Christine Bresnahan
Richard Blum

Mastering Linux® System Administration

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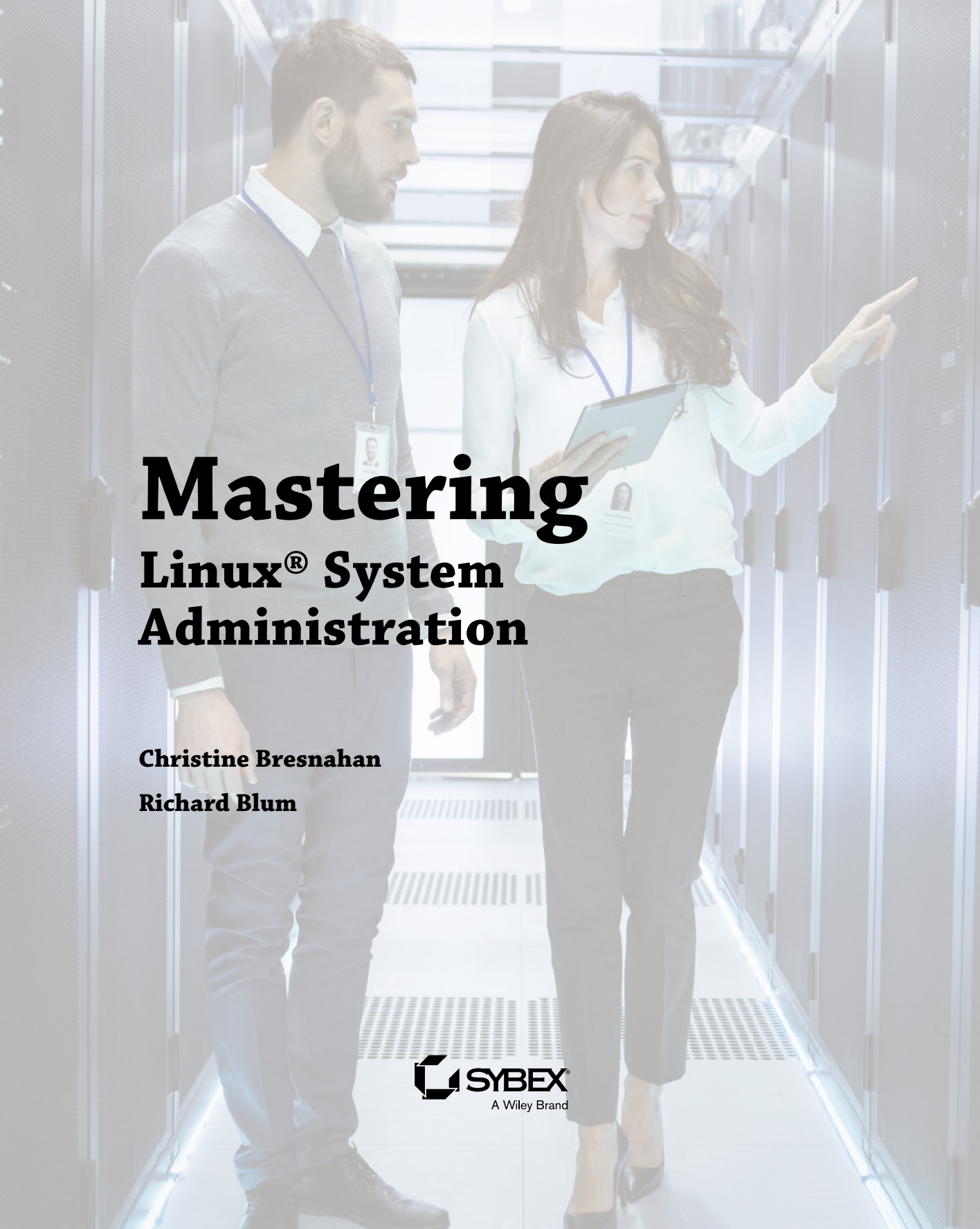

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Linux® System Administration

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To the Lord God Almighty, "in whom are hidden all the treasures of wisdom and knowledge."
—Colossians 2:3

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Introduction

Over the last few decades, the Linux operating system has evolved from being a hobbyist curiosity to becoming the operating system of choice for most servers on the Internet. The explosion in popularity of cloud computing is due to the robustness of Linux servers, and knowing how to install, configure, and manage Linux servers has become a necessary skill for most data center system administrators.

