

PART 8



# Appendixes



# Glossary of Linux Terms

**T**his appendix provides brief explanations of common terms used in the Linux and Unix environments. These include technical terms, as well as conventions used within the Linux community. Because of space limitations, this glossary is somewhat selective, but still should prove a lasting reference as well as a helpful guide for those new to Linux.

Cross-referenced terms are highlighted in *italics*.

## Symbols

.

Symbol that, in the context of file management, refers to the current directory.

..

Symbol that, in the context of file management, refers to the parent directory of that currently being browsed.

/

Symbol that, in the context of file management, refers to the *root* of the file system; also separates directories in a path listing.

~

Symbol that, in the context of file management, refers to a user's home directory.

|

Pipe symbol; used at the *command prompt* to *pipe* output from one *command* to another.

>

Symbol that, when used at the *command prompt*, indicates output should *redirect* into a file.

&lt;

Symbol that, when used at the *command prompt*, indicates a *command* should accept input from a file (see *redirect*).

#

Symbol that, when it appears on the *command prompt*, usually indicates the user is currently logged in as *root*.

\$

Symbol that, when it appears on the command prompt, usually indicates the user is currently logged in as an ordinary user. (Note that some versions of *Linux/Unix* use % or > instead of \$.)

?

Wildcard character indicating that any character can be substituted in its place.

\*

Wildcard character indicating that zero or more characters can appear in its place.

**\*nix**

Popular but unofficial way of describing the family tree that comprises *Unix* and its various clones, such as *Linux* and *Minix*.

## A

### **administrator**

Another word for either the *root* user or one who has adopted that user's powers temporarily.

### **AIX**

IBM's *proprietary* form of *Unix* that runs on the company's proprietary hardware, as well as *commodity* hardware based around AMD and Intel processors. Nowadays, IBM is slowly deprecating AIX in favor of *Linux*.

### **alias**

Method of creating a user-defined *command* that, when typed, causes another command to be run or a *string* to be expanded.

### **Apache**

Popular *Open Source* web server software that runs on *Unix*, *Linux*, and other operating system platforms. Considered responsible in part for the rise in popularity of Linux in the late 1990s.

**applet**

Small program that, in the context of the *Ubuntu* desktop, runs as part of a larger program and offers functions that complement the main program. The *GNOME* desktop incorporates several applets in its notification area.

**APT**

Advanced Packaging Tool; the underlying system by which software is managed and installed on *Ubuntu* and *Debian Linux* systems. *Shell* commands beginning with *apt*, such as *apt-get*, are used to install new software from various repositories. Under *Ubuntu*, the Synaptic Package Manager program provides a *GUI* method of using APT.

**archive**

Any file containing a collection of smaller files, compressed or otherwise (see also *tar*).

**B****BASH**

Bourne Again SHell. The most common *shell* interpreter used under *Linux* and offered as default on many Linux systems.

**binary executable**

Another way of referring to a program that has been compiled so that it can be used day-to-day. See also *compile*.

**block device**

How the *Linux kernel* communicates with a *device* that sends and receives blocks of data; usually a hard disk or removable storage device. See also *character device*.

**BSD Unix**

Berkeley Software Distribution Unix; form of *Unix* partially based on the original Unix *source code* but also incorporating recent developments. BSD is *open source* and free for all to use and share with practically no restrictions. There are various forms of BSD Unix, such as FreeBSD, NetBSD, and OpenBSD. BSD doesn't use the *Linux kernel*, but it runs many of the same programs. Some of the programs offered within the Linux operating system come from BSD.

**bzip2**

Form of file compression. Together with the older and less efficient *gzip*, it is a popular form of file compression under *Linux* and the equivalent to Zip compression under Windows. Files employing bzip compression are usually given a *.bz2* file extension. See also *tar*.

# C

## C

Programming language in which much of the *Linux kernel* is written, as were later versions of *Unix* before it. C was created by some of the same people who created Unix, and its development mirrors that of Unix.

## C++

Object-oriented programming language; originally designed to be an enhancement to C, but now seen as a popular alternative.

## C#

Modern programming language, which uses similar syntax to C, created by Microsoft and re-created on *Linux* via the Mono project.

## character device

How Linux refers to a *device* that sends/receives data asynchronously. For various technical reasons, this typically refers to the *terminal* display. See also *block device*.

## checksum

Mathematical process that can be applied to a file or other data to create a unique number relative to the contents of that file. If the file is modified, the checksum will change, usually indicating that the file in question has failed to download correctly or has been modified in some way. The most common type of checksum program used under *Linux* is md5sum.

## client

Shorthand referring to a computer that connects to a *server*.

## closed source

The reverse of *Open Source* in which the *source code* is not available for others to see, share, or modify. See also *proprietary*.

## code

See *source code*.

## command

Input typed at the *shell* that performs a specific task, usually related to administration of the system and/or the manipulation of files.

**command-line prompt**

See *shell*.

**commodity**

In the context of hardware, describes PC hardware usually based around Intel or AMD processors that can be bought off the shelf and used to create sophisticated computer systems (as opposed to buying specially designed hardware). One reason for *Linux*'s success is its ability to use commodity hardware.

**community**

The general term for the millions of *Linux* users worldwide, regardless of what they use Linux for or their individual backgrounds. By using Linux, you automatically become part of the community.

**compile**

The practice of creating a binary file from *source code*, usually achieved using the `./configure`, `make`, `make install` series of commands and scripts.

**config file**

Configuration file; any file that contains the list of settings for a program. Sometimes it's necessary to edit config files by hand using programs like *vi* or *Emacs*, but often the program itself will write its config file according to the settings you choose.

**copyleft**

The legal principle of protecting the right to share a creative work, such as a computer program, using a legally binding license. Copyleft also ensures future iterations of the work are covered in the same way.

**cracker**

Someone who breaks into computer systems to steal data or cause damage. The term is not necessarily linked to *Linux* or *Unix* but was created by the *community* to combat the widespread use of hacker in this sense. The word *hacker* has traditionally defined someone who merely administers, programs, and generally enjoys computers.

**cron**

Background *service* that schedules tasks to occur at certain times. It relies on the crontab file.

**CUPS**

Common Unix Printing System; set of programs that work in the background to handle printing under *Unix* and *Linux*.

**curses**

*Library* that lets software present a semigraphical interface at the *shell*, complete with menu systems and simple mouse control (if configured). The version of *curses* used under *Linux* and *Unix* is called *ncurses*.

**CVS**

Concurrent Versioning System; application that allows the latest version of software packages to be distributed over the Internet to developers and other interested parties.

**D****daemon**

See *service*.

**Debian**

Voluntary organization that produces *distributions* of *Free Software* operating systems, including *Linux*. Because it is a nonprofit organization run by passionate Free Software advocates, it is considered the most ethically sound of all Linux outfits. Many *distributions*, including *Ubuntu*, use Debian as the basis for their software because of its claimed reliability and relative simplicity.

**dependency**

A way of referring to system files that a program requires in order to run. If the dependencies are not present during program installation, a program might refuse to install.

**device**

*Linux* shorthand describing something on your system that provides a function for the user or that the system requires in order to run. This usually refers to hardware, but it can also describe a virtual device that is created to provide access to a particular Linux function.

**directory**

What Windows refers to as a folder; areas on a hard disk in which files can be stored and organized.

**distribution**

A collection of software making up the *Linux* operating system; also known as a *distro*. The software is usually compiled by either a company or organization. A distribution is designed to be easy to install, administer, and use by virtue of it being an integrated whole. Examples include *Ubuntu*, *SUSE Linux*, *Red Hat*, and *Debian*.

**distro**

Shorthand for *distribution*.

**documentation**

Another way of describing written guides or instructions; can refer to online sources of help as well as actual printed documentation.

**dpkg**

*Shell command* that can be used to administer software under *Ubuntu* and *Debian*. However, the *APT* system, which uses *dpkg*, is the preferred method of installing software.

**E****Emacs**

Seminal text editor and pseudo-*shell* beloved by *Unix* aficionados; can be used for programming tasks, simple word processing, and much more. This editor has cultural significance as one of the core pieces of software offered by *GNU Project, The*. Emacs was originally developed principally by *Stallman, Richard*. See also *vi*.

**environment**

Shorthand referring to a user's unique *Linux* configuration, such as variables that tell the *shell* where programs are located.

**F****FAT32**

File Allocation Table 32-bits; file system offered by Windows 98, Me, 2000, and XP. *Linux* can both read and write to FAT32 file systems. See also *NTFS* and *VFAT*.

**Firefox**

Web browser program used under *Ubuntu* and produced by the *Mozilla Foundation*.

**FLOSS**

Free, Libre, or Open Source Software; used within the *community* to describe all software or technology that, broadly speaking, adheres to the ethical approach of *Open Source* software and/or *Free Software*, as well as its legal guidelines.

**FOSS**

Free or Open Source Software; alternative term for *FLOSS*.



**free**

When used to describe software or associated areas of technology, “free” indicates that the project abides by the ethical (if not legal) guidelines laid down by *GNU Project, The*. It doesn’t indicate that the software is free in a monetary sense; its meaning is quite different from “freeware.”

**Free Software**

Software in which the *source code*—the original listing created by the programmer—is available for all to see, share, study, and adapt to their own needs. This differs from the concept of *open source*, because the right of others to further modify the code is guaranteed via the *GNU Public License* (GPL) software license (or a compatible license). For various reasons, Free Software sometimes does not include the source code (although the software can still be legally decompiled), but this is rare.

**G****gcc**

GNU Compiler Collection; programs used when creating *binary executable* files from *source code*.

**gid**

Group ID; numbering system used by the operating system to refer to a *group*.

**GIMP**

GNU Image Manipulation Program; high-powered image-editing program that runs under *Linux*, *Unix*, Windows, and other operating systems. Often preceded by the definite article: “The GIMP.”

**GNOME**

GNU Network Object Model Environment; a *GUI*-based desktop environment used by *Ubuntu*, as well as several other *distributions*. It uses the GTK+ *libraries*. See also *KDE*.

**GNU**

GNU’s Not Unix; see *GNU Project, The*.

**GNU/Linux**

Another name for the operating system referred to as *Linux*. The name GNU/Linux gives credit to the vast quantity of *GNU Project, The* software that is added to the *Linux kernel* within a *distro* to make a complete operating system. As such, GNU/Linux is the preferred term of many *Free Software* advocates.

**GNU Project, The**

Organization created by *Stallman, Richard* in order to further the aims of *Free Software* and create the body of software that makes up the *GNU* operating system.

**GNU Public License**

Software license principally created by *Stallman, Richard* in order to protect software *source code* against *proprietary* interests and ensure that it will always be shared. It does this by insisting that any source code covered by the GNU Public License (GPL) must remain licensed under the GPL, even after it has been modified or added to by others. The *Linux kernel*, as well as much of the software that runs on it, uses the GPL.

**GPL**

See *GNU Public License*.

**grep**

Global Regular Expression Print; powerful *shell command* that lets you search a file or other form of input using *regular expressions*. Because of the ubiquity of the *grep* program, many *Linux* and *Unix* users refer to searching as “grepping.” To “*grep* a file” is to search through it for a *string*.

**group**

Collection of users under one heading (group name) to facilitate system administration.

**GRUB**

GRand Unified Bootloader; boot manager program that offers a menu from which you can choose which operating system you wish to boot. It's needed to load the *kernel* program and thereby initiate the *Linux* boot procedure.

**GUI**

Graphical user interface; describes the software that provides a graphical system to display data and let you control your PC (usually via a mouse).

**guru**

One who is experienced and knowledgeable about *Linux/Unix* and is willing to share his or her knowledge with others. In a perfect world, every *newbie* would have his or her own guru.

**gzip**

One of the two preferred forms of file compression used under *Linux*. Files employing *gzip* compression usually have a *.gz* file extension. See also *bzip2*.

# H

## hack

Ingenious and/or extremely efficient solution to a problem, particularly within the programming world.

## hacker

Term used within the *community* to describe anyone who enjoys computers and possesses some skill therein, either in a professional capacity or as a hobby. This term is distinct from connotations of maliciously breaking into computers propagated by the media. See also *cracker*.

## host

Shorthand referring to any computer that acts as a *server* to another computer. See also *client*.

## HP-UX

Hewlett-Packard's *proprietary* form of *Unix* designed to work on its own hardware platform.

## Hurd

*Kernel* being developed by *GNU Project, The*. It's not associated with the *Linux* kernel in any way.

# I

## info

Source of *documentation* accessible from the *shell*; an alternative to the more established *man page* system. Also known as Texinfo.

## init

The program that is automatically run after the *kernel* has finished loading, and therefore early in the boot procedure. It's responsible for effectively starting the operating system.

## init.d

Collection of startup *scripts* that make up the components of a *run level*. Under *Ubuntu*, these are found at `/etc/init.d`. *Symbolic links* to selected `init.d` scripts are contained in folders within `/etc/init.d` that are named after *run level* numbers, such as `rc0.d`, `rc1.d`, `rc2.d`, and so on.

## initrd

Initial RAM disk; system used by the *Linux kernel* to load *modules* that are essential for the kernel to be able to boot, such as disk controllers.

**inode**

Part of the usually invisible file system structure that describes a file, such as its ownership permissions or file size.

**ipchains**

Now deprecated component of version 2.2 of the *Linux kernel* that allows the creation of network security setups, such as firewalls or port-forwarding arrangements. Note that some *distros* still prefer to use *ipchains*. See also *iptables*.

**iptables**

Component of versions 2.4 and 2.6 of the *Linux kernel* that allows powerful network security setups. Chiefly used in the creation of firewalls, but can be used for more elementary arrangements such as network address translation (NAT) routers.

**J****job**

How the *BASH shell* refers to a running program in order to facilitate administration by the user.

**journaling**

File system technology in which integrity is maintained via the logging of disk writes.

**K****KDE**

K desktop environment; *GUI* and set of additional programs used on various *distros*, such as *Mandriva* and a variation of *Ubuntu* called *Kubuntu*.

**kernel**

Essential but ordinarily invisible set of programs that run the computer's hardware and provide a platform on which to run software. In the *Linux* operating system, the kernel is also called *Linux*, after its creator, *Torvalds*, *Linus*.

**kernel panic**

Error message that appears when the *kernel* program in *Linux* cannot continue to work. In other words, a polite way of indicating a crash or, more often, a problem arising from user misconfiguration. This is most often seen when booting up after making incorrect changes to the system.

**Kludge**

*Community* slang describing an inelegant way of making something work, usually not in a way that is generally accepted as being correct. Pronounced “kloodge.”

**Kubuntu**

Version of *Ubuntu* that substitutes the *GNOME* desktop environment for *KDE*.

**L****LAMP**

Acronym describing a series of programs that work together to provide a complete *Linux*-based web-hosting environment. Stands for *Linux*, *Apache*, *MySQL*, and Perl, PHP, or Python (the last three in the list are scripting languages; see *script*).

**LGPL**

Lesser GPL; version of the *GNU Public License* (GPL) in which some use restrictions are slackened at the expense of various freedoms laid down by the main GPL. The LGPL is mostly used for *library* files.

**library**

General term referring to code that programs need to run and that, once in memory, is frequently accessed by many programs (leading to the phrase “shared library”). The most common and vital library is glibc (GNU C Library), created by *GNU Project*, *The* and the fundamental building block without which *Linux* could not operate. *GNOME* relies on the GTK+ libraries, among others.

**link**

File system method of assigning additional filenames to a file; also known as a “hard link.” See also *symbolic link*.

**Linux**

You mean you don’t know by now? Linux is what this book is all about. It is a *kernel* program created by *Torvalds*, *Linus* in 1991 to provide an inexpensive operating system for his computer, along with other components. These days, Linux is used to describe the entire operating system discussed in this book, although many argue (perhaps quite rightly) that this is inaccurate, and use the term *GNU/Linux* instead.

**local**

Shorthand referring to the user's PC or a device directly attached to it (as opposed to *remote*).

**localhost**

(1) Network name used internally by *Linux* and software to refer to the *local* computer, distinct from the network.

(2) Default name given to a Linux-based PC when no other name is defined during installation. However, under Ubuntu, the name *ubuntu* is assigned if no name is defined by the user.

## M

**man page**

*Documentation* accessible from the *shell* that describes a *command* and how it should be used.

**Minix**

Operating system that is a rough clone of *Unix*, created by Professor Andrew Tanenbaum. It was the inspiration for *Linux*.

**module**

Program code that can be inserted or removed from the *kernel* in order to support particular pieces of hardware or provide certain kernel functions. Drivers under Windows perform the same function.

**mount**

To add a file system so that it is integrated (and therefore accessible) within the main file system; applies to external file systems, such as those available across networks, as well as those on the *local* PC, such as the hard disk or CD/DVD-ROMs.

**Mozilla Foundation**

Organization founded by Netscape to create *open source* Internet software, such as web browsers and e-mail clients; originally based on the Netscape *source code*. At the time of this writing, it produces the *Firefox* and Camino web browsers, the Thunderbird e-mail and Usenet client, the Bugzilla bug-tracking software, as well as other programs.

**MySQL**

Popular and powerful *open source* database application. See also *LAMP*.

## N

### **newbie**

Term used to describe anyone who is new to *Linux* and therefore still learning the basics. It's not a derogatory term! See also *guru*.

### **NFS**

Network File System; reliable and established method of sharing files, printers, and other resources across a network of *Unix*-based operating systems. See also *Samba*.

### **NTFS**

NT File System; file system offered by Windows NT, 2000, and XP. It can be read by *Linux*, but usually writing is prohibited because it is considered unsafe. See also *FAT32*.

## O

### **OpenOffice.org**

*Open Source* office suite project created with the continuing input of Sun Microsystems and based on code Sun contributed to the Open Source *community*. Its commercial release is in the form of Star Office (although Star Office has several *proprietary* components added).

### **open source**

(1) Method and philosophy of developing software whereby the *source code*—the original listing created by the programmer—is available for all to see. Note that open source is not the same as *Free Software*; describing software as open source doesn't imply that the code can be shared or used by others (although this is often the case).

(2) A community of users or any project that adheres to open-source values and/or practices.

## P

### **partition**

Subdivision of a hard disk into which a file system can be installed.

### **PID**

Process ID; the numbering system used to refer to a *process*.

**pipe**

Method of passing the output from one *command* to another for further processing. Piping is achieved within the *shell* by typing the `|` symbol.

**POSIX**

Portable Operating System Interface; various technical standards that define how *Unix*-like operating systems should operate and to which the *Linux* operating system attempts to adhere.

**PPP**

Point-to-Point Protocol; networking technology that allows data transfer across serial connections like telephone lines. In other words, it's the technology that lets you connect to your Internet service provider using a modem.

**process**

The way the system refers to the individual programs (or components of programs) running in memory.

**proprietary**

Effectively, software for which a software license must be acquired, usually for a fee. This usually means the *source code* is kept secret, but it can also indicate that the source code is available to view but not to incorporate into your own projects or share with others.

# R

**Red Hat**

Well-known company that produces distributions of *Linux*.

**redirect**

To send the output of a *command* into a particular file. This also works the other way around: the contents of a particular file can be directed into a command. Redirection is achieved within the *shell* using the left and right angle brackets (`<` and `>`), respectively.

**regex**

See *regular expression*.

**regular expression**

Powerful and complex method of describing a search *string*, usually when searching with tools such as *grep* (although regular expressions are also used when programming). Regular expressions use various symbols as substitutes for characters or to indicate patterns.



**remote**

Indicates a computer or *service* that is available across a network, including but not limited to computers on the Internet (as opposed to *local*).

**root**

- (1) The bottom of the *Linux* file system directory structure, usually indicated by a forward slash (/).
- (2) The user on some versions of *Unix* or *Linux* who has control over all aspects of hardware, software, and the file system.
- (3) Used to describe a user who temporarily takes on the powers of the root user (via the *sudo* command, for example).

**RPM**

Red Hat Package Manager; system used to install and administer programs under *Red Hat*, *SUSE Linux*, and some other *distributions*. See also *APT*.

**RTFM**

Read the freaking manual/ *man page*; exclamation frequently used online when a *newbie* asks for help without having undertaken basic research.

**run level**

Describes the current operational mode of *Linux* (typically, the *services* that are running). Run level 1 is single-user mode (a stripped-down system with minimal running services); run levels 2 through 5 provide a *GUI*; run level 6 is reboot mode (switching to it will cause the computer to terminate its processes and then reboot); run level 0 is shutdown (switching to it will cause the PC to shut down).

**S****Samba**

Program that re-creates under *Unix* or *Linux* the Microsoft *SMB*-based system of sharing files, printers, and other computer resources across a network. It allows Linux to become a file or printer server for Linux and Windows computers, and also allows a Linux client to access a Windows-based server.

**scalable**

Term describing the ability of a single computer program to meet diverse needs, regardless of the scale of the potential uses. The *Linux kernel* is described as being scalable, because it can run supercomputers, as well as handheld computers and home entertainment devices.

**script**

Form of computer program consisting of a series of *commands* in a text file. Most *shells* allow some form of scripting, and entire programming languages such as Perl are based around scripts. In the context of the Linux operating system, shell scripts are usually created to perform trivial tasks or ones that frequently interact with the user. Shell scripts have the advantage that they can be frequently and easily modified. The *Linux* boot process relies on several complex scripts to configure essential system functions such as networking and the *GUI*. See also *init*.

**server**

- (1) Type of computer designed to share data with other computers over a network.
- (2) Software that runs on a computer and is designed to share data with other programs on the same PC or with other PCs across a network.

**service**

Background program that provides vital functions for the day-to-day running of *Linux*; also known as a *daemon*. Services are usually started when the computer boots up and as such are constituent parts of a *run level*.

**shell**

Broadly speaking, any program that creates an operating environment in which you can control your computer. The *GNOME* desktop can be seen as a shell, for example. However, it's more commonly understood within *Unix* and *Linux* circles as a program that lets you control the system using *commands* entered at the keyboard. In this context, the most common type of shell in use on Linux is *BASH*.

