time you do something. The double-quote example shows something like `Hello, my name is bob`. However, the single quote comes up with `Hello, my name is $USER`.

If you're going to play around with environment variables, I recommend that you start by using the methods I discuss in this section. After you have decided that you're comfortable with any changes you have made, you can make your changes permanent by opening the `~/.bash_profile` file and adding the same text there. The next time you log in, the changes go into effect. You can make changes for all your users' profiles in `/etc/profile` as well.

If you experiment heavily with these files, create a separate user account so that you can do whatever you want without messing up your own login. This advice especially goes for `/etc/profile`. You can damage everyone's logins with this one! To create a separate `/etc/profile`, you can make a backup by typing `cp /etc/profile /etc/profile.original`. Then, edit `/etc/profile` knowing that you can always delete it with the `rm` command and use the `mv` command to rename `/etc/profile.original` to `/etc/profile`.

Don't be too discouraged if you don't understand all this variable stuff right now. As you become more proficient with Linux, you should explore *shell scripting*. Shell scripting is the art of creating computer programs with just the shell. Most Linux and Unix administrators speak shell script language like you and I speak our native tongues.

Using Redirection and Pipes

Redirection and pipes facilitate the flow of information. A *pipe* is exactly what it sounds like: It directs the output of one program to the input of another program. A pipeline may consist of several utilities plumbed together by pipes. At either end of this pipeline is, optionally, a redirection.

Almost all Linux utilities that require input and output have been plumbed with the following common interfaces: `stdin` (standard input), `stdout` (standard output), and `stderr` (standard error). By having a common method to feed input to a program or read data from the output of a program, you can glue utilities together into sophisticated solutions.

Redirecting command output

I discuss redirecting command output here because it's by far the most common form of information detouring. One example of *output redirection* involves telling a command to send its results to a file rather than to the screen, as you probably have been used to seeing. Start in some familiar territory by typing `ls -la ~` and then pressing Enter, to produce something like the following:

```
total 20
drwx------ 2 sue  users 4096 Oct 30 07:48 .
drwxr-xr-x 5 root root  4096 Oct 30 11:57 ..
-rw-r----- 1 sue  users  24 Oct 30 06:50 .bash_logout
-rw-r----- 1 sue  users 230 Oct 30 06:50 .bash_profile
-rw-r----- 1 sue  users 124 Oct 30 06:50 .bashrc
-rw-rw-r-- 1 sue  users   0 Jan 2 07:48 wishlist
```

Want to send this information to a file instead? You can use the > redirection operator to tell `bash` to send the data into a file instead of onto your screen. Enter the following command to send the information to a file named `listing`:

```
ls -la ~ > listing
```

Notice that nothing displays on the screen, as you normally would expect. That's because the shell has rerouted the output to a file named `listing`. To verify that the directory listing is there, enter the following command:

```
cat listing
```

The `cat` (and more) is explained Chapter 16.

Note that if you type `ls -la ~ > listing` again, the data is overwritten, meaning that the file's contents are wiped out and replaced with the new output. You can avoid this situation by using >> as your redirection operator, which tells `bash` to add the command's output to the end of the specified file. If you type `ls -la ~ >> listing` in the same directory after making no changes, the contents of `listing` are as follows:

```
total 20
drwx------ 2 sue  users 4096 Oct 30 07:48 .
drwxr-xr-x 5 root root  4096 Oct 30 11:57 ..
-rw-r----- 1 sue  users  24 Oct 30 06:50 .bash_logout
-rw-r----- 1 sue  users 230 Oct 30 06:50 .bash_profile
-rw-r----- 1 sue  users 124 Oct 30 06:50 .bashrc
-rw-rw-r-- 1 sue  users   0 Jan 2 07:48 wishlist
total 20
drwx------ 2 sue  users 4096 Oct 30 07:48 .
drwxr-xr-x 5 root root  4096 Oct 30 11:57 ..
-rw-r----- 1 sue  users  24 Oct 30 06:50 .bash_logout
-rw-r----- 1 sue  users 230 Oct 30 06:50 .bash_profile
-rw-r----- 1 sue  users 124 Oct 30 06:50 .bashrc
-rw-rw-r-- 1 sue  users   0 Jan 2 07:48 wishlist
```

Laying pipes

Another `bash` shell feature enables you to connect commands so that the output of one becomes the input for the next one. This feature is referred to as a *pipe*. Suppose that you want to look over the details of all files in the `/etc` directory in long-listing format. If you type `ls -la /etc` to do so, a massive listing appears, and much of the information scrolls right past you. Although you can back up a bit by pressing Shift+PageUp, you may not be able to see everything.

To see all the information, you can do one of two things:

- Send the data to a file with redirection by typing something like `ls -la /etc > ~/etclisting` and then review the contents of `~/etclisting` with your favorite editor.
- Pipe the output to the `more` command(see Chapter 16).

To pipe the output to `more`, type `ls -la` *`directory_path`* `| more`, where *`directory_path`* is the directory for which you want to list the contents. The `|` symbol (which on the keyboard looks more like two vertical bars stacked on top of each other rather than just one solid line) tells `bash` that you want to use a pipe.

"Help!"

The *`man`* *page* system is the electronic manual for Linux (*`man`* is short for *man*ual), designed to provide users with a convenient reference to all the detailed command information. This information includes command prompt options, file formats, and program function usage.

The syntax for drawing a `man` page is `man <command name>`.

Don't know the command you're looking for or need basic information about using the `man` page system? Just type `man man` to get started. When you're finished reading the man page, press Q to exit.

Clearing the screen

The `clear` and `reset` commands are handy to know about when you're working in a shell. The `clear` command simply wipes the `bash` screen clean. Don't worry; it's not deleting any files or changing any settings — it's just tidying up so that you can start dumping new stuff to the screen again.

The `reset` command is a little more interesting. Suppose that you try listing a binary file to the screen with the `cat` command. After the computer finishes puking the result of executing the `cat` command on a binary file, you may get lucky and still be able to read your prompt. More likely, your prompt has been rendered into box characters of no special meaning, and typing on the keyboard gives you more of the same. To get back to normal, just type `reset` and press Enter. Note that it doesn't look like you're typing the word `reset`, but rest assured that the computer understands the series of characters and, after a couple seconds, should restore your shell environment to your native language.

Chapter 15

Gettin' Gooey with the GUIs

In This Chapter

- Adding applets to the panel
- Adding programs to the desktop
- Downloading and setting up themes
- Configuring the X Window System

The X Window System (or X) opens a world of possibilities. X is, in general, a set of applications that work together to provide a graphical interface. Think of these applications as the wireframe beneath your GUI, with GNOME and KDE (see Chapter 6) offering the pretty paper mâche coating. Some of these applications draw windows, some manage the look and feel, and others handle other aspects of the graphical world for you. All of them are configurable and even replaceable, which is enough to make the average user's eyes cross with way too many options!

GNOME and KDE are entirely creatures of convenience, offering integrated sets of window dressing so that you don't have to pick and choose your components. In this chapter, you get a chance to alter both KDE and GNOME's behavior to suit your own needs. For example, if you have a hard time reading text in those small command-prompt windows in the GUI, you can make both the windows and their fonts larger. You can change a wealth of other things, too, so read on and take a look.

If something goes terribly wrong in the GUI and you need to exit in a hurry, press Ctrl+Alt+Backspace. This key combination does one of two things. If you boot into the GUI, it collapses your GUI session and takes you to the GUI login prompt. However, if you boot to the command line, this key combination collapses the GUI immediately, taking you to the command line.

However, press Ctrl+Alt+Backspace only in an emergency. This key combination doesn't cleanly stop the programs involved. You end up with all kinds of bits and pieces of programs, files, and more on your system.

Changing GNOME's Look and Feel

Change is inevitable, except from a vending machine.

— Anonymous

The GNOME desktop environment has an amazing set of features for you to explore. Some of these customization features are nice and practical, and others are just plain fun. I tried to group the types of changes into related topics so that you can peruse them easily. In general (including in Fedora), you can find all the GNOME configuration options by going to the main menu's Preferences menu. Because Fedora is the only distribution covered in this book that uses GNOME by default, I focus on Fedora in this chapter.

How do ya like them applets?

Applets are a collection of miniprograms that do anything from display the time to show system status — some can even show the depressing trickle of your battery power running out if you're using a laptop. Sure, some of these miniprograms are more useful than others. Then again, everybody needs a bit of entertainment too, right?

Adding an applet icon to the panel

You can have fun sifting through to see what kinds of applets are available to you. To look through your options and perhaps add an applet to the panel (remember that the panel is the bar along the bottom of your screen), follow these steps:

1. **Right-click any free space on one of your panels and choose Add To Panel.**

   The Add To (Bottom or Top, accordingly) Panel dialog box appears, as shown in Figure 15-1.

   If you don't see an Add To Panel command, you're probably looking at the context menu for one of the applications on the panel. Try right-clicking elsewhere on the panel or closing some programs so that you can free up space amongst the minimized programs in the middle of your panel.

2. **Browse the available applets.**

3. **After you select the applet you want to add to your panel, click Add.**

   The applet is now on your panel.

If you then want to move the applet elsewhere on your panel, right-click it and choose Move from the shortcut menu. Then you can drag the applet around and click after you have it where you want to put it.

Figure 15-1: The GNOME and Fedora 3 Add To Bottom Panel dialog box.

Configuring an applet

After you have an applet placed and running, you may be able to play with configuration options. Some of these options enable you to change what information is displayed. Others have a variety of look-and-feel settings.

To check for which configuration and other options are available for your applet, follow these steps:

1. **Right-click the applet and examine the shortcut menu that appears.**

   This shortcut menu is different from applet to applet. The bottom portion is always the same: Remove From Panel and Move. Common entries for the top portion are Help and About. The rest of the items are either configuration options (see Step 2) or special applet features, such as the ability to copy the date from the Clock applet.

2. **Choose Preferences from the shortcut menu.**

   Not every applet has a Preferences dialog box. If this one does, the dialog box opens when you choose this option, and whichever configuration features this applet has are displayed.

3. **Alter the selections in the Preferences dialog box to customize this applet's behavior.**

   Now you get to have some fun. Make changes so that you can see what this applet can do — as you make your changes, they appear in the applet on your panel. Each applet has its own set of features, so I can't do a general walkthrough here. Just remember that you can always go back and change the settings or remove the applet from your panel later.

4. **Click Close to save your changes and close the dialog box.**

Ditching an applet

You have room for only so many applets. And, if you're like me, you probably don't want to have every bit of free space cluttered with icons. To remove an applet from the panel, simply right-click the applet you want to remove and choose Remove From Panel from the shortcut menu that appears. With nary a whimper, the applet vanishes from the panel.

Don't forget the programs

You may be looking at your panel and wondering whether you can make any changes to the programs listed there, like you can with applets. The good news is that you *can* change the programs on the bar! They fit in the same empty spaces that applets do. You can also add a program to your desktop itself, if you want.

Adding a program to the panel

If you have a program you end up using often, you can add it to your panel by following these steps:

1. **Click Applications in Fedora or (if you're using GNOME in another distribution) the distribution's Main Menu button and browse to the program you want to add to the bar.**

   Don't open the program. Just point to the menu item with your mouse pointer.

2. **Right-click the program and choose Add This Launcher To Panel.**

   An icon for this program appears on your panel.

After you have your program on the panel, you can run the program just by clicking its icon.

You can also add a *drawer* (menu button) to your panel for an entire menu. To do so:

1. **Open the main menu and browse to the submenu you want to add.**
2. **Enter that submenu.**

   For example, if you want to add a button for the Graphics menu to your panel, open the main menu, move your mouse to the Graphics menu, and then move your mouse to the right into the contents of the Graphics menu.

3. **Right-click to open the context menu.**
4. **Choose Entire Menu.**

5. **Choose either Add This As Drawer To Panel or Add This As Menu To Panel.**

   A drawer shows you its contents in icons only, while a menu looks more like the actual submenu from the main menu.

Removing a program from the panel

If you want to remove one of the programs on the panel, just right-click the icon you want to remove and choose Remove From Panel from the shortcut menu that appears. The icon vanishes from the panel. That's it!

Adding a program to the desktop

The panel has only so much room. Maybe you would rather have your program shortcuts lined up on the desktop as you do in Windows. To add a program to the desktop, follow these steps:

1. **Click the Main Menu button to open the GNOME main menu.**
2. **Browse to the submenu containing the program you want to add to the desktop.**
3. **Select the program you want to add to the desktop.**

   Don't open the program — just move your mouse pointer to it. For example, to add The GIMP, you move your mouse to the words *The GIMP* so that they're highlighted.

4. **Click and hold the mouse button on the program name and drag it to the desktop; then let go of the button.**

   Be sure to drag this item to the side (not up through the menu). A little piece-of-paper graphic follows your mouse pointer until you release the mouse button. After you do so, your new shortcut is added to the desktop.

If you're not happy with where a desktop icon is placed, click it and then drag it to a new location.

Removing a program from the desktop

To get rid of an icon you have on your desktop, right-click the icon and choose Move To Trash from the shortcut menu that appears.

Customizing KDE

Don't worry, you KDE users: You have plenty of options, too. You can customize your KDE setup in lots of ways, from the fun to the practical, so that you truly enjoy using it. As with GNOME, in fact, you can choose from far more features than I have room to cover in this chapter, so if you enjoy fiddling with the look and feel of your GUI, do some exploring on your own!

Applets keep fallin' on my head

Applets are miniprograms that do all sorts of things. An applet may display the time, show system status, or even offer a little frivolous fun. All kinds of applets are available out in the great big world of computer programming. A number of applets are included with your default KDE installation, though some of them are more useful than others.

Adding an applet icon to the panel

An interesting combination of applets is available in KDE, and you can easily add and remove these little gems from your KDE Panel as suits your needs. To add an applet to the panel (remember that the panel is the bar along the bottom of your screen) in KDE, follow these steps:

1. **Right-click a blank spot on the panel.**

   The panel's menu opens.

2. **Choose Add➪Applet.**

   You find yourself looking at the Applet submenu's contents.

3. **Choose the applet you want to add to the Panel.**

On a particularly crowded panel bar, you may have to use the right and left arrow bars at the panel's ends to see the applet. You may need to delete from the panel, in fact, any items you don't use, to ensure that everything can show up. (See the section "Removing an applet," later in this chapter.)

See those vertical bars between various panel entries? Hover your mouse pointer over them, and the pointer changes into a two-headed arrow. You can drag those vertical bars left and right to expand and contract various parts of your panel. You can also click the little arrows at the top to open menus related to the applets.

Configuring an applet

Some applets have options that let you customize how they behave. Others are more boring and just do the same old thing no matter what you would prefer. To check which configuration and other options are available for your applet, follow these steps:

1. **Right-click the applet and examine the shortcut menu that appears.**

   This shortcut menu is different from applet to applet. In fact, there doesn't seem to be any real consistency in the menu options! (And not every applet even has a shortcut menu.) Look for entries such as Preferences, Settings, or the word *Configure*.

2. **Choose the appropriate command from the shortcut menu.**

   If you see a Configure or Preferences dialog box, make your changes and click Apply to see how that affects your applet without closing the dialog box. You may see more than one configuration dialog box or submenu, as is the case for the KNewsTicker applet.

3. **Alter the selections in the dialog box to customize this applet's behavior.**

   Experiment as much as you want. Just remember that you can always go back and change the settings or remove the applet from your panel later.

4. **Close the dialog box.**

   In a Preferences dialog box, click OK to close the window. Settings dialog boxes typically have a button, aptly named Defaults, that enables you to restore your defaults.

Removing an applet

You have room for only so many applets. And, if you're like me, you probably don't want to have every bit of free space cluttered with icons. To remove an applet from the panel, follow these steps:

1. **Right-click the panel on an empty spot.**
2. **Choose Remove➪Applet.**

   The series of submenus opens, and you're finally looking at a list of the applets you now have on your panel.

3. **Choose the applet you want to remove from the panel.**

   The applet is no longer on your panel.

Adding programs to your panel

You can also add programs to your KDE Panel. To do so:

1. **Right-click on a blank spot on your panel.**
2. **From the shortcut menu, choose Add➪Application Button.**
3. **From the Application Button submenu, browse to the program you want to add and select it.**

   The program appears on the left or right of your panel, depending on where you have room. (You remove programs from the panel the same way that you remove applets.)

Cluttering the desktop with icons

KDE allows you to alter which applets and programs appear on your panel, and on your desktop. Managing these shortcuts is a simple operation after you understand how it works.

Adding a program to the desktop

The panel has only so much room. Maybe you would rather have your program shortcuts lined up on the desktop as you do in Windows. To add one of these shortcuts, follow these steps:

1. **Click the Main Menu button to open the KDE main menu.**
2. **Open the submenu containing the program for which you want to make a shortcut.**

   For example, if you want to add The GIMP, open the Graphics submenu.
3. **Choose the program for which you want to make a shortcut.**

   Don't open the program. For example, to add The GIMP, you move your mouse to the program and then click and hold the mouse button.
4. **Drag the program to the desktop.**

   A little graphic follows your mouse pointer until you release the mouse button, at which point you're asked whether you want to add the shortcut to the desktop but not remove it from the menu (Copy Here); add the shortcut to the desktop and remove it from the menu (Move Here); or make an obvious shortcut that looks more like a Windows shortcut (Link Here). Typically, you choose Link Here.

If you're not happy with where a desktop icon is placed, click it and then drag it to a new location.

Removing a program from the desktop

If you want to remove one of the programs from the desktop, just right-click the icon you want to remove and choose Delete or Move To Trash, depending on which option is available — if you move items into the trash, remember to empty the trash later. The icon vanishes from the panel or desktop. That's it!

Prettying Up Your Desktop with Themes

You may be familiar with the ability to install desktop themes under Microsoft Windows. A *theme* in the desktop world refers to color schemes, images, and

sounds applied to all portions of the desktop — window borders, fonts, icons, sound effects, and more — as part of a single, centralized entity. Many people are happy to find out that themes are available in the Linux world, too.

Many distributions offer collections of backgrounds you can download or that are already included. Chapter 12 includes pointers for the downloadable ones, and you can find the already installed ones usually by right-clicking on your desktop and choosing the option similar to Change Desktop Background.

Adding themes to GNOME

A large number of themes is available on the Internet for the GNOME desktop environment. To find and grab these themes for your own use, follow these steps:

1. **Point your Web browser to** `http://themes.freshmeat.net`**.**

   You're taken to the Themes Web site, where any number of GUI customization items is offered.

   If you're heavy into playing with customization, you can also check out `http://art.gnome.org`.

2. **Click GTK, which is part of the GNOME desktop environment.**

   This action brings you to the appropriate section, to ensure that you choose themes that work with your system.

3. **Select the GTK 2.X area.**

   Now you're in the section for the latest version of GNOME.

4. **Browse and choose the theme you want to try.**

   You can use the Sort Order drop-down list box to change the order in which the items are displayed. Keep your eye out for the requirements (sometimes called "dependencies") that go with the theme. Some themes require additional "engines" (software that runs behind the scenes), and you want to avoid them if you're uncomfortable with finding and adding software at this point. You're safe if you're looking for GTK themes and it mentions Metacity — that's part of the Fedora Core GNOME setup.

5. **After you have chosen your theme, click its name to go to the theme-specific page.**

   There, you can find any comments someone has about the theme.

6. **Scroll down if necessary and click the link under Tar/GZ or Tar/BZ2.**

Your browser asks for specifics on where you want to place the file. If you want to use this theme only for yourself, place it in your home directory or a subdirectory within your home. If you want to share the theme with others, place it in a directory that everyone can reach — you may need to make one and set its permissions appropriately.

7. **From the main menu, choose Preferences➪Theme.**

   This action opens the GNOME Theme Preferences dialog box, shown in Figure 15-2.

8. **Double-click your user's Home directory icon on your desktop.**

   The File Manager opens.

9. **Browse to where you stored the theme.**

10. **Make sure that the theme file is a `.tar.gz` file.**

    If not, you need to see Chapter 12 on how to convert this file to this format.

11. **Select the theme file and drag it into the left (Installer) pane of the Theme Preferences dialog box.**

    An installer dialog box opens.

12. **Click Install.**

    Your new theme is added to the themes list.

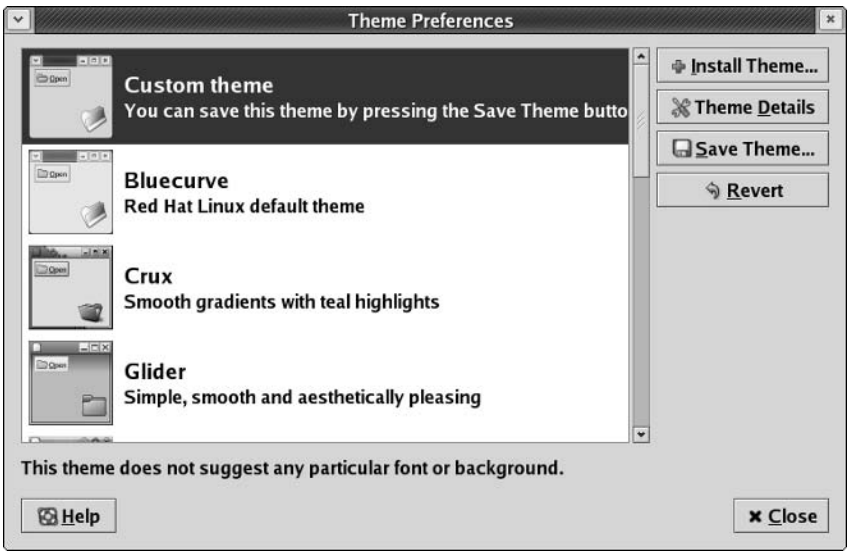


Figure 15-2: The GNOME Theme Preferences dialog box.

