Absolute OpenBSD: UNIX for the Practical Paranoid

by *Michael W. Lucas*
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This book takes readers through the intricacies of the OpenBSD platform, and teaches them how to manage the system with friendly explanations, background information, troubleshooting suggestions, and copious examples.

Table of Contents

Back Cover

This straightforward, practical, and complete guide to mastering the powerful and complex OpenBSD operating system, is for the experienced UNIX user who wants to add OpenBSD to his or her repertoire. The author assumes a knowledge of basic UNIX commands, design, and permissions. The book takes you through the intricacies of the platform and teaches how to manage your system, offering friendly explanations, background information, troubleshooting suggestions, and copious examples throughout.

About the Author

Michael W. Lucas, author of *Absolute BSD*, has been working with BSD-based operating systems since the late 1980s. His column, Big Scary Daemons, for the O'Reilly Report is in its third year. He has worked for several years as a consultant specializing in security, intrusion response, and network management.

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For Elizabeth, who brings spring's rich warm sunlight into darkest night

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OpenBSD is quite a trip, and the OpenBSD community even more so. Since starting this book, I've talked with more practical and professional paranoids than I knew existed outside of politics. It's been my privilege to work with some of the best computer security people in the world. Best of all, these people care about their work, and the impact it has on average people such as our parents and friends.

The following people all provided feedback on one or more chapters of this book, or answered specific questions on frequently-misunderstood aspects of OpenBSD, and as such deserve my heartfelt thanks. Some of them are OpenBSD crown princes, and others are just users who were trying to figure out what their computer was actually doing. What I've done right is thinks to them, and what I've done wrong is my own fault. They are, in alphabetical order: Shawn Carroll, Chris Cappuccio, Dave Feustel, Thorsten Glaser, Daniel Hartmeier, Jason Houx, Volker Kindermann, Anil Madhavapeddy, U.N. Owen (aka dreamwvr), Francisco Luis Roque, Srebrenko Sehic, Matt Simonsen, Sam Smith, Duncan Matthew Stirling, Peter Werner, and Jason Wright.

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When an author says something like, "Hold the presses! OpenBSD just added a whole slew of functionality and I have to rewrite huge sections of the book you were planning to ship out tomorrow," the editor is supposed to respond with dire threats involving chainsaws. The folks at No Starch just say, "Well, get to work then." I have been forced to report to the Secret Author Cabal that Bill and Karol are patient, kind, and thoughtful enough to resist our best techniques for driving publishers into Lovecraftian madness.

Then there's Sifu Brown and the fine staff and volunteers of the School of Chinese Martial Arts in Berkley, Michigan (http://www.ZenMartialArts.com). They have absolutely nothing to do with computers, but they have an awful lot to do with me not making dire threats involving chainsaws. Somehow, the Five Ways to Become a Great Martial Artist turned out to be the same as the Five Ways to Write a Great Computer Book I just never knew it before.

And finally, for Liz, and not just for catching the pet rats before they can stash seeds in server cases.

Michael Lucas
Saint Clair Shores, MI
May 2003

Chapter 0: Introduction

Overview

The very quick path to a quiescent pager? OpenBSD.

Welcome to *Absolute OpenBSD*! This book is an introductory text to general management of the OpenBSD server operating system. OpenBSD is a member of the BSD family of operating systems and is widely regarded as the most secure operating system available anywhere, under any licensing terms. It's widely used by Internet service providers, embedded systems manufacturers, and anyone who needs security and stability. If you're an experienced UNIX systems administrator who wants to add OpenBSD to your repertoire, this book is for you!

By the time you finish this book you should be comfortable on an OpenBSD system. You will understand how to manage, upgrade, and patch computers running OpenBSD. You'll also have a basic understanding of OpenBSD's software, security, and network management features.

What Is BSD?

AT&T employees created UNIX in the early 1970s. At the time, the monster telephone company was forbidden to compete in the computer industry. The telecommunications company used UNIX internally, but could not transform it into a commercial product. As such, AT&T was willing to license the UNIX software and its source code to universities for a nominal fee. This worked well for all parties: AT&T got a few pennies and a generation of computer scientists who cut their teeth on AT&T technology, the universities avoided high operating system license fees, and the students were able to dig around inside the source code and see how computers really worked.

Compared to some of the other operating systems of the time, the original UNIX wasn't very good. But all these students had the source code for it and could improve the parts that they didn't like. If an instructor found a certain bug particularly vexing, he could assign his students the job of fixing it. If a university network engineer, professor, or student needed a feature, he could use the source code to quickly implement it. As the Internet grew in the early 1980s, these additions and features were exchanged between universities in the form of patches. The Computer Science Research Group (CSRG) at the University of California, Berkeley, acted as a central clearinghouse for these patches. The CSRG distributed these patches to anyone with a valid AT&T source code license. The resulting collection of patches became known as the

Berkeley Software Distribution, or BSD.

This continued for a long, long time. If you look at the copyright for any BSD-derived code, you will see the following text.

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Copyright 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994
        The Regents of the University of California. All rights reserved.
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Fifteen years of continuous development by the brightest students of the best computer science programs in the world, moderated by the faculty of one of the top technical schools in the country. That's more than a lifetime in software development. As you might imagine, the result was pretty darn good almost everyone who used UNIX was really using BSD. The CSRG was quite surprised, near the end of these years, when it found that it had replaced almost all of the original AT&T code!

BSD Goes Public

In the early 1990s, the CSRG's funding started to run out. The University of California had to decide what to do with all this wonderful source code it owned. The simplest thing would have been to drop the original tapes down a well and pretend that the CSRG had never happened. In keeping with the spirit of academic freedom, however, it released the entire BSD collection to the public under an extremely liberal license. The license can be summarized like this:

- Don't claim you wrote this.
- Don't sue us if it breaks.
- Don't use our name to promote your product.

Compare this with the software license found on almost any commercial operating system. The BSD license is much easier to understand and unobjectionable to almost anyone. Anyone in the world can take the BSD code and use it for any purpose they like, from desktop computers to self-guided lawnmowers. Not surprisingly, many computer manufacturers jumped right on BSD. Not only was the code free, but also every computer science graduate for the last 15 years was familiar with it.

AT&T UNIX

As the CSRG was merrily improving AT&T's product, AT&T was doing its own UNIX development work to meet its internal needs. As AT&T developers implemented features, they