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## LEARNING ABOUT THE PIECES



Linux is said to be a “free” operating system (OS). This chapter explains exactly what that means and how it affects the way Linux is distributed. It also provides an introduction to the KDE desktop, its relation to Linux, and some of the more popular office-related software used on Linux.

### What Is Linux?

Linux is a computer operating system, the most important program your computer runs. It controls all of the programs that run on your computer by allocating resources, interpreting your instructions (by using your mouse and keyboard), sending output to the monitor, keeping track of all files, and performing many other important tasks.

Linux is different from most operating systems in that it has been developed by scores of programmers around the world. Linux is free, both in the sense that you don’t have to pay for it (though you can, and many people do) and in the sense that the source code (its internal pieces) is available to anyone who wants to look at or modify it. Having its source code “open” makes it possible for anyone to try Linux out, find bugs, and submit fixes that go to a central control point before making their way into future versions of Linux.

The *kernel* is Linux's central nervous system; it's the operating system code that runs the whole computer. Though some advanced Linux users make modifications to the kernel on their systems, you probably won't have anything to do with it. However, you should know that this is the core of your computer's system and that it is under constant development.

Because so many developers work on Linux, the pace of Linux development is quick, and problems are usually found and addressed rapidly.

## The Roots of Linux

Linux's lineage goes back to UNIX, the most proven operating system in the world in that it (and its variants) has been the most used networked computer OS for over three decades. UNIX was developed at Bell Telephone Laboratories and designed to support many users working at many computers at one time, all linked together and sharing information and resources. When using such an operating system, more than one person can use a single computer's hardware to do many things at once, and a single user can do more than one thing (multi-task) on a single machine as well. This makes for more efficient use of resources and a more powerful system.

Linux runs on a variety of platforms, including x86, PowerPC, DEC Alpha, Sun Sparc, and ARM, so no matter what type of computer hardware you have, Linux will probably run on it. Linux aims for POSIX (Portable Operating System Interface for UNIX) compliancy. POSIX is a set of standards that defines an interface between programs and operating systems. By sticking to these standards, software developers can be reasonably confident that their programs can be ported easily to any POSIX-compliant operating systems, such as the various versions of UNIX. This means that Linux users can take advantage of software made for general UNIX systems.

## Linux Performance

Linux has been praised for its stability—computers running the Linux OS have been known to run months or even years at a time without crashing, freezing, or having to be rebooted.

Linux machines are also known to be extremely fast because Linux is especially efficient at managing resources such as memory, computer power, and disk space. In fact, much of the World Wide Web is powered by older computers running Linux and the Apache webserver. Additionally, organizations such as NASA, Sandia, and Fermilabs have built powerful, yet inexpensive, supercomputers by combining groups of lesser-powered Linux machines and having them all work together in clusters.

### **Linux Distributions**

Because Linux is freely available, any company (or individual) can take it, add software to it, and offer the resulting compilation (either free or for sale) as a Linux distribution. The result is a range of available distributions. Some of the companies producing these distributions also make small modifications to the Linux kernel and include their own software tools for managing and configuring Linux in an effort to simplify installation and management. Although each distribution varies in minor ways, most differ merely in the software they include.

The good news is that even if your distribution doesn't include a tool or application you want, it usually can be downloaded free from the Internet.

## **Ways of Communicating with Linux: Text and Graphical**

One way to communicate with Linux is by typing text at a command line, similar to the C prompt (C:>) for anyone used to working with DOS. A text-based interface requires the user to type specific commands with a specific syntax that the operating system understands. The computer displays a *prompt* letting the user know it is ready to receive a command. The place where the command is typed is known as the command line. Anyone who used a personal computer in the mid-1980s or earlier is probably familiar with some kind of text-based user interface.

Many utilities, or programs, are command-line based. This means that instead of using a mouse button to access the program, you type a word into what is called a *terminal window* when the computer displays a prompt. This book will not discuss these utilities until the final chapter. Chapter 13 discusses the command-line interface and some of these utilities, but you can rest assured that this chapter is optional.

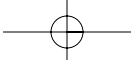
The other method of communicating with Linux is by way of a *graphical user interface (GUI)*. This is often called the desktop and consists of the icons, windows, dialog boxes, toolbars, and panels that you see when using Linux as a point-and-click operating system. This is considered more user-friendly because it provides visual clues you can use to get the computer to do something, instead of requiring that you memorize myriad commands.

Using the KDE GUI is the focus of this book. Though we introduce the command line and some of the commands associated with it, you should be able to do everything that you need to do with the KDE GUI.

## **What Is KDE?**

*KDE* is a GUI, a piece of software that interacts with the operating system but is not an integral part of it. It simply provides a means of communicating with it. You might think of it as an interpreter between you and Linux.

GNOME is another popular desktop GUI that works with Linux. GNOME and KDE are each created and maintained by different teams of software developers. Both function well, and making the choice between them is largely a matter of personal preference. We focus on KDE here because it's what we use in our offices and because it is included in almost every Linux distribution.



## What Else Is Included?

Besides Linux itself and the KDE desktop, you'll find many other programs included with your Linux operating system. KDE alone includes over 100 programs, such as image viewers, text editors, email programs, web browsers, and games. You'll even find a free office software suite (OpenOffice) and a Photoshop-like program (The GIMP), both of which are discussed in this book. OpenOffice and The GIMP are generally considered to be the leading free applications in their respective fields. For this reason we have given each one a separate chapter.