**Shuttleworth, Mark**

Entrepreneurial South African businessman who, as a long-term *Debian hacker*, devised and financially supports *Ubuntu* via his company, Canonical Ltd.

**SMB**

Server Message Block; network technology for sharing files, printers, and other resources. See also *Samba*.

**Solaris**

Form of *Unix* sold by Sun Microsystems; runs on *proprietary* hardware systems as well as on *commodity* systems based on Intel and AMD processors.

**source code**

The original program listing created by a programmer. Most programs that you download are precompiled—already turned into *binary executables* ready for general use—unless you specifically choose to download and *compile* the source code of a program yourself.

**SSH**

Secure SHell; program that lets you access a *Linux/ Unix* computer across the Internet. SSH encrypts data sent and received across the *link*.

**SSL**

Secure Sockets Layer; form of network data transfer designed to encrypt information for security purposes. It's used online for certain web sites and also within *Linux* for certain types of secure data exchange.

**Stallman, Richard M.**

Legendary *hacker* who founded *GNU Project*, *The* and created the concept of *copyleft*, as well as the software license that incorporates it: the *GNU Public License* (GPL). See also *Torvalds*, *Linus*.

**standard error**

*Linux* and *Unix* shorthand for the error output provided by a *command*.

**standard input**

*Linux* and *Unix* shorthand for the *device* usually used to provide input to the *shell*. For the majority of desktop PC users, this refers to the keyboard.

**standard output**

*Linux* and *Unix* shorthand for the *device* usually used to display output from a *command*. For the majority of desktop PC users, this refers to the screen.

**string**

A word, phrase, or sentence consisting of letters, numbers, or other characters that is used within a program and is often supplied by the user.

**sudo**

Program that runs under *Unix* and *Linux* by which ordinary users are temporarily afforded *administrator* rights. Ubuntu relies on *sudo* as the exclusive way for users to administer the system.

**SVG**

Scalable Vector Graphics; vector graphics technology. SVG is actually an XML markup language designed to create 2D graphics, increasingly used for *Linux* desktop icons and web graphics.

**swap**

Area of the hard disk that the *Linux kernel* uses as a temporary memory storage area. Desktop or *server Linux* differs from Windows in that it usually requires a separate hard disk *partition* in which to store the swap file.

**symbolic link**

Type of file akin to a Windows shortcut. Accessing a symbolic link file routes the user to an actual file. See also *link*.

**sysadmin**

Systems administrator; a way of describing the person employed within a company to oversee the computer systems. In such an environment, the sysadmin usually is the *root* user of the various computers.

**System V**

Variant of *Unix* used as a foundation for modern forms of *proprietary* Unix.

**T****tainted**

Describes a *kernel* that is using *proprietary modules* in addition to *Open Source* modules. Can also refer to insecure software.

**tar**

Tape ARchive; software able to combine several files into one larger file in order to back them up to a tape drive or simply transfer them across the Internet. Such files are usually indicated by a *.tar* file extension. Note that a tar file isn't necessarily compressed; the *bzip2* and *gzip* utilities must be used if this is desired.

**TCP/IP**

Transmission Control Protocol/Internet Protocol; standard protocol stack used by most modern operating systems to control and communicate across networks and also across the Internet (as opposed to NetBEUI, commonly available on older versions of Windows, and IPX/SPX, used on Novell's NetWare operating system).

**terminal**

Another word for *shell*.

**TeX**

Method and set of programs for typesetting complex documents. Invented prior to word processors and desktop publishing software, and now considered a specialized tool for laying out scientific texts. An updated version of the program called LaTeX is also available.

**Torvalds, Linus**

Finnish programmer who, in 1991, created the initial versions of the *Linux kernel*. Since then, he has taken advantage of an international network of volunteers and staff employed by various companies who help produce the kernel. Torvalds himself contributes to and oversees the efforts.

**tty**

Teletypewriter; shorthand referring to underlying *Linux* virtual *devices* that allow programs and users to access the *kernel* and thereby run programs.

**Tux**

The name of the penguin character that is the *Linux* mascot. The original Tux graphic was drawn by Larry Ewing.

**U****Ubuntu**

*Linux* distribution with several unique characteristics. Ubuntu is designed primarily for desktop use, although several server versions are available. It is intended for use by individuals in any location in the world, so it has strong multiple language support. It's run by the *Ubuntu Foundation*, which is financially backed by *Shuttleworth, Mark*. Each release is guaranteed to be supported for 18 months (5 years in the case of server releases).

**Ubuntu Foundation**

Organization set up by *Shuttleworth, Mark* and his company, Canonical, Ltd., to administer and provide support for the *Ubuntu* distribution of *Linux*.

**UID**

User ID; numbering system used by the operating system to refer to a *user*.

**Unix**

Seminal operating system created as a research project in 1969 by Kenneth Thompson and Dennis Ritchie at Bell Labs (later AT&T). Because it was initially possible to purchase the *source code* for a fee, subsequent revisions were enhanced by a variety of organizations and went on to run many mainframe and minicomputer systems throughout the 1980s, 1990s, and up to the present. Nowadays, Unix is fragmented and exists in a variety of different versions. Perhaps most popular is its *Open Source* rendition, *BSD Unix*, which has seen many developments since the source code was first released. This means that BSD Unix no longer exists but has instead diversified into a number of separate projects. *Proprietary* versions are also available, including *Solaris*, *HP-UX*, and *AIX*.

**user**

The way the operating system refers to anyone who accesses its resources. A user must first have a user account set up, effectively giving that user his or her own private space on the system. In addition to actual human users, an average *Linux* system has many other user accounts created to let programs and *services* go about their business. These are usually not seen by human users.

## V

**variable**

A changeable value that stores a certain data type (such as a number, date, or *string*), remembering it for future reference by the system or *script* it is defined by. Variables defined by and for the *Linux kernel* are vital to it.

**verbose**

*Command* option that will cause it to return more detailed output (or, in some cases, to return actual output if the command is otherwise “quiet”); usually specified by adding the `-v` command option.

**VFAT**

Virtual File Allocation Table; technical name of Microsoft’s FAT file system offered under Windows and also on removable storage devices such as flash memory cards.

**vi**

Arcane text editor and pseudo-*shell* beloved by *Unix* aficionados that can be used for creation of text files or for creating programs. Traditionally, Unix users either love or hate vi; some prefer *Emacs*. Nowadays new and improved versions of vi are available, such as vim, used under Ubuntu.

## W

**Wine**

Short for Wine Is Not an Emulator; software that re-creates the Windows Application Programming Interface (API) layer within *Linux* and lets users run Windows programs.

**workspace**

*X* terminology referring to a *GUI* desktop.

# X

## X

Short for X Window; software that controls the display and input devices, thereby providing a software foundation on top of which desktop managers like *GNOME* are able to run.

## X11

Version 11 of the *X* software, currently in use on most desktop *Linux* systems.

## XFree86 Project

Organization that creates *X* software. At one time, every *distribution* of *Linux* used XFree86 software, but most now use similar software from the *X.org* organization.

## xinetd

The *service* responsible for starting various network servers on the computer.

## XMMS

Audio player program.

## X.org

Organization that produces the X Window software and, in particular, a set of programs called X11. X11 is used on most modern distributions of *Linux*. It is backed by a number of *Unix* and Linux industry leaders.

## xterm

Simple program that allows you to run a shell under X. This program has the advantage of being available on most *Linux* systems that offer a *GUI*.



# BASH Command Index

**T**his appendix provides a whistle-stop tour of commands that can be used at the BASH shell. This is a highly selective listing, intended to provide a guide to commands that see day-to-day use on average desktop systems. In a similar fashion, although some command options are listed, they're strictly limited to those that receive regular deployment.

The descriptions of each command are deliberately simple. Note that the quantity of space a command is given is not an indication of its importance or usefulness. To this end, commands in the list with an asterisk after their name offer far more than hinted at by its brief description hints. In such cases, we strongly advise that you refer to the command's man page for more information.

Various conventions are used in the list:

- You should substitute your own details wherever italicized words appear.
- Commands that can and might be run by ordinary users are preceded with a dollar sign (\$).
- Commands that require root privileges (the use of `sudo`) are preceded with a hash symbol (#).

Commands that present dangers to the system through misuse are clearly marked. Such commands should not be used without research into the command's usage and function.



Command	Description	Typical Command Options	Examples of Use
\$ alias	Create or display command aliases		alias list=ls
\$ alsamixer	Alter audio volume levels		alsamixer
\$ apropos	Search man pages for specified words/phrases		apropos "word or phrase"
\$ apt-cache	Search, query, and otherwise manipulate the APT database cache (see apt-get)	search: Search for specified package (regexes may be used; see Chapter 15)  showpkg: Show information about specified package  depends: Show package dependencies of specified package, and show other packages that can meet that dependency	apt-cache search packagename
# apt-get	Multifunction tool use to install, remove, and otherwise administer software packages, according to the APT database	install: search for and install specified package from repositories (as specified in /etc/apt/sources.list)  update: Update or build package database by contacting package repositories  upgrade: Attempt to upgrade all current installed packages with new versions  dist-upgrade: Attempt to upgrade all currently installed packages, automatically and aggressively resolving package conflicts; often used to upgrade entire distro to new version  remove: Opposite of install; removes packages  clean: Remove any old package installation files that are stored on hard disk  -f: Attempt to fix broken package dependencies (used with install or remove)  --force-yes: Override any errors and thereby bypass apt-get's protective measures. Dangerous option—use with care!	apt-get install packagename

Command	Description	Typical Command Options	Examples of Use
\$ <code>bzip2</code>	Compress specified file (replaces original file with compressed file and gives it .bz2 file extension)	-d: Decompress specified file -k: Don't delete original file -t: Test; do a dry run without writing any data	<code>bzip2 myfile</code>
\$ <code>bzip2recover</code>	Attempt recovery of specified damaged .bz2 file		<code>bzip2recover myfile.tar.bz2</code>
\$ <code>cal</code>	Display calendar for current month (or specified month/year)		<code>cal 4 2005</code>
\$ <code>cat</code>	Display a file on screen or combine and display two files together		<code>cat myfile</code>
\$ <code>cd</code>	Change to specified directory		<code>cd /usr/bin</code>
\$ <code>cdparanoia *</code>	Convert CD audio tracks to hard disk files	-B: Batch mode; convert all tracks to individual files -S: Set CD read speed (2, 4, 8, 12, and so on; values relate to CD-drive spin speed; used to avoid read errors)	<code>cdparanoia -S 8 -B</code>
# <code>cdrecord *</code>	Burn audio or CD-R/RW data discs (the latter usually based on an ISO image; see <code>mkisofs</code> )	-dev=: Specify the drive's device number (can be discovered by running <code>cdrecord</code> with the <code>scanbus</code> option) --scanbus: Scan to see which CD-R/RW drives are present and return device numbers -speed=: Specify the write speed (2, 4, 6, 8, and so on) -v: Verbose output; obligatory for feedback on <code>cdrecord</code> 's progress	<code>cdrecord dev=0,0,0 -speed=16 -v myfile.iso</code>
# <code>cdisk *</code>	DANGEROUS! Menu-based disk-partitioning program		<code>cdisk /dev/hda</code>
# <code>chgrp</code>	Change group ownership of a file/directory	-R: Recursive; apply changes to subdirectories	<code>chgroup mygroup myfile</code>
\$ <code>chmod</code>	Change permissions of a file/directory (where a=all, u=user, g=group; and r=read, w=write, x=executable)	-R: Recursive; apply to subdirectories --reference=: Copy permissions from specified file	<code>chmod a+rwx myfile</code>
\$ <code>chown</code>	Change file ownership to specified username	-R: Recursive; apply to subdirectories	<code>chown username myfile1</code>

Command	Description	Typical Command Options	Examples of Use
# chroot	Change the root of the file system to the specified path		<i>chroot /home/mydirectory</i>
# chvt	Switch to the specified virtual terminal (equivalent of holding down Ctrl+Alt and pressing F1–F6)		<i>chvt 3</i>
\$ clear	Clears terminal screen and places cursor at top		<i>clear</i>
\$ cp	Copy files	-r: Recursive; copy subdirectories and the files therein -s: Create symbolic link instead of copying	<i>cp myfile1 directory/</i>
\$ crontab	Edit or display the user's crontab file (scheduled tasks)	-e: Edit the crontab file (create/amend) -l: List crontab entries -r: Delete the crontab file -u: Specify a user and edit their crontab file	<i>crontab -e</i>
\$ date	Display the date and time		<i>date</i>
\$ df	Display free disk space within file system	-h: Human readable; display sizes in KB, MB, GB, and TB, as appropriate -l: Restrict to local file systems, as opposed to network mounts	<i>df -h</i>
\$ diff	Display differences between specified files	-a: Consider all files text files (don't halt when asked to compare binary files) -i: ignore lowercase and uppercase differences	<i>diff myfile1 myfile2</i>
\$ diff3	Display differences between three specified files		<i>diff3 myfile1 myfile2 myfile3</i>
\$ dig	Look up IP address of specified domain		<i>dig mysite.com</i>
\$ dmesg	Display kernel message log		<i>dmesg</i>
# dosfsck *	Check and repair MS-DOS-based file hard disk partition (see also fsck)	-a: Repair without asking user for confirmation -r: Repair file system asking user for confirmation when two or more repair methods are possible -v: Verbose; display more information	<i>dosfsck -rv /dev/hda4</i>

Command	Description	Typical Command Options	Examples of Use
# dpkg	Install, remove, and otherwise administer local installation packages (on your hard disk); see also <code>apt-get</code>	-i: Install specified package -r: Remove (uninstall) specified package -I: Show info about specified package --ignore-depends= <i>packagename.deb</i> : Don't halt on package dependency issues (dangerous!)	<code>dpkg -i packagename.deb</code>
# dpkg-reconfigure	Reconfigure an already installed package		<code>dpkg-reconfigure packagename</code>
\$ du	Show sizes of files and folders in kilobytes	-h: Human readable; produce output in MB, GB, and TB -s: Summary; display totals only for directories rather than for individual files	<code>du -h /home/myuser</code>
\$ eject	Eject a removable storage disk	-t: Close an already open tray	<code>eject /media/dvd-rom</code>
\$ ex *	Start a simple text-editor program used principally within shell scripts		<code>ex myfile.txt</code>
\$ exit	Log out of shell (end session)		<code>exit</code>
\$ fdformat	Low-level format a floppy disk (this won't create a file system; see also <i>mkfs</i> )		<code>fdformat /dev/fd0</code>
# fdisk *	DANGEROUS! Hard-disk partitioning program	-l: List partition table	<code>fdisk /dev/hda</code>
\$ fg	Brings job running in background to foreground		<code>fg 1</code>
\$ file	Display information about specified file, such as its type		<code>file myfile</code>
\$ find *	Find files by searching directories (starting in current directory)	-maxdepth: Specify the number of subdirectories levels to delve into, starting from 1 (current directory) -name: Specify name of file to search for -type: Specify file types to be returned; -type d returns directories and -type f returns only files	<code>find -name "myfile"</code>

Command	Description	Typical Command Options	Examples of Use
\$ free	Display information about memory usage	-m: Show figures in MB -t: Total the columns at bottom of table	free -m
# fsck *	Check file system for errors (usually run from rescue disc)		fsck /dev/hda1
\$ ftp *	FTP program for uploading/downloading to remote sites		ftp ftp.mysite.com
\$ fuser	Show which processes are using a particular file or file system	-v: Verbose; detailed output	fuser -v myfile
\$ grep *	Search specified file for specified text string (or word)	-i: Ignore uppercase and lowercase differences -r: Recursive; delve into subdirectories (if applicable) -s: Suppress error messages about inaccessible files and other problems	grep "phrase I want to find" myfile.txt
# groupadd	Create new group		groupadd mygroup
# groupdel	Delete specified group		groupdel mygroup
\$ groups	Display groups the specified user belongs to		groups myuser
\$ gzip	Compress files and replace original file with compressed version	-d: Decompress specified file -v: Verbose; display degree of compression	gzip myfile
# halt	Initiate shutdown procedure, ending all processes and unmounting all disks	-p: Power off system at end of shutdown procedure	halt -p
# hdparm *	DANGEROUS! Tweak or view hard disk settings		hdparm /dev/hda
\$ head	Print topmost lines of text files (default is first 10 lines)	-n: Specify number of lines (such as -n 5)	head myfile.txt
\$ help	Display list of common BASH commands		help
\$ history	Display history file (a list of recently used commands)		history

Command	Description	Typical Command Options	Examples of Use
\$ host	Query DNS server based on specified domain name or IP address	-d: Verbose; return more information  -r: Force name server to return its cached information rather than query other authoritative servers	host 82.211.81.166
\$ hostname	Display localhost-style name of computer		hostname
\$ id	Display username and group info of specified user (or current user if none specified)		id myuser
# ifconfig *	Display or configure settings of a network interface (assign an IP address, subnet mask, and activate/deactivate it)	down: Disable interface (used at end of command chain)  netmask: Specify a subnet mask  up: Enable interface (used at end of command chain)	ifconfig eth0 192.168.0.10 netmask 255.255.0.0 up
\$ info *	Display info page for specified command		info command
# init	Change current run level		init 1
\$ jobs	Display list of jobs running in background		jobs
\$ kill	Kill specified process		kill 1433
\$ killall	Kill process(es) that have specified name(s)	-i: Confirm before killing process  -v: Verbose; report if and when successful	killall processnumber
\$ last	Display details of recent logins, reboots, and shutdowns		last
\$ ldd	Display system files (libraries) required by specified program		ldd /usr/bin/program
\$ less	Interactively scroll through a text file	-q: Quiet; disable beeps when end of file is reached or other error encountered  -i: Ignore case; make all searches case-insensitive unless uppercase letters are used	less myfile.txt

Command	Description	Typical Command Options	Examples of Use
\$ ln	Create links to specified files, such as symbolic links	-s: Create symbolic link (default is hard link)	ln -s <i>myfile1</i> <i>myfile2</i>
\$ lpr	Print file (send it to the printer spool/queue)	-V: Verbose; print information about progress of print job	lpr <i>myfile.txt</i>
\$ lpstat	Display print queue		lpstat
\$ ls	List directory	-a: List all files, including hidden files -d: List only directory names rather than their contents -h: Human readable; print figures in KB, MB, GB, and TB -l: Long list; include all details, such as file permissions -m: Show as comma-separated list	ls -h <i>mydirectory</i>
# lsmod	Display currently loaded kernel modules		lsmod
\$ lsof	Display any files currently in use	-u: Limit results to files used by specified user	lsof -u <i>username</i>
\$ man	Display specified command's manual		man <i>command</i>
\$ md5sum	Display MD5 checksum (normally used to confirm a file's integrity after download)		md5sum <i>myfile</i>
# mkfs *	DANGEROUS! Create specified file system on specified device (such as a floppy disk)	-t: Specify type of file system	mkfs -t <i>vfat</i> <i>/dev/fdo</i>

Command	Description	Typical Command Options	Examples of Use
\$ mkisofs *	Create ISO image file from specified directory (usually for burning to disc with cdrecord)	-o: Options; this must appear after command to indicate that command options follow  -apple: Use Mac OS extensions to make disc readable on Apple computers  -f: Follow symbolic links and source actual files  -J: Use Joliet extensions (make ISO compatible with Windows)  -R: Use Rock Ridge extensions (preferred Linux CD-ROM file system)  -v: Verbose; display more information (-vv for even more info)	mkisofs -o <i>isoimage.iso</i> -R -J -v <i>mydirectory</i>
# modinfo	Display information about kernel module		modinfo <i>modulename</i>
# modprobe	Insert specified module into the kernel, as well as any others it relies on	-k: Set module's autoclean flag so it will be removed from memory after inactivity  -r: Remove specified module as well as any it relies on to operate	modprobe <i>modulename</i>
\$ more	Interactively scroll through text file (similar to less)		more <i>myfile.txt</i>
# mount *	Mount specified file system at specified location	-o: Specify command options, such as rw to allow read/write access; various types of file systems have unique commands	mount /dev/hda4 /mnt
\$ mv	Move (or rename) specified files and/or directories	-b: Back up files before moving  -v: Display details of actions carried out	mv <i>myfile mydirectory/</i>
\$ netstat *	Show current network connections		netstat -a
\$ nice	Run specified command with specified priority	-n: Specify priority, ranging from the highest priority of -20, to 19, which is the lowest priority	nice -n 19
\$ nohup	Run specified command and continue to run it, even if user logs out		nohup <i>command</i>



Command	Description	Typical Command Options	Examples of Use
\$ passwd	Change user's password		passwd
\$ ping	Check network connectivity between local machine and specified address	-w: Exit after specified number of seconds (such as -w 5)	ping <i>mydomain.com</i>
\$ printenv	Display all environment variables for current user		printenv
\$ ps *	Display currently running processes	a: List all processes (note that command options don't require preceding dash) f: Display ownership of processes using tree-style graphics u: Limit results to processes running for and started by current user x: Include processes in results not started by user but running with the user ID	ps aux
\$ pwd	Display current directory		pwd
# reboot	Reboot computer		reboot
\$ renice	Change a process's priority while it's running (see nice)		renice 19 10704
\$ rm	Delete single or multiple files and/or directories	-r: Recursive; delete specified directories and any subdirectories -f: Force; don't prompt for confirmation before deleting (use with care!)	rm -rf <i>mydirectory</i>
# rmmod	Delete module from kernel		rmmod <i>modulename</i>
# route *	Add and create (or view) entries in routing table (see ifconfig)		route add default gw 192.168.1.1
\$ runlevel	Display current run level		runlevel
\$ screen *	Program that runs pseudo shell that is kept alive regardless of current user login	-ls: Display list of currently running screen sessions -R: Reattach to already running screen session or start new one if none available	screen
\$ sftp *	Secure Shell FTP; like FTP but running over an ssh connection (see ssh)		sftp <i>username</i> @192.168.1.14