13. **Select your new theme in the listing.**

    Your desktop changes to match the theme.

14. **Click Close when you're finished, and the Theme Preferences dialog box closes.**

Adding themes to KDE

Just as with GNOME, many themes are available for the KDE desktop. Most of the distributions covered in this book are using KDE version 3.3, so I am going to focus on this version. If you are a Xandros 2.5 or Linspire 4.5 user, you are using KDE 3.1. Mandrake 10.1 folks are using KDE 3.2. However, Xandros will be updated to version 3 by the time this book is released, and Linspire will update as well soon thereafter. Plus, Linspire offers lots of themes through its Click and Run Warehouse, so see Chapter 12 for how to add them. If you have updated your Mandrake system as discussed in Chapter 12, you are also probably using KDE 3.3.

To find and add themes for KDE 3.3:

1. **Point your Web browser to** `www.kde-look.org`**.**
2. **Under Themes/Styles, click KDE>3.2.**
3. **Among the tabs on the top, click the choice that will sort the themes in the method you prefer.**

   For example, you might click Highest Rated in order to see the themes people like the most.

4. **Browse and click the name of the theme you want to try.**

   This action takes you to the theme's page. Here, you find information about the theme, perhaps instructions on how to install it (unfortunately. there doesn't seem to be a lot of consistency here), and more. If you are nervous or have been having trouble getting themes to install, make sure to look for a theme that lists KDE 3.3 specifically. Folks feeling more adventurous might choose one for the 3.2 series. Reading the user comments can also be helpful in telling you if the theme is easy or difficult to install.

5. **Scroll down to the Download link and click it.**

   This link is usually at the base of the initial description information. When you click, a file browser dialog box appears.

6. **Browse to where you want to save the file and click Save.**

   The file is saved into the location you chose.

7. **If the file ends in `.gz`, `.zip`, `.tar.gzip`, or `.tar.bz2`, uncompress the file.**

   (If you're not sure how to uncompress the file, see Chapter 12.)

   The file may instead end in `.kth` or `.ktheme`. In this case, you don't need to open it up, so skip to Step 11.

8. **If you had to uncompress the file, open a command line terminal.**

   If you don't know how to open a command line terminal, see Chapter 14.

9. **Use the `cd` command to change into the directory containing the files you extracted.**

10. **Put the theme files in their proper places:**

    - If installation instructions appear on the item's page, follow them now.
    - If no installation instructions appear and the files you created aren't `.kth` or `.ktheme` files, you should see an INSTALL or README file explaining what to do. Follow those instructions.
    - If you created a `.kth` or `.ktheme` file, continue to the next step.

11. **Open your KDE Control Center.**

    To do so in:

    - Fedora: From the main menu, choose Control Center➪Appearances & Themes➪Theme Manager.
    - Linspire: From the main menu, choose Settings➪Control Panel➪ Look & Feel➪Theme Manager.
    - Mandrake: From the main menu, choose System➪Configuration➪ Configure Your Desktop➪Look & Feel➪Theme Manager
    - SuSE: From the main menu, choose Control Center➪Appearances & Themes➪Theme Manager.
    - Xandros: From the main menu, choose Control Center➪Display➪ Background.

12. **If you see the theme you downloaded already there, select it and you're done! Otherwise, open your file browser (see Chapters 10 and 12) and browse to the directory you saved the theme into.**

13. **Drag the theme file onto the Control Center dialog box.**

    Your theme should now appear. Select it, and have fun trying it out!

You may find that you have to look in the various sections (Background, Colors, Window Decorations, Icons, and so on) to find all the pieces of the

theme. If your Theme Manager has a theme customization section on the bottom with buttons (like Fedora's), you may have to click in each of those to find your new theme's information.

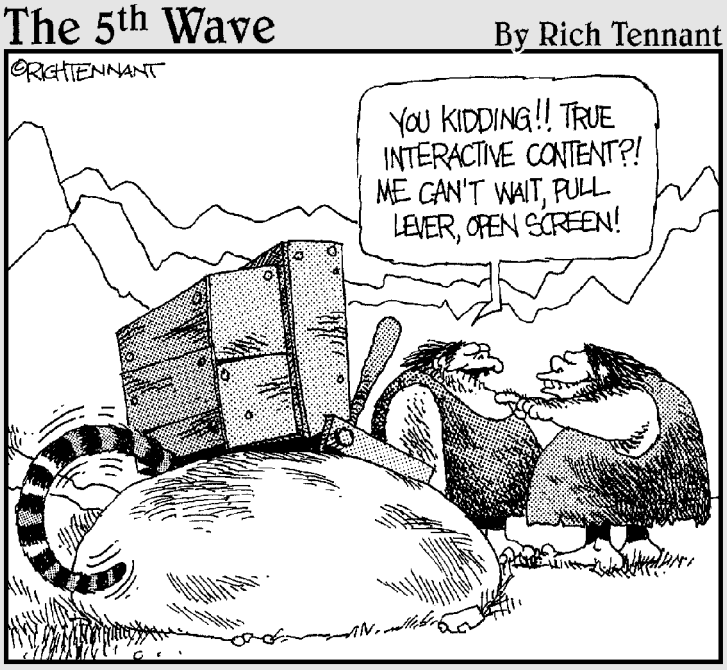
Tweaking the GUI's Innards

Behind GNOME and KDE lurks the X Window System, or "X." X provides the skeletal GUI structure and functionality. GNOME and KDE make use of this skeleton to provide you with a pleasant GUI environment. Whenever you configure hardware or other basic GUI features like resolution, you actually work with X, and not GNOME or KDE. In this section, I introduce you to the critical components of X and point you to some useful X configuration tools.

The `/etc/X11/XF86Config`, `/etc/X11/XF86Config-4`, or `/etc/X11/xorg.conf` file contains your X configuration. (All three files look the same inside.) Although this file is just a normal text file, the format is complicated and confusing. Rather than make you work with this file by hand, the various Linux distributions provide a number of tools. (See Chapter 20 for which tool comes with which distribution.)

If you really enjoy experimenting with GUIs and fiddling with them, you can do a number of things. Go to `www.linuxdoc.org` and read the various X Window System and XFree86-related HOWTO files. Some are quite technical, but some are a bit more friendly, and you may be surprised by just how much you can tweak the Linux GUI. You can also find `www.gnome.org` and `www.kde.org`, as well as dozens of other useful sites out there.

Part IV
Getting Things Done



In this part . . .

For many people, this part is the fun one! You find out how to edit files at the command line and in the GUI, including getting down and dirty with OpenOffice.org, the free office suite that rocks the Linux (and Windows, and OS X) world. You also get a bit crazy playing with multimedia. CDs, DVDs, audio files, movies, Internet radio . . . the sky's the limit when it comes to making your Linux machine a multimedia center.

Finally, for those who just can't leave Windows-only software and file formats behind, I cover how to add support for many of these items. I don't make the claim that everything Windows is supported under Linux, but you may be surprised at just how easy it is to find a way to use your Windows "stuff" (that's a high-level technical term, you know).

Chapter 16

Putting the X in Text

In This Chapter

- Viewing the contents of text files
- Manipulating text files in `nano`
- Editing text files with `Kate`
- Working with text files in `gedit`

From text editors to word processors, Linux offers a wide variety of options for working with words. In this chapter, I take a look at different ways to view the contents of a text file, using some simple text editors in both the non-GUI and GUI environments. In Chapter 17, I take a look at office suites for those who would rather do word-processing!

Viewing the Contents of a Text File

Almost all configuration files in Linux are text files. In addition, many pseudo-programs (called *shell scripts*), all HTML documentation, and many other items in your system are text files. Fortunately, if you just want to see what's in a text file and don't want to do anything to its contents, you don't have to use an editor or word processor. You can use three command-line commands to view text files: `cat`, `less`, and `more`. I would bet that you will grow to love them.

Yes, that first command is `cat`, and it's taken from the word *concatenate,* which means "to bring together end to end" — you can use the `cat` command on multiple text files to have their text joined, one file's contents directly after another's. Typically, you use this command in the Linux world in the format `cat` *`filename`,* where the contents of the file *`filename`* are displayed on the screen. For example, if you create the short text file `greetings` and then type `cat greetings`, you see the following:

```
$ cat greetings
These are the contents of the greetings file.
Meow!
$ _
```

Of course, if the file contains more than a screen's worth of information, `cat` spews it all out at one time like a big hairball, and all but the last screen of text scrolls off the screen. It's' a good thing that you have some other choices. The one you're likely to choose is `less`, which displays the contents of a file a full screen at a time. Then you press the spacebar to continue to the next screen. You can also use the arrow keys to move up and down one line at a time, if you want.

An alternative to `less` is `more`. The main difference between the two is that with `more`, you can move only forward through the file and see only a screen's worth of information at a time. You can't back up.

To use either `less` or `more`, the format is similar to the format used with the `cat` command: `less` *`filename`* or `more` *`filename`*. When you finish reading the document, press Q to exit.

Editing Text Files with nano

If you aren't using (or can't use) the GUI, then you have numerous text editors available to you. The most powerful of these are `vi` and `emacs`, which you'll hear many people go on about. However, both these programs require a learning curve. For beginners who want to just edit the dang file and move on, I recommend `nano` and `pico`. These two editors are very similar, and one or the other is typically included with most Linux distribution (but, unfortunately, not all). The "friendly" text editors included with the distributions discussed in this book are

- **Fedora:** `nano`
- **Knoppix:** None.
- **Linspire:** None; see Chapter 12 add one
- **Mandrake:** None; see Chapter 12 to add one (`jed` and `joe` are both available)
- **SuSE:** `pico`
- **Xandros:** `editor`, which has a menu of function keys at the bottom of its screen

To open a file in `nano`, type **nano *filename***, such as **nano file1**. This action opens the file in the `nano` editor, as shown in Figure 16-1.

You can then edit or type in that file as much as you need to.

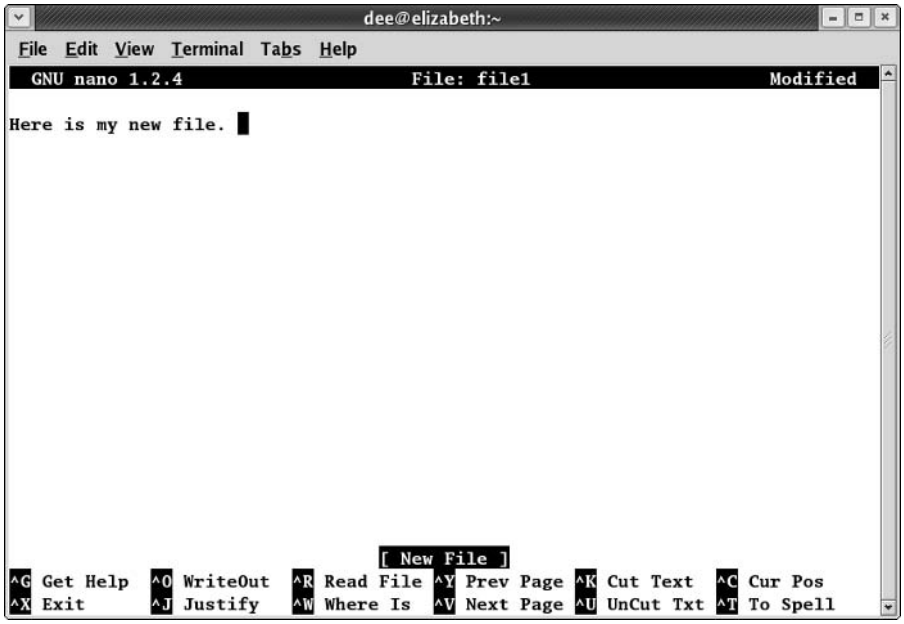


Figure 16-1: The file `file1` open in the `nano` editor in Fedora Core 3.

Saving your work as you go

To save your file's contents without closing it (so that you can keep working on it):

1. **Press Ctrl-O to Write Out.**

   A prompt appears toward the bottom of the screen, asking for the name of the file and offering the current name as the default option.

2. **If you want to use the same name, press Enter. If you want to change the name, make your changes and then press Enter.**

   The lower part of your screen now displays that it wrote (saved) a certain number of lines.

3. **Get back to work!**

Saving and moving on with your life

To save your file's contents and close it (because you're done working on it for now) — or to close the file and not save the changes — do the following:

1. **Press Ctrl-X to Exit.**

A prompt appears toward the bottom of the screen, asking whether it should save the *modified buffer*. This question is a fancy way of asking whether you want to save your changes.

2. **Press Y to save your changes or press N to not save them.**

   If you press Y, you're asked for the name of the file and offered the current name as the default option. If you press N, `nano` closed and exited, so you're finished with these steps.

3. **If you want to use the same name, press Enter. If you want to change the name, make your changes and then press Enter.**

   The `nano` editor closes, and your file is saved.

Going with gedit

You're not stuck with just command-prompt-based text editors in Linux. Lots of graphical options are available. In this section, I cover `gedit` because it is the default GUI text editor for Fedora, which is on the DVD included with this book. The default GUI editors for the full range of distributions covered are as follows:

- **Fedora:** Access `gedit` by choosing Accessories➪Text Editor (see Figure 16-2).
- **Knoppix:** Access KWrite or Kate by choosing Editors➪KWrite or Editors➪Kate.
- **Linspire:** Access KWrite by choosing Programs➪Business & Finance➪Text Editor, or KWrite in Programs➪Software Development➪Advanced Text Editor.
- **Mandrake:** Access Kate or KWrite by choosing More Applications➪Editors➪Kate or More Applications➪Editors➪KWrite.
- **SuSE:** Access Kate by choosing Utilities➪Editor.
- **Xandros:** Access KWrite (very similar to `gedit` and Kate) by choosing Applications➪Accessories➪Text Editor.

Entering and editing text in gedit

`gedit` is strictly a *text editor,* in that you use it to generate raw text, whereas a *word processor* creates marked-up text that can be opened only by programs that can read that word processor's file formatting. If you want to add bold, italics, underlines, or any other special features to your document, proceed to the next chapter.

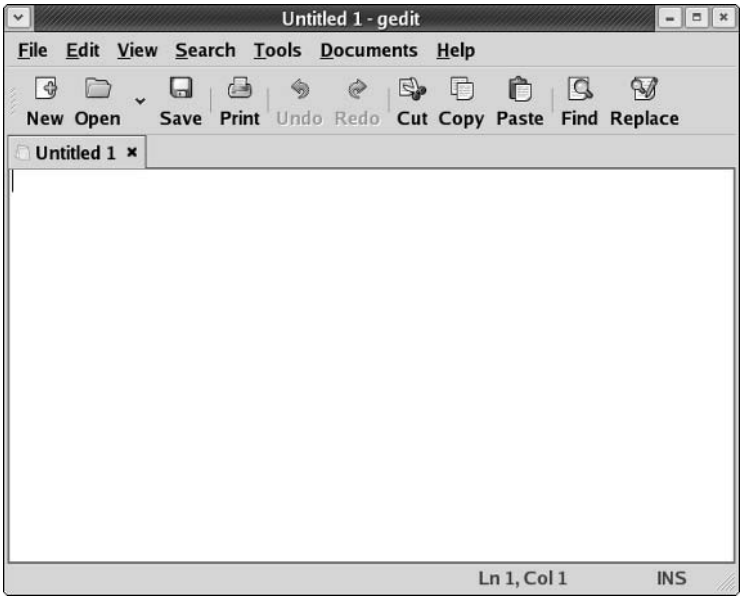


Figure 16-2: The `gedit` window with a blank file.

To enter text in `gedit`, just click within the big white space and start typing. You have access to the standard collection of editing tools, such as cut, paste, and copy. To use these, select the text you want to work with and then click the appropriate button on the `gedit` toolbar (or right-click and choose the appropriate command from the context menu).

The really interesting thing about this particular text editor is its plug-ins. To use these features, you need to follow these steps:

1. **Choose Edit➪Preferences in `gedit`.**

   This action opens the Preferences dialog box.

2. **Click the Plug-Ins tab.**

   The Plug-Ins tab's contents appear.

3. **Click an item you're interested in within the Plug-Ins tab.**

4. **Click the About Plugin button to get more information.**

   The information is contained within the small About window that appears.

5. **Click Close to get rid of the About window.**

6. **If you want to use this plug-in, click in its check box.**

   The plug-in is activated if a check appears in the check box.

7. **If the Configure Plug-In button becomes active for the plug-in you just selected, click the button to open the tool's plug-in configuration dialog box.**

   This dialog box will be different depending on which plug-in you're using.

8. **When you're finished with the individual plug-in's configuration, click OK to return to the Preferences dialog box.**
9. **If you want to examine more plug-ins, return to Step 3.**
10. **When you're finished selecting plug-ins, click Close to close the Preferences dialog box.**

You can now access the plug-ins from your `gedit` menus. Each one is placed in its appropriate location: for example, Change Case appears on the Edit menu.

Saving your work

As with most programs, you have two choices for saving your work. You can save your work and keep going or save it and then close the program. To just save the file and keep going, follow these steps:

1. **Click the Save button.**

   This button looks like a floppy disk. If you haven't ever saved this file, clicking it opens the Save As dialog box.

2. **Click the right-facing arrow toward the bottom left.**

   The filesystem browser opens.

3. **Browse through the directories in the left or right pane until you're in the directory where you want to save the file.**

   Double-click the name of a directory to enter it or click the `..` in the left pane's listing to move up a level in the directory tree.

4. **Type the file's name in the Selection text box.**
5. **Click OK to save the file.**

   The dialog box closes.

To close `gedit`, follow these steps:

1. **Choose File⇨Quit.**

   If you haven't saved this file since the last time you changed it, the Question dialog box appears.

2. **If you see the dialog box, click Save to save your work or click Don't Save to abandon it.**

   The program closes, unless you have more than one file open, in which case you see the Question dialog box for each file you have altered but not saved.

Taking a Quick Look at Kate

Kate (see Figure 16-3) is the default editor in KDE and works much the same way as `gedit` does. However, Kate is actually a bit fancier than `gedit`, offering features such as exporting to HTML (choose File➪Export), filtering various types of markup and coding to help spot errors (choose Tools➪Highlight Mode), and more.

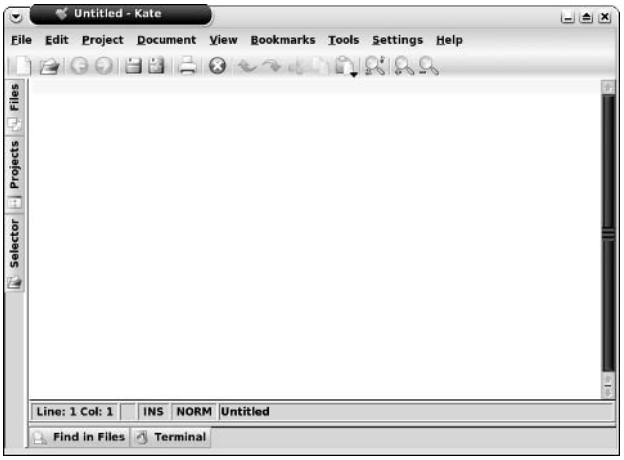


Figure 16-3: The Kate editor in SuSE 9.2.

Chapter 17

Word-Processing and More with OpenOffice.org

In This Chapter

- Installing the OpenOffice.org suite
- Word-processing with OpenOffice.org Writer
- "Spreadsheeting" with OpenOffice.org Calc
- Presenting with OpenOffice.org Impress
- Drawing with OpenOffice.org Draw
- Formulating with OpenOffice.org Math
- Configuring printing for the OpenOffice.org suite

Words fly, writing remains.

— Spanish proverb, from *Dictionary of Proverbs,* by Delfín Carbonell Basset

These days, just about everyone who has a computer has at least one office suite at their fingertips. If they're Microsoft Windows users, this suite is probably Microsoft Office, although it may be another worthy contender, such as Corel WordPerfect Office. In Linux, typically the suite is OpenOffice.org. This suite comes with Calc (a spreadsheet), Draw (diagrams and figures), Impress (for presentations), Math (a word processor for writing mathematical formulas), and Writer (for word-processing).

After you figure out how to use one of the programs in this suite, you may be happy to find that the others are designed to look and work in very similar ways. You can even open and save files in Microsoft Office format, if you need to share them with people using it — and you can edit the Office files people send you, too.

That's enough *about* OpenOffice.org. In this chapter, you can *actually use* it!

