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Beginning Ubuntu Linux

The complete introduction to Ubuntu

FIFTH EDITION

Emilio Raggi, Keir Thomas, Trevor Parsons, Andy Channelle, and Sander van Vugt

Accompanying DVD includes full versions of Ubuntu 10.04, as well as Kubuntu, Edubuntu, Xubuntu, and PPC releases!

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Beginning Ubuntu Linux

Fifth Edition

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Beginning Ubuntu Linux, Fifth Edition

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To my wife, Pim, and my two children, Camilo and Dante

Contents

About the Authors

Emilio Raggi lives in Buenos Aires, Argentina, and has been managing IT Projects for the past 12 years. He was very much a Windows fanboy, until one day he had to manage an Ubuntu desktop deployment project. He was highly qualified as Microsoft implementer, holding certificates as an MCP and MCSE, and was a consultant for an MS Partner. Still, Ubuntu had its charms and won him over. He is now an avid fan, user, and promoter, to the benefit of his family, friends, and colleagues. He is also an avid student of philosophy.

Keir Thomas is an award-winning author who has written several best-selling Linux titles for Apress. A former computer magazine editor, he has been writing about computers, operating systems, and software for a decade. He has also served as editor on several computer books. His works have been translated into many languages. Thomas works as a full-time author and has written five books for Apress. He lives on the side of a mountain in England, and his hobbies include hiking and playing musical instruments.

Trevor Parsons has been using free software for a decade, and was founding editor of the UK's *Linux User* magazine. When he's not writing, editing, and breaking computers, he sidelines as a drummer and fiddle player. Even then there's always an Ubuntu Flash drive in his violin case.

Andy Channelle is a lead instructor and web systems coordinator at the University of the West of England specializing in journalism and new media. He has written for a variety of technology magazines including *Linux Format* and *Mac Format* over the last ten years and has also managed a few large web projects based on free software and open principles.

Andy lives in the UK and enjoys writing, playing the guitar and drums, and sitting out in the sun reading books.

Sander van Vugt is an independent Linux expert, living in the Netherlands. He delivers his Linux training courses worldwide and is specialized in Linux performance issues. Sander is the author of many books, including *Beginning Ubuntu Server* and *Pro Ubuntu Server*. Sander can be reached at his e-mail address, `mail@sandervanvugt.nl`.

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■ **Bruce Byfield** is a journalist who specializes in writing about free and open source software. He has been a contributing editor at *Linux.com*, and his articles have appeared on the *Datamation*, *LWN*, *Linux Developer Network*, *Linux Journal*, and *LinuxPlanet* sites. He also writes a monthly column for the *Linux Journal* web site and a weekly blog called "Off the Beat" about the free software community for *Linux Pro* magazine. In addition to his online publications, he has published in such magazines as *Linux Journal*, *Linux Pro* magazine, *Maximum Linux*, *The New Internationalist*, and *Ubuntu User*. Although he long ago lost count, he has sold over 750 articles in his career.

Before becoming a journalist, Byfield was marketing and communications director at Progeny Linux Systems, and product manager at Stormix Technologies. His book *Witches of the Mind* is considered the definitive work on the American fantasist Fritz Leiber. He also designs elearning courses and is a marketing and communications consultant.

Byfield lives in Burnaby, Canada. In addition to free and open source software, his interests include parrots, aerobic exercise, science fiction, listening to punk-folk music, and collecting Northwest Coast art.

■ **Richard Hillesley** writes about free software and lives in the southwest of England.

Introduction

Linux applies an alternate philosophy to computing that revolves around the sharing of not only software but also knowledge. To use Linux is to become part of a huge global community of people who have caught on to a phenomenon that is changing the world.

Ubuntu (`http://www.ubuntu.com`) is the natural continuation of these goals. It's a project founded by entrepreneur businessman Mark Shuttleworth with the intention of bringing a freely available, high-quality operating system to the world. To this end, Shuttleworth invested $10 million of his own money to guarantee that this will be the case for many years to come. In 2010, the project has moved closer to becoming self-sustaining as Ubuntu becomes part of the mainstream for desktop, Netbook, and server users.