Command	Description	Typical Command Options	Examples of Use
\$ shred	Overwrite data in a file with gibberish, thereby making it irrecoverable	-u: Delete file in addition to overwriting  -v: Verbose; show details of procedure  -f: Force permissions to allow writing if necessary	shred -fv <i>myfile</i>
\$ sleep	Pause input for the specified period of time (where s=seconds, m=minutes, h=hours, d=days)		sleep 10m
\$ smbclient *	FTP-style program with which you can log in to a SMB (Windows)-based file share		smbclient //192.168.1.1/
\$ sort	Sort entries in the specified text file (default is ASCII sort)		sort <i>myfile.txt</i> -o <i>sorted.txt</i>
\$ ssh *	Log in to remote computer using secure shell		ssh <i>username@192.168.1.15</i>
\$ startx	Start GUI session (if GUI isn't already running)		startx
\$ su	Temporarily log in as specified user; log in as root if no user specified (provided root account is activated)	-: Adopt user's environment variables, such as \$PATH	su
\$ sudo	Execute specified command with root privileges		sudo <i>command</i>
\$ tac	Display specified text file but in reverse (from last to first line)		tac <i>myfile.txt</i>
\$ tail	Display final lines of specified text file	-n: Specify number of lines to display (such as -n4)	tail <i>myfile.txt</i>
\$ tar *	Combine specified files and/or directories into one larger file, or extract from such a file	-c: Create new archive -j: Use bzip2 in order to compress (or decompress) files -f: Specifies filename (must be last in chain of command options) -r: Add files to existing archive -x: Extract files from existing archive -z: Use gzip to compress (or decompress) files	tar -zcf <i>myfile.tar.gz</i> <i>mydirectory</i>

Command	Description	Typical Command Options	Examples of Use
\$ tee	Display piped output and also save it to specified file		ls -lh   tee <i>listing.txt</i>
\$ top *	Program that both displays and lets the user manipulate processes		top
\$ touch	Give specified file current time and date stamp; if it doesn't exist, create a zero-byte file with that name		touch <i>myfile</i>
\$ tracepath	Discover and display network path to another host		tracepath <i>192.168.1.20</i>
\$ umask	Set default permissions assigned to newly created files		umask u=rwx,g=r,o=
# umount	Unmount a file system		umount <i>/media/cdrom</i>
# useradd	Add new user	-m: Create home directory for user	useradd -m <i>username</i>
# userdel	Delete all mention of user in system configuration files (effectively deleting the user, although files owned by the user might remain)	-r: Remove user's home directory	userdel -r <i>username</i>
\$ unalias	Remove specified alias	-a: Remove all aliases (use with care!)	unalias <i>command</i>
\$ uname	Display technical information about current system	-a: Display all basic information	uname -a
\$ unzip	Unzip a Windows-compatible Zip file	-l: Display archive content but don't actually unzip	unzip <i>myfile.zip</i>
\$ uptime	Display uptime for system, as well as CPU load average and logged-in users		uptime
\$ vim *	Text editor program		vim
\$ wc	Count the number of words in a file		wc <i>myfile.txt</i>
\$ whatis	Display one-line summary of specified command		whatis <i>command</i>
\$ whereis	Display information on where a binary command is located, along with its source code and man page (if applicable)	-b: Return information only about binary programs	whereis -b <i>command</i>

Command	Description	Typical Command Options	Examples of Use
\$ xhost	Configure which users/systems can run programs on the X server	+: When followed by a username and/or system name, gives the user/system permission to run programs on the X server; when used on its own, lets <i>any</i> user/system use the X server -: Opposite of +	xhost +
\$ xinit	Start elementary GUI session (when not already running a GUI)		xinit
\$ zip	Create Windows-compatible compressed Zip files	-r: Recursive; includes all subdirectories and files therein -u: Updates Zip with specified file -P: Encrypts Zip with specified password -v: Verbose; display more information -#: Set compression level (from 0, which is no compression, to 9, which is highest)	zip -r <i>myfile.zip</i> <i>mydirectory</i>
\$ zipgrep	Searches inside Zip files for specified text string		zipgrep " <i>search phrase</i> " <i>myfile.zip</i>



# Getting Further Help

**S**o you've read through this book and have a good working knowledge of Linux. Ubuntu is running exactly as you want it to, and things are going okay. But then you hit a brick wall. Perhaps you want to perform a task but simply don't know how. Or maybe you know roughly what you need to do but don't know the specifics. Although this book tries to be as comprehensive as possible, it can't cover every eventuality.

You need to find some help, but where do you turn? Fortunately, many sources of information are available to those who are willing to help themselves. Linux contains its own series of help files in the form of man and info pages, and these are good places to start. In addition, some programs come with their own documentation. If neither of these sources provides the help you need, you can head online and take advantage of the massive Linux community around the world.

## Read the Manual!

Before asking for help online, it's important that you first attempt to solve your problems by using Linux's built-in documentation. If you go online and ask a question so simple that it can be answered with a little elementary research, you might find people reply with "RTFM." This stands for Read the Freaking Manual. In other words, do some basic research, and then come back if you're still stuck.

It's not that people online don't want to help. It's that they don't like people who are too lazy to help themselves and expect others to do the hard work for them. Although not all Linux people you encounter will take such a hard line, doing a little homework first can provide answers to a lot of questions, removing the need to ask others. This is particularly true when it comes to the fundamentals.

Documentation typically comes in three formats: man pages, info pages, and README files.

## Man Pages

Man pages are the oldest form of Unix documentation. In the old days, once an individual had created a piece of software, he would write a brief but concise man page in order to give others a clue as to how to operate it. The programmer would come up with a few screens of documentation that could be called up from the command prompt. This documentation would outline what the software did and list all the ways in which it could be used.

Nowadays, depending on the software package, man pages are usually created by technical writers, but the concept of providing essential information still applies. Man pages under Linux provide all the information you need about how to use a particular command or piece of software.

Sounds great, doesn't it? Alas, there's a problem: man pages are written by software engineers *for* software engineers. They expect you to already understand the technology being discussed. This is illustrated very well by the man page for `cdrecord`, software that can be used to burn CD images to disc. You can view this man page by typing `man cdrecord` at the command prompt.

The first line of the man page states, "Cdrecord is used to record data or audio Compact Discs on an Orange Book CD-Recorder or to write DVD media on a DVD-Recorder."

Most of that is clear, but what do they mean by "Orange Book"? They don't explain. (If you're curious, head over to [http://searchstorage.techtarget.com/sDefinition/0,,sid5\\_gci503648,00.html](http://searchstorage.techtarget.com/sDefinition/0,,sid5_gci503648,00.html).)

Further down in the man page, you see, "Cdrecord is completely based on SCSI commands . . . Even ATAPI drives are just SCSI drives that inherently use the ATA packet interface as [a] SCSI command transport layer."

What's SCSI, or ATAPI for that matter? Again, the man page doesn't explain. (They're methods of interfacing with storage devices attached to your computer.)

But why should man pages explain as they go along? Their function is to describe how to use a piece of software, not to provide a beginner's introduction to technology. If they did that, a single man page could run to hundreds of pages.

In other words, man pages are not for complete beginners. This isn't always the case and, because Linux sees widespread usage nowadays, man pages are sometimes created with less knowledgeable users in mind. But even so, the format is inherently limited: man pages provide concise guides to using software. Luckily, there are some tips you can bear in mind to get the most from a man page. But before you can use those tips, you need to know how to read a man page.

### How to Read a Man Page

To read a man page, you simply precede the command name with `man`. For example, to read the man page of `cdrecord`, a piece of software used to write ISO images to CD-R/RW discs, type the following command:

```
man cdrecord
```

This opens a simple text viewer with the man page displayed. You can move up and down line by line with the cursor keys, or move page by page using the Page Up and Page Down keys (these are sometimes labeled Pg Up and Pg Down). You can search by hitting the forward slash key (/). This will highlight all instances of the word you type. You can search for other examples of the word in the document by hitting the n key.

The average man page will include many headings, but the following are the most common:

**Name:** This is the name of the command. There will also be a one-sentence summary of the command.

**Synopsis:** This lists the command along with its various command options (sometimes known as *arguments* or *flags*). Effectively, it shows how the command can be used. It looks complicated, but the rules are simple. First is the command itself. This is in bold, which indicates it is mandatory. This rule applies to anything else in bold: it must be included when the command is used. Anything contained within square brackets ([ ]) is optional, and this is usually where you will find the command options listed. A pipe symbol (|) separates any command options that are exclusive, which means that only one of them can be used. For example, if you see [apple|orange|pear], only one of apple, orange, or pear can be specified. Usually at the end of the Synopsis listing will be the main argument, typically the file(s) that the command is to work on and/or generate.

**Description:** This is a concise overview of the command's purpose.

**Options:** This explains what the various command options do, as first listed in the Synopsis section. Bearing in mind that command options tell the software how to work, this is often the most useful part of the man page.

**Files:** This lists any additional files that the command might require or use, such as configuration files.

**Notes:** If this section is present (and often it isn't), it sometimes attempts to further illuminate aspects of the command or the technology the command is designed to control. Unfortunately, Notes sections can be just as arcane as the rest of the man page.

**See Also:** This refers to the man pages of other commands that are linked to the command in question. If a number appears in brackets, this means the reference is to a specific section within the man page. To access this section, type: `man <section no> command`.

Although there are guidelines for the headings that should appear in man pages, as well as their formatting, the fact is that you may encounter other headings, or you may find nearly all of them omitted. Some man pages are the result of hours if not days of effort; others are written in ten minutes. Their quality can vary tremendously.

## Tips for Working with Man Pages

The trick to quickly understanding a man page is decoding the Synopsis section. If you find it helps, split the nonobligatory command options from the mandatory parts. For example, `cdrecord`'s man page says that you *must* specify the `dev=` option (it's in bold), so at the very least, the command is going to require this:

```
cdrecord dev=X filename
```

Then you should skip to the Options section and work out which options are relevant to your requirements. While you're there, you'll also need to figure out what the `dev=` command option requires.

Although the command options contained in square brackets in the Synopsis section are, in theory, nonobligatory, the command might not work satisfactorily without some of them. For example, with `cdrecord`, we use the `-speed` command option, which sets the burn speed, and also the `-v` option, which provides verbose output (otherwise, the command runs silently and won't display any information on screen, including error messages!).

Another handy tip in decoding man pages is understanding what standard input and standard output are. In very simple terms, standard input (`stdin`) is the method by which a command gets input—the keyboard on most Linux setups. Standard output (`stdout`) is where the output of a command is sent, which is the screen on most Linux setups. (See Chapter 15 for more details about standard input and standard output.)

Often, a man page will state that the output of a command will be sent to standard output. In other words, unless you specify otherwise, its output will appear on screen. Therefore, it's necessary to specify a file to which the data will be sent, either by redirecting the output (see Chapter 17), or by specifying a file using a command option. For example, the `mkisofs` command can be used to create ISO images from a collection of files for subsequent burning to CD. But unless the `-o` option is used to specify a filename, `mkisofs`'s output will simply be sent to standard output—it will appear on the screen.

Finally, here's the best tip of all for using man pages: don't forget that `man` has its own man page. Simply type `man man`.

## Info Pages

Man pages date from the days of relatively primitive computers. Back then, most computers could only display page after page of text, and allow the user to scroll through it. In addition, memory and disk space were scarce, which is why some man pages are incredibly concise—fewer words take up less memory!

The *Texinfo* system is a valiant by the GNU Project attempt to overcome the shortfalls of man pages. Often, this is referred to as *info*, because that's the command used to summon Texinfo pages (normally, you type `info command`).



For starters, info pages are more verbose than the equivalent man pages, and that gives the author more space to explain the command or software. This doesn't necessarily mean that info pages are easier to understand, but there's a better chance of that being the case.

Secondly, info pages contain hyperlinks, just like web pages. If you move the cursor over a hyperlinked word, which is usually indicated by an asterisk (\*), you can proceed to a related page. In a similar sense, pages are linked together so that you can move back and forth from topic to topic.

The bad news is that the man page system is far more popular and established than Texinfo. If a programmer creates a new application, for example, it's unlikely he'll bother with an info page, but he will almost certainly produce a man page.

In fact, in many cases, typing `info command` will simply bring up the man page, except in the software used to browse info pages.

However, nearly all the GNU tools are documented using info pages, either in their own pages or as part of the `coreutils` pages. For example, to read about the `cp` command and how to use it, you can type this:

```
info coreutils cp
```

To browse through all sections of the `coreutils` pages, type this:

```
info coreutils
```

Because man pages are so established, everyone expects to find one for every utility. So most utilities that have info pages will also have man pages. But in such a case, the man page will state near the end that the main documentation for the utility is contained in an info page, and you may find it more fruitful to use that instead.

Navigating through info pages is achieved via the keyboard and is something of an art. But, as you might expect, there's a user-friendly guide to using info: just type `info info`. Remember that words preceded with an asterisk are hyperlinks, and you can jump from link to link using the Tab key.

## README Files and Other Documentation

Some programs come with their own documentation. This is designed to give users the information they need to get started with the program (as opposed to the man page, which is a concise and complete guide to the software). Alternatively, program documentation sometimes gives a brief outline of the program's features.

The files are usually simple text, so they can be read in any text editor or word processor, and are normally called README. Under Ubuntu, these documents are usually stored in a program-specific directory within `/usr/share/doc` (although a small minority of programs use `/usr/doc`).

Not all programs are friendly enough to provide such documentation, but even so, you'll still find a directory for the software in `/usr/share/doc`. This is because the software might also come with a getting started guide written by the Ubuntu package maintainer. Such guides detail specifics of using the software under Ubuntu, such as where configuration files are located or how the program interoperates with other software on the system. Sometimes, this documentation is written by a Debian package maintainer because nearly all Ubuntu software has its origins in the Debian project ([www.debian.org](http://www.debian.org)).

In addition, the directory will probably contain copyright information, explaining the software license used by the software, as well as a `CHANGELOG`, which is a text file listing features that have been added to each release of the software. The directory might contain some other files, too, detailing where to send information about bugs, for example.

Viewing the `README` documentation is easy. For example, for the `sudo` command, you could type this:

```
cd /usr/share/doc/sudo
less README
```

Sometimes, the `README` documentation is in a compressed tarball, in which case it will have either a `.tar.gz` or a `.tar.bz2` file extension. However, `less` is clever enough to realize this and extract the document for reading.

## Getting Help Online

If you can't figure out the answer by referring to the documentation, then there's little choice other than to look online. Linux benefits from a massive community of users, all of whom are usually willing to help each other.

The best way of getting help is to visit a forum. Here, you can post messages for others to reply to. Alternatively, you might choose to sign up for a mailing list. This is a way of sending e-mail to several hundreds, if not thousands, of people at once. Any individual can then reply. Mailing lists often have the benefit of allowing personal attention and interaction, but this comes at the expense of each subscriber receiving a whole lot of mail.

## Forums

The official Ubuntu project forums are located at [www.ubuntuforums.org](http://www.ubuntuforums.org). You'll find forums for just about every need, from security to beginner's issues, but by far, the most popular is the one devoted to the current release of Ubuntu, which is under the heading Ubuntu Release Assistance. Look in the General Help forum if your question isn't specifically related to one of the other technology areas listed.

Before you can post, you need to register by providing an e-mail address. This is designed to keep down the quantity of unwanted junk postings to the forum.

You might think it fine to post a new question immediately after registering, but don't forget the simple rules mentioned at the beginning of this appendix: if you don't do elementary research first and try to solve your own problem, you may elicit a hostile response from the other posters, especially if your question is one that comes up time and time again and has been answered several times.

So, first make use of the comprehensive search facility provided with the forums. For example, if you're looking for advice on getting a Foomatic D1000 scanner working, use this as a search term and see what comes up. The chances are that you won't be the first person who has run into problems with that piece of hardware, and someone else may have already posted a solution.

Often, you'll need to read the full thread to find an answer. Someone may start by asking the same question as you but, with the help and guidance of the forum members, they might find a solution, which they then post several messages later.

In addition, some individuals write their own HOWTO guides when they figure out how to do something. These are normally contained in the Faqs, Howto, Tips & Tricks forum, under the Other Support Categories heading.

If you're unable to find a solution by searching, then consider posting your own question. Keep your question simple, clear, and concise, because no one likes reading through acres of text. If possible, provide as many details about your system as you can. You will almost certainly want to provide the version number of the Linux kernel you're using, for example. You can find this version number by typing the following in a GNOME Terminal window:

```
uname -sr
```

In addition, any other details you can provide may prove handy. You definitely should mention the version of Ubuntu you're using, which is Edgy Eft (often referred to simply as "Edgy"). If you're asking about hardware, give its entire model name and/or number. Don't just ask for help with a Foomatic scanner. Ask for help with a Foomatic D1000 scanner, model number ADK1033, Revision 2. If you're asking about a piece of software, provide its version number (click Help ► About).

Sometimes in their replies, other forum members may ask you to post further details or to provide log files. If you don't understand the question, simply ask the poster to give you more details and, if necessary, instructions on what to do. Just be polite. Explain that you're a newbie. If you think the question is extremely obvious, then say so—apologize for asking what may be a stupid question, but explain that you've tried hard to answer it yourself but have failed. Don't forget that the Ubuntu forums include the Absolute Beginner Talk forum, where fundamental questions are asked all the time.

## Mailing Lists

Using the forum's search function also has the advantage of searching the archives of the mailing lists.

Mailing lists have a number of advantages and disadvantages. The advantages are that a mailing list provides an excellent way to learn about Ubuntu. All you have to do is read through the e-mail messages you receive in order to partake of a constant information drip-feed. In addition, some mailing lists are designed to make public announcements, so you'll find it easy to learn about the latest happenings in the Ubuntu community.

Mailing lists also have a terrific sense of community. They offer a neat way of getting to know other Ubuntu users and talking to them. E-mails often drift off topic into humor and general discussion.

The disadvantages of mailing lists are that you can easily receive in excess of 200 messages a day, depending on which mailing list you join. Even if you have a moderately fast Internet connection, that quantity of messages can take a long time to download. In addition, you'll need to sort out any personal or business e-mail from the enormous quantity of mailing list traffic (although the mailing list messages usually have the list title in square brackets in the subject field; you can therefore create a mail rule that sorts the mail according to this).

You can sign up to the Ubuntu mailing lists at <https://lists.ubuntu.com/mailman/listinfo/ubuntu-users>.

## Other Official Sites

The Ubuntu Document Storage Facility ([http://doc.gwos.org/index.php/Main\\_Page](http://doc.gwos.org/index.php/Main_Page)) is a guide put together by the individuals who maintain the Ubuntu forums. It contains a lot of information culled from the forums, not least of which is the Hardware Compatibility Guide. This lists hardware that is known to work with Ubuntu, or at least hardware that can be made to work with Ubuntu with a little effort, which often is also detailed.

The official Ubuntu web site contains a Documentation section that features FAQs and a glossary of terms. It's located at [www.ubuntu.com/support/documentation](http://www.ubuntu.com/support/documentation).

In addition, you might want to take a look at the Ubuntu wiki: <https://wiki.ubuntu.com>. This contains a whole world of fascinating information about Ubuntu, but can be somewhat difficult to navigate and tends to aimed at higher-level Ubuntu users, such as developers.

## Third-Party Sites

Of course, the Ubuntu project doesn't have a monopoly on sites that discuss Ubuntu. Several third-party web sites are worth at least an occasional visit, and other forum web sites are devoted to Linux.

One we visit on a regular basis is the Ubuntu blog: <http://ubuntu.wordpress.com>. This is written by a relative newcomer to Ubuntu who has chosen the Ubuntu distribution for his computer. It details discoveries that Carthik Sharma has made about Ubuntu, such as configuration options, online sources of software, how to overcome hardware issues, and so on.

In addition, we like to visit <http://linuxhelp.blogspot.com>, which is a similar blog written by a Linux user who uses Ubuntu and likes to share tips and techniques.

Perhaps the king of third-party Ubuntu sites is Ubuntu Guide: <http://ubuntuguide.org>. This contains brief instructions on how to do a variety of common tasks under Ubuntu, such as installing certain types of software or administering particular hardware. It covers a lot of the same ground as this book, but is still worth investigating if you wish to browse through some excellent tips and advice.

Finally, one of the best Linux forums and general advice sites can be found at [www.linuxquestions.org](http://www.linuxquestions.org). This has a forum dedicated specifically to Ubuntu, but also contains hundreds more devoted to just about every aspect of Linux, including forums for beginners.



# Exploring the DVD-ROM and Other Ubuntu Versions

**T**he DVD-ROM supplied with this book is double-sided. Side A contains the current Ubuntu release, 8.04. Side B contains the sister versions of Ubuntu that use different desktop environments, including Kubuntu, Xubuntu, and Edubuntu. It also has alternative versions of the main Ubuntu release for the PowerPC and 64-bit x86 platforms.

This appendix provides details about each of the Ubuntu derivations, along with instructions on how to utilize them.

## Version Numbers, Code Names, and Support

Each version of Ubuntu has a version number and also a code name. The version number is simply the year of release, followed by the month. The release made in June 2006 has the version number 6.06, for example. If an updated release is made after this, numbers are added to the end. For example, the first update to the 6.06 release is numbered 6.06.1.

The code name is how Ubuntu is referred to informally, especially among community members, and is set by Mark Shuttleworth, the creator of Ubuntu. Code names tend to involve animals and are usually humorous. The 6.06 version of Ubuntu is code-named Dapper Drake, for example. The latest 8.04 release is code-named Hardy Heron. People often just use the first word of the code name, especially on Internet forums. For example, the 8.04 release is often referred to as *Hardy*.

