The Gorilla Guide to...®

Linux Networking 101

Inside this Guide:

- Discover how Linux continues its march toward world domination
- Learn basic Linux administration tips
- See how easy it can be to build your entire network on a Linux foundation
- Find out how Cumulus Linux is your ticket to networking freedom

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Helping You Navigate The Technology Jungle!

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Linux Networking 101

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Entering the Jungle

Callouts Used in This Book

The Gorilla is the professorial sort that enjoys helping people learn. In the Schoolhouse callout, you'll gain insight into topics that may be outside the main subject but that are still important.

This is a special place where readers can learn a bit more about ancillary topics presented in the book.

When we have a great thought, we express them through a series of grunts in the Bright Idea section.

Takes readers into the deep, dark depths of a particular topic.

Icons Used in This Book

Definition. Defines a word, phrase, or concept.

Knowledge Check. Tests your knowledge of what you've read.

Pay attention. We want to make sure you see this!

GPS. We'll help you navigate your knowledge to the right place.

Watch out! Make sure you read this so you don't make a critical error!

Chapter 1

What Is Linux?

As you get started learning about Linux, you'll likely have many of the same questions that thousands of other people have had since the beginning of Linux time. For that reason, we'll start this chapter by answering the most common questions about Linux.

By reading this chapter, you'll find the answers to these questions:

1. What is an operating system?
2. What makes up the Linux OS?
3. What makes Linux unique?
4. What are the b enefits of using Linux?

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Figure 1-1. Linus Torvalds, principal author of the Linux kernel, on August 25, 1991, when he announced his new Linux kernel.

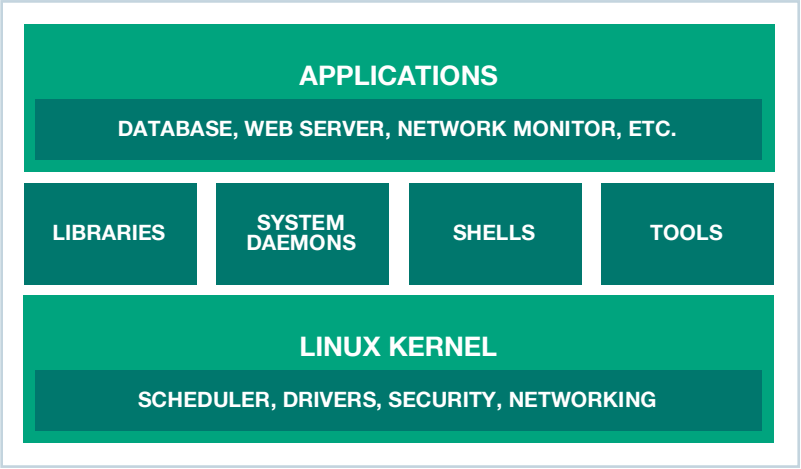

Figure 1-3. Example of a common Linux distribution

When a user runs an application or tool, that application or tool executes in what is called *user space*. This distinction is critical. Applications can come from a variety of sources, may be poorly developed, or originate unknown sources. By running these applications separate from kernel space, they can't tamper with the kernel resources and cause the system to *panic* (crash).

All applications, even system daemon processes that perform critical operating system functions, must make what is called a "system call" to the kernel in the kernel space in order to access system resources such as memory or network devices. Every modern multi-user operating system has some type of user space versus kernel space design, which is intended to keep it secure, high-performing, and reliable.

In short, the separation between user space and kernel space is made to ensure that Linux is as reliable and secure an operating system as possible.

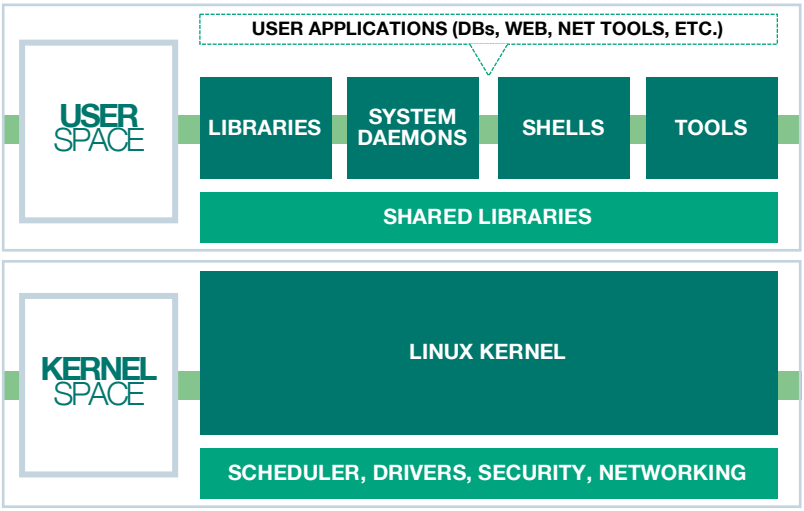

Figure 1-4. User Space and Kernel Space in the Linux kernel

Benefits of Using Linux

Besides the fact that Linux is a great operating system, is continually being enhanced, and has a huge community following, Linux has gained such tremendous popularity because there are so many different benefits to using it. Some of these benefits include:

- **Consistent operating model**. No matter what version or distribution of Linux you use, whether you're on a supercomputer or a tiny embedded device, the general operation of Linux is the same no matter where you go. What this means is that, with some exceptions, the command line syntax is similar, process management is similar, basic network administration is similar, and applications can be (relatively) easily ported between distributions. The end result of this consistent operating model is a cost savings generated by greater staff efficiency and flexibility.