The fundamental concept is that Ubuntu is available for use by anyone in the world, no matter who or where they are. As such, many different languages are supported, and the operating system can also be accessed by those with disabilities, such as partial sight or hearing. Ubuntu might just as easily be found on a Wall Street banker's laptop as on a battered old computer in a Brazilian *favela*.

Ubuntu is built around one of the most established versions of Linux: Debian (`http://www.debian.org`). The Debian Project was started back in 1993, shortly after the very first version of the Linux software was released, and has become one of the pioneering varieties of Linux. Ubuntu and Debian Linux both share common goals and are closely allied, but Ubuntu focuses largely on the desktop. For example, it provides a powerful office suite by default, as well as some excellent pieces of Internet software. Only recently has a dedicated server version become available.

It's also very easy to use. Ubuntu works straight out of the box. As soon as it's installed, you should be ready to start using it without any further work. In addition, tasks such as updating your software are as easy under Ubuntu as they are under Windows—in many cases, easier. Above all, however, Ubuntu is designed to be shared. You can take the DVD-ROM included with this book and install Ubuntu on as many computers as you want. You can also copy it as many times as you want and give those copies to your friends. We're serious! This isn't some kind of trick, either—Ubuntu isn't a trial version that will quit running in a month. You will never find yourself having to pay a fee further down the line, even if you want to install additional software. Ubuntu, and much of the software that runs on top of it, will always be free of charge.

Since its inception in 2004, Ubuntu has literally taken the world of Linux by storm and has even broken out of the technically demanding world of open source software. It's consistently voted the most popular desktop Linux and has even garnered a handful of celebrity users along the way: Jamie Hyneman of the popular TV show *MythBusters* is a fan, as is novelist and blogger Cory Doctorow. Within some Internet communities, such as Digg.com and Reddit, you may struggle to find individuals who don't use Ubuntu.

Ubuntu's popularity has risen as the software appears on desktop and laptop computers from the likes of Dell and HP, and it is finding its way into many users' hands through Netbooks.

What You'll Find in This Book

Beginning Ubuntu Linux, Fifth Edition is divided into five parts, each of which contains chapters about a certain aspect of Ubuntu use. These parts can be read in sequence, or you can dip in and out of them at will. When a technical term is mentioned, it is defined on first use in the chapter, or a reference is made to the chapter where the term is explained.

Part 1 examines the history and philosophy behind Ubuntu and the Linux operating system. We aim to answer many of the common questions about Linux. Such knowledge is considered to be as important, if not more so, than understanding the technical details on how Linux works. But although these chapters should be read sooner rather than later, they don't contain any technical information that you absolutely require to get started with Ubuntu.

Part 2 covers installing Ubuntu on your computer. An illustrated guide is provided, and all installation choices are explained in depth. Additionally, you'll find a problem-solving chapter to help, just in case anything goes wrong.

Part 3 focuses on getting started with Ubuntu. It covers setting up the Linux system so that it's ready to use. First we explore the graphical interface, so you know where to go to perform the most basic tasks. One chapter is dedicated to setting up common hardware devices, such as printers, and another explains how you can secure your system. You'll also learn how to fully personalize Ubuntu so you feel more at home with it, and how to work with your files.

In Part 4, we take a look at how you can use Ubuntu to perform your day to day tasks. We list the most common Ubuntu applications as an introduction for users more acquainted with Windows. Then we take a look at working with text files and with OpenOffice.org, the complete office suite built into Ubuntu. Then we explore ways to get connected with other people through e-mail or instant messaging. A whole new chapter takes a look at hot topics like social networks and cloud computing, and how Ubuntu can help you make the most of them with minimal effort. We also look at working with audio, movies and multimedia, and digital photos. And we finish Part 4 by going over different options for playing games with your Ubuntu PC.

Part 5 is dedicated to give you the skills necessary to keep your system running smoothly. You'll learn how to install new software, manage users, optimize your system, back up essential data, schedule tasks, and access computers remotely.

Finally, Part 6 contains four appendixes. The first is a full introduction to the command-line prompt, and includes a quick reference to the most used commands. Appendix B is a glossary of Linux terms used not only in this book but also in the Linux and UNIX worlds. The third appendix explains how to get further help when using Ubuntu, and the fourth explains how to use the DVD and the differences between the various versions of Ubuntu.