Other office suites available for Linux users are the OpenOffice.org relative StarOffice (`www.sun.com/staroffice`), Applixware Office (`www.vistasource.com/products`), KOffice (`www.koffice.org`), and GNOME Office (`http://www.gnome.org/gnome-office/`).

Word-Processing with OpenOffice.Org Writer

Word processors are almost required equipment these days. Kids use them to write letters to their grandparents. Grandparents use them to write letters to their grandkids. Whether you're working on the great American novel or a school book report, OpenOffice.org Writer has all the best features you'd expect to find these days in a word processor.

Starting it up

To start OpenOffice.org Writer in the distributions covered in this book, do the following:

- **Fedora Core:** Choose Applications➪Office➪OpenOffice.org Writer. Or you can click the OpenOffice.org Writer button on your upper panel.
- **Knoppix:** From the main menu, choose ➪Office➪OpenOffice.org Writer.
- **Linspire:** From the main menu, choose ➪Programs➪Business & Finance➪OpenOffice.org 1.1.0➪OpenOffice Writer.
- **Mandrake:** From the main menu, choose Office➪Wordprocessors➪OpenOffice.org Writer.
- **SuSE:** From the main menu, choose Office➪Word processor.
- **Xandros:** Choose Launch➪Applications➪OpenOffice.org➪Word Processor. Xandros users who purchased the product also have the option to install StarOffice through Xandros Networks (see Chapter 12), which is the commercial version of OpenOffice and contains additional fonts, templates, and more.

When you first open OpenOffice.org Writer, you may see a Paragraph Styles dialog box. Click the X in the upper-right corner to close this box and to get it out of the way for now.

Taking a tour of OpenOffice.org Writer

Before you proceed, take a look at the GUI layout shown in Figure 17-1.

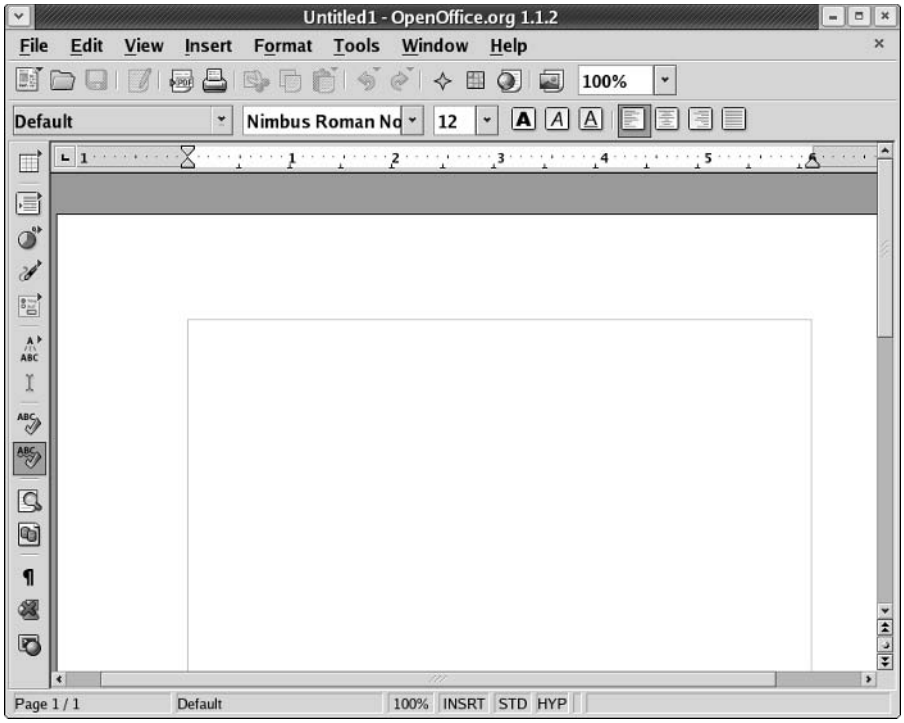


Figure 17-1: The Open Office.org Writer layout.

Main toolbar

Along the left side of the window is the main toolbar. Each icon in this series represents a different functionality. If a button is *extensible* (it has a little arrow on it), you can click it to open a tiny dialog box containing the options therein. Each icon is described in Table 17-1; for an example of what you see when you click an extensible button, see Figure 17-2. If you determine that you want to remove this toolbar, choose View➪Toolbars➪Main Toolbar.

Figure 17-2: The OpenOffice.org Writer's Show Form Functions button on the main toolbar, expanded.

Table 17-1 The OpenOffice.org Writer Main Toolbar, from Top to Bottom

Button	*What You Can Do*	*Extensible?*
Insert	Place an element (a table, another document, or a picture, for example) at the cursor's current location.	Yes
Insert Fields	Place a text element (current date, subject, or author's name, for example) at the cursor's current location.	Yes
Insert Object	Place an object (a chart, a mathematical formula, or an applet, for example) at the cursor's current location.	Yes
Show Draw Functions	Access the many OpenOffice.org drawing utilities.	Yes
Show Form Functions	Build forms with their respective special features (text boxes, radio buttons, and more).	Yes
Edit AutoText	Adjust the various settings for commonly used phrases to recall at the click of a button.	Yes
Direct Cursor On/Off	Add or remove special functionality that automatically formats text and objects according to where you click on the page (clicking in the middle centers the item, for example).	No
Spellcheck	Run the spell checker on your entire document or the selected text.	No
AutoSpellcheck On/Off	Activate or turn off the automatic spell checker feature.	No
Find On/Off	Open or close the Find and Replace dialog box.	No
Data Sources	Open or close the Data Sources dialog box, which lets you access databases previously specified by using the dialog box accessed by choosing Tools_Data Sources.	No
Nonprinting Characters On/Off	Show all spaces, returns at the ends of paragraphs, and other characters that you don't normally see in your documents.	No
Graphics On/Off	Show embedded images, or just show placeholders so that you can see where they are without seeing the images.	No
Online Layout	Tell OpenOffice.org Writer to show your document as a Web page.	No

Menu bar

Along the top of the window is the menu bar, something you should be used to if you typically work in Microsoft Windows. OpenOffice.org Writer has all the features you'd expect from a modern word processor. It has too many menu options to cover in depth, so I give you instead a (nonexhaustive) summary of what you find on each major menu:

- **File:** The usual Open, Save, Save As, Print, and Print Preview (under the term Page Preview) commands, along with a set of wizards (under the term AutoPilot) plus the ability to send documents through e-mail, create templates, and create Web pages
- **Edit:** The usual Select All and Find commands, along with change tracking, document merging, and document comparing
- **View:** The usual Zoom functions and toolbars, along with the abilities to show or hide formatting characters, to see what the document would look like as a Web page, and to access your database information
- **Insert:** The usual page breaks and special characters, along with indexes, tables, bookmarks, headers, footers, and cross-references
- **Format:** The usual character, paragraph, and page settings, along with styles, autoformatting capabilities, and columns
- **Tools:** The usual spell-checking and thesaurus entries, in addition to hyphenation, autocorrection, an image gallery, and a bibliography database

These menus have more features than what is listed here. Go through and take a look; you may find a new favorite feature in there somewhere.

Function bar

Directly below the menu bar in a default setup is the function bar, which you can remove at any time by using the View menu. This series of icons allows you single-click access to the most commonly used File and Edit features, among others. Table 17-2 lays out, from left to right, what you find on the default Function bar. The extensible items can all be opened to show a further set of options.

Table 17-2 The OpenOffice.org Writer Function Bar, from Left to Right

Button or Item	*What You Can Do*	*Extensible?*
New	Open new documents of various types.	Yes
Open File	Open an existing file for reading or editing.	No

(continued)

Table 17-2 *(continued)*

Button or Item	*What You Can Do*	*Extensible?*
Save Document	Save the current document. If you haven't saved this document before, the Save As dialog box opens.	No
Edit File	Edit the displayed Web page.	No
Export Directly as PDF	Opens a Save As dialog box with PDF selected as the file type.	No
Print File Directly	Send a file to the default printer.	No
Cut	Remove the selected text from the document and save it in memory.	No
Copy	Make a copy of the selected document text and save it in memory.	No
Paste	Place the text from memory into the document at the cursor's current location.	No
Undo	Undo the last change you made to the document.	Yes
Redo	Reinstate the last change to the document after using Undo to cancel it.	Yes
Navigator On/Off	Open or close the Navigator window, which allows you to jump to specific features within your document.	No
Stylist On/Off	Open or close the Paragraph Styles window, which allows you to select the particular style to apply to selected text.	No
Hyperlink Dialog	Open or close a dialog box that you can use to build complex hyperlinks.	No
Gallery	Open or close a dialog box that provides access to clip art.	No
Zoom	Alter how large the document shows on your screen.	No

Object bar

The object bar is directly below the function bar in a default OpenOffice.org setup. As usual, you can remove the object bar at any time by using the View menu. This series of icons allows you to click buttons and expand drop-down list boxes that represent standard word-processing functions, such as styles, fonts, font sizes, and formatting instructions. Most features on this bar are identical to what you see in most modern word processors. The button for paragraph background formatting is the only one that's particularly unusual.

This toolbar actually changes depending on what you're doing. If your cursor is within a table, for example, then the object bar contains useful buttons for working with tables.

Ruler

Directly below the object bar in a default OpenOffice.org setup is the ruler. All modern word processors offer this item, which marks out the margins and tabs, for example, of your document in the measuring system of your choice. To change which system you want to use, right-click the ruler to open the Measurements pop-up dialog box.

Your document

Oh, yeah — that big, blocked-off white space takes up most of the window. That's where you work on your documents! Just click in there and start typing. You can also access a Formatting shortcut menu by right-clicking in the document section.

OpenOffice.org Writer supports the following file formats (and more): its own "text" format that it uses in common with StarWriter (.SXW), Microsoft Word 95, 6.0, 97, 2000, and XP (.DOC), Rich Text Format (.RTF), Text (.TXT), and Web Page (.HTML).

Spreadsheets with OpenOffice.Org Calc

Some people like to balance their checkbooks by hand. When I first graduated from a university, I decided that it was time to get hold of my finances, and a spreadsheet was the way to do it. These days, I use spreadsheets to keep track of my "time card" when I'm doing consulting or contract work, help me manage project teams, and complete other tasks. I'm sure that you have your favorite uses for spreadsheets. The following sections take a look at OpenOffice.org Calc so that you can get to work.

Starting it up

To start OpenOffice.org Calc in the distributions I cover in this book, do the following:

- **Fedora Core:** Choose Applications➪Office➪OpenOffice.org Calc. Or you can click the OpenOffice.org Calc button in the lower panel.
- **Knoppix:** From the main menu, choose Office➪OpenOffice.org➪Open Office.org Calc.
- **Linspire:** From the main menu, choose Programs➪Business & Finance➪ OpenOffice.org 1.1.0➪OpenOffice Calc.

- **Mandrake:** From the main menu, choose Office➪Spreadsheets➪ OpenOffice.org Calc.
- **SuSE:** From the main menu, choose Office➪Spreadsheet.
- **Xandros:** Choose Launch➪OpenOffice.org➪ Spreadsheet.

Taking a tour of OpenOffice.org Calc

Much of what you see in OpenOffice.org Calc should look familiar, between looking through OpenOffice.org Writer and other spreadsheet programs you have used. Take a look at the GUI layout shown in Figure 17-3.

Main toolbar

Along the left side of the window is the main toolbar, which you can remove at any time by choosing View➪Toolbars➪Main Toolbar. Each icon in this series represents a different functionality. Just as with OpenOffice.org Writer, if a button is *extensible* (it has a little arrow on it), you can click it to open a dialog box containing the options contained within. Each icon is described in Table 17-3.

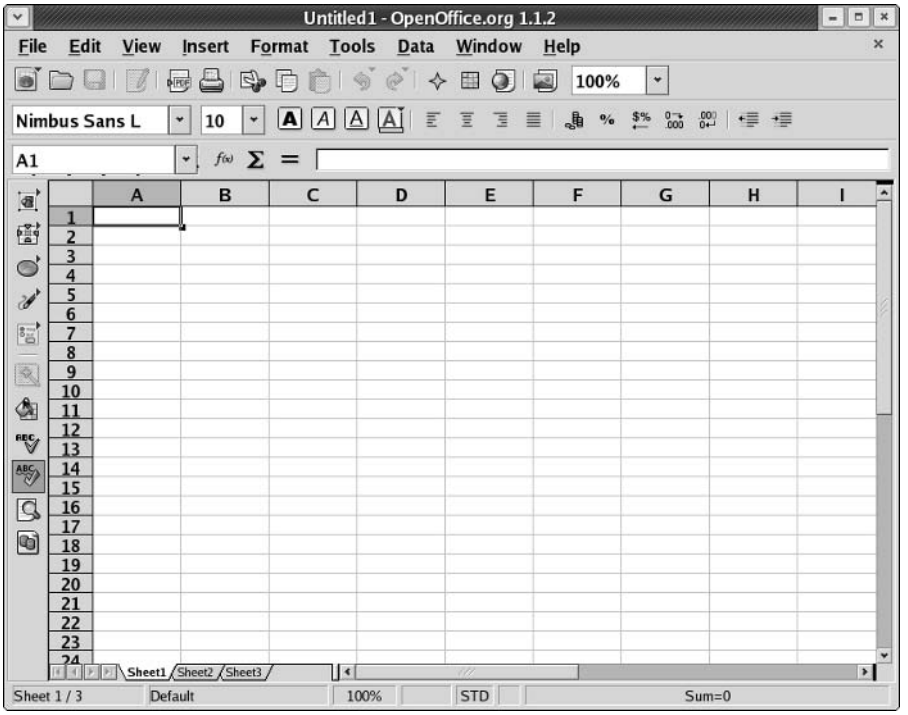


Figure 17-3: The OpenOffice.org Calc layout.

Table 17-3 The OpenOffice.org Calc Main Toolbar, from Top to Bottom

Button	*What You Can Do*	*Extensible?*
Insert	Place an element (a table, another document, or a picture, for example) at the cursor's current location.	Yes
Insert Cells	Place a cell (or column or row) at the cursor's current location.	Yes
Insert Object	Place an object (a chart, a mathematical formula, or an applet, for example) at the cursor's current location.	Yes
Show Draw Functions	Access the many OpenOffice.org drawing utilities.	Yes
Show Form Functions	Build forms with their respective special features (text boxes, radio buttons, and more).	Yes
AutoFormat	Quickly format a collection of cells in one of a variety of ways.	No
Choose Themes	Quickly assign a color-coordinated look to a sheet.	No
Spellcheck	Run the spell-checker on your entire document or the selected text.	No
AutoSpellcheck On/Off	Activate or turn off the automatic spell-check feature.	No
Find On/Off	Open or close the Find and Replace dialog box.	No
Data Sources	Open or close the Data Sources dialog box, which brings up the same dialog box as the Tools➪Data Sources menu selections.	No

Menu bar

Along the top of the window is the menu bar, a standard in the GUI world no matter which operating system you're using. OpenOffice.org Calc has all the features you would expect from a modern spreadsheet system. It has too many menu options to cover in depth, so, instead, here's a (nonexhaustive) summary of what you find on each menu:

- **File:** The usual Open, Save, Save As, Print, and Print Preview (under the term Page Preview) commands, along with a set of wizards (under the term AutoPilot) plus the ability to send documents through e-mail, create templates, and create Web pages

- **Edit:** The usual Select All and Find commands, along with change tracking, headers and footers, and plug-in loading
- **View:** The usual Zoom functions and toolbars, along with the options for showing or hiding column and row headers and accessing database information
- **Insert:** The usual page breaks and special characters, along with cells, rows, functions, and external data
- **Format:** The usual cell and row formatting, cell merging, and page settings, along with conditional formatting
- **Tools:** The usual spell-checking and thesaurus entries, in addition to hyphenation, autocorrection features, an image gallery, and a bibliography database
- **Data:** The usual data selection, sorting, and grouping routines in one easy place for quick access.

These menus have more features than those listed here. Go through and take a look; you may find a new favorite feature in there somewhere.

Function bar

Directly below the menu bar in a default setup is the function bar, which you can remove at any time by using the View menu. This series of icons allows you single-click access to the most commonly used File and Edit features, among others. The function bar in OpenOffice.org Calc is identical to that shown in Table 17-2 for OpenOffice.org Writer.

Object bar

The object bar is directly below the function bar in a default OpenOffice.org setup. As usual, you can remove the object bar at any time by using the View menu. This series of icons allows you to click buttons and expand drop-down list boxes that represent standard spreadsheet functions, such as styles, fonts, font sizes, and number formatting instructions. Most features on this bar are identical to what you see in most modern spreadsheets.

Formula bar

Directly below the object bar in a default OpenOffice.org Calc setup is the Formula bar. Table 17-4 lays out what you find in this short collection of entries. This bar actually changes depending on what you're doing, offering you buttons for particular tasks, so don't panic if you look here and this table doesn't match what you see on your own Formula bar.

Table 17-4 The OpenOffice.org Calc Formula Bar, from Left to Right

Button	*What You Can Do*
Sheet Area	Shows what row and column you're in. Type the coordinates and press Enter to jump directly to a cell.
AutoPilot: Functions	Click to open the AutoPilot: Functions dialog box and browse to find the particular spreadsheet function you're looking for.
Sum	Click to start a SUM (addition) function in the Input Line.
Function	Click to place an = in the Input Line to signal that you're about to enter a function.
Input Line	Assign values or enter functions to fill a spreadsheet cell.

Your document

The document area is where you work on your spreadsheet. Just pick a cell and start typing. You can also access a Formatting shortcut menu by right-clicking in the document section.

OpenOffice.org Calc supports the following file formats (and more): its own spreadsheet format (.SXC); Data Interchange Format (.DIF); dBASE (.DBF); Microsoft Excel 95, 5.0, 97, 2000, and XP (.DOC); text-based comma-separated values (.CSV), Symbolic Link (SYLK), and Web Page (.HTML).

Presentations with OpenOffice.Org Impress

Most people would rather eat glass than speak in front of a group of people. Still, if you have to, you may as well have some cool presentation software to back you up. This program is what I use when I speak at conferences. (I use it even when my clients want me to send in my presentation in Microsoft PowerPoint format. Shh! Don't tell — they don't know the difference!) Give OpenOffice.org Impress a chance to impress you.

Starting it up

To start OpenOffice.org Impress in the distributions I cover in this book, do the following:

- **Fedora Core:** Choose Applications➪Office➪OpenOffice.org Impress. Or, you can click the OpenOffice.org Impress button on your lower panel.

- **Knoppix:** From the main menu, choose Office➪OpenOffice.org➪ OpenOffice.org Impress.
- **Linspire:** From the main menu, choose Programs➪Business & Finance➪ OpenOffice.org 1.1.0➪OpenOffice Impress.
- **Mandrake:** From the main menu, choose Office➪Presentations➪ OpenOffice.org Impress.
- **SuSE:** From the main menu, choose Office➪Presentation.
- **Xandros:** Choose Launch➪Applications➪OpenOffice.org➪Presentation.

Using the AutoPilot Presentation Wizard

When you open OpenOffice.org Impress, the first thing that launches is the AutoPilot Presentation wizard (see Figure 17-4), which you can also open later manually by choosing File➪AutoPilot. If you don't want this wizard to show up the next time you open OpenOffice.org Impress, then click the Do Not Show This Dialog Again box.

To use this wizard, follow these steps:

1. **Leave the Empty Presentation option selected (unless you have a template you need to work from) and click Next.**

   Dialog 2 appears.

Figure 17-4: The Open Office.org AutoPilot Presentation wizard.

2. **If you want to select one of the default slide backgrounds that come with OpenOffice.org Impress, you can do so by looking to the Select a slide design drop-down list box, choosing Presentation Backgrounds, and then clicking the various options to see what they look like to the right of the dialog box.**

   By default, there aren't many background templates. This is one area where Sun's StarOffice offers added value.

3. **If you want to select a presentation (content) layout template that was designed specifically for the template you chose in this dialog box's screen 1, you can do so by looking to the Select A Slide Design drop-down list box, choosing Presentation(s), and then selecting the presentation type you want to use.**

   Again, you find limited options here by default.

4. **If you want your presentation ultimately to appear on something other than a computer screen, adjust the Select An Output medium to match its intended setting.**

   Your choices are Screen, Overhead Sheet, Slide, and Paper.

5. **Click Next to proceed.**

   Dialog 3 appears.

6. **Under Select a slide transition, experiment with the various options in the Effect and Speed drop-down list boxes to narrow down how you want to move from one slide to another.**

   OpenOffice.org Impress animates these transitions for you as long as the Preview box is checked.

7. **If you want to navigate manually from one slide to the next (the Default option) while you give your presentation, skip to Step 10. If you want to have your presentation advance automatically, click the Automatic option.**

8. **In Duration Of Page, set how long you want each slide to stay up.**

9. **In Duration Of Pause, set how long of a blank gap you want to have between slides.**

   If you have Show Logo checked, the OpenOffice.org logo appears during the blank pauses.

10. **After you have your settings selected, click Create to proceed.**

    OpenOffice.org Impress opens, as shown in Figure 17-5. You may find it useful to click the X in the upper right of the Modify Slide dialog box so that you can actually see the application for now!