This book covers what you'll need to know to work in a Linux server environment. One of the difficulties of working on Linux servers is that more often than not, you don't have access to a graphical desktop, so knowing how to interact with the server using text commands is a crucial skill to have for Linux system administrators. This book covers all aspects of Linux server management from the command line, from installing the system to configuring and monitoring common software packages found on Linux servers.

One of the confusing aspects of Linux is that there are many different "flavors," or distributions, of Linux available. However, there are two main Linux server distributions that have risen to the top in popularity in professional data centers. This book covers how to interact with both Ubuntu and Red Hat servers, providing separate instructions for each server environment when necessary.

Who Should Read This Book

This book is intended for the classroom environment, so the primary audience for the book is educators working at the high school, college, or university level. The book provides sufficient exercises, quizzes, and instructor material to create a one-semester course in Linux system administration.

That said, this book can also be used as a standard reference for any individual wanting to learn more about Linux system administration. There are several ways you can use this book. The most straightforward is to start at the beginning and follow all the steps to install, configure, and use a Linux server as described over the course of the book. Alternately, you can skip around from chapter to chapter and follow only the steps of the individual chapters. The book will also make for a handy reference guide as you work in a Linux server environment, performing your day-to-day duties in supporting your system users.

NOTE This book provides Instructor Materials that include PowerPoints for each chapter, a course syllabus, and bonus questions. Please visit the book page at `www.wiley.com`.

What You Will Learn

This book covers the basics of installing a Linux server, working in a command-line environment, and managing users, hardware, and software. The book starts by covering the basic Linux skills you'll need to install and work in a Linux server and then goes on to cover more intermediate

skills such as configuring and troubleshooting user accounts, storage devices, and networks. Finally, the book finishes by providing advanced system administration skills in writing shell script programs, setting up a web or database server, and even using virtualization in the Linux environment.

What You Need

To follow along in the chapters and complete the exercises in this book, you'll need some type of Linux server environment. The book specifically covers both the Ubuntu and Red Hat servers. If you intend to use the Red Hat server environment, you don't necessarily need to purchase a commercial copy of Red Hat Enterprise Linux. Instead, you can use the open source CentOS Linux server, which is an authorized copy of Red Hat intended for the open source world. At the time of this writing, the current versions of each are Ubuntu 20.04LTS and CentOS 8.1. These are the versions used in the exercises; if you opt to use newer versions of either server, you may experience different results in some exercises.

The best way to learn Linux is to install it on a separate physical system. If you don't plan on having your server host thousands of clients, you can use any old Windows workstation to install Linux (the book covers how to do that). Just remember that if you replace an existing Windows workstation with Linux, you will lose all data currently on the workstation, so make sure you back up any important data first.

Alternatively, you can load a virtualization software package, such as VirtualBox, in an existing Windows workstation. The virtualization software allows you to install and run the Linux server software in a virtual environment on top of Windows, sharing the hardware and disk space with your Windows workstation. In this setup, you don't need to worry about your Windows workstation data—it will remain safely separate from the Linux server.

The Mastering Series

The Mastering series from Wiley provides outstanding instruction for readers with intermediate and advanced skills, in the form of top-notch training and development for those already working in their field and clear, serious education for those aspiring to become pros. Every Mastering book features the following:

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- Skill-based instruction, with chapters organized around real tasks rather than abstract concepts or subjects.
- Self-review test "Master It" problems and questions, so you can be certain you're equipped to do the job right.

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