What's New in the Fifth Edition

The original edition of *Beginning Ubuntu Linux* was the first English-language book to provide a guide to using Ubuntu, and it remains one of the best. Successive editions of the book have tracked the changes within the Ubuntu project and have improved each time.

This edition of *Beginning Ubuntu Linux* has been thoroughly updated and revised to take into account improvements with the 10.04 release of the software, code-named Lucid Lynx. The previous edition covered the 9.04 release. This version of Ubuntu has incorporated a new level of integration with social networks. A new cloud service, Ubuntu One, helps you keep your files and personal information synchronized to multiple PCs. Ubuntu 10.04 also simplified, with Ubuntu Software Center, the way you can search for and install new applications. And it is a Long Term Support release, meaning that you will be given support and updates for your desktop installation for three years.

About the DVD-ROM Supplied with This Book

The DVD-ROM attached to the book is completely new, compared to that offered with previous editions. This edition offers a double-sided DVD-ROM that contains virtually every official release of Ubuntu 10.04, including not only the main Ubuntu release, but also Kubuntu, Xubuntu, and releases for servers and Netbooks.

By booting from Side A of the DVD-ROM you can opt to install Ubuntu or run in "live" mode, which means that the entire operating system boots from the disc and doesn't touch your hard disk. This can be useful for those who want to "try out" Ubuntu.

The contents of the DVD-ROM are explained in detail in Appendix D.

Conventions Used in This Book

The goal when writing *Beginning Ubuntu Linux* was to make it as readable as possible while providing the facility for readers to learn at their own pace.

Throughout the book, you'll find various types of notes and sidebars complementing the regular text. These are designed to provide handy information to help further your knowledge. They also make reading the book a bit easier.

■ **Note** A note is designed to provide an important piece of information that you should know and that will help your understanding of the topic being discussed.

■ **Tip** A tip is something that will help when you need to perform the task being described. Alternatively, it might be something that can make your life easier when using Ubuntu.

■ **Caution** A caution is something you should certainly pay attention to, because it warns of a hidden danger or particular caveat that applies to the topic being discussed.

In the sidebars, we take a moment to explain something that you should know, but that isn't vital to an understanding of the main topic being discussed. You don't need to read the sidebars there and then; you can return to them later if you like.

PART 1

Introducing the World of Linux

CHAPTER 1

Meet Ubuntu Linux

Because you're holding this book in your hands, there is a good chance that you have heard of Ubuntu Linux before. Maybe someone suggested it to you or you have read about it in the media. Anyway, we will try to show you how you can use it to make your life easier. First we point out ten (though there are certainly more) good reasons why you should give it a try. Then we talk about Ubuntu Linux in more detail, showing what it is and what it is like to work with.

We will be happy if, by the end of this chapter, you feel confident enough to install Ubuntu Linux on a PC. Of course, you'll get the maximum benefit from it by reading the rest of the book. Without proper guidance you may sometimes feel that Linux is a wild jungle, but this book can help you become an expert user.

Ten Reasons to Try Ubuntu Linux

In our experience there are at least ten good reasons to try Ubuntu Linux right away:

- You want your computer to boot really fast and to be fully functional after that.
- You want to use a sleek and modern operating system (OS) but are reluctant to buy a Mac.
- You are an idealist who thinks that software should be free ("free as in free speech").
- You are a materialist who would rather have software for free ("free as in free beer").
- You have seen Ubuntu Linux installed in a friend's PC and want the same "wow" computer experience for yourself.
- You are tired of being exposed to hackers and malicious users every time you open Internet Explorer.
- You just bought a netbook and it either (a) comes loaded with an old OS, or (b) has a brand new OS that limits you on what you can do.
- You have an old PC that you don't want to throw away just yet, but which is nearly useless under the latest versions of Windows.
- You are a hardcore Linux user who wants to figure out why Ubuntu has been chosen the best Linux desktop distribution so many times.
- You have been asked by your boss to evaluate Ubuntu Linux as a replacement for Windows on your organization's desktop computers. Or maybe you are the boss and want to motivate your crew with a great project.

This list could go on; we all have good reasons to try Ubuntu Linux on our PCs. More reasons will occur to you once you get to know it.

Of course, if you're already using an older version of Ubuntu (and taking into account that, in Ubuntu's terminology, "older" means six months), you don't need us to point out its virtues, right?