This book was written using version 8.04 as a base. This version was released in April 2008. It was the most recent version at the time of this writing. Mark Shuttleworth has announced plans for the 8.10 release, which is code-named Intrepid Ibex.

Each successive version of Ubuntu brings improvements, such as newer versions of software packages. However, not all versions of Ubuntu are created equal when it comes to online updates, as provided by the Update Manager program. All versions of Ubuntu come with free software updates for a set period, usually 18 months, after which users are expected to upgrade (for free) to the most recent version at that time.

However, the 8.04 release included with this book and the 6.06 release from a few years ago also have the epithet *LTS*, which stands for Long Term Support. The freely available software updates for 8.04 will last until 2011, some *three years* after the initial release. The 6.06 release is supported until 2009.

---

**Note** If you use the Ubuntu 8.04 or 6.06 release on a server system, support will last for five years.

---

The intention behind the 8.04 and 6.06 releases is that they should be used by those who want a proven and stable Linux operating system, and don't care about newer features in the latest releases of Ubuntu. For example, in a corporate environment, some of the new features provided in more recent versions of Ubuntu might require additional staff training, so an unchanging release may prove appealing.

### UPDATING TO A NEWER VERSION OF UBUNTU

Ubuntu works to a six-month release cycle, and this means a new version of Ubuntu comes out every half year. By the time you read this, a new release of Ubuntu may be available, and you might choose to update to it (but be aware that it will have only 18 months of update support, and not the three years—up until 2011—provided with 8.04).

You can update to a newer version of Ubuntu in two ways: by burning the ISO image to a CD or by upgrading online.

You can download the ISO image of the latest release from [www.ubuntu.com/getubuntu/download](http://www.ubuntu.com/getubuntu/download) and burn it to CD. Then insert the CD when Ubuntu is up and running. You'll be asked if you want to upgrade to the latest version using the Synaptic Package Manager. This process is automated. Of course, you can then use the same CD to install Ubuntu afresh on any other computer.

To upgrade online, open a terminal window (Applications ► Accessories ► Terminal), and type the following two lines, pressing Enter after each one:

```
sudo apt-get update
sudo apt-get dist-upgrade
```

This will download all the packages for the latest release of Ubuntu, if one is available, and attempt to update your system. Updating in this way involves less downloading, because your computer will get only the packages it needs, although it's still likely that several hundred megabytes will need to be downloaded.

## Other Versions of Ubuntu

In addition to the main Ubuntu releases, several Ubuntu derivations are available. You might refer to these as “spin-off projects.” They are created by taking the main Ubuntu release as a base and then adding software, usually in the form of an alternative desktop environment. Some support alternative hardware platforms but are otherwise identical to the main release.

We have included all the major derivations of the 8.04 release of Ubuntu, as listed in Table D-1, on Side B of the DVD-ROM. Here, we describe how to install other versions, and then provide some details about the Kubuntu, Xubuntu, and Edubuntu versions.

**Table D-1.** *Ubuntu Derivations on Side B of the DVD-ROM*

Ubuntu Derivation	ISO Image Filename	Description
Kubuntu	kubuntu-kde4-8.04-desktop-i386.iso	Same as the main Ubuntu release, except that it uses the KDE 4 desktop
Xubuntu	xubuntu-8.04-desktop-i386.iso	Same as the main Ubuntu release, except that it uses the Xfce desktop
Edubuntu	edubuntu-8.04-addon-i386.iso	Same as the main Ubuntu release but with a child-friendly interface along with the addition of some educational software
Ubuntu alternate installer	ubuntu-8.04-alternate-i386.iso	Same as the standard release of Ubuntu but employs a text-mode installer that can help bypass some graphical problems <sup>a</sup>
Ubuntu x86-64	ubuntu-8.04-desktop-amd64.iso	Same as the main Ubuntu release but compiled for computers with 64-bit processors <sup>b</sup>
Ubuntu PowerPC	ubuntu-8.04-desktop-powerpc.iso	Same as the main Ubuntu release but compiled for computers with PowerPC processors, such as G3, G4, or G5 chips <sup>c</sup>
Ubuntu main release	ubuntu-8.04-desktop-i386.iso	The CD release of Ubuntu 8.04, included so that you can create copies of Ubuntu for friends or colleagues <sup>d</sup>

<sup>a</sup>The DVD release of Ubuntu included on Side A of the DVD also features an option to use the text-mode installer. This alternate install ISO image is included so you can create CD copies of Ubuntu that feature the text-mode installer.

<sup>b</sup>As the filename suggests, this release will work only on 64-bit chips that support the AMD64 or EM64T/Intel 64 extensions. Intel's Itanium (IA-64) chips are not supported, although a community-supported Itanium release can be downloaded from <http://cdimage.ubuntu.com/ports/releases/8.04/release/>.

<sup>c</sup>The PowerPC release of Ubuntu is not officially supported. Updates are provided by its community of users. However, the older 6.06 release of Ubuntu is still officially supported until 2009, and can be downloaded from <http://releases.ubuntu.com/6.06/>.

<sup>d</sup>Because Ubuntu is open-source software, you can create copies of both the DVD that came with this book and any of these CD ISO images for whomever you wish. In fact, this is encouraged by both Canonical, the company behind Ubuntu, and Apress, the company that published this book.



## Installation of Other Versions

All of the other Ubuntu versions on Side B of the DVD-ROM are in the form of *ISO images*. These are single files that contain the entire contents of the bootable installation CDs. They're designed to be burned to blank CD-R or CD-RW discs.

---

**Note** If you want to use the alternative hardware versions of Ubuntu, you should create your own CD and use it to install Ubuntu.

---

If you want to install Kubuntu, Edubuntu, or Xubuntu, you have two choices:

- Start fresh, by burning a CD from the ISO image and installing from it. To learn how to do this on most major operating systems, see the “Creating Bootable CDs from ISO Images” section later in this appendix. See Table D-1 for the filename of the ISO image for each version.
- Upgrade from an existing installation using the Synaptic Package Manager.

The DVD-ROM version of Ubuntu supplied with this book includes all the Kubuntu, Xubuntu, and Edubuntu packages, making it easy to upgrade to them using the Synaptic Package Manager. However, you will need to add the DVD-ROM as an installation source. To do so, follow these steps:

1. Start Software Sources (System ► Administration ► Software Sources).
2. Select the Ubuntu Software tab and make sure a check is in the box alongside Cdrom with Ubuntu 8.04. Click the Close button.
3. A dialog box will appear, stating that you need to reload the information about available software. Make sure that the Ubuntu DVD-ROM is in the drive, and then choose to reload.

To install each version alongside the current desktop, you'll need to search for and install a particular metapackage using the Synaptic Package Manager (see Chapter 28 for details on using the Synaptic Package Manager):

- For the main Kubuntu release, install the `kubuntu-desktop` package. To install the newer KDE 4 release of Kubuntu, search for `kubuntu-kde4-desktop`. The following section describes the differences between these releases. During installation of Kubuntu, you will be prompted for which login manager you wish to use. It's a good idea to stick with `gdm` (GNOME Display Manager), which is the default choice.
- For Edubuntu, choose to install the `edubuntu-desktop` package. There are two versions of Edubuntu: the default based on the GNOME desktop and another based on the Kubuntu desktop. You can choose either from the list of results in the Synaptic Package Manager.
- For Xubuntu, install `xubuntu-desktop`. This is a metapackage that ensures all the Xfce desktop components are installed alongside the current desktop environment.

## Kubuntu

The standard Ubuntu release, as supplied with this book, relies on the GNOME Desktop Project for its graphical interface (see [www.gnome.org](http://www.gnome.org)). Many other desktop projects exist in the wider Linux world, but perhaps the only one that ranks alongside GNOME in terms of popularity is the K Desktop Environment project ([www.kde.org](http://www.kde.org)), usually referred to as KDE. Kubuntu is simply a version of Ubuntu that eschews GNOME in favor of KDE.

Kubuntu ([www.kubuntu.org](http://www.kubuntu.org)) retains the same philosophy as Ubuntu, in both its humanitarian aims of being available to all, as well as its more pragmatic aspects, such as always including the latest versions of applications. It also shares many technical features, such as the use of `sudo` to invoke superuser powers.

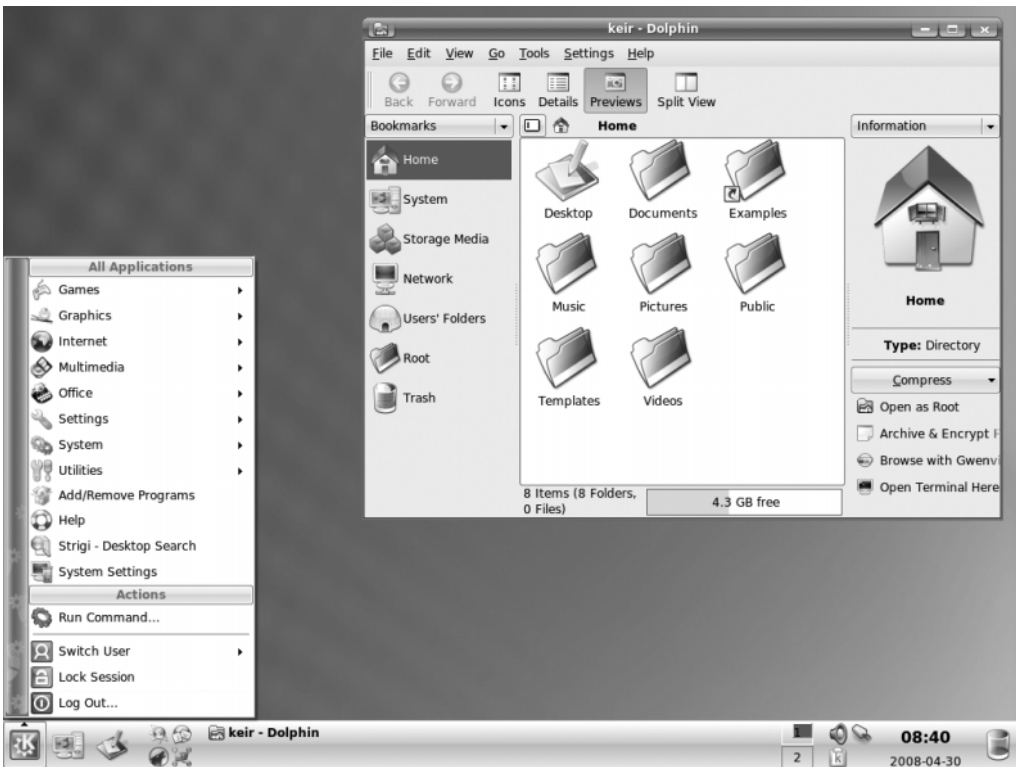
---

**Note** Rather than use `gksu` to invoke `sudo` powers for graphical applications, Kubuntu uses `kdesu`. It's used in the same way, however.

---

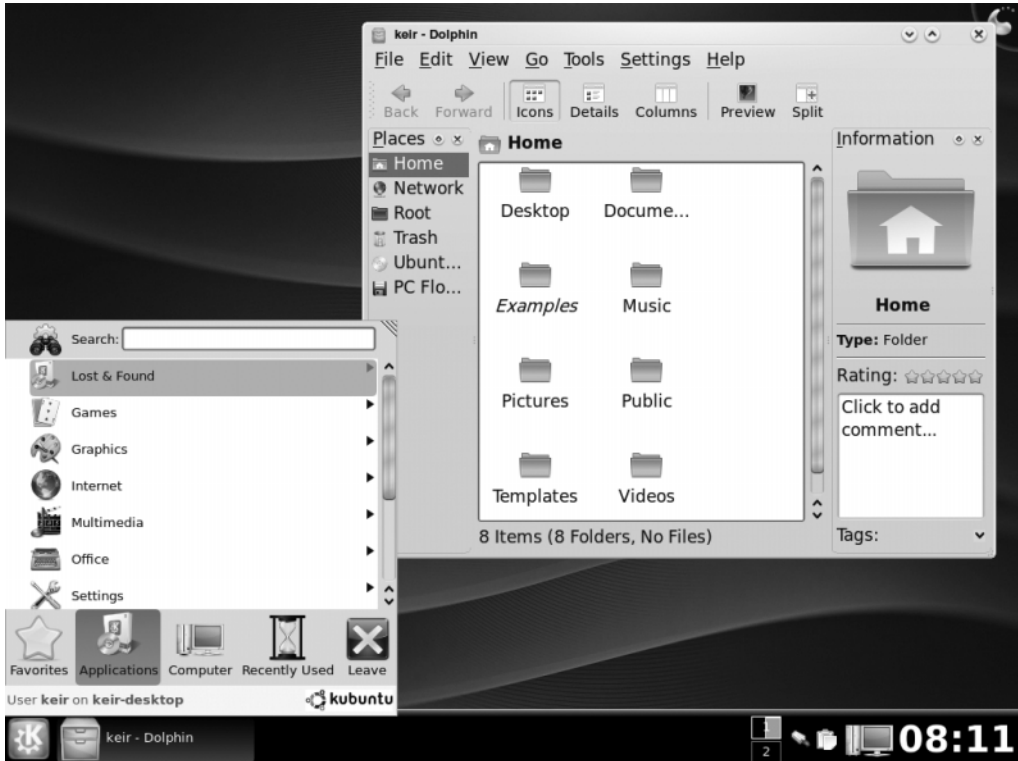
The main difference is the software bundled with this variant. When it comes to e-mail, KDE's KMail program is used instead of Evolution, for example, and Konqueror is used for web browsing instead of Firefox (although, of course, Evolution and Firefox can easily be installed via the Synaptic Package Manager after Kubuntu has been installed). Additionally, the Dolphin file manager is used instead of Nautilus. The system configuration software is radically different, too, with several KDE tools used instead of the GNOME software described in this book.

With the 8.04 release of Kubuntu, two separate versions of Kubuntu were simultaneously released. One uses the established version 3.5.9 of the software; the other uses the newer version 4 software. Version 4 of KDE radically redesigns the system software, as well as the look and feel. However, it is considered a work in progress, which is why the Kubuntu project has used the 3.5.9 version for its main release. The ISO image on Side B of the DVD-ROM provided with this book is of version 4. For more information about KDE version 4, see the Wikipedia article at [http://en.wikipedia.org/wiki/KDE\\_4](http://en.wikipedia.org/wiki/KDE_4). Figures D-1 and D-2 show the different Kubuntu versions.



**Figure D-1.** Kubuntu 8.04 main release, utilizing KDE 3.5.9

Once the Kubuntu components have been installed, as described in the previous section, you can opt to boot into Kubuntu by clicking the Options button on the login screen and clicking the Select Session entry. Then select the KDE entry from the list (or KDE 4 if you installed that version) and click the Change Session button. To boot to the standard Ubuntu desktop after this, simply repeat these steps and select GNOME from the list.

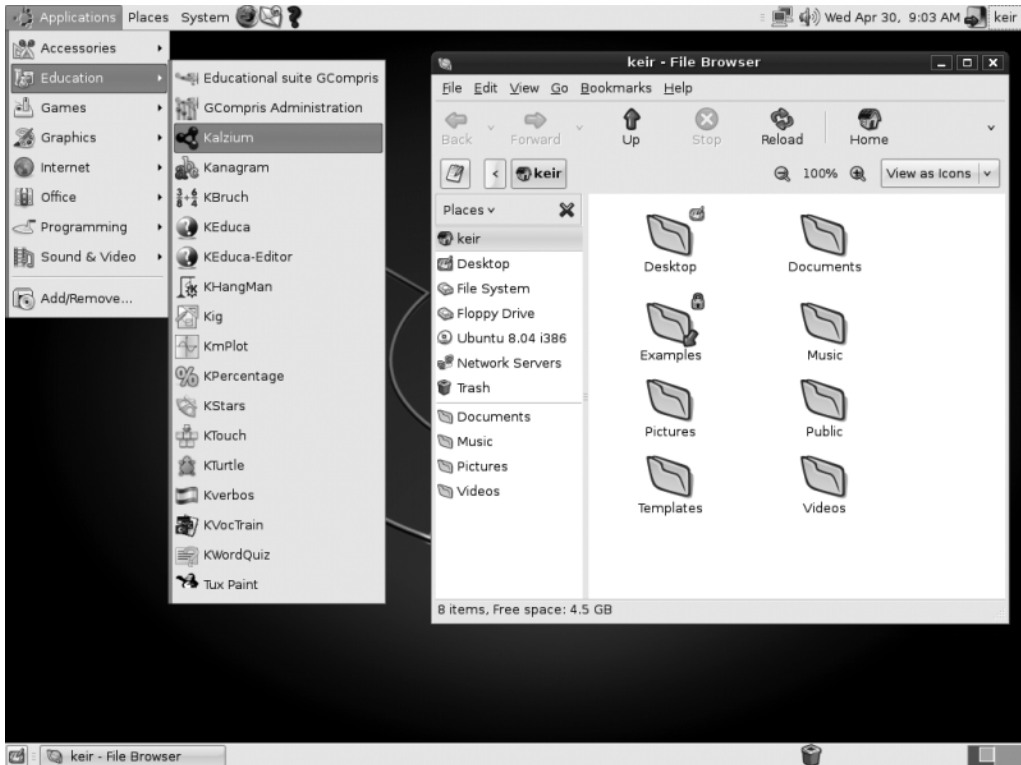


**Figure D-2.** *Kubuntu 8.04 featuring the KDE 4 desktop.*

## Edubuntu

The Ubuntu philosophy is to make an operating system accessible to everyone, no matter who they are or where they live in the world. Of course, young people are included in this vision, and Edubuntu ([www.edubuntu.org](http://www.edubuntu.org)) is a version of Ubuntu specifically geared toward their needs. It's a rendition of the standard Ubuntu release that has been bolstered by many educational software titles. In addition, it has a friendlier and simpler interface that's designed to appeal to youngsters, although it still utilizes the same desktop environment as the main Ubuntu release. Actually, two versions are available: one that uses the same GNOME desktop as the main release, as shown in Figure D-3, and another that is built on the KDE desktop of Kubuntu.

Edubuntu also features software from the Linux Terminal Server Project ([www.ltsp.org](http://www.ltsp.org)). This brings the potential for computers without a hard disk to boot Edubuntu from a central server. The intention is to give older computers (unfortunately, the type typically found in educational environments) a new lease on life, even if they're too underpowered to run modern software. Additionally, the terminal server can be used to administer the computers, which is clearly beneficial in a teaching environment. For information on how to set up a Linux Terminal Server Project system, see <https://help.ubuntu.com/community/LTSPServerSetup>.



**Figure D-3.** *Edubuntu 8.03 (GNOME desktop version)*

However, the standard installation of Edubuntu is just like any other Ubuntu configuration, and the software is designed to be installed directly on the hard disk of computers. The following are the chief education titles provided with Edubuntu:

- KDE Edu programs (<http://edu.kde.org>) include games involving mathematics, languages, science, and other miscellaneous topics. Teachers might also appreciate the inclusion of KEduca, a program designed to create form-based tests and exams.
- GCompris (<http://gcompris.net>) is for children of kindergarten age and introduces them to computer use as well as elementary math and reading skills.
- Tux Paint ([www.tuxpaint.org](http://www.tuxpaint.org)) is a user-friendly drawing package full of sound effects and colorful graphics.
- SchoolTool Calendar ([www.schooltool.org/products/schooltool-calendar](http://www.schooltool.org/products/schooltool-calendar)) is a calendar and time table application built specifically for school environments. To access SchoolTool, open a browser window, type `localhost:7080` into the address bar, and press Enter.

The main benefit of Edubuntu for educational establishments is that it's both free of charge and comes with the same kind of update support as Ubuntu. As with Ubuntu, although newer releases will become available, the 8.04 release is officially supported with updates until 2011. This provides a consistent experience for students and teachers alike.

Because Edubuntu is built on the Ubuntu base, there is no way to “switch between” Edubuntu and Ubuntu. Effectively, Edubuntu is a reconfiguration of Ubuntu with the addition of some educational software and a more kid-friendly theme. To return to a standard Ubuntu setup and deactivate the Edubuntu theme, simply select the Human entry from the Theme chooser list. See Chapter 10 for more details on how to switch themes.

## Xubuntu

While GNOME and KDE dominate the desktop interface landscape of Linux and are used in the main Ubuntu and Kubuntu releases, respectively, other projects take a different approach to the graphical desktop. The Xfce Desktop Environment ([www.xfce.org](http://www.xfce.org)) is one of these. It's a streamlined desktop that retains the good looks of GNOME but is much smaller in terms of memory footprint. This means that a system running Xfce is faster than an equivalent GNOME system. It also means that Xfce can be used on many older computers that don't have the powerful hardware we take for granted nowadays and would struggle with the latest GNOME and KDE releases of Ubuntu.

Because a key component of the Ubuntu Foundation's philosophy is to create an operating system that can be used by everyone, regardless of where they are in the world, a version of Ubuntu that can run on older hardware makes a lot of sense. It's unlikely that less developed countries will have access to the latest expensive computer hardware, for example.

As you might expect, Xubuntu ([www.xubuntu.org](http://www.xubuntu.org)) is simply a version of Ubuntu that replaces the GNOME desktop with the Xfce desktop, as shown in Figure D-4. Some key components are still present, such as the Firefox web browser. Other Ubuntu components are swapped for Xfce replacements; for example, the Nautilus file browser is replaced with Thunar.

Despite Xfce's claim to be lightweight, it still offers a high degree of usability and shouldn't be seen as a second-best choice for stripped-down hardware. It's certainly worth trying out if you long for a less cluttered desktop experience. It also uses many modern GUI aspects we take for granted, such as theming (see Chapter 10) and font antialiasing.

To use the Xfce desktop once it's installed, click the Options button on the login screen and then click the Select Session entry. Next, select Xfce from the list and click the Change Session button. To boot to the standard Ubuntu desktop after this, simply repeat the steps and select GNOME from the list.

