Red Hat® Linux® 7 Server

Mohammed J. Kabir

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— Elizabeth Zinkann, Contributing Editor/Review Columnist, *Sys Admin Magazine*

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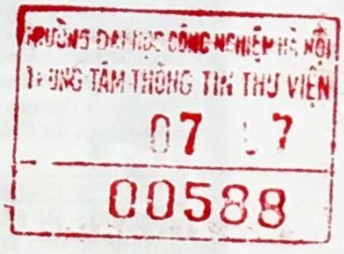
Red Hat® Linux® 7 Server

Mohammed J. Kabir



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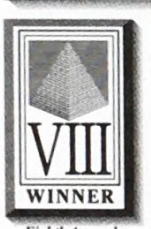

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About the Author

Mohammed J. Kabir is the Chief Technology Officer and a co-founder of Intevo, Inc. His company (`www.intevo.com`) uses Linux as the platform for its INTEVO MAIL service. When he is not busy managing software projects or writing books, Kabir enjoys riding mountain bikes and watching sci-fi movies. Kabir studied computer engineering at California State University, Sacramento, and is also the author of *Apache Server Bible*, *Apache Server Administrator's Handbook*, and *CGI Primer Plus for Windows*. You can contact Kabir via e-mail at `kabir@intevo.com` or visit his personal Web site at `http://www.nitec.com`.

Preface

Welcome to *Red Hat Linux 7 Server*. Thanks to Red Hat, Linux has been gaining attention everywhere for the past few years. Now Linux is on the radar screen of virtually all IT professionals around the globe. Even commercial operating system giants have felt the impact of Linux. Once an operating system for the hobbyist, Linux has matured over the years and has become a serious server platform candidate for the world of IT. Those of us who keep our eyes and ears open for the new and rising stars in this field know that Linux is on a roll.

With the help of a world of Linux developers, Red Hat has helped this open source star take center stage in the server arena. All major vendors of hardware and software have started to show great interest in Linux; interestingly, some movers and shakers of the computer industry have even invested in and partnered with Red Hat Linux. Yes, finally they get it.

Is This Book for You?

There are many Linux- and Red Hat Linux–specific books for you to choose from. Some are good, and some are not so good. Many are focused on Linux as a personal operating system and discuss the details of how you can use Linux on your desktop computer. Some cover both Linux as a workstation and server platform and leave out important details. I wrote this book to help those who are interested in building a Linux server. In this book, you will find practical information about how you can manage users, disk quotas, processes, and networks, as well as how to set up a DNS server, an SMTP/POP3 e-mail server, a Web server, an FTP server, an NFS server, a Samba-based file and print server, an IRC server, a SQL server, and more. You will learn to enhance server and network security by using various tools and techniques and also learn to custom-compile the Linux kernel to fine-tune your server for higher performance.

Although there are many Linux distributions, the Red Hat Linux distribution has become my favorite. Therefore, it makes perfect sense to write this book using Red Hat Linux. Red Hat has done a wonderful job of giving Linux the professional look it needed to win the admiration of IT professionals worldwide.

This is not a book about how to use Linux as a desktop operating system. It is about the serious job of keeping your organization's server up and running with one of the technological marvels of this millennium. The book assumes no prior knowledge of Linux or any other UNIX or UNIX-like operating systems. However, it does assume that you enjoy having a stable server operating system that can run month after month without even a single reboot. Interested? Welcome aboard.

How This Book Is Organized

I have organized the book into eight parts.

Part I: Getting Started

Part I is all about getting started with Red Hat Linux. The idea behind this part is to get your Red Hat Linux server installed and running. Because Red Hat Linux really shines in the installation area, you are likely to accomplish this goal in a very short time.

Part II: Working as a Superuser

Because you are reading this book, I assume you are also the superuser (administrator) of your Red Hat Linux server. In Part II, I discuss various details of the bootup and shutdown processes of Red Hat Linux server. I also explain the details of files and directory permissions, which is a must-know topic for any serious system administrator. Finally, the section provides a concise, everyday command reference for those who are new to Red Hat Linux. The command reference is likely to help you more than the typical man pages because it includes numerous examples.

Part III: Managing Users, Processes, and Networks

Part III deals with user administration, process management, and TCP/IP network basics and configuration. The chapter on user administration deals with user and group account management and how to implement disk quotas. You will find a chapter dedicated to process management that helps you learn about how processes are created, how to send signals to a running process, how to control process priority, how to monitor processes using various utilities, how to automate process execution via the cron facility, and how to log information from processes by using the syslog facility. The network administration chapter deals with basics of TCP/IP networking, how to classify IP networks, how to configure your server's network interfaces, how to create subnets, and so on.

Part IV: Setting Up Intranet/Internet Services

Part IV is the most important part of this book. It covers the common network services in great detail.

The Domain Name Service (DNS) chapter shows you how DNS works, how to configure BIND as a DNS server, how to perform load balancing using DNS, and so on.

The e-mail service chapter shows you how Simple Mail Transport Protocol (SMTP) mail service works, how to set up DNS for SMTP mail service, how to configure sendmail for SMTP mail service, and how to enable anti-spam measures. It also shows you how to set up a Post Office Protocol 3 (POP3) mail server and clients.

The Web service chapter shows how you can compile, configure, and install the famous Apache Web server for CGI scripts, Server Side Includes (SSI), virtual hosts, proxy service, secure transactions, and so on. From my experience, I know that Web service is one of the primary reasons many decide to use Red Hat Linux; therefore, I have specially prepared this chapter to provide you with all the information you need to create an elegant Web solution.

The FTP service chapter shows you how to configure wu-ftpd File Transfer Protocol (FTP) server for standard, anonymous, and guest FTP services. The in-depth coverage of this widely used FTP server provides you with valuable configuration options that enhance security and also provide a custom look and feel for your FTP users.

Finally, this part ends with a discussion on Internet Relay Chat (IRC) server and USENET news server. Although Internet Service Providers typically run news servers, private IRC servers are becoming very popular. A private IRC server can be a great resource for hosting company conferences over the Internet.

Part V: Setting Up Office Services

In Part V, you learn to use Linux in a office (LAN) environment.

The Samba service chapter shows you how to configure your Red Hat Linux server as a file and print server for the Windows computers in your LAN. You also learn to use Samba to access files and printers on other Windows computers.

The chapter on Network File System (NFS) shows you how to configure Red Hat Linux as an NFS server, which can provide mountable filesystems over the network. This chapter also introduces you to the rdist tool, which allows you to distribute files to other computers.

The last chapter in Part V shows you how to run MySQL, a SQL database server, on your Red Hat Linux server. It also provides useful examples of how you can create and access simple databases by using Perl scripts that run as both command-line scripts and CGI scripts.

Part VI: Securing and Monitoring

In Part VI, you learn various techniques for securing your Red Hat Linux server. The chapter on server security discusses issues such as shadow passwords, Pluggable Authentication Modules (PAMs), file/directory integrity checking tools, TCP wrapper, COPS, and so on.

The chapter on network security discusses issues such as use of nonroutable IP addresses for security purposes, masquerading IP addresses, packet filtering firewalls, proxy servers, and SATAN for monitoring network security holes.

Part VII: Tuning for Performance

Part VII deals with building custom kernels and designing large-scale, multi-server networks. The chapter on hacking the kernel discusses kernel compilation issues, and the chapter on the multi-server Web network discusses a real-world example of

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