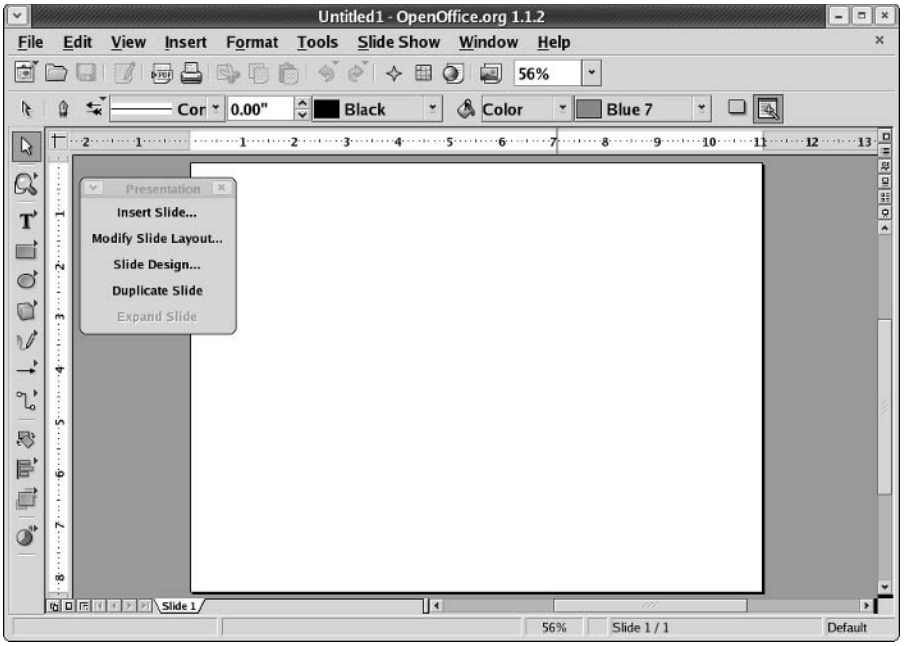


Figure 17-5: The Open Office.org Impress default look.

Taking a tour of OpenOffice.org Impress

Before you proceed, take a look at the GUI layout shown in Figure 17-5. The little Presentation dialog box may look like clutter to some, but I personally find it helpful as I'm creating and editing presentations. If you don't need it, just click the X in the upper right corner of the dialog box to get rid of it. You can bring it back at any time by choosing View➪Toolbars➪Presentation.

Main toolbar

Along the left side of the window is the main toolbar, which you can remove at any time by choosing View➪Toolbars➪Main Toolbar. Each icon in this series represents a different functionality. If a button is *extensible* (has a little arrow on it), you can click it to open a dialog box and see the options contained within. Each icon is described in Table 17-5. As you can see, this main toolbar is significantly different from the other OpenOffice.org programs because of the different needs you have in this context.

Table 17-5 The OpenOffice.org Impress Main Toolbar, from Top to Bottom

Button	*What You Can Do*	*Extensible?*
Select	Set the mouse pointer to select a particular element or section of a slide.	No
Zoom	Use a set of options that let you zoom in and out on the slide.	Yes
Text	Use a variety of methods for entering text on a slide.	Yes
Rectangle	Easily draw various forms of rectangles.	Yes
Ellipse	Easily draw various forms of ellipses.	Yes
3D Objects	Easily draw spheres, cubes, and more.	Yes
Curve	Easily draw curvy lines and even freeform.	Yes
Lines and Arrows	Use a selection of connector lines and arrows.	Yes
Connector	Use another set of connector symbols and lines.	Yes
Rotate	Rotate a selected object on a specific axis.	No
Alignment	Shift the selected object to a specific alignment on the page.	Yes
Arrange	Move objects higher or lower in the stack.	Yes
Insert	Insert items, such as graphs.	Yes

Menu bar

Along the top of the window is the menu bar. OpenOffice.org Impress has the many features you'd expect from a modern presentation package. It has too many menu options to cover in depth, so I give you instead a (nonexhaustive) summary of what you find on each menu:

- **File:** The usual Open, Save, Save As, Print, and Print Preview commands, along with a set of wizards (under the term AutoPilot) plus the ability to send documents through e-mail and create templates
- **Edit:** The usual Select All and Find commands, along with the ability to quickly duplicate a slide
- **View:** The usual Zoom functions and toolbars, along with the ability to select whether you're looking at just slides, notes, or another section
- **Insert:** The usual new slide, along with charts, frames, graphics, and spreadsheets

- **Format:** The usual text formatting features, along with layout, graphics, and style formatting
- **Tools:** The usual spell-checking feature, in addition to hyphenation, autocorrection, an image gallery, and a bibliography database
- **Slide Show:** The usual slide show controller menu

These menus have more features than those listed here. Don't forget to do some exploring on your own.

Function bar

Directly below the menu bar in a default setup is the function bar, which you can remove at any time by using the View menu. This series of icons allows you single-click access to the most commonly used File and Edit features, among others. The Function bar in OpenOffice.org Impress is the same as that in OpenOffice.org Writer, shown earlier in Table 17-2.

Object bar

The object bar is directly below the function bar in a default OpenOffice.org setup. As usual, you can remove the object bar at any time by using the View menu. This series of icons allows you to click buttons and expand drop-down list boxes that represent standard presentation-software functions, such as arrow styles, colors, line styles, and other formatting instructions. Most features on this bar are identical to what you see in most modern presentation programs.

View switchers

Along the top of your right-hand scrollbar, and along the left of your bottom scrollbar, you find a series of tiny buttons. Each button represents a different View available in OpenOffice.org Impress, and you can use these buttons to easily switch between various views. Table 17-6 outlines the available views and what you find in them.

Table 17-6 Available OpenOffice.org Impress Views

View	*What You Find*
Drawing	Individual slide view in which you can add art to your slide.
Handout	Four slides per page, as you might print it for handouts.
Layer	Allows you to switch between various slide layers. By default, your choices are the Default (top) layer and the Background Objects layer where you can create and edit backgrounds without altering your slide content.
Master	Individual slide view in which you can apply master formatting that will apply to all slides.

View	What You Find
Notes	Individual slide view in which you can see a small version of the slide plus your notes about that slide.
Outline	All-slides view with the slides listed in order for easy stepping through. Along the side, the slides are shown in thumbnail mode in a separate window as you navigate.
Slide	Right column: All-slides view with as many slides packed in as possible in columns and rows.
Bottom row:	Allows you to use the views on the right.

Ruler

Directly below the Object bar (and to the right of the main toolbar) is your pair of rulers. These items mark out margins and tabs,. To change measuring systems, right-click the appropriate ruler and select what you want to use.

Your document

Oh, yeah — that big white space takes up most of the window. That's where you work on your slides! Just click there and start typing. You can also access a formatting shortctut menu by right-clicking in the document section and choosing Slide➪Page Setup.

OpenOffice.org Impress supports the following file formats (and more): its own presentation format (.SXI), and Microsoft PowerPoint 97, 2000, and XP (.PPT or .PPS).

Fine Art with OpenOffice.Org Draw

Whether you're an aspiring graphic artist or just need a tool that lets you generate simple graphics for use on their own, in a presentation, or elsewhere, OpenOffice.org Draw provides a host of drawing functions. If nothing else, it's a whole lot of fun to play with! Not everything in life has to be practical.

Starting it up

To start OpenOffice.org Draw in the distributions I cover in this book, do the following:

- **Fedora Core:** Choose Applications➪Office➪OpenOffice.org Draw.
- **Knoppix:** From the main menu, choose Office➪OpenOffice.org➪ OpenOffice.org Draw.
- **Linspire:** From the main menu, choose Programs➪Business & Finance➪OpenOffice.org 1.1.0➪OpenOffice Draw.
- **Mandrake:** From the main menu, choose Office➪Drawing➪ OpenOffice.org Draw.
- **SuSE:** From the main menu, choose Graphics➪Vector Drawing.
- **Xandros:** Choose Launch➪Applications➪OpenOffice.org➪ Drawing Editor.

Taking a tour of OpenOffice.org Draw

Before you proceed, take a look at the GUI layout shown in Figure 17-6.

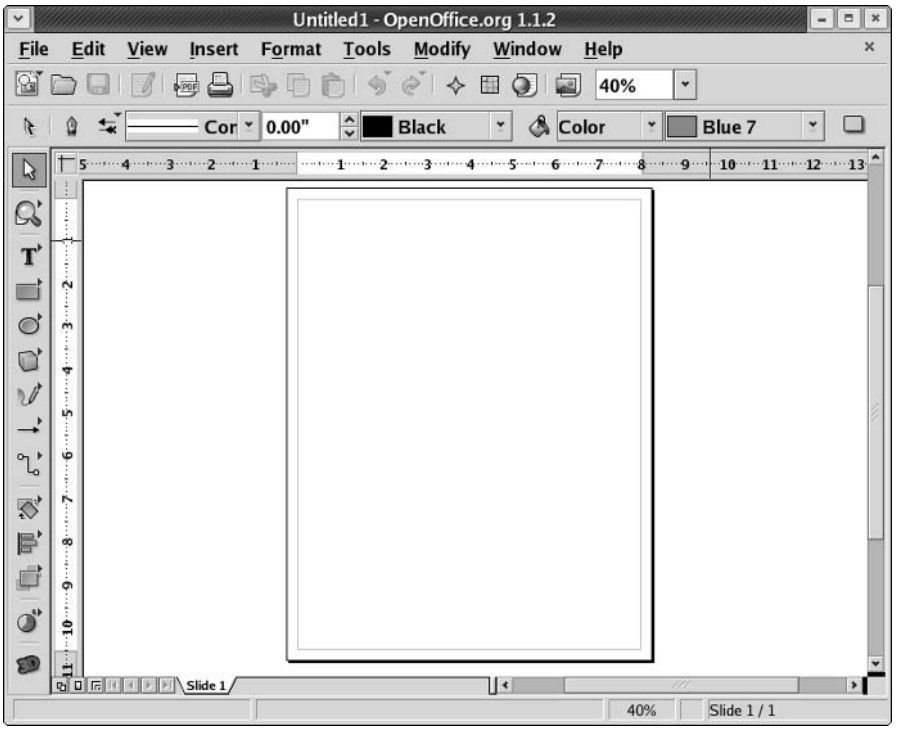


Figure 17-6: The OpenOffice.org Draw layout.

Main toolbar

Along the left side of the window is the main toolbar, which you can remove at any time by choosing View➪Toolbars➪Main Toolbar. Each icon in this series represents a different functionality. If a button is *extensible* (has a little arrow on it), you can click on it to open a dialog box with the options contained within. Each icon is described in Table 17-7. As you can see, this main toolbar is more similar to that in OpenOffice.org Impress than to the one in OpenOffice.org Writer.

Table 17-7 The OpenOffice.org Draw Main Toolbar, from Top to Bottom

Button	*What You Can Do*	*Extensible?*
Select	Set the mouse pointer to select a particular element or section of a slide.	No
Zoom	Use a set of options that let you zoom in and out on the slide.	Yes
Text	Use a variety of methods for entering text onto a slide.	Yes
Rectangle	Easily draw various forms of rectangles.	Yes
Ellipse	Easily draw various forms of ellipses.	Yes
3D Objects	Easily draw spheres, cubes, and more.	Yes
Curve	Easily draw curvy lines and even freeform.	Yes
Lines and Arrows	Use a selection of connector lines and arrows.	Yes
Connector	Use another set of connector symbols and lines.	Yes
Effects	Open the Special Effects dialog box to rotate, flip, and otherwise manipulate your images.	Yes
Alignment	Shift the selected object to a specific alignment on the page.	Yes
Arrange	Move objects higher or lower in the stack.	Yes
Insert	Insert items, such as graphs.	Yes
3D Controller	Open the 3D Effects dialog box.	No

Menu bar

Along the top of the window is the usual menu bar. OpenOffice.org Draw is a typical "vector" graphics program, meaning that it relies on lines rather than

dots or other techniques. See Chapter 18 for discussion of the software used for editing photographs and other heavy-detail work.

OpenOffice.org Draw has too many menu options to cover in depth, so I give you instead a (nonexhaustive) summary of what you find on each menu:

- **File:** The usual Open, Save, Save As, Print, and Export commands, along with a set of wizards (under the term AutoPilot) plus the ability to send documents through e-mail and create templates
- **Edit:** The usual Find and Replace, Image Map, and other such editing commands
- **View:** The usual Zoom functions and toolbars, along with the ability to select the display quality and place the program in Preview mode
- **Insert:** The usual charts, frames, graphics, and spreadsheets, along with scanning functions
- **Format:** The usual brush and graphics formatting, along with layers and style formatting
- **Tools:** The usual spell-checking, as well as hyphenation, autocorrection, an image gallery, and an eyedropper for grabbing colors
- **Modify:** Various options for altering the appearance of an object.

These menus have more features those listed here. Go through and take a look; you may find a new favorite feature in there somewhere.

Function bar

Directly below the menu bar in a default setup is the function bar, which you can remove at any time by using the View menu. This series of icons allows you single-click access to the most commonly used File and Edit features, among others. The function bar in OpenOffice.org Draw is identical to that in the other OpenOffice.org applications (refer to Table 17-2).

Object bar

The object bar is directly below the function bar in a default OpenOffice.org setup. As usual, you can remove the object bar at any time by using the View menu. This series of icons allows you to click buttons and expand drop-down list boxes that represent standard presentation software functions, such as arrow styles, colors, line styles, and other formatting instructions. This one is identical to the one you found in OpenOffice.org Impress.

Ruler

Directly below the object bar (and to the right of the main toolbar) in a default OpenOffice.org setup are the rulers. These items mark out the margins and tabs, for example, of your document in the measuring system of your choice. To change which system you want to use, right-click the ruler and change the Measurements to your preferences.

Your document

Click in that big white space and start doodling. You can also access a formatting pop-up menu by right-clicking in the document section.

OpenOffice.org Draw appears at first glance to have the most limited file type support for saving when you use the Save As dialog box , but in fact, it supports a wide range of graphics formats. You can save images to a format other than the OpenOffice.org Draw format (.SXD) by choosing File➪Export.

Supported graphics formats are BMP, EMF, EPS, GIF, JPEG, MET, PBM, PCT, PGM, PNG, PPM, RAS, SVG, SWF (Flash), TIFF, WMF, and XPM.

Layout with OpenOffice.Org Math

There's nothing like trying to type a math or science report and having to either use multiple lines to show your equations (which never looks right!) or write them by hand. OpenOffice.org Math is a great solution to this problem. You can lay out your equations and more in this program and then insert them into any of your OpenOffice.org documents. Whether you're a middle school student or a professional engineer, OpenOffice.org Math just may thrill you.

Many OpenOffice.org Math functions are different from what you're used to if you have looked at all the other OpenOffice.org programs. However, in many ways this program is less complex than some, thanks to its special-purpose nature. Keep in mind that it's not a calculation program. It's for laying out complex formulas on paper or the screen.

Starting it up

To start OpenOffice.org Math in the distributions I cover in this book, do the following:

- **Fedora Core:** Choose Applications➪Office➪OpenOffice.org Math.
- **Knoppix:** From the main menu, choose Office➪OpenOffice.org➪ OpenOffice.org Math.
- **Linspire:** From the main menu, choose Programs➪Business & Finance➪ OpenOffice.org 1.1.0➪OpenOffice Math.
- **Mandrake:** From the main menu, choose Office➪Wordprocessors➪ OpenOffice.org Math.
- **SuSE:** From the main menu, choose Office➪Office Suite. When the Templates And Documents – New Document window appears, choose

New Document➪Formula and then click Open. You can also open any type of document from any of the OpenOffice.org tools.

- **Xandros:** Choose Launch➪Applications➪OpenOffice.org➪ Formula Editor.

Taking a tour of OpenOffice.org Math

Before you proceed, take a look at the GUI layout shown in Figure 17-7.

Close the Selection dialog box by clicking the small X in the upper right corner of its window for now, to keep things as uncluttered as possible. You can get it back at any time by choosing View➪Selection.

Main toolbar

Along the left side of the window is the main toolbar, which you can remove at any time by choosing View➪Toolbars➪Main Toolbar. Each icon in this series represents a different functionality. You're likely to find this main toolbar quite different from those in the other OpenOffice.org programs. Mostly, it's just smaller. Each icon is described in Table 17-8.

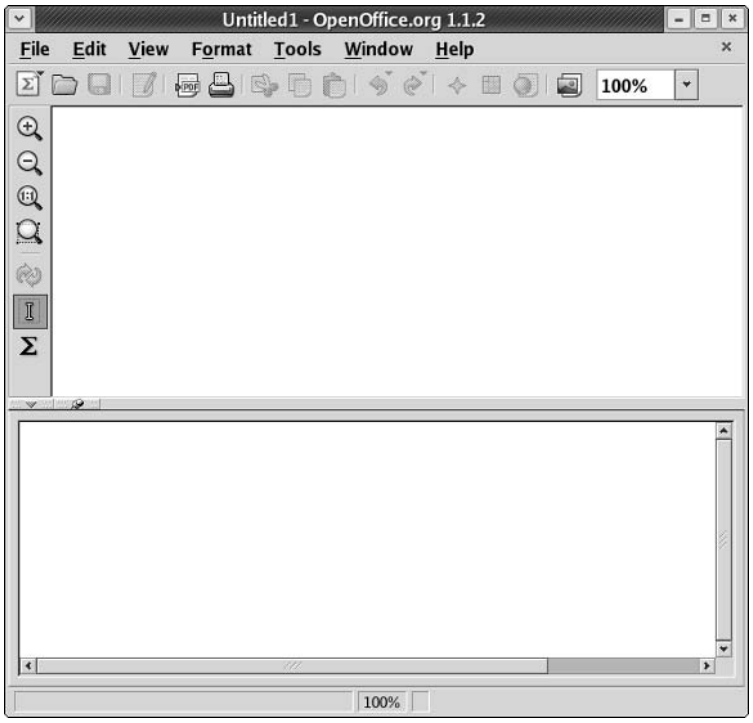


Figure 17-7: The OpenOffice.org Math layout.

Table 17-8 The OpenOffice.org Math Main Toolbar, from Top to Bottom

Button	*What You Can Do*
Zoom In	Enlarge the contents of the document section.
Zoom Out	Shrink the contents of the document section.
Zoom 100%	Shrink or enlarge to the contents' original size.
Entire Formula	Enlarge or shrink the formula so that it fits in the full screen.
Refresh	If you have View➪AutoUpdate Display enabled, update the document area to match the Commands area.
Formula Cursor	Click within the formula in Document view so that your cursor automatically moves to that position in the Commands area.
Symbols	Open the Symbols dialog box, which contains both Greek and other special-purpose mathematical symbols.

Menu bar

Along the top of the window is the menu bar, a standard in the GUI world no matter which operating system you're using. OpenOffice.org Math may be unlike any program you may have used already, so I don't say anything about what you may expect to find there. I just give you a (nonexhaustive) summary of what you find on each menu:

- **File:** The usual Open, Save, Save As, and Print commands that you find in most GUI programs, along with a set of wizards (under the term AutoPilot) and the ability to send documents through e-mail, create templates, and create Web pages
- **Edit:** The usual Select All and Find commands, along with specialized commands for moving within the formula
- **View:** The usual Zoom functions and toolbars, along with screen update features and more
- **Format:** The usual font type, font size, spacing, and alignment features and more
- **Tools:** The usual Configure and Options entries for customizing the program's setup and behaviors, in addition to formula importing and access to the symbol catalog

Function bar

Directly below the menu bar in a default setup is the function bar, which you can remove at any time by using the View menu. This series of icons allows you single-click access to the most commonly used File and Edit features, among others. Again, the function bar here is the same as that in Table 17-2.

- **HelixPlayer:** A version of RealPlayer without the pieces that have to be handed with pay licenses (like MP3s). It can play Internet (streaming) radio and downloaded music.
- **MPlayer-Plugin:** A browser plug-in that you can use at times to listen to formats that other players may not support, including Windows formats. Least likely to be legal if you're in the United States.
- **XMMS:** A Winamp clone that can play Internet (streaming) radio and downloaded music. Sometimes comes with MP3 support and sometimes doesn't, but typically 'you can add MP3 support regardless through your distribution's extra repositories (see Chapter 12).
- **Kaffeine:** A full-featured audio/video media player for Internet (streaming) radio, downloaded files, CDs, DVDs, and so on. Again, this program is of questionable legality in the United States. In SuSE, if you get a complaint about "demux" not being included, install the oggmtools package (see Chapter 4).
- **Xine:** A full-featured audio/video media player for Internet (streaming) radio, downloaded files, CDs, DVDs, and so on. Again, this program is of questionable legality in the United States. In SuSE, if you get a complaint about "demux" not being included, install the oggmtools package (see Chapter 4).

Listening to Downloaded Music

Downloading music from the Internet is a fun activity. A lot of people like to pretend that it's both legal and ethical, when, in fact, it's often theft, depending on where you grabbed the music. I leave that ethical issue between you and your belief system of choice, but because my own ethics say that it's theft, I'm going to focus on showing you music that you're *welcome* to download — legally and ethically! Take a look at strategies for finding such music, along with how to listen to it.