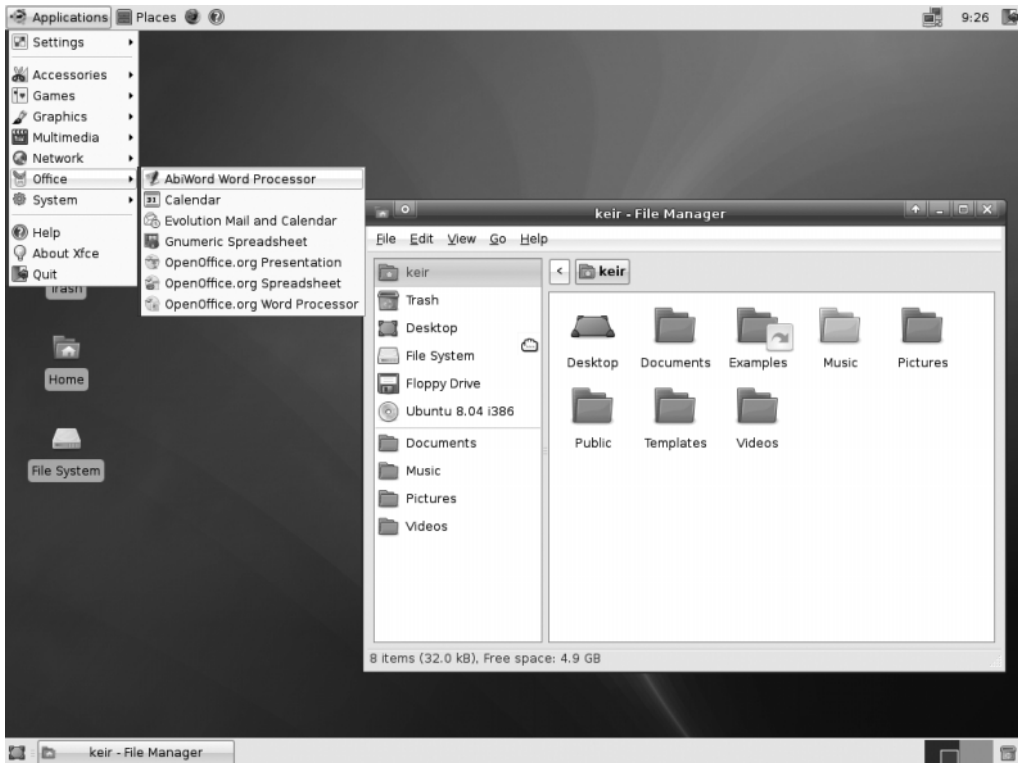


Figure D-4. *Xubuntu 8.04*

## Creating Bootable CDs from ISO Images

The Ubuntu derivatives are supplied on Side B of the DVD-ROM disc as ISO images. It should be obvious from the individual filenames what each ISO file contains, but you can also consult Table D-1.

ISO images are designed to be burned to blank CD-R or CD-RW discs that you boot from in order to install the operating system, just as you booted from Side A of this disc to install Ubuntu. Alternatively, you can use an ISO image to install the operating system on virtual machines.

Of course, to burn ISO images to CD, you'll need a CD or DVD drive capable of burning discs. These have been available for many years and are standard features on nearly all desktop and notebook computers. You'll also need a blank CD-R or CD-RW disc and perhaps one or two spares in case your first attempt doesn't work. If you opt to use CD-RW discs, these should be blanked prior to use. This can be done with most CD-burning software.

A few rules should be followed whenever burning ISO images:

- Copy the ISO image to your computer's hard disk. Don't try to burn an ISO image directly from a DVD/CD or a network share. The burning software requires quick access to the ISO file, and this isn't possible when it's not on your hard disk.
- Always burn at the slowest speed possible, even if your CD/DVD burner is capable of much faster speeds. For some reason, ISO images burned quickly onto discs often fail to work. Even worse, sometimes the discs appear to work until it becomes apparent that one particular file is corrupted and the installation halts.
- It's not a good idea to use your computer for heavy tasks while burning ISO images. You should refrain from game playing or video editing, although light computer use should be fine (that is, word processing, web browsing, and so on).

The instructions in the following sections describe how to burn ISO images to CDs using Ubuntu, Windows, and Mac OS X.

### DECODING ISO FILENAMES

ISO filenames for Linux distributions can be a little hard to understand, so here's a quick guide. Let's take the Xubuntu 8.04 ISO filename as a guide. Here it is:

`xubuntu-8.04-desktop-i386.iso`

This filename consists of four main parts:

- The first part is the name of the distribution. In this case, it's `xubuntu`, but this could read `edubuntu` or just `ubuntu`, for example.
- The second part is the version number of the distribution—`8.04`.
- The third part is the platform for which the distribution is designed. In this case, this version of Xubuntu is designed for the desktop, but this could read `server` or `alternate`, to indicate an alternate install disc.
- The final part, before the `.iso` file extension, is a description of the computer architecture for which the distribution is made. `i386` means the distribution will run on all 32-bit PCs (which is to say, every computer made since around 1990). You might also see `amd64` here, which means the distribution is designed to work on 64-bit processors, such as recent Intel Pentium 4 and AMD Athlon 64-based computers. If you see `PowerPC` here, it means the distribution is designed to run on PowerPC-based computers, primarily older Apple Macintoshes. `ia64` means the distribution is designed to run on computers with Intel's Itanium CPUs.



## Burning CDs Using Ubuntu

Here are the steps for burning CDs from ISO images using Ubuntu:

1. Copy the ISO image to the desktop.
2. Right-click the image on the desktop and select Write to Disc from the menu that appears.
3. A new dialog box appears. In the Write Speed drop-down list, select the lowest value possible. If you have more than one CD/DVD writer drive installed on your computer, ensure the correct model is selected from the Write Disc To list, too.
4. Insert a blank CD-R or CD-RW.
5. Click the Write button to create the CD.

## Burning CDs Using Windows Vista/XP

Unlike Ubuntu and Mac OS X, Windows Vista and XP don't contain any built-in ISO burning software. For the purpose of burning ISO images, we recommend that you download and install the freeware ISO Recorder tool from <http://isorecorder.alexfeinman.com/isorecorder.htm>. Versions are available for both Windows XP and Vista. The following are the steps for burning CDs from ISO images using the Windows XP version of ISO Recorder:

1. Copy the ISO file to your desktop.
2. Insert a blank CD-R or CD-RW disc into your drive.
3. Right-click the .iso file on the desktop, select Open With, and then select ISO Recorder from the list.
4. The ISO Recorder program window opens. Click the Properties button.
5. Click and drag the recording speed slider so that the middle number under the slider is 1 (or to the lowest possible number if 1 isn't available). Click OK in the Properties dialog box.
6. Click the Next button in the main ISO Recorder program window. This will start the burning procedure, which might take some time, during which you should avoid using your PC.

## Burning CDs Using Mac OS X

Here are the steps for burning CDs from ISO images using a Mac OS X system:

1. Copy the ISO file to the desktop.
2. Insert a blank CD-R or CD-RW disc.
3. In Finder, click Applications ► Utilities ► Disk Utility.
4. When the program starts, click Images ► Burn.
5. Navigate to the ISO file on the desktop, and then click the Burn button in the dialog box that appears.

# Index

## ■ Special characters

- (three dashes), 329
- # (hash), 309
- # apt-get command, BASH, 658
- # cdrecord \* command, BASH, 659
- # cfdisk \* command, BASH, 659
- # chgrp command, BASH, 659
- # chroot command, BASH, 660
- # chvt command, BASH, 660
- # dosfsck \* command, BASH, 660
- # dpkg command, BASH, 661
- # dpkg-reconfigure command, BASH, 661
- # fdisk \* command, BASH, 661
- # fsck \* command, BASH, 662
- # groupadd command, BASH, 662
- # groupdel command, BASH, 662
- # halt command, BASH, 662
- # hdparm \* command, BASH, 662
- # ifconfig \* command, BASH, 663
- # init command, BASH, 663
- # lsmod command, BASH, 664
- # mkfs \* command, BASH, 664
- # modinfo command, BASH, 665
- # modprobe command, BASH, 665
- # mount \* command, BASH, 665
- # reboot command, BASH, 666
- # rmmmod command, BASH, 666
- # route \* command, BASH, 666
- # runlevel command, BASH, 666
- # tracepath command, BASH, 668
- # umount command, BASH, 668
- # useradd command, BASH, 668
- # userdel command, BASH, 668
- \$ (dollar symbol), 309
- \$ alias command, BASH, 658
- \$ alsamixer command, BASH, 658
- \$ apropos command, BASH, 658
- \$ apt-cache command, BASH, 658
- \$ bzip2 command, BASH, 659
- \$ bzip2recover command, BASH, 659
- \$ cal command, BASH, 659
- \$ cat command, BASH, 659
- \$ cd command, BASH, 659
- \$ cdparanoia \* command, BASH, 659
- \$ chmod command, BASH, 659
- \$ chown command, BASH, 659
- \$ clear command, BASH, 660
- \$ command, vim command mode, 353
- \$ cp command, BASH, 660
- \$ crontab command, BASH, 660
- \$ date command, BASH, 660
- \$ df command, BASH, 660
- \$ diff command, BASH, 660
- \$ diff3 command, BASH, 660
- \$ dig command, BASH, 660
- \$ dmesg command, BASH, 660
- \$ du command, BASH, 661
- \$ eject command, BASH, 661
- \$ ex \* command, BASH, 661
- \$ exit command, BASH, 661
- \$ fdformat command, BASH, 661
- \$ fg command, BASH, 661
- \$ file command, BASH, 661
- \$ find \* command, BASH, 661
- \$ free command, BASH, 662
- \$ ftp \* command, BASH, 662

- \$ fuser command, BASH, 662
- \$ grep \* command, BASH, 662
- \$ groups command, BASH, 662
- \$ gzip command, BASH, 662
- \$ head command, BASH, 662
- \$ help command, BASH, 662
- \$ history command, BASH, 662
- \$ host command, BASH, 663
- \$ hostname command, BASH, 663
- \$ id command, BASH, 663
- \$ info \* command, BASH, 663
- \$ jobs command, BASH, 663
- \$ kill command, BASH, 663
- \$ killall command, BASH, 663
- \$ last command, BASH, 663
- \$ ldd command, BASH, 663
- \$ less command, BASH, 663
- \$ ln command, BASH, 664
- \$ lpr command, BASH, 664
- \$ lpstat command, BASH, 664
- \$ ls command, BASH, 664
- \$ lsof command, BASH, 664
- \$ man command, BASH, 664
- \$ md5sum command, BASH, 664
- \$ mkisofs \* command, BASH, 665
- \$ more command, BASH, 665
- \$ mv command, BASH, 665
- \$ netstat \* command, BASH, 665
- \$ nice command, BASH, 665
- \$ nohup command, BASH, 665
- \$ passwd command, BASH, 666
- \$ ping command, BASH, 666
- \$ printenv command, BASH, 666
- \$ ps \* command, BASH, 666
- \$ pwd command, BASH, 666
- \$ renice command, BASH, 666
- \$ rm command, BASH, 666
- \$ screen \* command, BASH, 666
- \$ sftp \* command, BASH, 666
- \$ shred command, BASH, 667
- \$ sleep command, BASH, 667
- \$ smbclient \* command, BASH, 667
- \$ sort command, BASH, 667
- \$ ssh \* command, BASH, 667
- \$ startx command, BASH, 667
- \$ su command, BASH, 667
- \$ sudo command, BASH, 667
- \$ tac command, BASH, 667
- \$ tail command, BASH, 667
- \$ tar \* command, BASH, 667
- \$ tee command, BASH, 668
- \$ top \* command, BASH, 668
- \$ touch command, BASH, 668
- \$ umask command, BASH, 668
- \$ unalias command, BASH, 668
- \$ uname command, BASH, 668
- \$ unzip command, BASH, 668
- \$ uptime command, BASH, 668
- \$ vi \* command, BASH, 668
- \$ wc command, BASH, 668
- \$ whatis command, BASH, 668
- \$ whereis command, BASH, 668
- \$ xhost command, BASH, 669
- \$ xinit command, BASH, 669
- \$ zip command, BASH, 669
- \$ zipgrep command, BASH, 669
- \$PATH variable, 377
- %CPU column, top program, 367
- %MEM column, top program, 367
- & (ampersand symbol), 373
- \* (asterisk), 358, 675
- \_ (underscore) character, 280
- | (pipe symbol), 362, 383
- ~ (tilde), 615
- (+) read/write (rw) permissions, 331
- < (left angle bracket), 361
- = (equal sign), in Calc, 491
- > (right angle bracket), 361, 385

- 0 (zero) value, 586
- \ (backslash), 279
- ! (exclamation mark), 382, 527, 625
- / (forward slash), 279, 673
- . (period), 599
- ? (question mark), 348

## ■ Numerics

- 3D drivers, installing, 160–163
- 3D effects, 507–509
- 3D flourish tool, 507

## ■ A

- a command option, 362, 600
- A command, vim command mode, 353
- AACS (Advanced Access Content System), 392
- AbiWord word processor, 563
- acceleration, 234
- Access, Microsoft, 264
- accessibility settings, 235–236
  - keyboard, 238–239
  - login options, 243
  - mouse, 235–236
  - OpenOffice.org, 471
- accessibility tools, 245
- accessing computers remotely. *See* remote access to computers
- accessing files, 281–283
- Account tab, 579
- Add Directory button, 603
- Add File button, 603
- Add to Panel option, 252
- Add Wallpaper button, 221
- Add/Remove Applications window, 558
- Address Book Search applet, 253
- Address Cards view, Contacts mode, Evolution, 535
- admin system group, 582
- administrator account, 99
- administrator powers, 122
- Advanced Access Content System (AACS), 392
- Advanced Package Tool. *See* APT
- Advanced tab, 579
- age of Linux, 5–6
- Airbrush tool, GIMP, 438
- alien program, 118
- Alignment tool, GIMP, 438
- all day events, 538
- Alpha to Logo filters, GIMP, 448
- Alt+D shortcut, BASH, 380
- Alt+L shortcut, BASH, 380
- Alt+R shortcut, BASH, 380
- Alt+T shortcut, BASH, 380
- Altering Permissions section, 328
- ampersand symbol (&), 373
- anacron, 616–617
- animating slides, 504–506
- animation
  - custom, 504, 506
  - Flash, 425
- animation filters, GIMP, 448
- antialiasing, 222
- antivirus protection, 175
- AppArmor, 199
- Appearance option, OpenOffice.org, 470
- Apple's Boot Camp utility, 73
- applets, 251–252
- Application category, OpenOffice.org, 466
- Application Switcher, 228
- applications. *See* programs
- Applications menu, 102, 110, 250, 257
- Applications option, Finder, 109
- APT (Advanced Package Tool), 550, 597
  - installing and removing packages using, 561–563
  - overview, 561
  - querying packages and repositories, 563–565
  - updating system, 564–565

- apt-cache depends packagename lless  
command, 563
- apt-cache search packagename  
command, 563
- apt-cache show packagename lless  
command, 563
- apt-get command, 569
- apt-get command, APT, 561
- Archive Manager, 273–274
- Artistic filters, GIMP, 447
- As Character option, Writer, 483
- Aspell dictionary package, 529
- Assistive Technology Support, 245
- asterisk (\*), 675
- Asterisk Password Reveal, 39
- at command, 618
- atq job number, 618
- Audacity software, 409
- audio. *See* digital audio
- Authentication tab, 567
- AutoCaption option, OpenOffice.org  
Writer, 472
- autocompletion, BASH shell
  - with files and paths, 378
  - overview, 377
  - viewing available options, 378–379
- autohinting, 223
- automatic login, 587–588
- Automatic Private IP Addressing, 126
- Automatic Proxy Configuration, 144
- Automatically Fix File System Errors  
setting, 46
- Available Backups drop-down list, 605

## B

- b command, vim command mode, 353
- ba commands, 378
- background (bottom) color box, 439
- Background option, OpenOffice.org  
Writer/Web, 472

- backing up data
  - choosing data to back up, 599–601
  - from command line
    - compressing tar archives, 607–608
    - creating tar files, 606–607
    - extracting files from tar archive, 608
    - overview, 606
    - saving file to CD-R/RW, 609–611
    - viewing tar archive information, 608
- e-mail, 38–39
- making notes, 39–40
- overview, 37–38, 599
- using Simple Backup
  - changing backup file destination, 604
  - changing time period between  
backups, 605
  - excluding files and folders, 603
  - including files and folders, 603
  - overview, 601–603
  - restoring data via Simple Backup,  
605–606
- Backports repository, 552
- backslash (\), 279
- Backup Properties dialog box, 601
- bang, 382
- Base program, 264
  - creating database
    - adding controls to form manually, 518
    - adding table, 514–515
    - creating form, 516–517
    - editing database table, 518
    - overview, 514
  - getting started with, 512–513
  - overview, 511
  - using database, 519
- BASH shell, 314–316
  - autocompletion
    - with files and paths, 378
    - overview, 377
    - viewing available options, 378–379

- command history, 381–382
- command index, 657–669
- commands, 365
- getting help, 310–311
- keyboard shortcuts
  - overview, 379
  - for system control, 380–381
  - for working in BASH, 379–380
- listing files, 314–316
- moving files, 316–317
- overview, 303–305, 307–309, 377
- piping and directing output
  - of commands, 383–385
  - overview, 383
  - redirecting output, 385–386
- reasons for using, 305–306
- running programs, 309–310
- running via virtual console, 311–312
- when to use, 307
- working with files
  - changing and creating directories, 319–320
  - copying files, 316
  - deleting files, 318–319
  - listing files, 314–316
  - moving files, 316–317
- BASIC category, OpenOffice.org, 466
- Basic Fonts (Western) option, OpenOffice.org Writer, 471
- Battery Charge Monitor applet, 253
- BBC (British Broadcasting Corporation), 402, 422
- benefits of Linux
  - fewer crashes, 8
  - free and shareable, 9
  - Linux community, 9–10
  - no annoying copy protection or usage restrictions, 9
  - overview, 8
  - security, 8–9
- bin directory, 335
- binary files, 546
- binary value, 264
- BIOS menu, 49
- BitTorrent file sharing application, 203
- Bksp key, GNOME Calculator, 273
- Bluetooth
  - Manager program, 589
  - overview, 163
  - pairing Bluetooth devices, 163
  - transferring files between Bluetooth devices, 164–165
  - USB adapters, 163
  - using Bluetooth keyboard or mouse, 166
- Blur filters, GIMP, 446
- Blur/sharpen tool, GIMP, 439
- bonding, 163
- Boolean value, 264
- Boot Camp utility, 73
- boot directory, 335
- Boot from first hard disk option, Boot menu, 52
- boot loader menu, 97
- boot loaders, 33, 99
- boot sectors, 33
- bootable CDs, creating from ISO images, 690–693
- /boot/grub/menu.lst file, 586
- booting
  - automatic login, 587–588
  - from CD-ROM, 48–49
  - freeing disk space
    - emptying cache of package files, 597
    - emptying /tmp folder, 596
  - overview, 596
  - removing unused software, 597
  - managing GNOME session, 589–591

- prelinking
  - configuring prelinking, 594
  - deactivating prelinking, 594–595
  - overview, 593–594
  - reducing boot menu delay, 586–587
  - using mouse, 113
- Borders icon, Writer, 485
- borders of windows, customizing, 216
- bounce keys, 239
- Bourne Again SHell. *See* BASH shell
- Brasero program, 270–271, 409–410
- Brightness applet, 253
- Brightness/Contrast menu option, 442
- Bristol virtual synthesizer, 409
- British Broadcasting Corporation (BBC), 402, 422
- browser dialog box, GIMP, 435
- Bucket tool, GIMP, 438
- buffers, GIMP, 440
- bug fixing, 118
- build-essential metapackage, 569
- BulletProofX system component, 85
- burning CDs, 692–693
- By Company view, Contacts mode, Evolution, 535
- Bytecode Interpreting, 223
- .bzip2 files, 273
- bzip2 program, 607

## C

- c command option, 606
- cache of package files, emptying, 597
- Calc program, 261–262
  - creating charts, 496–497
  - deleting and inserting data and cells, 492
  - entering and formatting data, 491–492
  - overview, 491
  - sorting data, 495–496
  - using filters, 498

- working with formulas
  - overview, 493
  - summing figures, 494
  - using Function Wizard, 493–494
- Calculate option, OpenOffice.org Calc, 472
- Calculator, 258, 273
- Calendar view, Evolution, 266
- Calendars mode, Evolution, 523
  - adding or editing diary entry, 538–540
  - overview, 537
  - specifying appointment types, 537–538
- cameras
  - basic use information, 157–158
  - connecting to PC, 429–430
- card readers, 157
- cat command, 347–348, 385
- cataloging images. *See* downloading and cataloging images
- Category drop-down list, Calc, 493
- CD (compact disc) player, 258
- cd command, 382, 625
- cdrecord command, 386, 609
- cdrom -> media/cdrom directory, 335
- CD-ROM, booting from, 48–49
- cdrom system group, 582
- CD-R/RW drive, 119, 609–611
- CDs (compact discs)
  - audio, listening to, 404
  - bootable, creating from ISO images, 690–693
  - burning, 258, 270–271
  - checking for defects, 51
  - creating own, 409–411
  - ripping music from
    - adding MP3-ripping support to Sound Juicer, 407
    - choosing format, 406–407
    - overview, 405–406
    - process, 408–409
- cells, in Calc, 492



