

# What is Ubuntu Linux 6.06LTS?

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# Conventions Used in This Book

In this book, I have tried to follow the following conventions of appearance:

1. Normal Text – used for prose
2. `Constant width` – used for anything you will type at the command prompt, e.g. commands, command output, and switches
3. `SMALL CAPS` – used for replaceable items in code and text
4. *Italic* – used for file and directory names
5. Inset text
  - Warning – This icon designates a warning.
  - Tip – This icon designates a tip relating to the surrounding text which can make some process easier.
  - Note – This icon designates a note relating to the surrounding text.

# Chapter 1

## What is Ubuntu Linux?

## 1.1 What is Linux?

Before I even ask the question of what Ubuntu 6.06 LTS is, I need you to understand what Linux itself is.

If you're young, every computer you've ever used may have had Microsoft Windows on it. Whether it was 95, 98, ME, or XP, you've had the same basic experience for years. Despite the similarities, these were all different *operating systems*. If you are older, you may remember DOS. That, too, is an *operating system*. Perhaps you or a friend uses or has used an Apple Mac. The current Mac OSX and the older MacOS were both *operating systems*, as well.

With that knowledge, you may guess what I'm going to tell you next: Linux is just another operating system. Well, that's not exactly true: Linux is the fundamental element<sup>1</sup> of many different operating systems, each of which is called a *distribution*. Stacked on top of Linux are various tools and programs which make up the system you see on your screen.

Now that you know that Linux is a small, essential element of your system, and that there are many different different sets of tools that you can stack on top of it, you may be intimidated by the number of choices you are faced with – don't be. We will be using one set of tools consistently throughout this book, so you won't need to

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<sup>1</sup>Called a kernel

choose one.

About this plethora of choices – don't ask for Linux to change and accept only one tool set, because its diversity is its strength. Just as a species with a diverse gene pool is stronger against disease, so a diverse set of operating systems is less likely to be taken out by a virus.

Linux is extremely flexible and is used in telephones, MP3 players, Tivos, wireless routers, servers, desktops, Google search, and many other places you wouldn't expect. Companies can turn Linux into what they want it to be because it and most of the tool sets on it can be freely used, copied, and modified. It's kind of like Silly Putty, which can be pushed into any shaped hole.

Many thousands of programmers, artists, translators, and usability experts from around the world work together through the Internet to improve Linux and its tools (or even make altogether new tools). Many of them are hired to do this by companies like IBM, Novell, or Google, but even more do it in their spare time because they love to. Like the hobbyist who carves a chair out of a single piece of wood or restores a car, they take real pride in their work, and it shows.

This pride extends to security, and Linux systems are generally very secure by design. At the time that I'm writing this, there have never been **any** known Linux viruses found in the real world, only in computer labs as proofs-of-concept.

The underlying secure nature of and number of differ-

ent tool sets on Linux make it a difficult target for virus writers, and I doubt this will ever change, even though much of the most important data on the Internet is protected by Linux systems.

Wikipedia has this technical stuff to say about Linux:

Linux is a clone of the operating system Unix, written from scratch by Linus Torvalds with assistance from a loosely-knit team of hackers across the Net. It aims towards POSIX and Single UNIX Specification compliance.

It has all the features you would expect in a modern fully-fledged Unix, including true multitasking, virtual memory, shared libraries, demand loading, shared copy-on-write executables, proper memory management, and multi-stack networking including IPv4 and Ipv6.

Although originally developed first for 32-bit x86-based PCs (386 or higher), today Linux also runs on (at least) the Compaq Alpha AXP, Sun SPARC and UltraSPARC, Motorola 68000, PowerPC, PowerPC64, ARM, Hitachi SuperH, IBM S/390, MIPS, HP PA-RISC, Intel IA-64, DEC VAX, AMD x86-64, AXIS CRIS, and Renesas M32R architectures.