One place to find such material is on a band's own Web site. Many groups today realize that offering free downloads of their work is a great PR move — if people love the sample songs, they're more likely to go out and buy the album. For an example, I use one of my own favorite bands, Evanescence (`www.evanescence.com`).

Evanescence, like many other bands, has its page done mostly with Macromedia's Flash tool. (See Chapter 12 for how to add this functionality to your distribution.) To listen to music files in general:

- **Fedora:** Choose Applications➪Sound & Video➪Music Player.
- **Knoppix:** From the main menu, choose Multimedia➪Sound➪XMMS.

- **Linspire:** From the main menu, choose Programs➪Audio & MP3➪CNR More➪Lsongs to download this tool, and install it in the Audio & MP3 menu.
- **Mandrake:** From the main menu, choose Multimedia➪Sound➪Amarok.
- **SuSE:** From the main menu, choose Multimedia➪Audio Player.
- **Xandros:** Choose Launch➪Applications➪Multimedia➪Media Player. After you're done, to see whether you can listen to any music here, click the Music link. The songs are in the Flash window on the left. You have the option of clicking `real` for RealPlayer, `windows` for Windows Media Player, or `lyrics` to see the words for this song.

Ripping Music Tracks from CDs

This is another topic that's impossible to cover without at least acknowledging that both ethics and legal issues are involved. I'm not going to get into legalities here, but my personal ethics are that it's fine to rip (copy) music off my own CDs for my own use. If I want to pull my favorite songs off CDs that I purchased and set them up so I can listen to them collectively in a random playlist off of my computer's hard drive, I don't see a problem with this. However, doing this and then taking the CD back for a refund is theft, in my opinion.

So, with that said, a number of music ripping programs are available in Linux:

- **Fedora:** Choose Applications➪Sound & Video➪Sound Juicer CD Ripper (see Figure 18-4).

Figure 18-4: The Sound Juicer CD Ripper in Fedora.

- **Knoppix:** None, though you'd need a second CD drive anyway!
- **Linspire:** From the main menu, choose Programs➪Audio & MP3➪CNR More➪G-Rip, and add this program, which is then kept in the Audio & MP3 menu.
- **Mandrake:** From the main menu, choose Multimedia➪Sound➪CD Ripper (KAudioCreator).
- **SuSE:** From the main menu, choose Multimedia➪CD/DVD Tools.
- **Xandros:** None, though you can use the Xandros File Manager to burn CDs. (See the section "Burning CDs and DVDs," later in this chapter.)

To rip songs, with the Sound Juicer, from a CD that you've already inserted:

1. **For each song that you don't want to rip, uncheck the Extract check box, next to the song.**

   The check mark disappears for each song that you don't want to digitize.

2. **Choose Edit➪Preferences.**

   The Preferences dialog box appears, as shown in Figure 18-5.

Figure 18-5: The Sound Juicer Preferences dialog box.

3. **Select your preferred sound format.**

   I highly suggest Ogg Vorbis because this format is easily handled on Linux machines without any inherent legal problems and is also better compressed than MP3 for equivalent sound.

4. **Use the Browse button to select where you want your sound files saved.**

5. **In the Output Name section, select how you want Sound Juicer to name and arrange the files in subdirectories.**

6. **Make any other configuration changes you want to make.**

7. **When finished making changes, click Close.**

   The dialog box closes.

8. **Click Extract.**

   The Progress dialog box appears, showing you what track you're on and how far within that track you are.

9. **Choose CD➪Eject.**

   The CD tray opens.

10. **Remove the CD and close the tray.**

11. **Close Sound Juicer.**

Burning CDs and DVDs

A CD burner is a great way to make data backups (especially if it's a rewriteable), save and share your digital photos, put together multimedia memento scrapbooks, and more. Many tools are available that allow you to burn CDs under Linux:

- **Fedora:** Choose Applications➪Sound & Video➪K3b if you have KDE installed, or add grip (see Chapter 12).
- **Knoppix:** From the main menu, choose Multimedia➪K3b.
- **Linspire:** From the main menu, choose Programs➪Audio & MP3➪ CD Burner.
- **Mandrake:** None installed by default. Using Chapter 12, look for the programs arson, xcdroast, and rhythmbox.
- **SuSE:** From the main menu, choose Multimedia➪CD/DVD Burning.
- **Xandros:** Choose Launcher➪Applications➪Multimedia➪CD Writer.

Creating and Modifying Graphics

The GIMP is a graphics program that's considered in many ways equivalent to Adobe Photoshop. Many don't consider The GIMP the friendliest program on the planet, but at the very least, it has enough features to keep you busy experimenting for weeks! To open The GIMP:

The GIMP may not already be installed. In Linspire and Xandros in particular, you might need to use what you learned in Chapter 12 to add this software before you can use it.

- **Fedora:** Choose Applications➪Graphics➪GIMP Image Editor.
- **Knoppix:** From the main menu, choose Graphics➪GIMP Image Editor.
- **Linspire:** From the main menu, choose Programs➪Multimedia & Design➪CNR More➪GIMP, which is installed under Multimedia & Design.
- **Mandrake:** From the main menu, choose Multimedia➪Graphics➪The GIMP v2.
- **SuSE:** From the main menu, choose Graphics➪Image Editing.
- **Xandros:** Choose Launch➪Applications➪Graphics➪GIMP Image Editor.

When you start The GIMP for the first time, you have to walk through its user setup routine. Fortunately, you can just click Continue each time, unless you're a graphics guru who has a particular reason to want to do things in a different way. After you've clicked past all these dialog boxes, a collection of one or more dialog boxes pops up containing the GIMP main dialog box (see Figure 18-6) plus additional tool dialog boxes. I recommend closing all but the main one for now, just to keep your screen and brain uncluttered.

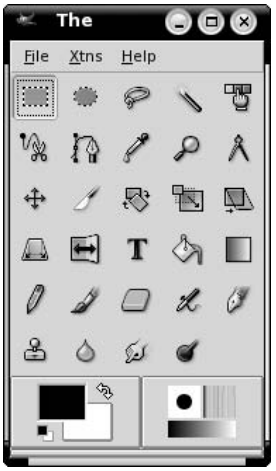


Figure 18-6: The GIMP's main dialog box in Mandrake 10.1.

The GIMP is an incredibly complex program, with entire books written for the people who really want to use it heavily. Great starter links for working with The GIMP are

- **GIMP Tutorials Pointer Page:** `http://empyrean.lib.ndsu.nodak.edu/~nem/gimp/tuts`
- **RRU GIMP Tutorial:** `www.rru.com/~meo/gimp/Tutorial`
- **The official GIMP.org site's tutorials page:** `www.gimp.org/tutorials/`
- **The GIMP Savvy Web site (with a full book available for reading online):** `http://gimp-savvy.com/`

Watchin' Movies

These days, you can watch many kinds of movies on your computer. Whether it's a Flash animation, a DVD, or a movie trailer, you've got the tools that you need right at your fingertips (or just a click away). You may have even installed some already while trying to access other multimedia features. Here are some of the tools of the trade.

Watching a DVD in Linux is a bit of a legal quagmire if you live in the United States. The Digital Milennium Copyright Act (DMCA) and other issues make it tricky for any open source program to navigate the licensing maze when it comes to movies that are encoded or protected in various fashions. However, not all DVDs have such countermeasures enabled: There are DVDs that Americans can watch under Linux with no trouble. (Note that I say *watch*, and not *copy* or *pirate*.)

For more on the DMCA and the problems it causes, see `anti-dmca.org`.

To watch a DVD in Linux, first check Chapter 11 to see what your distribution will do if you just pop a DVD into your drive. Of course, you can also start a program by hand, though you may have to download it first:

- **Fedora:** Doesn't ship with any DVD players by default. Use Chapter 12 to add repositories so you can install Kaffeine, Xine, or Mplayer.
- **Knoppix:** From the main menu, choose Multimedia➪Video➪xine media layer.
- **Linspire:** Purchase a legal DVD player from the Click And Run Warehouse by going to the main menu and choosing Programs➪ Multimedia & Design➪CNR More➪DVD Player (see Figure 18-7). Or install Mplayer from the same place.

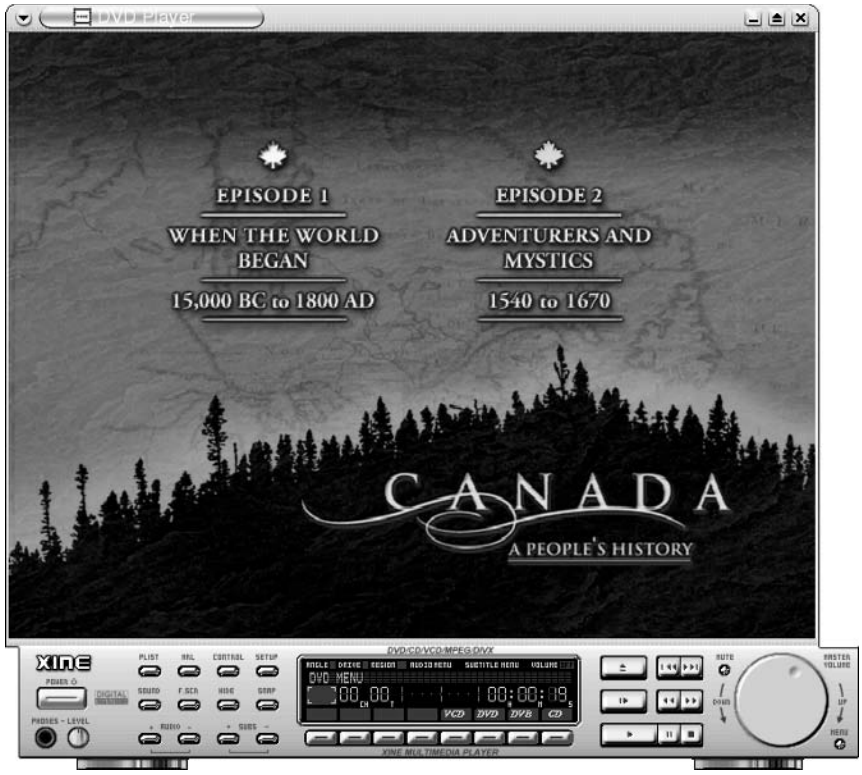


Figure 18-7: The Linspire DVD Player in Linspire 4.5.

- **Mandrake:** From the main menu, choose Multimedia➪Video➪Kaffeine.
- **SuSE:** From the main menu, choose Multimedia➪Video Player.
- **Xandros:** Launch➪Applications➪Multimedia➪Video Player.

Chapter 19

Windows-Only Media Formats and Programs

In This Chapter

- Running Microsoft Office and Web tools with CrossOver Office
- Using Windows inside Linux with Win4Lin
- Playing Windows games with Cedega
- Creating a "virtual computer" inside Linux with VMWare
- Trying out the free Windows inside Linux tool, WINE

A gentleman is a man who can play the accordion, but doesn't.

— Unknown

There is little more maddening for computer users than to find a file online or have someone send a file, just to discover that they can't use it. While this issue is less of a problem for Linux users as each day passes, things do sometimes still crop up that have to be dealt with so that you can move forward instead of spinning your wheels. Also, you may want certain programs that you just can't live without and haven't found a replacement that you're happy with yet.

Fortunately, you have a number of options available in both of these scenarios. If you're looking for software, then a good place to start (aside from Chapter 12) is `linuxshop.ru/linuxbegin/win-lin-soft-en/`. Here, you can see whether there *really* isn't a Linux tool that can do the job. You may be surprised. After looking at this site, you have two options. You can take advantage of commercial packages that can help you to access these documents and features under Linux, or you can wade in and try to get Wine working, which is the free base beneath all these tools. When it comes to file formats, you also ultimately may have to go looking for ways to run Windows tools under Linux to handle files that you otherwise can't use under Linux quite yet. Do a Web search on the file format (for example, `.doc`) and the word `linux` for recommendations as well.

Commercial Software

A growing number of commercially available tools let you work with anything from Microsoft Office to your Windows games under Linux. Mind you, ultimately the Linux user's goal is to not have to use any of these extra program layers — but in the meantime, it's nice not to be inconvenienced. I've reviewed or at least used every one of these products (often more than once over the years), so I'm not just going by their Web sites.

Many of these vendors offer server, as well as desktop products. I'm focusing on the desktop. For more about their server products, check out their Web sites.

CodeWeavers

CodeWeavers (`www.codeweavers.com`) provides an excellent product that I use from time to time: CrossOver Office. This program allows you to use Microsoft Office (along with a growing number of office applications) directly under Linux. It also comes with a hefty number of plug-ins (see Figure 19-1) that you might miss when it comes to Web surfing. It's a bit jarring to run Microsoft Word and Windows Media Player under Linux at first — because there's no *native* (without special software) way to do this otherwise — but it's certainly handy. You can even use the iPod's iTunes through CrossOver Office!

Figure 19-1: The CrossOver Office Install Software dialog box, in Xandros 2.5.

What I most appreciate about CodeWeavers (and all these companies, really) is that they are very upfront about what works really well, what works except for a few features, and what works not so well. All you have to do is check their Web site. For those who always seem to want to scream "piracy" when it comes to Linux, you actually do have to own the programs you want to run (say, 'Microsoft Office) and install them through CrossOver Office off of their original CDs or DVDs. However, you don't have to own the version of Microsoft Windows the software would run under. CodeWeavers has built a re-implementation of the necessary Windows functionality under the hood instead.

Are you an iPod and iTunes junkie? There's no Linux version of iTunes available, but CrossOver Office lets you run iTunes under Linux.

A plus to CodeWeavers CrossOver Office is that the applications run in individual windows just like every other program on your machine. A minus is that not all Windows software is supported, because hooks have to be built under the hood for each new piece of software.

CrossOver Office comes with the Xandros Deluxe desktop (available for installation through the Xandros Networks, see Chapter 12) and is available for purchase from the Xandros Networks store for other Xandros users.

Win4Lin

Another option is Win4Lin from NeTraverse (`www.netraverse.com/`). Win4Lin actually offers you a platform within which you install Microsoft Windows (so have those CDs handy) and then run programs on top of it. As of this writing, Win4Lin supports Windows 95, 98 (see Figure 19-2), and ME. Soon, it will support newer versions of Windows as well.

A plus to Win4Lin is that it supports a more full range of Windows software. A minus is that it runs in its own separate window, so its applications aren't integrated into the rest of your desktop. You also have to actually keep your Microsoft Windows operating system CDs around because you need to be able to install the operating system into Win4Lin — though you can then put them in storage after you've done the installation. You also end up having to have a special kernel (boot session) to run Win4Lin 5.0, so if you hate rebooting, this program may not be the solution for you — though you could just make this your default boot option.

Win4Lin is available for purchase for Linspire users through their Click And Run Warehouse; from the main menu, choose Programs➪Utilities➪ CNR More➪Win4Lin.

Figure 19-2: Windows 98 installing under Win4Lin in a SuSE 9.1 window.

Cedega

More interested in games than office tools? There's also TransGaming's Cedega (`www.transgaming.com`), which was once called WineX. This version of the free Wine project (see the upcoming section "Installing and Using Wine") is specifically designed to support Direct X, which is used in Windows to make programming for multimedia and games easier. Subscribers have access to regular updates, allowing them to make use of their favorite games and also add any games they like to the growing list of games that are being tested with the system.

Go to `www.transgaming.com/searchgame.php`, scroll to the bottom of the screen, and click the Here link. A listing of all games, in order, appears so that you're able to find out what games are supported at what level. A handy new(ish) feature is the Point2Play installer (see Figure 19-3), which you can use to ready your computer for the Cedega experience.

A plus to Cedega is, again, that you don't need to keep those Windows CDs lying around. However, its support for individual games can be spotty, so be sure to check the Web site before you invest in this product. Also, be sure to make use of the help forums!

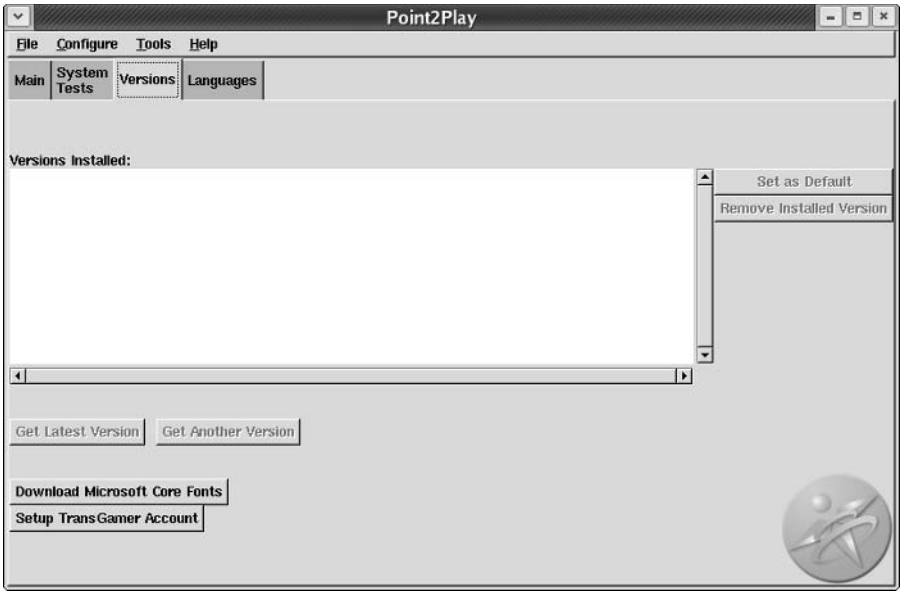


Figure 19-3: The TransGaming Point2Play installer.

VMware

If you absolutely *have* to do something under Windows itself but only have one computer and it's running Linux (or vice versa, for that matter), there's VMware (`www.vmware.com`). This is a popular tool in technical support offices where people need access to many different kinds of machines to test things. It's also popular with authors, like myself, because it allows us to grab those tricky screenshots of the boot process and installer screens.

In VMware, you run a full session of another operating system (or even an extra session of the same one you're running on the main machine) within your desktop — see Figure 19-4. If your machine is powerful enough, you could have five different operating systems all running in their own windows on a single computer.

A minus to VMWare is that it requires a bit of extra oomph in your system. Check out its requirements and then try to go as far *above* them as you can. It also runs in a self-contained window. A plus, though, is that this program really is the next best thing to buying another computer.

Figure 19-4: A VMware window containing Windows XP, but running in Linux.

Installing and Using Wine

And then there's Wine (`www.winehq.org`), a complete rebuild of Microsoft Windows 9*x* functionality that runs under Linux. Wine is in many ways the mother of everything in the previous section. However, because it's a free and very complicated project, it's not quite as friendly as the commercial versions. It's kind of like the others but with all the makeup and hairspray removed.

Some Linux distributions offer Wine RPMs directly on their installation CDs or through their packaging schemes. For the distributions covered in this book, do the following to install WINE for the distributions that don't have it already installed, or to start it for the distributions that do have it. (See Chapter 12 for more details on installing software.)

- **Fedora Core:** Available through yum, depending on what repositories you've added (see Chapter 12). Type `yum search wine` to find the available packages. Then, install both of them. For example, on my AMD Athlon machine, I type `yum -y install winesetuptk wine.athlon` in order to install the setup tool and the main program.
- **Knoppix:** From the main menu, choose WINE.
- **Linspire:** From the main menu, choose Programs➪Software Development➪CNR More➪WINE for Linspire.
- **Mandrake:** Available through the package installation program (Chapter 12). Search for `wine`. (xwine is not the same as WineX.)
- **SuSE:** Available through YaST's software installation routine (see Chapter 12). You can find it in System➪Emulators➪PC ➪WINE.
- **Xandros:** Not available. The adventurous are welcome to go to `www.winehq.org`, click the Download link, and try to build this program from source code (see Chapter 12).

You can find the Wine documentation at `www.winehq.org/site/docs/wine-user/index`. Start in the "Configuring Wine" section.

Now comes the fun part — trying to run your old Windows software. You don't really run Wine, per se. Instead, you invoke Wine whenever you need to use something from the Windows world. To install a Windows program through Wine, insert the CD-ROM or floppy into the appropriate drive. Your distribution might open the File Manager for you, or you may need to open the File Manager manually. Regardless, your goal is to run the installation routine, which is typically `SETUP.EXE`. You can double-click this icon in the File Manager and, when asked what program you want to use to open this file, answer `wine`.

As I write this, I'm trying some old home design program I bought back when I was silly enough to think I'd be able to afford to build a house before I was ninety. Because it's difficult to describe a standard Wine session, I thought I'd walk you through how this goes for me.

The installer loads and runs just fine. I stick with the defaults (because Wine is still a work-in-progress and it's best not to taunt it with getting too fancy) and then wait while the installer adds all of the files to my SuSE system. Now, to run my new old software. To run a Wine program, I first need to know what the path is to that program. I can find it by looking in the `~/.wine` directory. In this case, the program was installed into `/home/dee/.wine/fake_windows/Program Files/HOUSE`. The file `house.exe` looks like the one for launching the program.