- centered option, Style drop-down list, 221
- central file server, 322
- Change Icon, 467
- Changes option, OpenOffice.org Calc and Writer, 472
- Character option, Writer, 480
- Character Palette applet, 253
- charts, in Calc, 496–497
- Check CD for defects option, Boot menu, 51
- Check for new hardware drivers tool, 590
- child processes, 369
- chkdsk command-line tool, 83
- chmod command, 330–331
- chown command, 606
- Cinelerra software suite, 425
- Clam Antivirus
  - dealing with infections, 210–211
  - scanning for viruses, 209
  - updating database, 208
- clear command, 341
- Clearlooks theme, 214
- Clipboard Text Encryption applet, 253
- Clock applet, 253
- Clock notation option, 242
- clock, Ubuntu desktop, 106
- Clone tool, GIMP, 439
- codecs, 393, 414–416
- Color picker tool, GIMP, 437
- colors
  - color-coding within GNOME Terminal, 323
  - correcting, in GIMP, 442–444
  - customizing, 216
  - of wallpaper, 222
- Colors option, OpenOffice.org, 470
- Combine filters, GIMP, 447
- COMMAND column, top program, 367
- !command command, sftp, 625
- command history, BASH shell, 381–382
- command line
  - adding and deleting users at, 580–583
  - backing up data from
    - compressing tar archives, 607–608
    - creating tar files, 606–607
    - extracting files from tar archive, 608
    - overview, 606
    - saving file to CD-R/RW, 609–611
    - viewing tar archive information, 608
  - configuring Ubuntu using, 122
- Command mode, vim text editor, 351–353
- command prompts, 308
- ! command, sftp, 625
- / command, vim command mode, 352
- ? command, vim command mode, 352
- command-line mode, 354–355, 356
- command-line prompts, 303
- command-line shell, 304, 305, 306, 334, 350, 357
- commands, piping and directing output of, 383–385
- comma-separated value (CSV) files, 262, 456, 486
- community, Linux, 9–10
- compact discs. *See* CDs
- compatibility
  - OpenOffice.org, 455–457
  - OpenOffice.org Writer, 472
- compiling kernels, 595
- Compiz Fusion, 161
- CompizConfig Settings Manager tool, 229, 230, 232
- Complain mode, AppArmor, 199
- composing e-mail messages, 528–529
- Compressed file types, 290
- compressing tar archives, 607–608
- Computer window, 298
- configuration dialog box, GIMP, 272
- configuration options, 469
- configuration software, 24

- configuration tools, 25
  - configure script, 571
  - configuring
    - display, 89–92
    - Firestarter
      - overview, 202–203
      - setting inbound rules, 203–204
      - setting outbound rules, 205
      - turning off diagnostic services, 206–207
    - Ubuntu, Device Manager, 119, 121
  - Connect to Server applet, 253
  - connecting camera to PC, 429–430
  - Connections option, OpenOffice.org Base, 473
  - Contact List Editor pane, Evolution, 537
  - Contacts manager/calendar, 258
  - Contacts mode, Evolution, 523
    - adding or editing contact information, 535–536
    - creating contact list, 537
    - overview, 535
  - Contacts view, Evolution, 266
  - Content Scrambling System (CSS), 392, 423
  - context menu, in Writer, 480–481
  - Control Panel function, Windows, 108
  - Controls category, OpenOffice.org, 467
  - controls, customizing, 216
  - copy protection, 9
  - copying
    - files, BASH shell, 316
    - Windows fonts, 458
  - copyleft, 17
  - core fonts, 458
  - country, selecting during installation, 53–54
  - cp command, 316
  - cp program, 344
  - cpio command, 606
  - CPU Frequency Scaling Monitor, 145, 253
  - cpufreq-selector applet, 145
  - crashes, fewer with Linux, 8
  - Create Form, Base, 516
  - cron daemon, 613–615
  - crontab command field, 617
  - crontab file, 613–614
  - crontab/ file, 617
  - cropping in GIMP, 438, 444
  - cryptographic keys. *See* keys
  - CSS (Content Scrambling System), 392, 423
  - CSV (comma-separated value) files, 262, 456, 486
  - Ctrl+A shortcut, BASH, 380
  - Ctrl+E shortcut, BASH, 380
  - Ctrl+K shortcut, BASH, 380
  - Ctrl+L shortcut, BASH, 380
  - Ctrl+left arrow shortcut, BASH, 380
  - Ctrl+right arrow shortcut, BASH, 380
  - Ctrl+T shortcut, BASH, 380
  - Ctrl+U shortcut, BASH, 380
  - Ctrl+W shortcut, BASH, 380
  - Ctrl+Y shortcut, BASH, 380
  - cursor keys, 98, 351
  - custom animation, 504, 506
  - Custom backup mode, Simple Backup, 602
  - Custom button, Synaptic Package Manager toolbar, 554
  - Custom Filters button, 560
  - Customize dialog box, 467
  - cutting and pasting text, 114
- D**
- D command, vim command mode, 352
  - Dapper Drake, 681
  - Data category, OpenOffice.org, 467
  - Database pane, Base, 513, 519
  - databases. *See* Base
  - Databases option, OpenOffice.org Base, 473
  - date command, 341
  - db command, vim command mode, 352
  - dd command, vim command mode, 352

- deactivating
  - prelinking, 594–595
  - spell-checking, 482
- .deb file extensions, 547
- .deb package files, 559
- Debian distribution, 26
- Debian Package (dpkg), 549–550, 558–560
- Debian package maintainer, 676
- Debian package-management system, 569
- decoding ISO filenames, 691
- Decors filters, GIMP, 448
- decrypting e-mail, 195–196
- DeCSS software, 423
- Default Colors option, Chart, 473
- Default Face option, 245
- default mode, GNOME Calculator, 273
- default partitioning option, 56
- default sleep mode, 148
- Defragment Now button, 46
- Delete key, Calc, 492
- Delete This Panel, 248
- deleting
  - data and cells, in Calc, 492
  - e-mail messages, 526
  - files, BASH shell, 318
  - menus, 250–251
- denial-of-service (DoS) attacks, 206
- dependencies, 548–549, 557, 560, 570–571
- Description heading, man page, 673
- Deskbar applet, 253
- desktop
  - adding shortcuts
    - creating launcher, 247
    - creating link, 248
    - overview, 246
  - applets, 251–252
  - desktop elements, 105–107
  - first impressions, 101–102, 105
  - menus
    - adding all menus to Panel, 249
    - adding Applications menu to Panel, 249–250
    - deleting, 250–251
    - overview, 249
  - overview, 100, 246
  - personalizing panels, 248, 249
  - visual effects, 160–163, 225–233
  - widgets, 232–233
- Desktop games, 259
- Despeckle effect, GIMP, 446
- Details button, Task Details dialog box, 541
- /dev directory, 321, 335, 345
- dev= command option, 609
- devel libraries, GTK+ 1.2, 570
- /dev/hdd hard disk identifier, IDE, 59–65
- Device Manager, 119, 121
- df command, 345
- DHCP (Dynamic Host Control Protocol), 126
- dialout system group, 582
- dial-up telephone modems, 141–143
- Dictionary, 274–275
- Dictionary Lookup applet, 253
- diff command, 361
- diff3 command, 362
- digital audio
  - creating own CDs, 409–411
  - Internet telephone, 411–412
  - online radio stations, 401–402
  - podcasts, 402
- digital cameras. *See* cameras
- digital images, 37
- digital photos
  - downloading and cataloging images
    - cataloging with F-Spot, 431
    - connecting camera, 429–430
    - importing photos using F-Spot, 430–431
    - overview, 429

- tagging images using F-Spot, 433
- tweaking photos using F-Spot, 431–432
- getting pictures onto PC, 430
- GIMP
  - cropping, 444
  - filters, applying, 446–448
  - healing, 444
  - making color corrections, 442–444
  - overview, 434–440, 442
  - sharpening, 445
  - overview, 429
- Digital Rights Management (DRM), 392, 423
- Dillo programmer, 571
- Dillo web browser, 570
- dip system group, 582
- directing output. *See* piping and directing output
- directories, 282, 319
- Disk Cleanup tool, 34
- Disk Management tool, 32
- Disk Mounter applet, 253
- disk partitioning, 55
- display, configuring, 89–92
- displayconfig-gtk package, 86
- Distorts filters, GIMP, 446
- distributions of Linux, 19
- distros, 19
- dmesg command, 341
- Do Backups drop-down list, Time tab, 605
- dock, 110
- Document area, OpenOffice.org, 464
- Document protection, OpenOffice.org, 455
- 'document' search string, 361
- 'document.' search string, 361
- 'document\$' search string, 361
- Documents category, OpenOffice.org, 466
- documents, importing, 68
- Dodge/Burn and dodge tool, GIMP, 439
- dollar symbol (\$), 309
- DoS (denial-of-service) attacks, 206
- DOS command prompt, 303
- dots per inch (DPI), 430
- Double-Click Timeout setting, 235
- Download Package Files Only, 556
- downloading and cataloging images
  - connecting camera, 429–430
  - importing photos, 430–431
  - overview, 429
  - tagging images, 433
  - tweaking photos, 431–432
- DPI (dots per inch), 430
- dpkg (Debian Package), 549–550, 558–560
- dpkg command, 560
- dpkg -I packagename.i386.deb lless querying package, 561
- dpkg -l packagename querying package, 561
- dpkg -s packagename lless querying package, 561
- dpkg-reconfigure xorg-xserver
  - command-line configuration
  - utility, 85
- dragging-and-dropping, 235, 289
- Drawer applet, 253
- Drawing category, OpenOffice.org, 467
- Drawing toolbar, 263, 464, 503, 507
- drive references, 279–280
- driver file, 139
- drivers, proprietary vs. open source, 118–119
- DRM (Digital Rights Management), 392, 423
- du command, 344
- dual-boot setup, 31
- DVD burning, 258, 270–271
- DVD release of Ubuntu 8.04, 43
- DVD supplied with this book
  - creating bootable CDs from ISO images, 690–693
  - overview, 681
  - version numbers, code names, and support, 681–682

- versions of Ubuntu
  - Edubuntu, 687–689
  - installation of, 684–685
  - Kubuntu, 685–686
  - overview, 683
  - Xubuntu, 689
- DVD-ROM drive, booting from, 48
- dw command, vim command mode, 352
- Dwell Click applet, 253
- Dynamic Host Control Protocol (DHCP), 126
- E**
- Eastern Standard Time (EST), 53
- echo command, 309
- Edge Detect filters, GIMP, 446
- Edit category, OpenOffice.org, 466
- Edit menu, Nautilus, 284
- Edubuntu, 687–689
- Edutainment Suite, KDE, 688
- Effect Options dialog box, 506
- ejecting, 299–300, 341
- Ekiga, 277–278
- Ellipse Select tool, GIMP, 436
- Emacs text editor, 350, 379
- e-mail. *See also* Evolution program
  - access, configuring, 169–171
  - backing up, 38–39
  - composing messages, 528–529
  - creating new folders, 531
  - creating search folders, 533–534
  - creating signatures, 529–530
  - decrypting, 195–196
  - deleting messages, 526
  - flagging messages, 527
  - junk e-mail, 532
  - overview, 530
  - reading, 526
  - sending and receiving, 524
  - signing and encrypting, 194–196
  - sorting and filtering messages, 532–535
- E-mail option, OpenOffice.org, 473
- emblems, 287
- Emphasis option, Add button dialog box, 505
- Enable Bidirectional Support box, 156
- encryption
  - decrypting files, 193
  - of files, 190–192
  - overview, 179–180
  - setting up for
    - exporting public key, 185–186
    - generating key pair, 181–184
    - importing and signing public key, 188, 190
    - overview, 180
    - publishing public key, 186–187
    - signing and encrypting e-mail, 194–196
- encryption key, 131, 621, 624
- end-of-file (EOF), 381
- End-User License Agreement (EULA), 18
- Enforce mode, AppArmor, 199
- Enhance filters, GIMP, 446
- entering data, in Calc, 491–492
- Entrance option, Add button dialog box, 504
- EOF (end-of-file), 381
- equal sign (=), in Calc, 491
- Erase tool, GIMP, 438
- Escape key, Totem Movie Player, 269
- ESSID (Extended Service Set Identifier), 129
- EST (Eastern Standard Time), 53
- etc directory, 335
  - /etc/apt/sources.list file, 566, 568
  - /etc/apt/sources.list.d/ directory, 566
  - /etc/hdparm.conf file, 149
  - /etc/inittab file, 312
- Ethernet network device, configuring, 125–126, 128
- EULA (End-User License Agreement), 18
- Evolution Alarm Notifier tool, 590

Evolution program, 23, 169, 265–266

Calendars mode

adding or editing diary entry, 538–540

overview, 537

specifying appointment types, 537–538

Contacts mode

adding or editing contact information,  
535–536

creating contact list, 537

overview, 535

Mail mode

composing message, 528–529

creating e-mail signature, 529–530

creating new folders, 531

Memos mode, 540

modes, overview of, 521–523

overview, 521

steps to configure, 169

Tasks mode, 540–541

exclamation mark (!), 382, 527, 625

.exe files, 132, 137

Execute Actions drop-down list,

Evolution, 532

exit command, 341, 625

Exit option, Add button dialog box, 505

Expand box option, 249

Exploit.IFrame.Gen-1, 211

exporting public key, 185–186

ext2 file system, 336

ext3 file system, 336

Extended Service Set Identifier (ESSID), 129

Extract button, Archive Manager, 273

extracting files from tar archive, 608

Eyes applet, 254

## F

Failsafe GNOME option, 241

Failsafe Terminal option, 241

fax system group, 582

fdisk command, 339

fields, Writer, 489

file browser window, 286, 295

File Browsing function, Finder, 109

file command, 341

file compatibility, OpenOffice.org, 455–457

File Format drop-down list, 264, 509

file formats, OpenOffice.org, 476

file management

accessing removable storage devices,  
298–300

accessing Windows files

accessing networked files, 294–296

overview, 291

sharing folders from within Ubuntu, 297

working with files in Windows  
partitions, 292–294

file system concepts

drive references, 279–280

file access and storage, 281–283

file names, 280

overview, 279

launching files and running programs,  
289–291

overview, 279

using Nautilus

file and folder icons, 288

overview, 283–286

searching for files, 286

special windows, 288–289

file permissions, 326

file shortcuts, 332–333

file system, 333–336

File System Table (fstab), 337, 340

file type codes, 327

File Types tab, 603

files. *See also* file management

free space, 345–346

searching for, 342–343

Files heading, man page, 673

fill screen option, Style drop-down list, 221

- Filter function, Calc, 498
- filtering e-mail messages, 532–535
- filters
  - in Calc, 498
  - in GIMP, 446–448
- find command, 342
- Find Files/ function, Windows, 108
- Finder, 109
- Firefox (web browser), 266–268, 369
- firefox-bin process, Firefox web browser, 369
- Firestarter, 175
  - configuring
    - overview, 202–203
    - setting inbound rules, 203–204
    - setting outbound rules, 205
    - turning off diagnostic services, 206–207
  - installing, 201–202
- firewalls, 200. *See also* Firestarter
- Fish applet, 254
- FLAC audio file format, 406
- flagging e-mail messages, 527
- flags command-line, 314
- Flash
  - adding support for, 417, 419
  - animations, 425
  - exporting Impress presentation as Flash file, 509–510
- Flash Player software, 268
- flatbed scanners, 158
- flavors of Linux, 19–20
- Flip tool, GIMP, 438
- floating palettes, OpenOffice.org, 463
- floating toolbar, OpenOffice.org, 476
- floppy disk drive, 298
- floppy system group, 582
- flow charts, 454
- Fluendo MP3 codec, 397
- FluidSynth virtual synthesizer, 409
- folders
  - in Evolution's Mail mode, creating, 531
  - search folders, in Evolution, 533–534
  - sharing from within Ubuntu, 297
- font preferences, 222–224
- Font Preferences dialog box, 222
- Font Rendering heading, Font Preferences dialog box, 222
- fonts
  - copying, 458, 459
  - installing TrueType Core Fonts, 459–460
  - overview, 458
- Fonts option, OpenOffice.org, 470
- Fontwork tool, 506
- Foomatic D1000 scanner, 677
- footers, in Writer, 489–490
- Force Quit applet, 254
- foreground (top) color box, 439
- Foreground Select tool, GIMP, 437
- Form Control toolbar, Base, 519
- Form Navigation toolbar, Base, 519
- Form Wizard, Base, 516
- Format category, OpenOffice.org, 466
- Format Cell dialog box, Calc, 492
- formatting
  - data, in Calc, 491–492
  - text, in Writer
    - context menu, 480–481
    - Formatting toolbar, 479–480
    - overview, 479
    - Style and Formatting palette, 481
- Formatting Aids option, OpenOffice.org Writer, 471–472
- Formatting toolbar
  - Calc, 492
  - Impress, 506
  - OpenOffice.org, 464
  - Writer, 479–480

- formatting tools, Writer, 260
- forms, 264, 513
- Formula bar, Calc, 494
- formulas, in Calc
  - overview, 493
  - summing figures, 494
  - using Function Wizard, 493–494
- forums, 676–677
- forward slash (/), 279
- forward slash key (/), 673
- FQDN (fully qualified domain name), 620
- Frame category, OpenOffice.org, 467
- framebuffer graphical mode, 77
- free command, 341
- Free Select tool, GIMP, 436
- Free Software Foundation (FSF), 16
- free space, 58
- freeing disk space, 596
- FSF (Free Software Foundation), 16
- F-Spot
  - importing photos using, 430–431
  - main window, 431
  - overview, 431
  - tagging images using, 433
  - tweaking photos using, 431–432
- fstab (File System Table), 337, 340
- FTP program, 624
- full- screen option, 307
- fully qualified domain name (FQDN), 620
- Function Wizard, in Calc, 493–494
- functions, adding to toolbars in
  - OpenOffice.org, 465–467
- fuse system group, 582
- Fuzzy Select tool, GIMP, 437

## G

- g switch, 581
- G switch, 582
- GCC (GNU Compiler Collection), 16, 569
- GCompris, 688
- Gedit text editor, 312, 585–586
- GeForce 6600 graphics card, 162
- General option, OpenOffice.org, 470–473
- General tab, power-management
  - preferences, 148
- Generic filters, GIMP, 446
- genisoimage command, 609
- Geometry option, 3D effect, 508
- get command, sftp, 625
- GIDs (group IDs), 577, 580
- GIMP program, 271–272
  - cropping, 444
  - filters, applying, 446–448
  - healing, 444
  - making color corrections, 442–444
  - overview, 434–440, 442
  - sharpening, 445
- GIMPshop, 448
- gksu command, 325
- glib libraries, GTK+ 1.2, 570
- Global Face Dir option, 245
- Global Regular Expression Print, 358
- GMT (Greenwich Mean Time), 53
- GNOME Art web site, 217–219
- GNOME CD/DVD Creator, 601
- GNOME CPU Frequency Scaling
  - Monitor, 145
- GNOME desktop, 332
- GNOME Onscreen Keyboard (GOK), 245
- GNOME option, 241
- GNOME PPP dial-up tool, 142
- GNOME session, managing, 589–591
- GNOME Terminal, 145, 308, 323, 372, 381
- GNOME themes, 214
- GNOME-Look web site, 217
- gnome-power-manager tool, 590
- gnome-session-manager program, 589
- GNU and Linux together, 18–19
- GNU C Library, 548
- GNU Compiler Collection (GCC), 16, 569



- GNU organization, 5
- GNU project, 16–17
- GNU Public License (GPL), 17–18
- Gnumeric, 460
- Go menu, Nautilus, 284
- gocr program, 158
- GOK (GNOME Onscreen Keyboard), 245
- Google Summer of Code sponsorship scheme, 601
- GParted tool, 59
- GPL (GNU Public License), 17–18
- Gradient fill tool, GIMP, 438
- Graphic category, OpenOffice.org, 467
- graphical desktop operating system, 5
- graphical problems, 84–90, 92
- graphical subsystem, 367
- graphical user interface (GUI), 19
  - adding and deleting users via, 578–579
  - creating and deleting groups via, 580
  - GUI applications, accessing remotely
    - accessing Ubuntu via Remote Desktop, 627–629
    - overview, 626
    - running X applications on remote computer, 621, 626, 628, 630
- graphics card, 77
- Graphics Card tab, Screens and Graphics utility, 87
- graphics cards, 119
- Greenwich Mean Time (GMT), 53
- grep command, 384
- Grid option, OpenOffice.org, 471–473
- group IDs (GIDs), 577, 580
- groupdel command, 583
- groups, creating and deleting via GUI, 580
- Groups tab, Users and Groups program window, 580
- growisofs command, 610
- GRUB boot loader, 83
- GRUB boot menu, 71

- GStreamer multimedia framework, 394
- GStreamer plug-in package, 414
- gststreamer0.10-plugins-ugly-multiverse software package, 407
- GtkRC file option, 242
- GUI. *See* graphical user interface
- GUI terminal emulator, 381
- Guided – Use Entire Disk option, 57
- guru status, 10
- gutsy (distribution repository), 551
- gzip program, 607

## H

- h command option, 344
- h option, 344
- hackers, 179
- halt command, 341
- hard drive space, freeing up
  - reclaiming space, 34–35
  - removing Windows, 35
  - using another hard disk, 35–36
- hard links, 248, 332–333
- Hardware Drivers utility, 162
- hardware support
  - overview, 117–118
  - proprietary vs. open source drivers, 118–119
- Hardy Heron, 43, 681
- hardy repository, 551
- hash (#), 309
- head command, 348–350
- head mytextfile command, 349
- headers, in Writer, 489–490
- healing, in GIMP, 439, 444
- help
  - online
    - forums, 676–677
    - mailing lists, 678
    - other official sites, 678
    - overview, 676
    - third-party sites, 679