Linux is easily portable to most general-purpose 32- or 64-bit architectures as long as they have a paged memory management unit (PMMU) and a port of the GNU C compiler (gcc) (part of The GNU Compiler Collection, GCC). Linux has also been ported to a number of architectures without a PMMU, although functionality is

then obviously somewhat limited. See the Clinix project for more info.

Linux is one of the many great examples of Free and Open Source software. I think that it is important for users of Free software to understand what it is just as citizens of a democratic state should understand what democracy means. I have left the choice of whether to learn about it or not up to the reader, though, by placing the information in the appendix, “What are Open Source and Free Software” on page ??.

## 1.2 Learning About Ubuntu 6.06 LTS

### What is Ubuntu 6.06 LTS?

The short answer to this question is that Ubuntu is just Linux with a specific set of tools – a set which makes life easier for the average computer user. Now for the long answer.

Ubuntu is the child of another famous distribution, Debian Linux, which is maintained by a non-profit group. Debian has been the choice for servers for over ten years now. It is amazingly stable and secure, but isn't very user-friendly.

In 2004, a Silicon Valley multi-millionaire from South Africa named Mark Shuttleworth decided to use his vast

fortune to improve the lives of poor South Africans and started Canonical, Ltd. with the goal of making Debian Linux as user-friendly as possible. He named the new distribution Ubuntu, which roughly means “humanity toward others.”

Ubuntu 4.10 (sometimes called by its developers’ name, Hoary Hedgehog) was released in October of that year, and immediately became a smash hit within the Linux community. It appeared as if many people shared Mr. Shuttleworth’s concept of what a desktop should look like and had been waiting for something like it. Ubuntu quickly gained a large share of the Linux desktop market and now stands as the number one distribution by many metrics.

## Why Ubuntu 6.06 LTS?

I think that it’s obvious why I chose to write this book using Ubuntu and not some other popular distribution like Red Hat or Suse: it makes a great server because of its Debian heritage and is still the top desktop choice – literally the best of both worlds. The one major drawback to deploying Ubuntu in a corporate or educational environment has been its quick development cycle: a new version is released every six months and old versions were deprecated too quickly to be used corporately.

Ubuntu 6.06 LTS, though, is special because it will be supported on the server for five years and on the desktop

for three. It is now possible to deploy a stable set up using Ubuntu which will not need to be changed for years. For me, this special version signaled the perfect time to write the book you're reading now.

## 1.3 Getting Ubuntu 6.06 LTS

The good news about getting Ubuntu 6.06 LTS is that it is completely free – you don't have to spend a cent to begin testing it in preparation for deployment. There are two ways to get it, neither of which will cost anything.

### Download

The fastest method for people with reliable, fast Internet service is to download and burn a CD. This is the method I suggest because it allows you to get three slightly different versions of the CD: the desktop version, the server install version, and the alternate install version. I will use all three of these in the course of the book.

If you already know how to use a Bittorrent client (for .torrent files), downloading the torrent file will be fastest for you. Be sure to leave the Bittorrent client open for a good while after your download is finished, so that you can share with others the way they shared with you. If you don't know how to use Bittorrent, downloading through your regular web browser is sufficient.

Go to the Ubuntu website and click on Download. Follow the instructions for your download method. Be sure to read the page carefully, as instructions can change regularly. If you are able to handle the large download, get a desktop i386 version, a server install i386 version, and an alternate install i386 version. Before you burn each CD, make sure to check the downloaded file against the MD5 sum listed on the download page so that you know the download wasn't corrupted.

An MD5 sum program takes the contents of a large file and compares parts of it, coming out with a thirty-two digit number which can't be easily forged. If the file is randomly changed somewhere, the MD5 sum will change radically, and this protects against accidental corruption or intentional vandalism of the file. Large downloaded files typically have the MD5 sum posted on the same download site.

You can find an MD5 sum program for your operating system by searching the Internet. Run the program on the CD image you downloaded and compare it to the one on the Ubuntu website. If the two sums are identical, then your CD image is perfect and is safe to burn to disk. Check the disk with the program after burning to make sure the burning process went smoothly. You don't want a corrupted disk or image to ruin your day!