What Is Ubuntu Linux Anyway?

Ubuntu Linux can be defined in many ways and from different angles. First off, it is an operating system (usually shortened to OS). Ubuntu is a distribution of Linux, based on Debian, and that gives it some characteristic features. But to describe it only as an OS would be nothing short of unfair: it also has a wide range of pre-installed applications and many more readily available at the click of the mouse, and an ever-growing user community. Let's talk about what Ubuntu is in a little more depth.

Ubuntu Linux Is an Operating System

Ubuntu Linux, as an OS, is, very simply, what makes your computer work.

A computer is much more versatile than a TV or DVD player. You can plug different input devices into it, run applications, and expect it to do a lot of stuff. To be able to do all this, your computer needs an OS, the underlying software that instructs it in how to perform all its functions.

An OS tells your computer what to do when it starts, for example. Without it, your computer would beep and wait in annoyance when you turned it on. The OS also communicates with your computer's hardware, and with the applications that you use to perform your work. The OS glues together all aspects of your computer.

The first and most important of those components is you, the user. You're the one who chooses which applications to run, what actions to take, and whether the PC should be turned on or off. The OS needs input from you and needs to communicate to you the result of your actions.

Usually, you work with applications, which enable you to do specific tasks, such as writing documents or browsing the web. Applications also need to communicate with your OS, to interact with other applications, and to make the computer's hardware work. How they do this varies by operating system, which is why most Windows applications will not work out of the box with Linux. But, as we will see later, that shouldn't deter you from using Linux.

You also have data, the information you need to perform your work. You might save photos, documents, and other files. In this respect, the OS should provide a means to access storage capacity, whether it is local (a hard disk attached directly to your computer), removable (USB drive), or remote (a file server or online storage system). Data comes in different formats, and each format is usually tied to a specific application, which may even be registered as proprietary. For example, a document with the extension ".doc" or ".docx" has been written and saved with Microsoft Word. This is why interoperability—the ability to use different data formats with various applications—is important. As an analogy, think about a thermometer reading 64° F. We can say that temperature itself is the data, and the measurement unit the format. You can change the format (to degrees Celsius) while keeping the same data, but you can't have measurement of temperature without a measurement unit. An interoperable application would be able to read the temperature whether it is in degrees Fahrenheit or Celsius.

Last but not least, you have the hardware, such as graphic and sound cards, printers, scanners, and many other devices. Usually, to make a specific piece of hardware work, the OS needs a driver, a special piece of code that handles communication with the device. Maybe the greatest challenge you'll face when using Ubuntu Linux will be getting all your hardware up and running. Although most devices should run out-of-the-box with Ubuntu, you might have to follow some additional steps to make some specific pieces of hardware work. That's why we pay so much attention in this book to this topic.

As you can see, an OS does a lot of stuff. On desktop computers, the most popular OS is Microsoft Windows, with Windows 7 being the latest incarnation.[1] Windows is a closed and proprietary OS, which means that nobody outside Microsoft can view or modify its source code (unless you are given permission to do so by Microsoft, and even then you must sign a Non-Disclosure Agreement). It is also "non-free" in the sense that you must pay for it, and depending on the version Windows can be really expensive.[2]

But, as with any other component of your computer, the OS can be swapped out for a better one. Welcome to Ubuntu Linux.

Ubuntu Is a Distribution of Linux, Based on Debian

Ubuntu, as an OS, is part of the larger family of Linux distributions.

You'll find out more about that in Chapter 2. For now, suffice it to say that Ubuntu uses Linux as its kernel. The *kernel*[3] is the portion of the OS that performs the most basic functions, such as memory and process management. Linux is an open and free kernel, strongly based on concepts first sketched up for UNIX, Linux's honorable ancestor. That's why it is said that Linux is a UNIX-like OS.

Linux is one of the flagship developments of the free and open source software movement. It is a very versatile and powerful OS that runs on many different hardware platforms. Although widely adopted in devices such as servers and smartphones, it hasn't yet earned great market share on desktop computers. But that might be about to change—thanks in part to Ubuntu Linux.

Because Linux is just a kernel, it usually needs other programs to run as a full OS. Different Linux distributions (or *distros* for short) package all the other software needed to make an OS, each with a different philosophy in mind. More often than not, there are organizations behind each distribution, and these organizations often drive the development of new packages.