- in OpenOffice.org, 474
- overview, 671
- via manual
  - info pages, 674–675
  - man pages, 672–674
  - overview, 671
  - README files and other documentation, 675–676
- Help Agent, 474
- help command, 341, 378, 625
- :help command, vim command-line mode, 355
- Hex keys, 130
- hexadecimal (hex) text, 130
- hibernating, 103, 147–148
- hidden files and directories, 289
- hierarchical file system, 333
- high-resolution mouse, 233
- history of Linux, 13–15
- /home directory, 177, 240, 324, 333, 335, 339, 599, 603
- /home/keir directory, 342
- HTML file types, 290
- Hue/Saturation option, GIMP, 442
- Hurd, 19
- hyperlinks. *See* links
- 
- i command, 353, 359
- .i386.deb file extensions, 560
- icons, 215
  - choosing set, 217
  - for files and folders, 288
  - before menus, hiding/showing, 224
  - Ubuntu desktop, 105
- id command, 581
- IDE-based hard disks, 59
- ifconfig command, 310
- Illumination option, 3D effect, 508
- Image editor, 258
- Image file types, 290
- Image-Editing Tools, GIMP, 436
- image-tweaking tools, Writer, 483
- Import window, F-Spot, 430
- importing
  - documents and settings of user accounts, 68
  - photos, using F-Spot, 430–431
  - public key, 188, 190
- Impress program
  - animating slides, 504–506
  - overview, 263–264
- inbound data connection, 202
- inbound traffic policy, 203, 205
- Include Threads drop-down box, Evolution, 534
- incremental backup, 603
- individual configuration programs, 121–124
  - installing software, 122–124
  - using command line, 122
- .inf files, 132, 137
- info pages, 674–675
  - man pages, 672–674
  - overview, 671
  - README files and other documentation, 675–676
- Inhibit Applet, 254
- Ink tool, GIMP, 439
- Inkscape program, 435
- input devices, personalizing
  - keyboard settings, 237–240
  - mouse options, 233–234
  - overview, 233
- Insert category, OpenOffice.org, 466
- Insert mode, vim text editor, 353–354
- inserting data and cells, in Calc, 492
- Install Theme button, Theme Preferences dialog box, 219
- Install Updates button, Update Manager window, 198

## installation

- 3D drivers, 160–163

- compiler tools, 569

- Firestarter, 201–202

- Linux installation files, 546–547

- managing software repositories

  - adding or removing repositories at command line, 568–569

  - overview, 565–566

  - Software Sources program, 566–567

- other versions of Ubuntu, 684–685

- overview, 545–546

- package management

  - dependency management, 548–549

  - overview, 547–548

  - package repositories, 550–551

  - repository components, 552–553

- package management from command prompt

  - overview, 558

  - using APT tools, 561–565

  - using dpkg, 558–561

- playback software

  - adding Flash support, 417, 419

  - adding Java support, 419–420

  - installing codecs, 414–416

  - installing RealPlayer, 416–417

  - overview, 413–414

- problems with, 79–81. *See also*
  - postinstallation problems;
  - preinstallation problems

  - graphical problems, 84–92

  - overview, 75

- Skype, 411–412

- software repositories, 549–550

- from source

  - compiling, 571–573

  - installing compiler tools, 569

  - overview, 569

  - unpacking tarball and solving dependencies, 570–571

- Synaptic Package Manager

  - installing software, 555–557

  - overview, 553

  - removing software, 557

  - searching for software, 553–555

- theme components, 217–219

- TrueType Core Fonts, 459–460

- Ubuntu

  - overview, 43–45

  - stage 1: preparing Windows partition for resizing, 46–48

  - stage 2: booting from CD-ROM, 48–49

  - stage 3: choosing language settings, 50

  - stage 4: selecting from boot menu, 50–52

  - stage 5: choosing language for, 52

  - stage 6: selecting country and time zone, 53–54

  - stage 7: confirming keyboard layout, 54–55

  - stage 8: repartitioning hard disk, 55–66

  - stage 9: entering user name, 66–68

  - stage 10: importing documents and settings, 68

  - stage 11: confirming installation choices, 69

  - stage 12: waiting during installation, 70

  - stage 13: rebooting Ubuntu, 71–73

- Installing System progress bar, 79

- instant messaging, 171–173

- interface, general, configuring options, 224–225

- Internet access

  - configuring Ethernet network device, 125–126, 128

  - connecting to wireless networks, 128–131

  - joining wireless network, 131

  - overview, 124

  - using dial-up telephone modems, 141–143

- using NdisWrapper to install Windows wireless network drivers, 131–133, 139–140
- blacklisting existing drivers, 138–139
- extracting driver components, 137–138
- installing configuration tools, 133
- installing Windows XP drivers, 133–134
- installing wireless networking hardware, 134–136
- removing drivers, 140–141
- using NetworkManager, 124–125
- working with proxy server, 144
- Internet Explorer favorites, 38
- Internet files, 38
- Internet telephone, 411–412
- Internet Updates tab, 566
- Internet-facing services, 175
- Invest applet, 254
- IP address, 295
- iptables tool, 175, 200
- IPv4 local area network addresses, 592
- .iso file extension, 691
- ISO images
  - of CD release of Ubuntu 8.04, 43
  - creating bootable CDs from, 690–693

## ■ J

- j option, 608
- Jamendo online music store, 400–401
- Java, 419–420, 471
- Jazz++ sequencer, 409
- jfs file system, 336
- jobs, controlling, 373–374
- junk e-mail, 532

## ■ K

- KDE (K Desktop Environment), 107, 685
- kdebase metapackage, 557
- keir user, 328
- kernel module, 131, 138
- Kernel Panic errors, 77

- kernel-tree, 595
- key combination, 240
- key pair, generating, 181–184
- keyboard
  - Bluetooth, 166
  - layout, confirming, 54
  - settings, 240
    - accessibility, 238–239
    - general, 237
    - layout, 237
    - mouse key, 239
    - overview, 237
  - shortcuts, 240
    - adding, deleting, or modifying, 224
    - in BASH, 379–380
    - overview, 379
    - for system control, 380–381
    - for working in BASH, 379–380
- Keyboard Accessibility Status applet, 254
- Keyboard Indicator applet, 254
- Keyboard Preferences dialog box, 237
- keys. *See* private key; public key
- killall command, 372
- KMail program, KDE, 685
- KOffice, 460
- Konqueror, 557
- Kubuntu, 44, 107, 685–687
- kubuntu-desktop package, 685

## ■ L

- l (long option), 315
- l option, 323
- LAMP acronym, 24
- language settings, 50, 52, 471
- last command, 341
- launchers, 246
- launching files and running programs, 289–291
- layers, GIMP, 441

- Layouts tab, Keyboard Preferences dialog box, 237
- lcd command, sftp, 625
- learning to use Linux, 23–24
- least privilege, 199
- left angle bracket (<), 361
- Left/right cursor key shortcut, BASH, 380
- legalities of playback, 391–393
  - listening to audio CDs, 404
  - overview, 391
  - playing audio files
    - installing codecs, 394
    - overview, 393
    - using Rhythmbox, 397, 399
  - ripping music from CDs
    - adding MP3-ripping support to Sound Juicer, 407
    - choosing format, 406–407
    - overview, 405–406
    - process, 408–409
- less command, 348
- lib directory, 335
- libc6 package, 548
- libglib package, 571
- libgtk package, 571
- libraries, 303, 593
- license, 9
- Light and Shadow filters, GIMP, 446
- link-local networking, 126
- links, 675
  - hard, 332–333
  - symbolic, 332
  - symbolic and hard, 248
- Linux, 3–5
  - age of, 5–6
  - benefits of
    - fewer crashes, 8
    - free and shareable, 9
    - Linux community, 9–10
    - no annoying copy protection or usage restrictions, 9
    - overview, 8
    - security, 8–9
  - flavors of, 19–20
  - learning to use, 23–24
  - obtaining, 25–26
  - who uses, 24–25
- List view, Contacts mode, Evolution, 535
- live distro mode, 44
- Live365, 402
- lls command, sftp, 625
- lmkdir command, sftp, 625
- ln command, 332
- local printer, configuring, 150–152
- Local tab, Login Windows Preferences dialog box, 243
- locate command, 342–343
- Locate Pointer option, 234
- Location bar, Nautilus window, 284
- Lock Screen applet, 254
- Lock Screen option, 103
- Log Out option, 103
- logging in, 99, 100, 587–588, 620–623
- login options, 241–245
  - accessibility settings, 243
  - general settings, 241–242
  - local settings, 242–243
  - overview, 240–241
  - remote settings, 243
  - security settings, 243–244
  - user settings, 244–245
- login picture, 246
- Login Window Preferences window, 588
- long option (-l), 315
- lost+found directory, 335
- lpadmin system group, 582
- ls command, 315, 625
- ls -l command, 325, 332, 344

■ **M**

- m command, 580
- Mac OS X, 109, 110
- Macintosh HD icon, 110
- Macromedia Flash (SWF), 264, 509
- macros, recording, 475
- Magnatune online music store, 400
- mail merging, 472, 486–489
- Mail mode, Evolution
  - composing messages, 528–529
  - creating e-mail signature, 529–530
  - creating new folders, 531
  - creating search folders, 533–534
  - deleting messages, 526
  - flagging messages, 527
  - junk e-mail, 532
  - overview, 530
  - reading e-mail, 526
  - sending and receiving e-mail, 524
  - sorting and filtering messages, 532–535
- Mail Preferences icon, Preferences dialog box, Evolution, 526
- mailbox (.mbox) files, Thunderbird's, 527
- mailing lists, 678
- Main Distribution repository, 551
- Main Menu applet, 254
- Main section, 552
- main toolbar window, GIMP, 435
- Main work area, 503
- make command, 572
- make install command, 572
- Make Link option, 248
- Makefile file, 572
- man ufw command, 200
- managing users. *See* users, managing
- Manual backups mode, Simple Backup, 602
- manual mode, NetworkManager, 125
- manual partitioning screen, 81
- Manual Proxy Configuration, 144
- Map filters, GIMP, 447
- Mark for Complete Removal option, 557
- Mark for Removal option, 557
- Mark Recommended for Installation option, 555
- Mark Suggested for Installation option, 555
- Material option, 508
- Max Size tab, 603
- .mbox (mailbox) files, Thunderbird's, 527
- Measurer tool, GIMP, 437
- media directory, 335
- meetings, 538
- memory cards, 157, 429
- Memory option, OpenOffice.org, 470
- memory sticks, 157–158
- Memory test option, Boot menu, 52
- Memos mode, Evolution, 523, 540
- Memtest86 program, 52, 71, 77
- Menu Bar applet, 254
- menus
  - adding all menus to Panel, 249
  - adding Applications menu to Panel, 249–250
  - adding, deleting, or modifying items, 224
  - customizing, in OpenOffice.org, 468
  - deleting, 250–251
  - overview, 249
- Menus element, 105
- metapackages, 557
- Microsoft, 3, 176
- Microsoft Access, 264
- Microsoft Office, 453–454
- Microsoft Outlook, 169, 527
- Microsoft Virtual PC 2004, 36
- middle mouse button, 113
- Mines, 276
  - movie playback, 269
  - overview, 257–259, 273
  - photo editing, 271–272
  - Pidgin Internet messenger, 275

- presentation, 263–264
  - running, 110, 289–291
  - spreadsheet, 261–262
  - web browsing, 266–268
  - word processing, 260–261
- Minix, 13
- Mist theme, 214
- MIT Artificial Intelligence Lab, 17
- mkdir command, 319
- mkdir command, sftp, 625
- mkisofs command, 674
- /mnt directory, 335, 339
- /mnt/windows directory, 340
- Modem Monitor\_ applet, 254
- modems, 141–143
- Modify category, OpenOffice.org, 467
- modulename, 138
- Monitor model option, Screens and Graphics Utility, 86
- more command, 348
- Motion path option, Add button dialog box, 505
- Motion Picture Association of America (MPAA), 423
- mount command, 322
- mount points, 59, 64
- mounting, 280
  - drive, manually, 338–340
  - mount command, 337–338
  - overview, 337
  - removing mounted system, 340
- mouse, 113
  - Bluetooth, 166
  - options, 233–234
  - pointer
    - controlling with keyboard, 239
    - customizing, 217
- mouse (KVM) switch, 76
- Mouse Orientation option, 234
- Mouse Preferences dialog box, 233
- Move tool, GIMP, 437
- Movie/DVD player, 258
- movies
  - editing software, 425
  - overview, 422
  - watching, 420–422
- moving files, BASH shell, 316–317
- Mozilla Firefox Bookmarks, 38
- Mozilla Foundation, 38, 546
- Mozilla Plug-in option, OpenOffice.org, 473
- Mozilla Thunderbird e-mail client, 38
- mozilla-plugin-vlc, 555
- MP3 audio file format, 407
- MP3 playback, 391
- MP3 player, 258
- MP3-ripping support, adding to Sound Juicer, 407
- MPAA (Motion Picture Association of America), 423
- MS-DOS prompt, 258
- Multics, 6
- multimedia. *See also* digital audio; movies
  - DVDs, 423
  - flash animations, 425
  - installing playback software
    - adding Flash support, 417–419
    - adding Java support, 419–420
    - installing codecs, 414–416
    - installing RealPlayer, 416–417
    - overview, 413–414
  - overview, 413
  - TV, 426
- multiple virtual desktops, 213
- multiple-speaker surround sound, 168
- Multiverse section, 553
- MusE sequencer, 409
- music. *See* digital audio
- music stores, online. *See* online music stores
- mutt e-mail program, 555
- mv command, 316

My Computer/Computer icon,  
Windows, 108

My Documents/Documents folder,  
Windows, 108

My Network Places, 108, 294

myprogram program, /home/keir  
directory, 310

## ■ N

n command, 349, 352

N command, 352

Name heading, man page, 673

names of files, 280

nano text editor, GNU, 614

Nautilus program, 259, 270–271

- file and folder icons, 288
- overview, 283–286
- searching for files, 286
- special windows, 288–289

Navigate category, OpenOffice.org, 467

ndd command, vim command mode, 352

NdisWrapper, using to install Windows  
wireless network drivers

- blacklisting existing drivers, 138–139
- extracting driver components, 137–138
- installing configuration tools, 133
- installing Windows XP drivers, 133–134
- installing wireless networking hardware,  
134–136
- overview, 131–133, 139–140
- removing drivers, 140–141

NeoOffice, 456

network address of printer, 153

Network button, Finder, 109

Network Manager program, 590

Network Monitor applet, 254

network name, 295

Network Neighborhood, 294

network printers, configuring, 152–156

networked files, accessing, 294–296

NetworkManager, 124–125

New Panel option, 248

newbie status, 10

NI column, top program, 367

Noise filters, GIMP, 446

Norton's Partition Magic, 33

NoScript tool, 212

Notes heading, man page, 673

Notification Area, 148, 254

Notification area, Ubuntu desktop, 106

Novell GroupWise, 169

Numbering category, OpenOffice.org, 467

nVidia GeForce 6600 graphics card, 162

nyy command, vim command mode, 353

## ■ O

O command, vim command mode, 353

o command, vim command mode, 353

o option, 674

OASIS OpenDocument Format (ODF), 457

object modes, Nautilus, 288

obtaining Linux, 25–26

ODF (OpenDocument Format), 457, 476

Office file format, 456

Office, Microsoft. *See* Microsoft Office

official sites, 678

Ogg media format, 392

Ogg Theora, 422

Ogg Vorbis audio file format, 406

On AC Power tab, 146–147

On Battery Power tab, 147–148

one-off tasks, using at command to  
schedule, 618

online help

- forums, 676–677
- mailing lists, 678
- other official sites, 678
- overview, 676
- third-party sites, 679



- online music stores
    - Jamendo, 400–401
    - Magnatune, 400
    - overview, 399–400
  - online radio stations, 401–402
  - online updates, 197–198
  - open source drivers, 82, 118–119
  - OpenDocument Format (ODF), 457, 476
  - OpenOffice.org. *See also* Base program; Calc program; Impress program; Writer program
    - configuration options, 470
    - creating macros, 475–476
    - customizing interface
      - adding functions to toolbars, 465–467
      - adding new toolbar, 467–468
      - configuring options, 469–473
      - customizing menus, 468
      - overview, 465
    - file compatibility, 455–457
    - fonts
      - copying Windows fonts, 458
      - installing TrueType Core Fonts, 459–460
      - overview, 458
    - getting help, 474
    - inserting objects with Object Linking and Embedding, 474–475
    - interface, 463–464
    - key features, 454–455
    - overview, 453, 463
    - saving files, 476–477
    - similarities with Microsoft Office, 453–454
    - using wizards, 474
  - openoffice.org-base package, 264
  - open-source software, 457
  - Opera browser, 259
  - operating systems, 3–4
  - opt directory, 335
  - Optimal Page Wrap, Writer, 484
  - Options button, 99
  - Options category, OpenOffice.org, 466
  - Options configuration dialog box, Writer, 489
  - Options heading, man page, 673–674
  - outbound traffic, 202
  - outgoing connections, 205
  - Outlook, Microsoft, 169, 527
- P**
- p command, vim command mode, 353
  - package files, cache of, emptying, 597
  - package management
    - from command prompt
      - overview, 558
      - using APT tools, 561–565
      - using dpkg, 558–561
    - dependency management, 548–549
    - overview, 547–548
    - package repositories
      - categories of, 551
      - overview, 550
      - repository components, 552–553
  - package-manipulation command, 558
  - Paintbrush tool, GIMP, 438
  - pairing, 163
  - Panel entry, GIMP, 434
  - panel items, moving, 251
  - panels, personalizing, 248–249
  - Paragraph dialog box, Writer, 480
  - parent directory, 319
  - parent processes, 369
  - partitioning, 31–33
  - passphrase, 130
  - passwd command, 582–583
  - passwords, 196
    - adding and changing, 583–584
    - displaying/hiding, 241
  - pasting text, 114
  - patented software, 391
  - Path creation tool, GIMP, 437
  - PATH variable, 309

- paths, GIMP, 440
- Paths option, OpenOffice.org, 470
- Paths tab, 603
- pax command, 606
- PCI ID numbering system, 134
- PCMCIA card, 141
- PDF (Portable Document Format) files, 290, 454, 476
- PDKSH (Public Domain Korn SHell), 304
- Pencil tool, GIMP, 438
- period (.), 599
- permissive policy, 202
- personal ID number (PIN), 163
- personal information management program.  
    *See* Evolution program
- personalization
  - desktop items
    - applets, 251–252
    - menus, 249–251
    - overview, 246
    - personalizing panels, 248–249
    - shortcuts, adding, 246–248
  - desktop visual effects, 225–233
  - font preferences, 222–224
  - general interface, 224–225
  - input devices
    - keyboard settings, 237–240
    - mouse options, 233–234
    - overview, 233
  - keyboard shortcuts, 240
  - login options, 241–245
    - accessibility settings, 243
    - general settings, 241–242
    - local settings, 242–243
    - overview, 240–241
    - remote settings, 243
    - security settings, 243–244
    - user settings, 244–245
  - login picture, 246
  - moving panel items, 251
  - overview, 213–214
  - Perspective Clone tool, GIMP, 439
  - Perspective tool, GIMP, 438
  - phone over Internet, 411–412
  - photo editing. *See* GIMP program
  - pictures, inserting in Writer, 483–484
  - PID column, top program, 366
  - PID number, 370
  - Pidgin program, 169, 172, 275
  - Pilot Applet, 254
  - PIN (personal ID number), 163
  - pipe symbol (|), 362, 383
  - piping and directing output
    - of commands, 383–385
    - overview, 383
    - redirecting output, 385–386
  - Places menu, 102
  - Places pane, Nautilus window, 286
  - plain text (passphrase), 130
  - playback software, installing
    - adding Flash support, 417–419
    - adding Java support, 419–420
    - installing codecs, 414–416
    - installing RealPlayer, 416–417
    - overview, 413–414
  - player application, 394
  - .pls file, 401
  - plugdev system group, 582
  - podcasts, 402
  - Pointer Capture applet, 254
  - port numbers, of printers, 153
  - Portable Document Format (PDF) files, 290, 454, 476
  - Ports tab, Properties, 156
  - postinstallation problems, 81–83
    - overview, 83
    - Windows Vista, 83–84
    - Windows XP, 84
  - pound sterling symbol (£), 54
  - Power Manager program, 590
  - PowerPC processor, 73

- PowerPoint (PPT), 263, 264
- power-saving features, configuring
  - overview, 145
- power-management preferences
  - On AC Power, 146–147
  - On Battery Power, 147–148
  - General tab, 148
  - overview, 145–146
  - spinning down hard disk, 149–150
- PPT (PowerPoint), 263, 264
- PR column, top program, 367
- precompiled kernels, 595
- preinstallation problems, 75–79
- prelink command, 594
- prelinking
  - configuring, 594
  - deactivating, 594–595
  - overview, 593–594
- Presentation file types, 290
- presentation program. *See* Impress program
- Presentation Wizard, 263, 502
- primary key, Base, 518
- Print option, OpenOffice.org, 470–472
- Print Queue applet, 590
- Print Scr button, 39
- print server module, 152
- printers
  - administering, 156
  - configuring local printer, 150–152
  - configuring network printer, 152–156
  - configuring Windows/SMB shared printer, 154
  - overview, 150
  - sharing, 151
- privacy, when web browsing, 212
- private key, 180
- proc directory, 335

- processes
  - controlling
    - killing processes, 369–370
    - overview, 368–369
    - using other commands for, 371–372
    - Zombie processes, 370–371
  - viewing, 365–368
- process-killing command, 372
- profiling application, 199
- program window, Evolution, 521
- programs. *See* names of specific programs
- Properties dialog box, 46
- Properties option, context menu, 286
- Proposed Updates repository, 552
- proprietary drivers, 81, 118–119, 129
- proprietary software, and GPL, 17–18
- Proxy option, OpenOffice.org, 473
- proxy servers, 144
- ps command, 371
- Public Domain Korn SHell (PDKSH), 304
- public key
  - exporting, 185–186
  - importing and signing, 188, 190
  - publishing, 186–187
- put command, sftp, 625
- pwd command, 341
- pwd command, sftp, 625

