

# Introduction

Welcome to *Ubuntu 7.10 Linux Unleashed*! This book covers the free Linux distribution named Ubuntu and includes a fully functional and complete operating system produced by the Ubuntu Community, sponsored by Canonical Software.

Ubuntu directly descends from one of the oldest and most revered Linux distributions ever: Debian. Those of you who know nothing about Linux will likely not have heard of Debian; it is enough to know that it is considered to be one of the most stable and secure Linux distributions currently available. Ubuntu benefits directly from many contributions from free software developers across the world.

If you are new to Linux, you have made a great decision by choosing this book. Sams Publishing's *Unleashed* books offer an in-depth look at their subject, taking in both beginner and advanced users and moving them to a new level of knowledge and expertise. Ubuntu is a fast-changing distribution that can be updated at least twice a year. We have tracked the development of Ubuntu from early on to make sure that the information in this book mirrors closely the development of the distribution. A full copy of Ubuntu is included on the enclosed disc, making it possible for you to install Linux in less than an hour! No longer an upstart, Linux now has an enviable position in today's modern computing world. It can be found on machines as diverse as mobile phones and wrist-watches, all the way up to supercomputers—in fact, Linux currently runs on more than half of the world's top 500 supercomputers.

Do not let the reputation of Linux discourage you, however. Most people who have heard of Linux think that it is found only on servers, looking after websites and email. Nothing could be further from the truth because Linux is making huge inroads in to the desktop market, too. Corporations are realizing the benefits of running a stable and powerful operating system that is easy to maintain and easy to secure. Add to that the hundreds of improvements in usability, and Linux becomes an attractive proposition that tempts many CIOs. The best part is that as large Linux vendors improve Linux, the majority of those improvements make it into freely available distributions, allowing you to benefit from the additions and refinements made. You can put Ubuntu to work today and be assured of a great user experience.

This book provides all the information that you need to get up and running with Ubuntu. It even tells you how to keep Ubuntu running in top shape and how to adapt Ubuntu to changes in your own needs. You can use Ubuntu at home, in the workplace, or, with permission, at your school or college. In fact, you might want to poke around your school's computer rooms: You will probably find that someone has already beaten you to the punch—Linux is commonly found in academic institutions. Feel free to make as many copies of the software as you want; because Ubuntu is freely distributable all over the world, no copyright lawyers are going to pound on your door.

After an introduction to Linux and Ubuntu, you will find out how to get started with Ubuntu, including installation and initial configuration. We also take you through installing software, managing users, and other common administrative tasks. For the more technically minded, we also cover some starting steps in programming across several languages—why not pick one and try it out? Throughout this book, you will also find information about multimedia applications, digital graphics, and even gaming (for after-hours when you are finished tinkering). After you make it through this book, you will be well equipped with the knowledge needed to use Linux successfully. We do assume that you are at least familiar with an operating system already (even if it is not with Linux) and have some basic computer knowledge.

## Licensing

Software licensing is an important issue for all computer users and can entail moral, legal, and financial considerations. Many consumers think that purchasing a copy of a commercial or proprietary operating system, productivity application, utility, or game conveys ownership, but this is not true. In the majority of cases, the *end user license agreement* (EULA) included with a commercial software package states that you have paid only for the right to use the software according to specific terms. This generally means you may not examine, make copies, share, resell, or transfer ownership of the software package. More onerous software licenses enforce terms that preclude you from distributing or publishing comparative performance reviews of the software. Even more insidious licensing schemes (and supporting legislation, especially in the United States) contain provisions allowing onsite auditing of the software's use!

This is not the case with the software included with this book. You are entirely free to make copies, share them with friends, and install the software on as many computers as you want—we encourage you to purchase additional copies of this book to give as gifts, however. Be sure to read the README file on the disc included with this book for important information regarding the included software and disk contents. After you install Ubuntu, go to <http://www.gnu.org/licenses/gpl.html> to find a copy of the GNU GPL. You will see that the GPL provides unrestricted freedom to use, duplicate, share, study, modify, improve, and even sell the software.

You can put your copy of Ubuntu to work right away in your home or at your place of business without worrying about software licensing, per-seat workstation or client licenses, software auditing, royalty payments, or any other type of payments to third parties. However, be aware that although much of the software included with Ubuntu is licensed under the GPL, some packages on this book's disc are licensed under other terms. There is a variety of related software licenses, and many software packages fall under a broad definition known as *open source*. Some of these include the Artistic License, the BSD License, the Mozilla Public License, and the Q Public License.

For additional information about the various GNU software licenses, browse to <http://www.gnu.org/>. For a definition of open-source and licensing guidelines, along with links

to the terms of nearly three dozen open-source licenses, browse to <http://www.opensource.org/>.

## Who This Book Is For

This book is for anyone searching for guidance on using Ubuntu and primarily focuses on Intel-based PC platforms. Although the contents are aimed at intermediate to advanced users, even new users with a bit of computer savvy will benefit from the advice, tips, tricks, traps, and techniques presented in each chapter. Pointers to more detailed or related information are also provided at the end of each chapter.

If you are new to Linux, you might need to learn some new computer skills, such as how to research your computer's hardware, how to partition a hard drive, and (occasionally) how to use a command line. This book helps you learn these skills and shows you how to learn more about your computer, Linux, and the software included with Ubuntu. System administrators with experience using other operating systems can use the information in this book to install, set up, and run common Linux software services, such as the *Network File System (NFS)*, a *File Transfer Protocol (FTP)* server, and a web server (using Apache, among others).