Ubuntu Linux is one such distribution, but it isn't completely original, which is to say it wasn't created from scratch. It is in fact an adaptation of Debian. Debian has been around almost as long as Linux itself, having been founded in 1993, just two years after Linus Torvalds[4] made his initial announcement of the Linux kernel. Debian is widely respected within the Linux community and has some claim to be the definitive Linux distribution.

The Debian project was started by a computer scientist named Ian Murdock, and its name comes from a combination of his Christian name with that of his girlfriend Deborah—hence Deb-Ian (sort of like Brangelina).

Debian is well known for its strict adherence to the spirit of free and open source software, which is embodied in the Debian Social Contract and the Debian Free Software Guidelines (DFSG). These documents[5] lay down rules for the governance of the decentralized worldwide community that is Debian.

Debian is not, like many other Linux distributions, sponsored by any company, but rather by a not-for-profit organization called Software in the Public Interest.[6]

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[1] Windows is of course very popular as a server OS also.

[2] At the time of this writing, the full version of Windows 7 ranged from $199 to $319 (`http://www.microsoft.com/windows/buy/default.aspx`). This price did not include Microsoft Office.

[3] The kernel is commonly presented alongside with the shell, the latter being the interface between the user and the kernel. The traditional shell for Linux is based on the command line.

[4] Linus Torvalds is the original creator of the Linux kernel. See Chapter 2 for more details.

[5] Available here: `http://www.debian.org/social_contract`

[6] `http://www.spi-inc.org/`

Debian is also well known for how it manages its software. Part of the Debian project is to maintain an online database and repository of software, which is available to all Internet users. Today, more than 25,000 free applications are in there, and much care has been taken to make software installation and upgrade as easy as possible.

Ubuntu Linux Is a Full Desktop Solution

But to talk about Ubuntu Linux as just an OS would be unfair. It is much more than that.

Ubuntu Linux is built upon the sound foundation of Debian, and by all standards they are very much alike; however, they do differ in their approaches. Although supremely flexible, Debian is mostly used on servers. Ubuntu, on the other hand, is primarily a desktop distribution, although it also has a Server edition. In terms of their approaches to releasing new software, Debian is extremely cautious and issues a release only after a through bug-testing procedure. In contrast, Ubuntu is very aggressive, which allows it to include more modern software, though sometimes in not-so-stable versions.

Building upon Debian's premise, Ubuntu Linux is a full-featured desktop solution that comes with tons of applications ready to install and use. It is not just the OS that is free and open: you also get, pre-installed, the full productivity suite OpenOffice.org, a browser, a photo manager, mail and messaging clients, and much, much more. Once you install Ubuntu Linux, you will seldom need an application that is not found in its repositories. It's like being granted unrestricted access to a warehouse full of goodies!

Computers can be money pits. But with Ubuntu Linux, you can stop worrying about how much software costs and start thinking what you want to do and how to use the right tools to do it.

The Ubuntu Linux Experience

When you replace your OS, many things change with it. The interface might not look the same, the applications can be different, and you may not be able to ask the same people for help. So you may ask: "What would it be like to work with Ubuntu Linux? What would I be getting into?"

Those are good and legitimate questions. We will try to give you a preliminary impression, but the answers can be truly obtained only when you use Ubuntu yourself for the first time.

"Linux for Human Beings"

If you have heard about Linux before, you might think it is a dull and text-based OS that can only be used by computer geeks. But although the command-line shell has a central role to play, there are many different flavors of Linux (called distributions, as you will see in Chapter 2), and Ubuntu is aimed at being easy to use.

One of the nicknames for Ubuntu is "Linux for human beings."[7] This means that when the developers get together to analyze future directions for the OS, they talk about what people want to use the computer for.

Many of the improvements of Lucid Lynx, the latest version of Ubuntu Linux, are in the area of integration with social networks. It is not that the development team has any special relationship with those applications; it's just that they acknowledge that a great part of our activities with a computer today involves using sites like Facebook and Twitter. Services that so many people use should be simple and straightforward.

Another area of great improvement has been application installation. There is a new concept regarding how applications should be looked for and installed. With other operating systems, you

[7] https://help.ubuntu.com/10.04/about-ubuntu/C/