If you're trying to find the `.wine` directory in the GUI and can't see it, you probably have to go to the View menu and choose Show Hidden Files. So, to run the program, I double-click it and, when asked what program to run it with, enter `wine`. That's it (see Figure 19-5). Now pull out those old Windows 95 and 98 CDs and give them a try! Not all of them will work, but some probably will. The cool thing is that you can keep trying them on and off over time as newer versions of Wine come out.

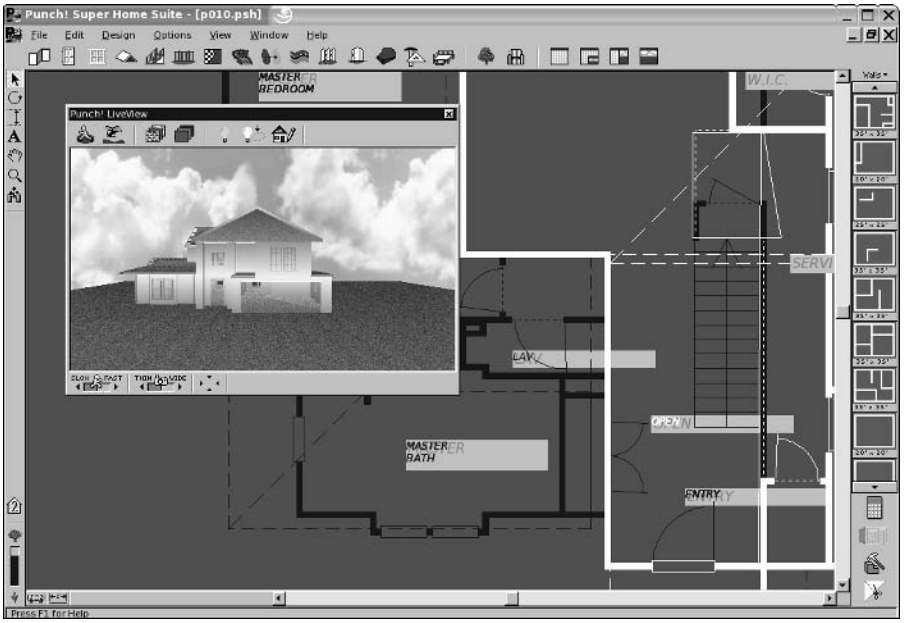


Figure 19-5: WINE running an old home design Windows 98 program.

Part V
The Part of Tens

"It's called Linux Poker. Everyone gets to see everyone else's cards, everything's wild, you can play off your opponents' hands, and everyone wins except Bill Gates, whose face appears on the jokers."

In this part . . .

In this part of the book, I cover answers to the questions most frequently asked about Linux. I explain some key Linux installation and setup points, as well as share more routine troubleshooting tips and tricks. I also talk about the most popular bootable distribution: Knoppix. Rather than telling you just how to use Knoppix like any other distribution (I figure you'd like to have an installed machine so that you can enjoy it, rather than just using a LiveCD), you discover some cool ways to make use of Knoppix to rescue floundering computers, including Windows boxes. I only hope you enjoy reading this part of the book as much as I enjoyed writing it!

Chapter 20

Ten Troubleshooting Tips

In This Chapter

- Dealing with frozen installations
- Changing your boot environment
- Recovering when you see some black-and-white text screen!
- Escaping a hung GUI
- Using multiple resolutions

Troubleshooting is like reading a mystery novel. You have some facts, symptoms, and details, but you don't know whodunit. You have to take whatever information you have, work with that data, weigh the various possibilities, and then narrow them to a single suspect. Finally, you need to test your theory and prove that your suspect is the guilty party.

Troubleshooting problems in Linux (or any operating system) can encompass many hardware and software issues. Whether the problem is the operating system, the hardware, or a service giving you fits, you can use some basic troubleshooting techniques to start your investigations:

- **Document the problem.** Write down any and all symptoms that the system is showing, including actions you can and can't do. Jot down any information you see in error messages.
- **Examine the Linux log files.** You can find most of these in the `/var/log` directory. Look for the word "error."
- **Compare your problem system with a working system running the same distribution and version.** Sometimes, comparing configuration files and settings may uncover the problem or narrow the possibilities.
- **Check connections.** Check to make sure that all the hardware is connected properly and powered on. Verify that all cables and connections are attached properly. There's always someone, somewhere, accidentally kicking a cable out from a wall connection.
- **Remove new hardware.** Remove any hardware that you have changed or added recently (before the problem started) and see whether the problem disappears. If so, you can probably conclude that the new or changed hardware (or its driver) is the culprit and start researching solutions.

- **Reduce the number of active programs.** Stop running unnecessary services and applications that aren't related to the problem at hand. You may more easily figure out what's happening if other services and applications aren't getting in the way.
- **Check to see whether the problem is reproducible.** Does the same sequence of events produce the same problem? Suppose that when you try to print to a color printer, nothing happens. If nothing happens *every* time you attempt to print, the problem is reproducible. If, instead, sometimes your information is printed and at other times it isn't, the problem pattern isn't the same and isn't reproducible — or it's caused by something more complicated than just clicking one button. Unfortunately, problems that are nonreproducible are more difficult to resolve because it seems that no set pattern of events re-creates those problems.

After you've come up with a solution, take a few moments to document the situation. Note the symptoms of the problem, its cause, and the solution you implement. The next time you encounter the same problem, you can call on your notes for a solution rather than reinvent the wheel.

If you don't have any problems to troubleshoot (yet), document your environment *before* you do. Making a backup of your `/etc` directory and your `/boot` directory is a great place to start.

"The Linux Installer Froze"

When you're installing Linux, the installation may just freeze. If it does, wait a bit and make sure that the installation program really froze. (Sometimes, the software just takes a while to process information.) If the software looks like it has frozen, there's no harm in rebooting your computer and starting over — just as you would do with any operating system installation. Sometimes, you can reboot and never have that problem again. At other times, the problem may happen twice in a row and then be fine the third time. Be sure to try several times before giving up.

If the installation still freezes in the same spot or close to the same spot, go to the distribution's support pages (see Chapter 2). These pages may talk about some known problems and solutions that can help you and should show you how to join discussion lists in order to get more assistance. Otherwise, diagnosing the problem can be tricky and may seem more like voodoo than science. Here are some tips:

- **If this problem happens repeatedly at exactly the same spot, you may have a bad installation disk.** If you're a Fedora Core or Red Hat Enterprise Linux user, see the next section, "For Fedora Core Users," and then return here if that technique doesn't solve your problem. Otherwise, try the disk in another machine if possible and see whether the installation

fails in the same place there. If you purchased this disk with a Linux distribution, contact the distribution's technical support team. If you got the disk with a book, contact the publisher's technical support team. If you burned the disk yourself, try burning a new copy at a slower speed.

- **If this problem happens repeatedly at exactly the same spot and you don't have a bad installation disk, the trouble may be with one of your machine's hardware components.** If you can, try trading hardware between machines. If not, you may need to choose a different machine on which to install Linux or try another distribution.
- **If the problem seems to happen randomly, your particular Linux distribution may not be compatible with that particular machine.** Again, you can try trading some hardware around, installing Linux on another machine, or using another distribution.

If you're not sure whether your installer has frozen, try pressing various combinations of Alt+F#, where # corresponds to one of the function keys. Depending on the distribution, the installer has not completely frozen if you can see different screens when you try this technique.

For Fedora Core Users with CD-ROMs

When installing Red Hat Linux 7.3 or later (Fedora Core 3 is considered "later"), a special solution is available to people who run into problems that seem to have absolutely no explanation, such as the installer freezing.

This solution doesn't work with the DVD provided with this book, because it contains more than just the Fedora software, so continue with this section only if you downloaded your own DVD or purchased it from a third party, or if you downloaded or otherwise acquired the Fedora CDs.

If your installation keeps dying while Anaconda (the Red Hat installer program) is placing packages on your hard drive, follow these steps to try to fix it:

1. **Place the DVD-ROM or the first Fedora Core CD-ROM into your drive.**
2. **Reboot the machine.**
3. **Wait until you reach the boot screen where you usually press Enter to start the installation.**

   If you reach a graphical installation screen, you missed the screen you're looking for. You need to reboot, repeat this step, and then proceed.

4. **At the prompt, type `linux mediacheck` and then press Enter.**

   Text scrolls by, and then you see a screen with a bright blue background. Then the CD Found dialog box appears.

5. **Tab to the OK button and press Enter to proceed to the media examination.**

   This step opens the Media Check dialog box. If you've changed your mind and just want to start the installation, use the Tab or arrow keys to select Skip and then press Enter.

6. **If you want to test the first CD-ROM or the DVD-ROM, tab to the Test button and press Enter. If you want to test another installation CD-ROM, tab to the Eject CD button and press Enter.**

   If you chose the second option, remove the first CD-ROM from the CD-ROM drive and replace it with the CD-ROM you want to test. Close the CD-ROM drive and make sure that Test is selected.

7. **Press Enter to begin the media check.**

   The Media Check status box opens and shows you the name assigned to the DVD-ROM or CD-ROM and how much progress has been made. At the end of the inspection, the Media Check Result dialog box opens.

8. **Look at the text after** `and the result is`**.**

   If the result is `PASS`, nothing is wrong with the DVD-ROM or CD-ROM itself. Your installation woes are caused by something else. Return to the section "The Linux Installer Froze," earlier in this chapter.

   If the result is `FAIL`, the DVD-ROM or CD-ROM you just tested is flawed. If you purchased this CD-ROM or DVD-ROM, you need to talk to the company you purchased it from to see whether you can get a replacement. On the other hand, if you burned your own DVD-ROM or CD-ROM, I recommend doing one of the following:

   - Burn the DVD-ROM or CD-ROM again, at a speed of 4x or lower.
   - Burn the DVD-ROM or CD-ROM again on a newer drive with BurnProof technology (`www.burn-proof.com`) or something similar.

If the DVD-ROM that came with this book is defective, contact the technical support address listed in this book, not Red Hat. However, remember that the media checking routine does not give you a reliable PASS or FAIL for this particular DVD-ROM.

"I Told the Installer to Test My Graphics, and They Failed"

The installer may have misguessed what hardware you have. Double-check the settings as best you can. If they look right, try choosing a lower resolution for now and testing again, and if that fails try a lower number of colors

and test again. You can then try setting things back the way you want them after the machine is fully installed and updated, when it hopefully will have a fix for whatever the problem might be.

"The Installer Tested My Graphics Fine, but My GUI Won't Start"

If your Linux installation program showed you a GUI test screen saying that you were ready to proceed with the rest of the installation, you probably expected that the GUI would start with no problem. Unfortunately, that doesn't always happen.

Each distribution has its own set of graphics configuration tools. If you boot your machine for the first time and see error messages when you're trying to enter the GUI automatically or when you type `startx` to start the GUI manually, use the following tools to fix the problem:

- In Fedora Core, use `system-config-display`.
- In Knoppix, you don't install. Use the options available when you boot it in order to tell it specifics about your display.
- In Linspire, use `xf86config`.
- In Mandrake, use `drakconf` and select the Display option.
- In SuSE, use `sax2`.
- In Xandros, use `xf86config`.
- Your last resort is `xf86config`. This fully text-based tool *should* be available with most distributions. It may be called `xf86config4`.

"I Think I'm in Linux, but I Don't Know What to Do!"

Two different screens tend to cause panic to folks new to Linux. The first of these screens, shown in Figure 20-1, is in fact a sign that you installed the software and booted the machine successfully. Jump for joy! It's just that you're booting into the command-line environment rather than the GUI environment. If you reach a screen similar to the one shown in Figure 20-1, the computer is asking you to log in with the username for an account and a password that you created during the installation process.

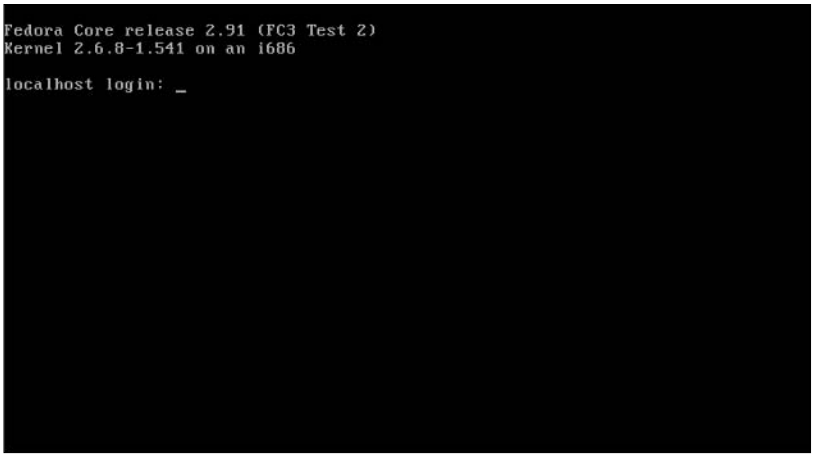


Figure 20-1: A Linux command-line login prompt.

If you created only the root account, you can log in there as `root`.

After you enter the username and password, you find yourself at the screen shown in Figure 20-2, which just happens to be the second spot where people get worried. If you see this screen, you have not only booted properly into Linux, but you're also logged in and using the machine! Give yourself a good pat on the back.

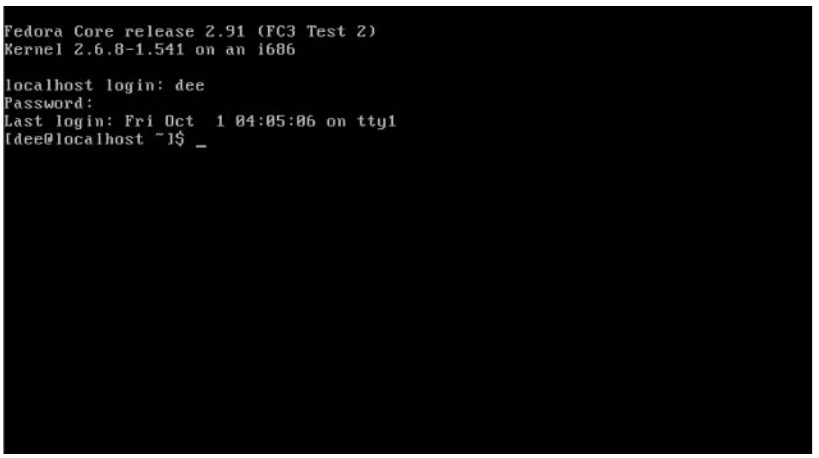


Figure 20-2: Logged in at the Linux command line.

What do you do from here? Anything you want. Surf through this book for commands you want to run. Type `startx` to start up the GUI. If you didn't install any GUI (which means you selected a minimal install option with no graphical interface, or you actually unselected graphics), you may want to reinstall, or you'll have to add all the tools by hand (which is not a quick job!)

"I Don't Want to Boot into This!"

Are you booting into the command-line environment when you want to use only the GUI? Or are you finding that you're already booting into the GUI and you would rather boot to that nice, clean, black-and-white command-line screen? You're not stuck with either of these options. You can change them at any time.

You can press Ctrl-Alt-F# to change out of the GUI to a command line terminal at any time and then Alt-F7 or Alt-F8 to switch back.

Changing your boot environment "permanently"

The word *permanently* is in quotes in the heading because you can, of course, go back and change this setting later, if you want. *Permanently* just refers to the fact that after you have made this change, every time you boot the system, it automatically goes into the preferred environment until you change it.

You can't make this change in Linspire or Xandros unless you want to boot into *single-user mode*, which is basically "safe mode" and not much use. Well, okay, you can, but you would need a techie friend to set up a bunch of stuff for you. Linspire and Xandros assume that you don't want to do this. You can't do this in Knoppix either, but then it's a Live CD so you won't be doing anything permanent to it.

To make this change in Fedora, Mandrake, or SuSE, you need to edit what's called a *runlevel*. Fortunately, all three of these distributions use the same runlevel settings, so the instructions are the same for all of them:

1. **In the GUI, open a command line terminal.**

   If you're not sure how to do so, see Chapter 14. If you're not in the GUI and you're already logged in, type `su -` to become the root user.

2. **Type `cp /etc/inittab /etc/inittab.old` to make a backup.**

   Now, if something happens while you're editing the `inittab` file, you can always restart fresh with the old version.

3. **Open the inittab file in your preferred text editor.**

   Some Linux text editors are covered in Chapter 16.

4. **Scroll down until you find a line similar to the following:**

   ```
   id:5:initdefault:
   ```

This line appears near the top of the file. What you're interested in here is the number. In most mainstream Linux distributions, the number `5` tells Linux to boot into the GUI, and the number `3` tells Linux to boot into the command line. In the preceding example, therefore, I boot into the GUI.

5. **Change the number in this line.**

   If it's a `5`, change it to `3`, and vice versa. Make sure that all colons and other items are left properly in place, or else your machine will have problems booting later.

6. **Save and exit the file.**

   The changes go into effect the next time you reboot the system.

If you do end up having problems booting the system, in many current Linux distributions (including the one that comes with this book) your installation disk can be used as an emergency boot disk. Check your documentation for information about the distribution you're using if it's not Red Hat 10.

Changing your boot environment just for now

At any time, you can have your Linux box switch between full command-line mode and full GUI mode. The instructions I give here assume that you're using Fedora, Mandrake, or SuSE. (Knoppix, Linspire, and Xandros don't give you this option.)

To switch between modes, do the following:

- To change from the GUI login to the command-line login, open a terminal window and type (as root) `init 3`.
- To change from the command line login to the GUI login, type (as root) `init 5`.

"I Want to Change Screen Resolutions"

Do you want or need to swap between resolutions in the GUI on the fly? Suppose that you want to use 1,024 x 768, but you work on Web pages and want to be able to see how they look in a browser at 800 x 600 or even 640 x 480. Your machine is very likely already set up to do this, but you just need to know how!

If your machine is set up for it, you can change resolutions by pressing the key combination Ctrl+Alt+Plus, where Plus is the big plus (+) sign on your number pad — you can't use the plus sign on the main keyboard for this one.

If you're using a keyboard without a number pad — as you will be if you're using a laptop — or your machine isn't set up to be able to change on the fly, you need to change your resolution through your display configuration program. You can find this option at:

- **Fedora:** Choose Applications➪System Settings➪Display.
- **Knoppix:** From the main menu, choose Settings➪Control Center➪Peripherals➪Display.
- **Linspire:** From the main menu, choose Settings➪Control Panel➪Look & Feel➪Display.
- **Mandrake:** From the main menu, choose System➪Configuration➪Configure Your Desktop➪Peripherals➪Display.
- **SuSE:** From the main menu, choose Control Center➪Peripherals➪Display.
- **Xandros:** Choose Launch➪Control Center➪Display➪Settings.

"My GUI Is Hung, and I'm Stuck!"

One quick solution to this problem is the key combination Ctrl+Alt+Backspace. If this doesn't do the trick, your system is in really bad shape! Try to switch to a virtual terminal by using Ctrl+Alt+F5. If this key combination also does nothing, you need to reboot the machine.

"Help, My Machine Hangs During Boot!"

When configuring a Linux machine, you may encounter problems with the `/etc/grub.conf` file. This file indicates the operating system or systems to which your system can boot, and the file also contains Linux startup settings. Linux can boot from any of your hard drives — not just the master IDE drive on the primary IDE channel. Consider this list of potential solutions if the `/etc/grub.conf` file makes trouble:

- If you have altered or added hard drives, you may need to change the `boot` line in the `/etc/grub.conf` file.
- If you haven't made hardware changes, check to make sure that your `/etc/grub.conf` file is referring to the correct location of the Linux image. (The program code that loads and executes at runtime and is located in the `/boot` directory.)
- If the location under the `/boot` directory or the device for the root entry is incorrect, your system can't boot to Linux. In this situation, a rescue or emergency disk is helpful. Refer to Chapter 5 for instructions on using a rescue disk.

- If you're working with a multiboot operating system environment, be sure that your `/etc/grub.conf` file contains entries for each of your operating systems. Each operating system or Linux installation needs to be in separate entries.
- If your file contains entries to switch to a higher-resolution display and you have boot problems, try reducing the video setting to simple VGA.

Linux allows you to use spaces and other characters in filenames that you may or may not be able to use in filenames on other operating systems. However, some Linux applications may stumble when they encounter file or directory names containing spaces. Usually, a safe bet is to stick with alphanumeric characters and avoid spaces and odd characters, such as question marks and exclamation points.

"Aaargh! I Forgot My Root Password! What Do I Do?"

Fear not. You have a way around this problem! You need to boot into *single user mode,* which you can accomplish by rebooting your machine and then doing the following:

- **Fedora:** If you see a blue screen with the words "Press any key to enter the menu," press a key. At the GRUB boot screen, press **E**, which takes you to a configuration file. Use the arrow keys to go to the line starting with `kernel`, and press **E** again to edit that line. At the end of the line, add the word `single`, press Enter to put the change into place, and then press **B** to boot the machine.
- **Knoppix:** You don't need to because you can just reboot the machine and start over.
- **Linspire and SuSE:** See Chapter 21 for how to use Knoppix to recover your root password. Even in single user/failsafe mode, you need the root password for these distributions.
- **Mandrake:** Reboot the computer and at the boot menu, select the Failsafe option.
- **Xandros:** At the Xandros boot screen, select Configure (Expert). When you reach the Give Root Password For Maintenance prompt, enter your password.