## Ship-it CD

Canonical, Ltd. will be happy to mail you a complimentary CD. You only need to register at their website then wait several weeks for delivery. If you don't own a CD writer or have regular access to Internet service, this may be your only option. If you aren't under any time constraints and don't want to bother with a download, this option is appropriate for you.

Go to the Ubuntu website<sup>2</sup> and choose the “Ship-it CD” menu option. Click on the “create a new account” option to register for an account. When your confirmation e-mail comes, make sure the you send a reply to activate your account. After you log in to the Ship-it site, register for your CDs (yes, you can request more than one)<sup>3</sup>, your order should take between four to six weeks to arrive. A longer delay is not unheard of. If it is taking longer than expected, you can log in to the Ship-it site and check the status of your order.

## 1.4 Getting Support for Ubuntu 6.06 LTS

There is no such thing as a free lunch ....

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<sup>2</sup><http://www.ubuntulinux.org/http://www.ubuntulinux.org>

<sup>3</sup>I suggest the three pack with one for each kind of computer: PC, Mac, and AMD64.

Everyone has a least one problem with whichever operating system they use and needs help from someone else. Ubuntu is no different, with support coming in a couple of flavors, and you should seriously consider which one is right for your school. No matter what, when that problem crops up (and it will) you will pay either with your time or your money. Every operating system is the same in this way.

## **Paid Support**

If you have trouble with Microsoft Windows, you can call Microsoft or your computer manufacturer for a fee. Similarly, the makers of Ubuntu, Canonical, Ltd. will happily provide quality, paid support for their product at a reasonable price. If you need help and want that help to come from a voice on the other end of a phone line twenty-four hours a day, you should take this option. Visit the Ubuntu website<sup>4</sup> and click on the “Support” option. The most current details and prices will be available to you. At the time this book is being written, one year / ten incident support starts at US\$250 per computer.

Because Ubuntu is freely distributable and open source, other companies local to you can offer you support, as well. Take a look at the Ubuntu partner page<sup>5</sup> or your

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<sup>4</sup><http://www.ubuntulinux.org>

<sup>5</sup><http://www.ubuntu.com/partners/find>

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yellow pages or call your Chamber of Commerce for help with this.

### Free Support

If you are willing to do a little homework or to hire someone who will, there is a lot of support available from volunteers for which you don't have to pay a cent.

Your first stop for help should be the users manual on your own computer. The help system is extensive and can help you out of 75% of the jams you'll encounter. Just click help from within the application you are having trouble with or choose help from the system menu.

The second place to look for Ubuntu support is from the Ubuntu Wiki<sup>6</sup>. People who have solved common problems they encountered detail the solutions here. Simply search for some of the words describing your problem or the error message you received.

Next, take a look at the Ubuntu Forums<sup>7</sup>. If you don't see your problem there, describe your machine, the installed software, symptoms, problems, goals, and any error messages you receive. You are likely to receive an answer in a day or two, though sometimes your answer will come almost as soon as you have finished posting

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<sup>6</sup><https://wiki.ubuntu.com>

<sup>7</sup><http://www.ubuntu.com/community/forums>

and sometimes there will be no one who can answer at all.

If you don't get what you want in a forum or chatting, don't become impatient and definitely don't lose your cool on-line. The people who volunteer their time will remember you as a difficult person and might be less inclined to help you. "A spoonful of sugar helps the medicine go down" is much better to follow than "The squeaky wheel gets the grease.

If the forums can't solve your problem immediately and it's too critical to wait a day or two, join the Ubuntu IRC chat<sup>8</sup> and give the same kind of information you would give for a forum. Volunteers regularly hang out there to answer questions. Again, be nice and don't lose your cool.