## Q

- :q command, vim command-line mode, 355
- :q! command, vim command-line mode, 355
- QEMU virtualization software, 36
- queries, Database pane, Base, 513
- querying packages, 560–561
- question mark (?), 348
- queue name, of printer, 153
- quick desktop guides, 107–109
- Quick Launch toolbar function, Windows, 108

QuickTime format, 414

Quit applet, 254

## R

r command option, 316, 358

r switch, 583

radio stations. *See* online radio stations

RAM subsystem, 145

RDP (Remote Desktop Protocol), 629

README files, 348, 675–676

Ready To Install screen, 69

Real Simple Syndication (RSS), 402

Real Video format, 414

RealPlayer, installing, 416–417

reboot command, 341

rebooting Ubuntu, 71–73

receiving e-mail, 524

Recommended backup mode, Simple Backup, 602

Recommended Updates repository, 551

recording macros, OpenOffice.org, 475

Rectangle Select tool, GIMP, 436

Recurrence tab, Evolution, 539

Recycle Bin, 102, 108

redirecting output, 385–386

Reduce Backlight Brightness option, 147

rEFlt software, 73

refresh rate option, Screens and Graphics Utility, 87

Regex tab, 603

regexes, 359

reiserfs file system, 336

Reload button, 123, 289, 553

Remember Password box, Evolution, 524

remote access to computers, 626–629

Remote Desktop, accessing Ubuntu via, 627–629

Remote Desktop Protocol (RDP), 629

remote shell session, 622

removable storage, 157, 298–300

removing

applications, 557–558

NdisWrapper drivers, 140–141

packages, 548

unused software, 597

Windows, 35

Render filters, GIMP, 447

renice value, 368

renicing, 368

repartitioning hard disks, 37

manually editing partitioning table, 59–65

overview, 55–56

resizing main partition, 56–57

using entire disk, 57

using largest contiguous free space, 58

Reply button, Evolution, 265

Reply To All button, Evolution, 265

reports, Database pane, Base, 513

repositories, 145, 549–550

Backports, 552

gutsy, 551

hardy, 551

Main Distribution, 551

Proposed Updates, 552

Recommended Updates, 551

Security Updates, 551

Skype, 568–569

RES column, top program, 367

Rescue Mode entry, boot menu, 197

resizing windows, 113

resolution, 105

Resolution option, Screens and Graphics Utility, 87

Restart option, 104

Restore As button, 605

restoring data, 605–606

restrictive policy, 202

Resume – Resume normal boot option, 98

reverse dependencies, 548–549, 560

- Rhythmbox program, 268–269, 393, 397, 399
  - adding podcast, 403
  - listening to audio CDs, 404–405
  - ripping tracks with, 408
- Rich Text Format (RTF) files, 347, 456
- right angle bracket (>), 361, 385
- ripping music from CDs
  - adding MP3-ripping support to Sound Juicer, 407
  - choosing format, 406–407
  - overview, 405–406
  - process, 408–409
- rm command, 318, 625
- rmdir command, 625
- roaming mode, NetworkManager, 125
- root and ordinary users, 177–178
- root directory, 335, 378
- Root – Drop to root shell prompt option, 98
- root file system, 59
- root password, 577
- root user, 177, 576–577
- Rosegarden sequencer, 409
- Rotate tool, GIMP, 438
- RSS (Real Simple Syndication), 402
- RTF (Rich Text Format) files, 347, 456
- Ruler, OpenOffice.org, 464
- Run Application applet, 255
- run level, 312
- Run Xclient Script option, 241
- running programs, 110, 289–291
- rw- file permissions, 328

## S

- S (status) column, 370
- S column, top program, 367
- s command option, 332
- S command option, 344
- s command option, 344
- Sanskrit, 306
- Save As drop-down list, OpenOffice.org, 476
- Save Background Image box, Theme Preferences window, 217
- saving backup file to CD-R/RW, 609–611
- sbin directory, 335
- Scale tool, GIMP, 438
- scaled option, Style drop-down list, 221
- scanner system group, 582
- scanners, configuring, 158–160
- scheduling tasks
  - with anacron, 616–617
  - with crontab, 613–615
  - overview, 613
  - using at command to schedule one-off tasks, 618
- SchoolTool Calendar, 688
- Scissors Select tool, GIMP, 437
- scp, transferring files between remote computers using, 623–624
- Screen arrangement option, Screens and Graphics Utility, 87
- screen program, 623
- screenlets, difference from applets, 252
- Screenreader, 245
- Screens and Graphics Utility, 86–90, 92
- Search button, Synaptic Package Manager toolbar, 553
- search folders, in Evolution, 533–534
- Search for Files applet, 255
- Search option, OpenOffice.org, 473
- searching for files, 342–344
- secondary channels, 59
- Secure Remote Connection option, 241
- Secure Shell (SSH) tool, 202
- secure shell, remote access to computers using
  - logging in to remote computer, 620–623
  - overview, 619–620
  - transferring files between remote computers, 623–625
- Secure Socket Layer (SSL), 141

- security, 8–9
  - common-sense security, 196–197
  - encryption
    - decrypting files, 193
    - of files, 190–192
    - overview, 179–180
  - setting up for, 180–188, 190
    - Firestarter, 201–207
    - online updates, 197–198
    - overview, 175–176
    - root and ordinary users, 177–178
    - signing and encrypting e-mail, 194–196
    - Ubuntu firewall, 200. *See also* Firestarter
    - virus scanning, 207
    - for web browsing, 212
    - Windows security vs. Linux security, 176–177, 179
- Security option, OpenOffice.org, 470
- Security tab, Login Windows Preferences dialog box, 243
- Security Updates repository, 551
- Select by tool, GIMP, 437
- self-installing binaries, 547
- self-installing package, Windows, 631
- Sensitivity setting, 235
- Separator applet, 255
- serial port, 141
- Serpentine program, 270–271
- Service Set Identifier (SSID), 129
- Sessions program, 589
- setting up for. *See also* firewalls
- settings of user accounts, importing, 68
- setup.exe program, 44
- sftp
  - commands, 625
  - transferring files between remote computers using, 624–625
- Shading option, 3D effect, 508
- shared folder, accessing, 295–296
- sharing printers, 151
- Sharpen filter, GIMP, 445
- sharpening, in GIMP, 445
- Shear tool, GIMP, 438
- shell commands, 341, 383
- shell scripting, 386
- ShipIt page, of Ubuntu website, 9
- shortcuts, 332–333. *See* keyboard, shortcuts
  - adding
    - creating launchers, 247
    - creating links, 248
    - overview, 246
- Show Desktop applet, 255
- Show Hide Buttons, 249
- SHR column, top program, 367
- shred command, 341
- shriek, 382
- Shut Down option, 104
- Shutdown/Reboot button, Windows, 108
- Shuttleworth, Mark, 681
- signatures, e-mail, 529–530
- signing
  - e-mail, 194–196
  - public key, 188, 190
- Simple Backup
  - changing backup file destination, 604
  - changing time period between backups, 605
  - excluding files and folders, 603
  - including files and folders, 603
  - overview, 601–603
  - restoring data via, 605–606
- Skype
  - installing, 411–412
  - repository, 568–569
- slash (/), 348
- sleep (standby) mode, 146, 148
- sliders, GIMP, 443
- slides, animating, 504–506
- Slides pane, 503

- slow keys, 239
- Smudge tool, GIMP, 439
- software
  - installing, 122–124, 196
  - patents, 391
  - removing, 597
  - setting up online software repositories, 145
- Software Update Notifier, 109
- Software Updates tool, 591
- Sophos antivirus labs, 177
- Sort By drop-down list, Calc, 495
- sort command, 385
- Sort Lists option, OpenOffice.org Calc, 472
- sorting
  - data, in Calc, 495–496
  - e-mail messages, 532–535
- sound cards, configuring, 168–169
- Sound Juicer program, 268, 393, 404, 407, 408
- source code, 14, 546
- Spaces function, 110
- speed command option, 674
- Speex audio format, 406
- spell-checking, in Writer, 481–482
- spinning down hard disk, 149–150
- Spotlight function, 110
- Spreadsheet file types, 290
- spreadsheet program. *See* Calc program
- spyware, 203
- square brackets, 360
- srv directory, 335
- SSH (Secure Shell) tool, 202
- ssh remote shell session, 620
- ssh server program, 620
- ssh suite, 619
- ssh-keygen program, 622
- SSID (Service Set Identifier), 129
- SSL (Secure Socket Layer), 141
- Stallman, Richard, 16–17
- standard error, 386
- standard input (stdin), 383, 386, 674
- standard output (stdout), 383, 386, 674
- Standard toolbar, OpenOffice.org, 463
- standby (sleep) mode, 146, 148
- Star Office, 453
- Start menu function, Windows, 108
- Start or install Ubuntu option, Boot menu, 51
- starting up, 97–99
- static addresses, 39, 592
- Statistics tab, 567
- status (S) column, 370
- Status bar, OpenOffice.org, 464
- stdin (standard input), 383, 386, 674
- stdout (standard output), 383, 386, 674
- sticky keys, 238
- Sticky Notes applet, 255
- storage devices, removable
  - ejecting media from drives, 299–300
  - overview, 298
- storage, file, 281–282
- storing
  - backup data, 609
  - files, 281–283
- Style and Formatting palette, in Writer, 481
- subdirectories, 282
- submenus, GIMP, 446
- sudo apt-get build-essential command, 569
- sudo apt-get dist-upgrade
  - command-line, 564
- sudo apt-get update command, 564
- sudo apt-get upgrade command-line, 564
- sudo command, 331, 577, 580
- sudo passwd root command, 576
- sudo system, 325
- suid bit, 328
- Sum icon
  - Calc, 494
  - Writer, 485

- Summary field, Evolution, 538
  - Sun Microsystems, 20, 453
  - superusers, 177, 324
  - supplementary groups, 581
  - support, hardware
    - overview, 117–118
    - proprietary vs. open source drivers, 118–119
  - Suspend option, 103
  - swap partition, 59, 61
  - Sweep audio editing software, 409
  - SWF, 264, 509
  - Switch User option, 103, 109
  - switches command-line, 314
  - symbolic links, 248, 332
  - symbols in file names, 280
  - Synaptic Package Manager, 25, 120, 122, 394, 426, 460, 549–550, 594, 601, 620
    - installing software, 555–557
    - overview, 553
    - removing software, 557
    - searching for software, 553–555
  - Synopsis heading, man page, 673–674
  - sys directory, 335
  - .sys files, 132, 137
  - system control, keyboard shortcuts for, 380–381
  - system, controlling
    - controlling jobs, 373–374
    - controlling processes
      - controlling Zombie processes, 370–371
      - killing processes, 369–370
      - overview, 368–369
      - using other commands for, 371–372
    - overview, 365
    - viewing processes, 365–368
  - system fonts, 222
  - System menu, 102
  - System Monitor applet, 255
  - System Preferences icon, 110
  - System Restore, 35
  - system variable, 309
- T**
- t command option, 340
  - t option, 608
  - Tab key, and BASH, 377
  - Table category, OpenOffice.org, 467
  - Table option, OpenOffice.org Writer/Web, 472
  - Table tool, Writer, 484
  - Table toolbar, Writer, 485
  - Table Wizard, Base, 514
  - tables
    - adding to databases, 514–515
    - Database pane, Base, 513
    - editing database table, 518
    - Writer, 472
    - in Writer, 484–485
  - tagging images, 433
  - tail command, 348–350
  - tail mytextfile command, 349
  - Tanenbaum, Andrew, 14
  - tape system group, 582
  - tar archives
    - compressing, 607–608
    - extracting files from, 608
    - viewing information, 608
  - tar command, 606, 614, 617
  - .tar files, 606
  - tarballs, 547, 570–571
  - .tar.gz archive, 219
  - Task Details dialog box, 541
  - task field, 617
  - Tasks, Evolution, 266, 523, 540–541
  - Tasks pane, Base, 513
  - tasks, scheduling. *See* scheduling tasks
  - telephone over Internet, 411–412
  - television, 426
  - templates, 501



- Templates category, OpenOffice.org, 466
  - terminal emulator program, 307
  - terminal programs, 303
  - Terminal Server Client Applet, 255
  - Terminal Server Client program, 630
  - terminal window, 122, 682
  - Texinfo system, 674
  - Text editor/viewer, 259
  - text files
    - comparing, 361–362
    - overview, 347
    - searching through
      - overview, 358
      - using `grep`, 358–359
      - using regular expressions, 359–361
    - types, 290
    - viewing
      - overview, 347
      - using `cat` command, 347
      - using `head` and `tail` commands, 348–350
      - using `less` command, 348
  - Text Formatting toolbar, 263
  - text in toolbar buttons, 225
  - Text tool, GIMP, 438
  - text-based shell, 304
  - Textures option, 508
  - Theme Preferences dialog box, 214
  - themes
    - changing individual components, 215–217
    - installing additional components, 217–219
    - overview, 214–215
  - Third Party tab, 566
  - third-party sites, 679
  - Third-Party Software tab, 566
  - three dashes (---), 329
  - Thunderbird e-mail client, 38
  - Thunderbird e-mail client, 527
  - TightVNC system service, 631
  - tilde (~), 615
  - tiled option, Style drop-down list, 221
  - Time bar, Totem Movie Player, 269, 421
  - time zone, selecting, 53–54
  - TIME+ column, top program, 367
  - /tmp folder, 335, 596, 613
  - Tomboy Notes applet, 255
  - toolbars
    - adding functions to, 465–467
    - adding new toolbar, 467–468
    - text in buttons, 225
  - top program, 365
  - Torvalds, Linus, 10, 13, 15
  - Totem Movie Player, 269, 307, 393
  - totem-xine package, 424–425
  - touch command, 341
  - touchpad settings, 236
  - Tracker Applet, 590
  - Tracker process, 590
  - transferring files
    - between Bluetooth devices, 164–165
    - between remote computers, 623–625
  - Trash, 102, 108, 110, 251, 255, 526
  - TrueType Core Fonts, 458–460
  - Tux Paint, 688
  - TV (television), 426
  - TWAIN modules, Windows, 430
  - Typing Break tab, Keyboard Preferences dialog box, 240
- U**
- u command, vim command mode, 353
  - UAC (User Account Control) dialog boxes, Windows Vista, 176
  - Ubuntu blog, 679
  - Ubuntu Document Storage Facility, 678
  - Ubuntu firewall, 200. *See also* Firestarter
  - Ubuntu forums, 123, 142
  - Ubuntu Guide, 124, 679
  - Ubuntu root file system, 334

- Ubuntu Server, 682
  - Ubuntu Software tab, 566
  - ufw tool, 200
  - UIDs, 577
  - umount command, 340
  - underscore (\_) character, 280
  - undo command option, 594
  - Unique Udev ID (UUID) number of Windows partition, 292
  - United States Computer Emergency Readiness Team, 6
  - Universe section, 552
  - Unix operating system, 13, 20
  - Unlock button, 576, 578, 580
  - Unmatched Search Folder, 534
  - Unmount Volume, 299, 430
  - unused software, removing, 597
  - unzip command, 373
  - Update Manager, 198
  - Update Notifier tool, 591
  - updates, online, 197–198
  - Updates tab, 566
  - uppercase letters, 280
  - uptime command, 341
  - usage restrictions, 9
  - USB Legacy Support, 76
  - USB memory sticks, 81, 157–158
  - USB socket, 321
  - User Account Control (UAC) dialog boxes, Windows Vista, 176
  - User Account Editor dialog box, 578
  - user accounts, importing documents and settings, 68
  - USER column, top program, 366
  - User Data option, OpenOffice.org, 470
  - User folders update tool, 591
  - User Privileges tab, 579
  - User Switcher applet, 255
  - useradd command, 580–583
  - user-defined string, 384
  - userdel command, 583
  - Username box, 295
  - users and file permissions
    - altering permissions, 330–331
    - overview, 324–325
    - viewing permissions
      - overview, 325–328
      - permissions on directory owned by root, 329–330
      - permissions on user's directory, 329
      - typical data file permissions, 328–329
  - users, managing
    - adding and changing passwords, 583–584
    - adding and deleting groups at command line, 580–583
    - adding and deleting users
      - at command line, 580–583
      - via GUI, 578–579
    - creating and deleting groups via GUI, 580
  - Users tab, Login Windows Preferences dialog box, 244
  - user-scheduled tasks, 613
  - usr directory, 336
  - /usr/share/doc directory, 675
  - UUID (Unique Udev ID) number of Windows partition, 292
- V**
- v option, 608
  - validating e-mail, 194–195
  - /var directory, 336, 345
  - /var/backup directory, 604
  - variables, 309
  - VBA (Visual Basic for Applications), 261, 455
  - vCard, Evolution, 537
  - vector graphics creation tool, 454
  - versions of Ubuntu
    - Edubuntu, 687–689
    - installation of, 684–685
    - Kubuntu, 685–687
    - overview, 683

- Ubuntu Server, 682
  - Xubuntu, 689
  - Vertical message window, 535
  - video system group, 582
  - videos, 420–422
  - View As Icons/List, Nautilus window, 285
  - View category, OpenOffice.org, 466
  - View menu, Nautilus, 284
  - View option, OpenOffice.org, 470–473
  - vim command mode, 352, 355
  - vim text editor
    - creating new text file using, 357–358
    - modes
      - Command mode, 351–353
      - Command-Line mode, 354–355
      - Insert mode, 353–354
      - overview, 351
    - overview, 350–351
    - using to edit file, 355–357
    - viewing
      - creating new text file using, 357–358
      - modes, 351–355
      - overview, 350–351
      - using to edit file, 355–357
  - VIRT column, top program, 367
  - virtual desktops, 111–113, 213, 227
  - virtual files, 321–323
  - Virtual Network Computing (VNC)
    - software, 627
  - Virtual PC 2004, Microsoft, 36
  - virtualization software, 36
  - viruses, 7, 175–176
    - Clam Antivirus
      - dealing with infections, 210–211
      - scanning for viruses, 209
      - updating database, 208
    - overview, 207
  - Visible Buttons entry, 465
  - Visual Assistance utility, 591
  - Visual Basic for Applications (VBA), 261, 455
  - visually impaired tools, 226
  - VMware, 8, 36
  - VNC (Virtual Network Computing)
    - software, 627
  - VoIP (Voice over IP), 411–412
  - Volume Control applet, 255
  - Volume Manager program, 591
  - vv option, 608
- W**
- w command, vim command mode, 353
  - :w command, vim command-line mode, 355
  - :w! command, vim command-line mode, 355
  - wallpaper
    - changing, 221
    - personalizing, 219–222
  - WAV audio format, 407
  - Weather Report applet, 255
  - web browsers, 258, 266–268
  - Web filters, GIMP, 448
  - web of trust, 189
  - web proxy, 144
  - websites
    - official sites, 678
    - third-party sites, 679
  - WEP encryption, 131
  - whatis command, 341
  - whereis command, 344
  - widgets, 215
  - Wi-Fi networks, 128, 592
  - Wi-Fi Protected Access (WPA) system, 131
  - window borders, 215, 216
  - Window List applet, 255
  - Window Selector applet, 255
  - windows
    - Nautilus, special windows, 288–289
    - resizing, 113

## Windows

- connecting to Windows computers
  - remotely, 629–632
- files, accessing
  - accessing networked files, 294–296
  - overview, 291
  - working with files in Windows
    - partitions, 292, 294
- fonts, copying, 458
- installing Ubuntu inside, 47–48
- partitions, preparing for resizing, 46
- printer sharing, 150
- problems with, 6–8
- removing, 35
- security of, vs. Linux security, 176–177, 179
- Start button, 249
- Windows Genuine Advantage, 9
- Windows List bar, 106
- Windows Media Player 9 format, 414
- Windows Product Activation (WPA), 9
- Windows Update program, 109
- Windows Vista
  - burning CDs using, 692
  - freeing up space, 33–34
  - and security, 176
  - security in, 281–283
- Windows XP, 6
  - burning CDs using, 692
  - Professional version, 630
  - security in, 281–283
- Windows/SMB shared printer, 154
- WinZip archive tool, 545–546
- wired networks, 125
- wireless network cards, 128, 131, 132
- wireless networks, 128–131
- wizards, 474
- wodim command, 609
- word processing program. *See* Writer program
- Workspace Switcher, 111, 251, 255

worms, 176

WPA (Wi-Fi Protected Access) system, 131

WPA (Windows Product Activation), 9

Writer program, 260–261

- adding headers and footers, 489–490

- formatting text

- context menu, 480–481

- Formatting toolbar, 479–480

- overview, 479

- Style and Formatting palette, 481

- inserting pictures, 483–484

- mail merging, 486–489

- overview, 479

- spell-checking, 481–482

- working with tables, 484–485

Writing Aids settings, 471

Wubi, 47–48

## ■ X

X flag, 626

X graphical subsystem, 626

x option, 608

X server communications, 626

x86\_64 driver file, 136

x86-based processors, 565

Xen, 36

Xfce 4 environment, 107

Xfce Desktop Environment, 689

Xfix –Try to fix X server option, 99

xfs file system, 336

Ximian, 521

X.org, 75, 85

XSane utility, 158, 430

Xterm, 259

Xubuntu, 44, 107, 689

XviD file format, 422

## ■ Y

y option, 362

yy command, vim command mode, 353

**Z**

- z command option, 608
- z option, 608
- Z SHell (ZSH), 304
- zero (0) value, 586
- Zeroconf (Zero Configuration Networking)  
    system, 126
- zero-day exploit, 199
- .zip files, 132, 258, 273
- Zombie processes, 370–371
- Zoom controls, Nautilus window, 284
- zoom option, Style drop-down list, 221
- Zoom tool, GIMP, 437, 440
- ZSH (Z SHell), 304