No matter what distribution you're using, now's your chance to change the root password to one you can remember. Type `passwd` and then enter the new password twice as directed. When you're done, type `exit` and then boot the machine normally.

Chapter 21

Ten Cool Uses for Knoppix

In This Chapter

- Rescuing files off a dead machine
- Testing, testing!
- Carrying around a portable Linux desktop
- Installing Knoppix

Until you walk a mile in another man's moccasins you can't imagine the smell.

— Robert Byrne

LiveCDs are a great way to experiment with Linux in general, or a particular distribution of Linux, because many of them offer a live version for download or purchase. Because Knoppix is recommended as the LiveCD to use for pre-installation tasks in this book, I thought I would make sure to give you some more fun things you can do with this CD-ROM so that you don't feel like you wasted your time burning it! I won't even do what my husband suggested and make one of the ten entries being to use the disk as a frisbee, because I'd hate for you to feel cheated out of something truly cool.

Rescuing Files off of a Machine that Won't Boot

One cool use for Knoppix is to recover the important files that might be left on a messed up computer that otherwise won't boot. You can use Knoppix for this task whether those files are in Linux or Windows (even on an NTFS partition!). Then you can either e-mail the files to yourself — you can find a simple e-mail program in the main menu where you choose Internet➪KMail — or attach a USB storage device to the machine and copy the data onto it.

To access a USB storage device, plug it in, and Knoppix automatically adds an icon on your desktop for it! However, there's a caveat here. It mounts all filesystems as read-only so that you're going to have to change the USB drive to read-write first:

1. **Click the terminal with the black screen icon on your panel.**

   A terminal window appears.

2. **Type `su -` to become the root (administrative) user.**

   You're not prompted for a password.

3. **Look at the new icon and see what was put in the brackets.**

   For example, [sda1], which is the typical label for a USB drive.

4. **Type `mount -o remount,rw /mnt/`*drive* to remount the drive as read-write.**

   So, for example, `mount -o remount,rw /mnt/sda1`

5. **Find where the files are that you want to copy off of your hard drive(s), using the GUI.**

   If you have lots in lots of places, focus on one group for now and come back and do another later.

6. **Look in the Location bar for the folder the files are in.**

   So, for example, if it says file:/mnt/hda1/web, the folder is /mnt/hda1/web.

7. **Use the `cd` command to change to this directory in the command line terminal.**

   For example, `cd /mnt/hda1/web`

8. **Type `ls` to see the directory's contents.**

   There they are!

9. **Use the `cp` command to copy the file(s) you want to copy over.**

   Some hints:

   - To copy all files in this directory and all its subdirectories to /dev/sda1, type `cp -r * /dev/sda1`
   - To copy all the files in this directory but no subdirectories, type `cp * /dev/sda1`
   - To copy all files whose names begin with an a, type `cp a* /dev/sda1`
   - You may want to bundle and compress the files first. In that case, use the program found in the main menu by choosing Utilities➪Ark to do so and tell it to create the archive directly on the USB drive, which shows up on your desktop as Hard Disk Partition [sda1] (which refers to /dev/sda1 and /mnt/sda1).

10. **Right-click the USB device on your desktop and select Unmount.**

    This action makes sure that all your data was saved properly.

Recovering a Root Password with Knoppix

If you're using SuSE, Linspire, or another distribution that requires you to enter a root password even to enter single user mode, you need external tools to help you recover when you forget what your root password is. This problem is another major reason that many system administrators keep Knoppix on hand. To recover your root password, do the following:

1. **Place the Knoppix CD or the DVD-ROM that came with this book into your CD-ROM or DVD-ROM drive.**
2. **Reboot the computer.**

   If you're using the DVD-ROM that came with this book, press Enter when you reach the boot menu. If, for some reason, the DVD-ROM doesn't boot, see Appendix B.
3. **After the computer successfully boots into Knoppix, determine which partition refers to your main Linux installation.**

   You're looking for your root (/) partition. Chapter 11 details what you find there if that helps. Basically, open each of the partition icons on your desktop and figure out which one looks like the right section of your filesystem.
4. **After you find the proper partition, if you currently don't have a file browser window open anywhere within that partition, click the partition icon to open the browser now.**

   For example, if the root partition is `/dev/hda3`, click the Hard Disk Partition `[hda3]` icon.
5. **Click the Terminal Program icon on your panel.**

   A terminal window opens.
6. **Type `su -` to access the root user's account.**

   You're not prompted for a password.
7. **Make sure to close the file browsing window that's accessing your root partition.**
8. **Type `mount -r remount rw /dev/`*partition* to remove the partition and re-add it as a full read-write filesystem.**

   For example, if your root partition was on `/dev/hda3`, you type `cd/mnt/hda3`.

9. **Type `cd /mnt/`*`partition`* to change to the root partition's base directory.**
10. **Type `cd etc` to enter the `/etc` directory, relative to where it's attached to your current setup.**
11. **Type `cp passwd passwd-orig` to make a backup copy of your main user and password file.**

    Don't skip this step. It lets you can revert to the original file if you mess something up!
12. **Type `joe passwd` to open the `/etc/passwd` file in the joe text editor.**

    You can press Ctrl-K and then the H key to display the Help menu at the top of the screen at any time. To get rid of that menu, press the same key combination again.
13. **Look for the line similar to `root:x:0:0:root:/root:/bin/bash`**
14. **Delete the x (or anything else) from between the first two colons so that the line looks more like the following:**

    ```
    root::0:0:root:/root:/bin/bash
    ```
15. **Press Ctrl-K and then the X key to save the file and exit the program.**
16. **When asked for the name of the file to save, just press Enter to accept the default.**
17. **Type `reboot` to reboot the machine.**
18. **When the CD-ROM ejects, remove it from the drive and press Enter to continue rebooting.**
19. **After you reboot into your system, log into a regular user account.**
20. **Open a terminal window.**

    If you're not sure how to do so, see Chapter 14.
21. **Type `su -` and press Enter to become the root user.**

    When you deleted that in Step 14, you actually erased any password from the root user. If you're prompted for a password, just press Enter without typing anything.
22. **Open the /etc/passwd file in your preferred text editor.**
23. **Find the line you edited before.**

    It should look something like:

    ```
    root::0:0:root:/root:/bin/bash
    ```
24. **Add the x back into place between the two colons.**

    Remember, this is a lowercase x. It should look like the following now:

    ```
    root:x:0:0:root:/root:/bin/bash
    ```

25. **Save and exit the file.**
26. **Type `passwd` and press Enter.**

    You're prompted for a new root password.

Functioning as a Portable Desktop

You can carry your Knoppix CD and a USB device that contains your home directory's contents, to always have your preferred desktop on hand no matter where you go. Or, if you're not allowed to replace your current OS (or your host's OS) but don't want to have to go through all the stuff in the first section of this chapter:

1. **From the main menu, choose KNOPPIX➪Configure➪Create A Persistent KNOPPIX Home Directory.**

   A query dialog box appears.
2. **If you want to make a USB device as the home directory, insert it now.**

   Don't proceed until you see the new hard disk partition icon appear on the desktop.
3. **Click Yes in the query dialog box.**

   Another query dialog box appears, asking whether you want to put your directory on one of the listed partitions.
4. **Select the partition or USB device you want to save your information on.**

   Another query box appears.
5. **If you want to use the whole device (maybe a whole USB keychain), choose Yes. If you want to just use up a bit of someone's existing Windows partition, click No.**

   Don't overwrite your host's or spouse's Windows partition! That would tend to annoy them! Another query dialog box appears. It tells you how much space on that device is currently used and how much is available.
6. **Enter how many MB of space you want to use to store your Knoppix files and click OK.**

   Knoppix does what it needs to do and then offers you another dialog box.
7. **If you want to encrypt (secure) your data, select Yes. Otherwise, select No.**

   If you choose encryption, you'd better not forget your password! I'm going to assume you chose No.
8. **Make a note of where you are told your home directory is and what you'll type in the boot prompt.**

For example, `home=/dev/sda1`. Whenever you put the Knoppix CD into this machine and boot it, you type that information at the boot prompt in the format `knoppix home=/dev/sda1`. This command tells Knoppix to go look and find your home directory.

9. **While you're at it, from the main menu, choose KNOPPIX➪Configure➪Save KNOPPIX Configuration.**

   Now you can configure things to your preferences and have it be persistent. A dialog box appears.

10. **Stick with the defaults for the types of configuration files and just click OK.**

    Another query dialog box opens.

11. **Choose your new home location for saving and click OK.**

    Make note of the information in the final dialog box. Now you would type, at the boot prompt, `knoppix home=/dev/sda1 myconfig=/dev/sda1`.

Installing Knoppix

While Knoppix is primarily a LiveCD, you can actually install this distribution. If you decide to do so, you may want to first see Chapter 2 for how to make any changes you might need to make on your machine before beginning the installation. For example, you may want to have already created the partition you want to put Knoppix in. Fortunately, you can use Knoppix to make the partition! (Again, see Chapter 2.) You can also, instead of starting with Step 5 in the upcoming steps, choose the Partition menu option to do your partitioning during the installation and then, when the partitioning is done, return to Step 5.

Another caveat is that Knoppix doesn't have a friendly way to set up your boot menu for dual booting. One (long) way around this is to install Fedora or one of the other versions of Linux included on the DVD-ROM first and then look in the file /boot/grub/menu.lst. You find an entry that looks something like the following:

```
title Windows XP
            root (hd0,0)
            makeactive
            chainloader +1
```

Copy this section down. After you've installed Knoppix, you can then go edit its /boot/grub/menu.lst file to add the four lines you found in the other distribution to it and reboot. This actions adds a boot menu entry for Windows. (It's important that you don't just copy the hd0,0 part from here, unless your Windows installation is really on the first hard drive, in its first partition.)

Once you're ready to proceed, place the DVD that came with this book (or a Knoppix CD-ROM) into your DVD-ROM or CD-ROM drive and reboot the machine. If you're using the DVD that came with this book, press Enter at the boot prompt. If you don't see a boot prompt, see Appendix B.

After you're fully in your Knoppix desktop, complete the following steps.

If you're using a newer version of Knoppix than the one that comes with this book, the instructions for the latest version are available online at `http://www.freenet.org.nz/misc/knoppix-install.html`.

1. **Press the key combination Ctrl-Alt-F1 to exit the GUI and enter command-line mode.**

   You can use F1 through F6 to do this from any version of Linux. Cool, huh? To get back, simply press Ctrl-Alt-F7 or Ctrl-Alt-F8. Whether it's 7 or 8 varies from version to version, so try 7 and if that doesn't work, use 8.

2. **If you see a bunch of colorful text but no prompt (which will look like** root@tty1[/]#**), press Enter to pull up the prompt.**

3. **Type** /KNOPPIX/usr/sbin/knx2hd

   The screen turns blue and the Initialisation of Knoppix-Installation screen appears. (Initialisation is the UK spelling of the American and Canadian Initialization.)

4. **Press Enter.**

   The Knoppix Main-Menu screen appears.

5. **Use your up and down arrows to select Configure Installation and press Enter.**

   The Choose System Type screen appears.

6. **Use your up and down arrows to select Beginner and press Enter.**

   The Creating Knoppix Configuration Step (1/7) screen appears.

7. **Use your up and down arrows to select the partition you want to install Knoppix in, press the space bar to mark that partition, and then press Enter.**

   The Creating Knoppix Configuration Step (2/7) screen appears.

8. **Type your full name in the format Firstname Lastname and press Enter**.

   The Creating Knoppix Configuration Step (3/7) screen appears.

9. **If you don't want to use the suggested login name, change it here and then press Enter.**

   The Creating Knoppix Configuration Step (4/7) screen appears.

10. **Type this login account's password and press Enter.**

    The text box goes blank, but the screen doesn't otherwise change.

11. **Type the password again and press Enter.**

    The Creating Knoppix Configuration Step (5/7) screen appears.

12. **Type your root (Administrator's) password, press Enter, and then repeat as you did before with the login account's password.**

    After the second time, the Creating Knoppix Configuration Step (6/7) screen appears.

13. **Type the name to assign to this computer and press Enter.**

    The Creating Knoppix Configuration Step (7/7) screen appears.

14. **Accept the settings in this screen (unless you're positive that you want to change them) and press Enter.**

    The Knoppix Main-Menu screen returns. Keep in mind that following this step sets you up to only have Knoppix as a boot option.

15. **Use your up and down arrows to select Start Installation and press Enter.**

    The Starting Knoppix Installation screen appears. Review the information shown.

16. **If something is wrong, use the Tab key to select No and press Enter and then return to Step 5 to make changes. Otherwise, use the Tab key to select Yes and press Enter.**

    The installation begins. When it finishes, the Creating Floppy Disk screen appears.

17. **If you want to create a boot floppy disk (which can be handy if something happens to your boot menu), use Tab to select Yes. Otherwise, use Tab to select No. Press Enter.**

    I assume that you're not creating a boot disk with these instructions. If you choose to do so, Knoppix will walk you through the process. When you either finish making the boot disk or skip it, the Installation Successful screen appears.

18. **Press Enter to close the installation program.**

19. **Type `reboot` to reboot the machine.**

    You're told when it's safe to eject the DVD-ROM or CD-ROM. From there, you'll be booting into Knoppix, or at least into its boot menu!

Keeping Knoppix Up to Date

If you decided to install Knoppix, as discussed in the previous section, then you need to keep it up to date so that all security vulnerabilities and bug fixes

are taken care of. After you're installed and logged into Knoppix using one of your accounts, connect to the Internet. Then:

1. **Choose System➪KPackage (Package Manager).**

   The KPackage package management program opens.

2. **In KPackage, choose Special➪Apt: Debian➪Update.**

   A separate KPackage window appears.

3. **When asked for your root password, type it and press Enter.**

   Within the secondary window, you can watch the update process. Once you see the text `RESULT=#` (where # stands for any number), the update is complete. You'll also see the word `Done` a bit above it.

4. **Click Cancel to close the second window.**

   It takes a minute or so for KPackage to process the new package lists it just downloaded.

5. **In KPackage, choose Special➪Apt: Debian➪Upgrade.**

   The Update selection just grabbed the latest list of available packages. Choosing Upgrade now grabs all the updated software and installs it. A secondary window appears, and you can watch what's happening in there. First, KPackage figures out what software it needs to update.

6. **When asked whether you want to continue, type** `Y` **and press Enter.**

   Now, KPackage actually grabs the updates to install them. This process can take a while (an hour or longer) the first time you do it, depending on how long your version of Knoppix has been available. You can tell how much longer it has to go by watching the percentage marker in the bottom left of the window. Once the download is complete, KPackage begins configuring the packages for installation.

7. **If you're asked questions about how to configure packages, answer them as best you can and press Enter after your answer.**

   Unfortunately, this process can feel a bit cryptic. You can always go back and change things if you have to, later. Often a default is offered, so try just pressing Enter if you're not sure what else to do. After you've answered all the questions, the updating begins. The longer your download took, the longer your update will take, so again be prepared to wait. You also may be asked more configuration questions along the way, so make sure to at least glance at the screen from time to time.

   The secondary window closes on its own once the update is complete. You can now close KPackage.

Installing New Software in LiveCD Knoppix

There are two ways to install new software in Knoppix, depending on whether you're using Knoppix as a LiveCD (you didn't install it), or whether you actually installed it. If you installed Knoppix, see the next section, "Installing New Software on an Installed Knoppix System."

To add new software when you're using Knoppix as a LiveCD — remember that it will be lost when you reboot, unless you use the techniques detailed in the section "Functioning As a Portable Desktop," earlier in this chapter — make sure that you're connected to the Internet and then:

1. **From the main menu, choose KNOPPIX➪System➪Install Software (while running from CD).**

   The Disclaimer dialog box appears.

2. **Read the dialog box's contents and click OK.**

   The Choose Software dialog box appears. Here, you find a relatively limited set of options.

3. **Select the program you want to add and click OK.**

   The installation details dialog box appears.

4. **Read the dialog box's contents and click OK.**

   The software is downloaded and added. When finished, the Success dialog box appears.

5. **Click OK to remove the dialog box.**

Installing New Software on an Installed Knoppix System

If you installed Knoppix, you can add software to your system by making sure that you're connected to the Internet and then doing the following:

1. **From the main menu, choose System➪KPackage (Package Manager).**

   The KPackage package management program opens.

2. **Click the New tab to see the list of software that you don't have installed.**

3. **Click program names to see descriptions on the right. Once you have selected a program you want to install, click the dot to its right to replace it with a checkmark.**
4. **Continue selecting programs until you've marked all that you want to install.**
5. **Click Install once you're ready to add everything you have marked.**

   Just as with updating, the more you choose to add, the longer it takes to download and add the software. You may be asked configuration questions along the way. KPackage walks you through the rest of the process.

Adding More Software Repositories

Did you install Knoppix, but you can't find all the programs you want to add? Because Knoppix is a variant of the Debian distribution (`www.debian.org`), you can usually add anything to Knoppix that you can add to Debian. So, the trick is to find the proper Debian software repositories and add them to your system so that KPackage knows where to find them.

The skills described in this section are useful for those using Linspire and Xandros as well, because both of those distributions are based on Debian, too.

To do so:

1. **Click the terminal icon on your panel to open a terminal window.**
2. **Type `cat /etc/debian_version` to find out which version of Debian your version of Knoppix relates to.**

   The Knoppix included on the DVD-ROM that comes with this book is Knoppix 3.6, which is related to Debian 3.1. Going to Debian's Web site, you see that this release is called "sarge" (`www.debian.org/releases/sarge`) — it can be important in Debian to know the name; sometimes it's used more often than the number.
3. **Click the View The Full List Of Sites link and wait for the large page to load.**

   If there's a specific program you want, click the Search For A Package link instead.
4. **Within this page, use your browser's search feature to search for the Debian version name.**

For example, you would search for `sarge` if you're using the version of Knoppix that came with this book. Unfortunately, a lot of what you find is going to be somewhat cryptic. Pick a repository or three.

5. **Once you have found something you're interested in, check to see whether a red X is in its check box.**

   If so, that repository isn't incredibly stable, and you may not want to use it.

6. **If there is no red X, or you're willing to risk an unstable repository just in case it's up and working, click the Download As Text link to the right of the listing.**

   You're brought to a page that looks like the following (the indented items are actually part of the previous line; there are only three lines here):

   ```
   # Helix Software for Debian
   deb http://helix.alioth.debian.org/deb sid main non-free
   deb http://helix.alioth.debian.org/deb sarge main non-free
   ```

7. **Find the line in this listing that has the name of your Debian version in it.**

   For example, the last line has `sarge` in it.

8. **Open the /etc/apt/sources.list in your favorite text editor.**

9. **At the end of the file, add the line you found.**

   For example:

   ```
   deb http://helix.alioth.debian.org/deb sarge main non-free
   ```

   There are other repositories listed in here that you can make available by removing the # at the beginning of their line. Only do this with lines formatted like the preceding code line. Everything else is a "Comment," which is used to just leave notes so you can understand what you're looking at.

10. **Save and exit the file.**

Go to the section "Keeping Knoppix Up to Date," earlier in this chapter for how to load up the new list of software and then go to the section "Installing new Software on an Installed Knoppix System" for how to add software from your new repositories.

Aren't Sure a Machine Actually Works?

If you're having hardware trouble, you can try booting a machine from Knoppix to get a hint of where the problem is. If the machine can boot with Knoppix,

then the problem may be hard-drive oriented. If you run into identical problems with Knoppix that you did under Windows or another form of Linux, then you have more hints there.

I had problems on one machine with three different distributions, and after a lot of frustration and observation, I realized that the machine only crashed in the GUI in all three, and never when I was just using the command line. I changed the machine's video card and voilà, everything was fine.

Exploring Tons of Linux Tools

Knoppix comes with an amazing array of tools for just one CD-ROM. You can play with multimedia tools for television, sound editing, and more without having to hunt down and install a new piece of software. When you find something you really like, then you can go about seeing whether you can get it and add it for your own distribution. Heck, a lot of this software is available for Windows, too!

You can also use Knoppix to test documents like Web sites and word-processing files to make sure that they work right under Linux. You can even check to see whether WINE (see Chapter 19) can handle a particular Windows program that you're hoping to run, because WINE comes installed by default in Knoppix. If the program works in Knoppix, you might then not bother to install WINE under another distribution.

Part VI
Appendixes

"When we started the company, we weren't going to call it 'Red Hat'. But eventually we decided it sounded better than 'Beard of Bees Linux'."

In this part . . .

This part adds some extra material to support the rest of this book. Starting with the ever-popular and useful Appendix A, you find a reasonably comprehensive and friendly compendium of common Linux commands, ready for use as a desktop reference. Appendix B provides an overview of and information about the DVD included with this book (and how to get a set of CDs if you don't have a DVD-ROM drive), including basic booting instructions when installing Red Hat Linux and a list of what's on the DVD.