Finally, if these steps fail, there's always Google Search. Although people often recommend it as a first stop, I don't. Remember that not all the advice on the web about Linux will apply to you or Ubuntu 6.06 LTS. Some advice will be for other architectures such as an older Apple, some will be for other distributions like Red Hat, and some will be for older versions of Ubuntu. Purchasing an owner's manual for a 2004 Honda CRX to fix your 1972 Ford LTD probably won't be much help, and following the advice in the manual may actually damage your car. Just as certain details like how to gap a spark plug are

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<sup>8</sup>irc.freenode.net #ubuntu

universally applicable, so some details about Linux work everywhere, but how big your gap needs to be can depend not only on the make of the car, but also the model and even the year.

## 1.5 Installing Programs in Ubuntu 6.06 LTS

We will be installing a lot of different software during our trek through this book, so I want to discuss how the philosophy for installation under Ubuntu differs from what you may be familiar with.

The normal process for installing a Windows program follows this process:

1. You search to find a suitable program for your needs, using the web, your friend, a magazine, or browsing in a store;
2. A CD is purchased or the program is downloaded;
3. An executable file (.exe) or installer file (.msi) is run by double-clicking or is auto run from a CD and some questions are answered. Most of the time, the defaults are accepted by clicking “Next” several times; and

4. The program is registered with the system so that it can be easily uninstalled later.

Almost without exception, the process above uses the mouse in a graphical, windowed environment.

The process under Ubuntu 6.06 LTS has some surprising similarities:

1. You search for a program using the package manager program;
2. The program is automatically downloaded or copied from the installation CD;
3. A package file (.deb) is run from the package manager and reasonable defaults are used wherever possible. You are asked as few questions as possible; and
4. The program is registered with the package manager, which allows it to be updated or uninstalled easily.

Any program can be installed in Ubuntu either with a mouse, or by typing commands at a text prompt. This means that server software doesn't need the extra overhead of a windowing environment which would slow it down.

The major difference between these processes is that most Windows programs are installed from outside the

system using various sources, while Ubuntu 6.06 LTS has thousands of packages available specifically for its system. Staying inside the system greatly simplifies our lives.

Always find a way to achieve your goals by using the packages listed within the package manager.

Of course, you **can** install many programs from outside the system, even downloading the source code and compiling them yourself, but this is a complicated process and leaves your system difficult to update or upgrade. I have intentionally chosen packages for this book which are available from within the Ubuntu system, giving you a more stable and flexible system in the long-term.

If you are new to Linux, **never** download the latest source code and compile yourself. Although the ability and right to do this is one of the great strengths of Linux, the process is almost sure to cause a new user problems. At the very least, you will need to follow security updates yourself, instead of leaving that to the system.

## 1.6 Updating Ubuntu 6.06 LTS

If you have been in the Windows world for some time, you have undoubtedly used the Windows Update service. This has been a convenient way to find and install security updates for your base system. It has had a few drawbacks, though:

1. It is a web-based system, so is a little slow;

2. The system uses binary patches which can cause corruption if some patches aren't applied or if they are applied in the wrong order;
3. It only updates your base system, but not other programs which you may have installed and which need updating, too. These third-party updates must be found separately and installed using the third-party tools; and
4. You originally had to visit the Windows Update website of your own volition.

The first and final cons have been mostly solved by MS Windows' use of an update icon in the system tray in recent versions, reminding you of updates.

Ubuntu has a similar system, called the Update Manager, which is closely tied to the Package Manager. The Update Manager is a program, not a web service, which makes the process a little faster. The real bonus is that updates include all the packages that you have installed through the Package Manager. The system also replaces entire files instead of patching, so there is no chance of corruption. Overall, the Ubuntu update process makes keeping your system up-to-date much easier than you may be used to.

If you see a problem with your updates, and some are waiting to be installed, don't force it. It is possible that the security situation affects several packages and a day

or more may be required to update all the packages affect so that they can be installed simultaneously. Wait it out, and contact a support method if the conflict remains for more than a few days.