## What This Book Contains

*Ubuntu Unleashed* is organized into six parts, covering installation and configuration, Ubuntu on the desktop, system administration, programming and housekeeping, and a reference section. A disc containing the entire distribution is included so that you have everything you need to get started. This book starts by covering the initial and essential tasks required to get Ubuntu installed and running on a target system.

If you are new to Linux, and more specifically Ubuntu, first read the chapters in Part I, "Installation and Configuration." You will get valuable information on the following:

- ▶ Detailed steps that walk you through installation
- ▶ Critical advice on key configuration steps to fully install and configure Linux to work with your system's subsystems or peripherals, such as pointers, keyboards, modems, USB devices, power management, and—for laptop users—PCMCIA devices
- ▶ Initial steps needed by new users transitioning from other computing environments
- ▶ Configuration and use of the X Window System, the graphical interface for Linux

Part II, "Desktop Ubuntu," is aimed at users who want to get productive with Ubuntu and covers the following:

- ▶ Becoming familiar with the X Window System and looking at GNOME and KDE
- ▶ Discovering the many productivity applications that come with Ubuntu
- ▶ Surfing the Internet and working with email and newsgroups

- ▶ Using Ubuntu to listen to music and watch video
- ▶ Using Ubuntu to download and manipulate images from digital cameras
- ▶ Setting up local printers for Ubuntu
- ▶ Understanding the current state of gaming for Linux

Moving beyond the productivity and desktop areas of Ubuntu, Part III, “System Administration,” covers the following:

- ▶ Managing users and groups
- ▶ Automating tasks and using shell scripts
- ▶ Monitoring system resources and availability
- ▶ Backup strategies and software
- ▶ Network connectivity, including sharing folders and securing the network
- ▶ Internet connectivity via dial-up and broadband connections
- ▶ Building and deploying web servers
- ▶ Database creation, management, and manipulation
- ▶ File and print servers
- ▶ Using FTP for serving files across the Internet and local networks
- ▶ Building and deploying email servers using Postfix and managing mailing lists
- ▶ Creating remote access gateways and services
- ▶ Configuring DNS for your network
- ▶ Using LDAP for storing information on users and security
- ▶ Configuring a local news server

Part IV, “Programming Linux,” provides a great introduction to how you can extend Ubuntu capabilities even further using the development tools supplied with it. This part covers the following:

- ▶ Programming in Perl, using variables and scripting
- ▶ An introduction to the Python language
- ▶ Writing PHP scripts and linking them to databases
- ▶ C and C++ programming tools available with Ubuntu and how to use the GNU C Compiler (gcc)

Part V, “Ubuntu Housekeeping,” looks at some of the more advanced skills you need to keep your system running in perfect condition, including the following:

- ▶ Securing your machine against attack from outsiders and viruses
- ▶ Performance tuning
- ▶ Command-line masterclass
- ▶ Advanced apt
- ▶ Kernel and module management and compilation

An extensive reference in Part VI, “Appendixes,” gives you scope to explore in even more depth some of the topics covered in this book as well as providing historical context to Ubuntu and installation resources.

## Conventions Used in This Book

A lot of documentation is included with every Linux distribution, and Ubuntu is certainly no exception. Although the intent of *Ubuntu Unleashed* is to be as complete as possible, it is impossible to cover every option of every command included in the distribution. However, this book offers numerous tables of various options, commands, and keystrokes to help condense, organize, and present information about a variety of subjects.

This edition is also packed full of screenshots to illustrate nearly all Ubuntu-specific graphical utilities—especially those related to system administration or the configuration and administration of various system and network services.

To help you better understand code listing examples and sample command lines, several formatting techniques are used to show input and ownership. For example, if the command or code listing example shows typed input, the input is formatted in boldface, as follows:

```
$ ls
```

If typed input is required, as in response to a prompt, the sample typed input also is in boldface, like so:

```
Delete files? [Y/n] y
```

All statements, variables, and text that should appear on your display use the same bold-face formatting. In addition, command lines that require root or super user access are prefaced with the `sudo` command, as follows:

```
$ sudo printtool &
```

Command-line examples that any user can run are prefaced with a dollar sign (\$), like so:

```
$ ls
```

The following elements provide you with useful tidbits of information that relate to the discussion of the text:

#### NOTE

A note provides additional information you might want to make note of as you are working; augments a discussion with ancillary details; or points you to an article, a whitepaper, or another online reference for more information about a specific topic.

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#### TIP

A tip can contain special insight or a timesaving technique, as well as information about items of particular interest to you that you might not find elsewhere.

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#### CAUTION

A caution warns you about pitfalls or problems before you run a command, edit a configuration file, or choose a setting when administering your system.

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#### Sidebars Can Be Goldmines

Just because it is in a sidebar does not mean that you will not find something new here. Be sure to watch for these elements that bring in outside content that is an aside to the discussion in the text. You will read about other technologies, Linux-based hardware, and special procedures to make your system more robust and efficient.

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Other formatting techniques used to increase readability include the use of italics for placeholders in computer command syntax. Computer terms or concepts are also italicized upon first introduction in text.

Finally, you should know that all text, sample code, and screenshots in *Ubuntu Unleashed* were developed using Ubuntu and open-source tools.

Read on to start learning about and using the latest version of Ubuntu. Experienced users will want to consider the new information in this edition when planning or considering upgrades. There are many different Linux distributions from different vendors, but many derive from, or closely mimic, the Debian distribution.