Appendix A

Common Linux Commands

In This Appendix

- Archiving and compression commands
- Communication commands
- File commands
- System control commands

Computing novices often marvel at the keyboard dance Linux experts typically perform. Sure, these experts know about modern advances like the mouse and graphical interface, but these keyboard musicians prefer the home keys and find that they can work faster with the keyboard. It takes some time to reach this level of proficiency, but every expert was a novice at one time, and any novice can become an expert by delving into the various commands available and getting plenty of practice.

In this appendix, you find the commands listed by themes, according to what they can actually do for you.

So, read on — and dazzle your friends with your command-prompt finesse. When they ask you how and where you figured out all those commands, just smile and mumble something about the voices in your head — and, of course, keep this section dog-eared and within reach of your computer.

Linux Commands by Function

Because every command serves a specific purpose, organizing these tools into groups according to their individual functions isn't difficult. If you know what you need to do but don't know which command does the job, flip through this section to start your search. From here, you can dig further by referencing `man` pages and other help information (online sites and reference books, for example) or by looking in this book's index for further coverage.

To access a `man` page, type **man *command*** at a command prompt. For example, `man ls` shows you the help information for the file listing command.

Archiving and compressing

Although disk space isn't as much of a premium as it once was, bandwidth and backup media still are. Subsequently, this group provides a potpourri of tools for compacting and organizing data for storage, as shown in Table A-1.

Table A-1 Archiving and Compressing Tools

Command	*Purpose*
`bzip2`	Compresses files into `.bz2` format. Used mostly for incredibly large sets of text files (which is what source code actually is).
`compress`	Compresses files into `.Z` format. Pretty old and not used much in the Linux world.
`gunzip`	Uncompresses `.gz` files and `.tgz` files.
`gzip`	Compresses files into `.gz` format.
`tar`	Packages files together in a group.
`uncompress`	Uncompresses files from `.Z` format.
`unzip`	Uncompresses files from `.zip` format.
`zip`	Compresses files into `.zip` format.

Built-in bash commands

Some commands don't even seem to exist if you try to look up their help information in the `man` pages, and the commands don't show up as files on your system. Remember, as you type commands at the prompt, that you're communicating with a type of program called a *shell*. (In my case, it's `bash`, the default Linux shell.) The shell has a set of commands, included in the following list, that you can use to communicate with it, as shown in Table A-2.

Table A-2 Shell Commands

Command	*Purpose*
`alias`	Creates command shortcuts.
`env`	Lists your current environment variables and their settings.
`export`	Whenever you're told to set an environment variable, use this first so that the variable will be remembered properly.

Command	Purpose
history	Lists off the last 1,000 commands you've typed.
unalias	Removes command shortcuts.

If you try to view the man page entry for some of these commands, you find instead the help information for BASH BUILTINS loads. To search through this massive manual, press the forward slash (/) key to open the man search interface and then type the name of the command you want to search for. Press Enter to start the search. The interface stops in the first spot where the term is found. If you want to try again, press the N key to proceed to the next occurrence of the word.

For example, you might be reading the massive bash man page (type man bash to access this page), but perhaps you're only interested in items related to *prompts,* which are the bits of text that appear to the left of your cursor in a text window. An example prompt is

```
[dee@catherine dee]$
```

So, you might type /prompt and press Enter to jump down to the first instance of this word. If the text around the word doesn't reflect what you're looking for, you'd press the N key to jump to the next one, and so on.

Getting Help

When you're digging around for help on a command, you can call on an interesting range of shell commands for assistance, as shown in Table A-3.

Table A-3 Shell Help Commands

Command	Purpose
apropos	Looks for commands that contain a keyword in their man page descriptions.
info	One way of finding help information. You can find instructions for this tool at www.gnu.org/software/texinfo/manual/info/
man	The primary way of getting help in Linux and Unix.
whatis	Gets a one-line description of a command.

Locating details about the command-prompt options of a command is a never-ending pursuit. The man page system provides some helpful guides at your fingertips for rapidly finding this detailed information.

Files and file system

No matter which operating system you're using, it's hard to do anything without being able to find your way through and work with the file system. The following utilities help you find your way:

File organization

Boxing, packing, sorting, shipping — I'm always shuffling files around on my system. File organization commands provide tools for moving files and file system units around, as shown in Table A-4.

Table A-4 File Organization Tools

Command	*Purpose*
`cd`	Changes directories.
`cp`	Copies a file.
`df`	Shows partitions and how much space they have.
`du`	Shows how much disk is being used in the current directory and below.
`ln`	Creates a shortcut.
`ls`	Lists the contents of a directory or information about a file.
`mkdir`	Creates a directory.
`mv`	Moves or renames a file.
`pwd`	Shows the path for the directory you're currently in.
`rm`	Deletes a file.
`rmdir`	Deletes an empty directory.

File attributes

Files are much like candy bars. The wrappers provide information about the ingredients, size, and package date — all descriptive of the tasty nugget inside. (Perhaps the wrapper is even childproof.) Files keep all this wrapper information in an *inode.* Along with the capability to change file inode information, these commands can return data about the content of the file, as shown in Table A-5.

Table A-5	File Attributes Commands
Command	***Purpose***
`chgrp`	Changes the group associated with a file.
`chmod`	Changes a file's permissions.
`chown`	Changes who owns a file.
`file`	Shows what type of file you're dealing with.
`stat`	Shows some statistics about the file.
`touch`	Creates an empty file of this name.
`wc`	Shows how many words, lines, and so on are in this file.

File locators

Where, oh, where can my file be? These commands, shown in Table A-6, help you locate files in Linux's monster tree-structure file system:

Table A-6	File Locators Commands
Command	***Purpose***
`find`	Hard-core filesystem search tool.
`locate`	Lighter weight filesystem search tool.
`which`	Tells you the path for the program that would be run if you typed this command.

File viewers

File browsing is a favorite pastime of many a system user. These tools provide a variety of utilities for viewing the contents of readable files of all sizes. Unlike using a full-screen editor, you cannot damage the contents of a file with these commands, shown in Table A-7, because they're read-only tools:

Table A-7	File Viewers
Command	***Purpose***
`cat`	Dumps the contents of the file to your screen.
`head`	Shows the first ten lines of a file.

(continued)

Table A-7 *(continued)*

Command	*Purpose*
`less`	Shows the file a screen at a time.
`more`	Shows the file a screen at a time.
`tail`	Shows the last ten lines of a file.

File system commands

These commands, listed in Table A-8, provide information or perform actions on the entire file system, from creation and tuning to repair and recovery. Some of these commands return data only, whereas others also provide you with surgical instruments for serious file-system hacking:

Table A-8 File System Commands

Command	*Purpose*
`badblocks`	Searches a partition for bad blocks.
`e2fsck`	Checks and repairs an ext2 or ext3 filesystem.
`e2label`	Applies a filesystem label to an ext2 or ext3 partition.
`eject`	Ejects a CD or DVD.
`fsck`	Can check and repair many types of filesystems.
`mkfs`	Creates a filesystem (format a partition).
`mount`	Loads a partition into your filesystem.
`sync`	Saves all information out of buffers onto disks.
`tune2fs`	Adjusts ext2 and ext3 filesystem parameters.
`umount`	Removes a partition from the filesystem.

mtools

The mtools suite of utilities provides a nice way to transfer information to your Microsoft friends. Although Linux has native support for Microsoft Windows and DOS file systems, your Microsoft cohorts don't have access

to Linux (`ext2` and `ext3`) file systems. To keep everyone happy, you can buy preformatted MS-DOS disks and use them with the mtools commands (see Table A-9) so that you can swap them back and forth with your friends who are using Windows:

Table A-9 mTools Commands

Command	*Purpose*
`mcd`	Changes directory in DOS format on a DOS disk.
`mcopy`	Copies DOS files to and from Linux.
`mdel`	Deletes a DOS file.
`mdeltree`	Deletes a DOS directory and its contents.
`mdir`	Lists a DOS directory's contents.
`mdu`	Shows how much space is taken and available for a DOS partition.
`mformat`	Formats a partition for DOS.
`mlabel`	Applies a DOS volume label.
`mmd`	Creates a DOS directory.
`mmount`	Mounts a DOS disk or partition.
`mmove`	Moves or renames a DOS file or directory.

System control

These commands provide system-wide information and control. Normal users can run many commands to obtain system information; however, commands that actively change the configuration of the system need to run while you're logged in as root — or have utilized the `su` command to temporarily become the superuser.

Administration

Some administration commands, shown in Table A-10, don't fall neatly into a category.

Table A-10	Administration Commands
Command	***Purpose***
`passwd`	Change a particular user's password. Any user can run this command to change their own password. Only root can use it to change someone else's.
`su`	Switch to another user account without logging out of this one.

Kernel module handling

You may sometimes need to add kernel support for an additional device (software or hardware). If this need arises, you have a limited number of choices: You can either rebuild the kernel or install a loadable kernel module. Although rebuilding a kernel doesn't exactly require a Ph.D. in nuclear science, consider it a time-consuming nuisance that's best to avoid. The commands in Table A-11 enable you to include the kernel support you need while the system is running, without having to rebuild the entire thing from scratch:

Table A-11	Kernel Support Commands
Command	***Purpose***
`depmod`	Regenerates your module dependencies.
`insmod`	Loads a module by hand.
`lsmod`	Lists the modules your kernel has loaded.
`modprobe`	Loads a module by hand along with its dependencies and settings.
`rmmod`	Unloads a module by hand.

Processes

Most of your system activity requires processes. Even when your system appears idle, a dozen or so processes are running in the background. These commands, shown in Table A-12, enable you to check under the hood to make sure that everything that needs to be running is running and that you're not overheating or overtaxing resources:

Table A-12 Process Commands

Command	*Purpose*
`at`	Has a command run at a particular time.
`atq`	Works with the at queue.
`crontab`	Sets up commands to run at regular intervals.
`kill`	Stops a process by its number. Often used as `kill -9` for a harsh stop for something that won't die.
`killall`	Stops a process by name rather than number.
`nice`	Assigns a CPU use priority to a process.
`pidof`	Gets a program's ID number.
`ps`	Gets a lot of programs' ID numbers, usually used as `ps aux`.
`pstree`	Shows the relationships between programs.
`renice`	Changes a program's CPU use priority.
`top`	Shows resource use over time.

Appendix B

About the DVD-ROM

The DVD-ROM included with this book contains everything you need to install and run Fedora Core 3, Knoppix 3.6, Linspire 4.5, Mandrake 10.1, SuSE 9.2, and Xandros 2.5. Collectively, this content is the equivalent of 11 CD-ROMs that you would have to download for yourself. Because it can be too confusing to try to focus on everything, the primary focus within this book is on Fedora Core 3. This distribution includes the following:

- **Fedora Core 3:** A complete copy of the software for the latest and greatest version of the consumer-level Red Hat Linux, for your computing pleasure. If you are interested in the source code, you can download it directly from Red Hat's Fedora Project site at `http://fedora.redhat.com`. We thought that you might not mind us using the space that would have gone to multiple CD's worth of source code to include lots and lots of other software instead!
- **RPM (Red Hat Package Manager):** The Red Hat software distribution and installation management environment, wherein Linux updates and new facilities are packaged for easy installation on your Linux machine.
- **KDE (the K Desktop Environment) and GNOME (GNU Network Object Model Environment):** The two leading graphical user interfaces for Linux. You can pick the one you like best!
- **Mozilla Firefox:** The best-of-breed Web browser for your Linux machine, just waiting for your surfing pleasure.
- **Samba:** The best way to integrate Linux servers with Windows users. Samba lets your Linux machine masquerade as a Windows server so that Windows users can grab files and print documents hassle-free.
- **Apache Web Server:** The world's most popular (or at least, most frequently used) Web server software.
- **Games!:** Tons of games; enough to help you procrastinate for weeks!
- **OpenOffice.org:** A full-featured and popular office suite.

Or, you can download Fedora yourself by going to `http://fedora.redhat.com`.

But that's not all. This DVD also contains the ISO images (the files you can use to make your own CDs) for:

- The full version of Linspire 4.5, which you would normally have to buy!
- A LiveCD (see Chapter 4 for an explanation of a LiveCD) version of the popular SuSE Linux 9.2 distribution, with its default KDE desktop.
- The "open circulation" (free) version of Xandros 2.5!
- The full version of Mandrake 10.1, another popular distribution.

(See Chapters 1 and 4 for more information on these distributions.)

You can use both Fedora and Knoppix directly off the DVD-ROM. The others you can use your own CD burning software and (legally) use it to write the ISO images to CDs. The files are contained with the DVD-ROM's `distros` directory. If, for some reason, you can't use the DVD, you can get the distributions discussed in this book by going to:

- Fedora: `http://fedora.redhat.com`
- Knoppix: `www.knoppix.net`
- Linspire: `www.linspire.com`
- Mandrake: `www.mandrake-linux.com`
- SuSE: `www.suse.com`
- Xandros: `www.xandros.com`

Getting all of these (except Fedora) is covered in more detail in Chapter 4.

When it comes time to burn your CD-ROMs or DVD-ROM, make sure that you tell your CD burner that you're working with ISO images (usually the option has something to do with the word "image"). If you burn the CD and find that it contains just one big file (the ISO file), it will not work. The ISO image actually contains all the files that would be on the CD, so if you put the CD in and find that it contains many files, the CD was created properly.

In addition, if you want the source code for those distributions that are just ISO images (Xandros, Linspire, SuSE, and Mandrake) sent to you, please complete the online coupon at `www.dummies.com/go/linux3sourcecoupon`.

System Requirements

Make sure that your computer meets the following minimum system requirements. If your computer doesn't match up to most of these requirements, you may have problems using the contents of the DVD-ROMs:

- **A PC with an Intel-compatible Pentium-class processor:** I recommend a 400MHz Pentium II or better for using Graphical mode, though for a heavy use desktop system, "more is better."
- **At least 256MB of RAM:** You need at least 192MB of RAM for Graphical mode. (Linux can handle as much RAM as you can fit into a typical PC, and more is almost always better than less.)
- **At least 650MB (the barest minimum) of hard drive space:** I recommend 2.5GB and as much as 5GB if you want to install all the software from the DVD-ROM. You need less space if you don't install every program, but you should go ahead and make 5GB of space available, to give yourself more options.
- **A DVD-ROM drive — double-speed (2x) or faster:** The faster the DVD-ROM drive, the faster your installation experience. A coupon is offered in this book if you need to order CDs to replace the DVD.
- **Just about any VGA monitor:** Just about any monitor does the trick, but you want one that's capable of displaying at least 256 colors or grayscale.
- **A keyboard and a mouse:** You need both items so that you have a way to communicate with your Linux system and tell it what to do!
- **A 3½-inch floppy drive is handy, although not absolutely necessary:** You might need to start the installer with a floppy, though most people won't have to.
- **Some kind of network connection:** Again, the faster your Internet connection, the less time it takes to update your installation to the most recent versions. I use a cable modem for my Internet connection, and I like the increased speed when it comes to dealing with the many and varied sources of Linux software and updates online. See Chapter 8 on the various ways to connect to the Internet.

If you need more information on PC basics, check out *PCs For Dummies* by Dan Gookin (published by Wiley Publishing, Inc.).

Using the DVD-ROM

You can take either of two basic approaches to using the Fedora Core installation DVD-ROM. I cover each one in separate step-by-step lists. I tell you in this section how to pick which set of instructions to follow. The two ways to use this DVD-ROM are shown in this list:

- If you can boot from your DVD-ROM drive (which probably means that you have a newer PC), follow the instructions in the following section.
- If you can't boot from your DVD-ROM drive, for whatever reason, follow the instructions in the upcoming section "Booting from a Linux floppy disk." Choosing this option means that you boot from a Linux boot

floppy disk, with the DVD that came with this book already inserted into your DVD-ROM drive. (To create a Linux boot floppy disk to enable this approach, please check out the instructions in Chapter 2.) The floppy disk handles the beginning of the process and then turns the rest of the installation over to the DVD-ROM.

Booting from the DVD-ROM

To install items from the DVD-ROM to your hard drive, follow these steps:

1. **Insert the DVD-ROM into your computer's DVD-ROM drive.**
2. **Reboot your PC.**

   As long as your PC is configured to boot from the DVD-ROM, this step starts the Linux installation process for you automatically.
3. **If you want to install Fedora, type `linux` at the boot prompt. If you want to boot into Knoppix without having to install anything, just press Enter.**

Congratulations! The Linux installation process is now under way, or you're just about to use Linux without having to install a thing. For the rest of the gory details on the fascinating task of installing Fedora, please consult Chapter 3. If you had to order the CD-ROMs, then boot with the first CD for the same effect as booting with the DVD.

Booting from a Linux floppy disk

To install the items from the DVD-ROM to your hard drive with a boot disk (I show you how to make one in Chapter 2), follow these steps:

In case you have a problem installing from the DVD

On some PCs, after booting from the companion DVD, Knoppix and Fedora Core installation may not work. If you have such problems with the DVD, you can download Knoppix from `www.knoppix.net` and burn your own CD-ROM from there. For Fedora Core, please visit `www.dummies.com/go/linux3sourcecoupon` to obtain the CD set. Note that this problem doesn't affect the other distributions' ISO images that are in the DVD's `distros` directory.

1. **Insert the DVD-ROM into your computer's DVD-ROM drive and insert a bootable Linux floppy disk into your computer's floppy drive.**

   See the instructions in Chapter 2 for creating a bootable Linux floppy disk.

2. **Reboot your PC.**

   This step starts the Linux installation process for you automatically.

Congratulations! The Linux installation process is now under way. For the rest of the gory details on this fascinating task, please consult Chapter 3.

And some people say that installing Linux is hard! What could be easier than this? On the other hand, if all you want to do is investigate the contents of the Linux installation DVD-ROM, simply insert it into your machine's CD-ROM drive. After that, you can browse through the DVD-ROM's contents right there in Windows. The contents are described in the following section.

What You Find on the DVD-ROM

Here's a summary of the software on the DVD-ROM, arranged by directory organization. If you use Windows, the DVD-ROM interface helps you navigate the DVD-ROM easily; you can use most of its contents only if you already have Linux installed.

The contents of the DVD consist of all four installation CD-ROMs' worth of material for Fedora Core 3, plus the ISO files discussed earlier in this chapter. Not all the software is installed automatically. You find out in Chapters 3 and 12 how to customize what's added. Aside from that, the DVD has useful install utilities and a handy-dandy README file that explains precisely what you find. The directory structure may look similar to the following (except for lacking my handy annotations, of course):

```
E:
  |----> distros           -- ISO images for the included
          distributions
  |----> Fedora
  |        |----> RPMS     -- binary packages, incl:
  |        |                  OS, GUIs, Apache, etc.
  |        |----> base     -- info on release
  |        |                   used by install process
  |        |               -- source code for the packages
                             in RPMS
  |----> images            -- boot & ramdisk images
  |----> KNOPPIX           -- the files used to boot you into
          KNOPPIX instead of Fedora's installer
  |----> isolinux          -- boot files
  |----> README            -- general read me file
  |----> RELEASE-NOTES     -- current info about this release
  |----> RPM-GPG-KEY       -- GPG sigs for Red Hat pkgs
```

Both CDs include *GPG signatures,* allowing the installer to check the contents of the files against the stored security data to make sure that the files haven't been changed. (The assumption is that all changes would be for the worse, such as Trojan horses or viruses.) Thus, signatures provide a way to make sure that everything is safe and wholesome for your computer!

If You've Got Problems (Of the DVD-ROM Kind)

I tried my best to locate programs that work on most computers with the minimum system requirements, as Red Hat did for its operating system. Alas, your computer may differ, and some programs may not work properly for some reason.

The two likeliest problems are that you don't have enough memory (RAM) for the programs you want to use or that you have other programs running that are affecting the installation or running of a program. If you see error messages like `Not enough memory` or `Setup cannot continue`, try one or more of the following methods and then try using the software again:

- **Close all running programs.** The more programs you're running, the less memory is available to other programs. Installers also typically update files and programs; if you keep other programs running, the installation may not work properly.
- **In Linux, close your GUI environment and run demos or installations directly from a command line.** The interface itself can tie up system memory or even conflict with certain kinds of interactive demos. Use the command prompt to browse files on the DVD-ROM and launch installers or demos.
- **Have your local computer store add more RAM to your computer.** This step is, admittedly, a drastic and potentially expensive one, depending on the price of RAM at the time. If you have a modern PC with less than 64MB of RAM, however, adding more memory can really help the speed of your computer and enable more programs to run at the same time.

If you still have trouble with the DVD-ROM, please call the Wiley Product Technical Support phone number at 1-800-762-2974. Outside the United States, call 1-317-572-3994. You can also contact Wiley Product Technical Support through the Internet at `www.wiley.com/techsupport`. Wiley Publishing provides technical support only for installation and other general quality control items; for technical support on the applications themselves, consult the program's vendor or author.

To place additional orders or to request information about other Wiley products, please call 1-800-225-5945.

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