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LPIC-1

Linux Professional
Institute Certification
STUDY GUIDE

Second Edition

Exams 101 and 102

Roderick W. Smith

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SERIOUS SKILLS.

LPIC-1

Linux Professional Institute Certification

Study Guide
Second Edition



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Roderick W. Smith



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Introduction

Why should you learn about Linux? It's a fast-growing operating system, and it is inexpensive and flexible. Linux is also a major player in the small and mid-sized server field, and it's an increasingly viable platform for workstation and desktop use as well. By understanding Linux, you'll increase your standing in the job market. Even if you already know Windows or Mac OS and your employer uses these systems exclusively, understanding Linux will give you an edge when you're looking for a new job or if you're looking for a promotion. For instance, this knowledge will help you to make an informed decision about if and when you should deploy Linux.

The Linux Professional Institute (LPI) has developed its LPI-1 certification as an introductory certification for people who want to enter careers involving Linux. The exam is meant to certify that an individual has the skills necessary to install, operate, and troubleshoot a Linux system and is familiar with Linux-specific concepts and basic hardware.

The purpose of this book is to help you pass both of the LPI-1 exams (101 and 102). Because these exams cover basic Linux command-line tools, software management, hardware configuration, filesystems, the X Window System, the boot process, scripts, security, documentation, administration, and networking, those are the topics that are emphasized in this book. You'll learn enough to manage a Linux system and how to configure it for many common tasks. Even after you've taken and passed the LPI 101 and 102 exams, this book should remain a useful reference.

This book has undergone its own testing and certification by ProCert (http://www.procert.com/labs_quicklinks/q1_latm.html). This means that you can rest assured that the book covers the LPI objectives.

What Is Linux?

Linux is a clone of the Unix operating system (OS) that has been popular in academia and many business environments for years. Formerly used exclusively on large mainframes, Unix and Linux can now run on small computers—which are actually far more powerful than the mainframes of just a few years ago. Because of its mainframe heritage, Unix (and hence also Linux) scales well to perform today's demanding scientific, engineering, and network server tasks.

Linux consists of a kernel, which is the core control software, and many libraries and utilities that rely on the kernel to provide features with which users interact. The OS is available in many different distributions, which are collections of a specific kernel with specific support programs.

Why Become LPI Certified?

Several good reasons to get your LPI certification exist. The LPI Web site suggests four major benefits:

Relevance LPI's exam was designed with the needs of Linux professionals in mind. This was done by performing surveys of Linux administrators to learn what they actually need to know to do their jobs.

Quality The LPI exams have been extensively tested and validated using psychometric standards. The result is an ability to discriminate between competent administrators and those who must still learn more material.

Neutrality LPI is a nonprofit organization that does not itself market any Linux distribution. This fact removes the motivation to create an exam that's designed as a way to market a particular distribution.

Support The LPI exams are supported by major players in the Linux world. LPI serves the Linux community.

How to Become LPI Certified

The LPI certification is available to anyone who passes the test. You don't have to work for a particular company. It's not a secret society.

To take an LPI exam, you must first register with LPI to obtain an ID number. You can do this online at <https://www.lpi.org/caf/Xamman/register>. Your ID number will be e-mailed to you. With the ID number in hand, you can register for the exam with either of the two firms that administer them: Thomson Prometric and Pearson VUE. The exams can be taken at any Thomson Prometric or Pearson VUE testing center. If you pass, you will get a certificate in the mail saying that you have passed. To find the Thomson Prometric testing center nearest you, call (800) 294-3926. Contact (877) 619-2096 for Pearson VUE information. Alternatively, register online at <http://securereg3.prometric.com> for Thomson Prometric or <http://www.vue.com/lpi/> for Pearson VUE. However you do it, you'll be asked for your name, mailing address, phone number, employer, when and where you want to take the test (i.e., which testing center), and your credit card number (arrangement for payment must be made at the time of registration).

Who Should Buy This Book

Anybody who wants to pass the LPI-1 exams may benefit from this book. If you're new to Linux, this book covers the material you will need to learn the OS from the beginning, and it continues to provide the knowledge you need up to a proficiency level sufficient to pass the LPI-1 101 and 102 exams. You can pick up this book and learn from it even if you've never used Linux before, although you'll find it an easier read if you've at least casually used Linux for a few days. If you're already familiar with Linux, this book can serve as a review and as a refresher course for information with which you might not be completely familiar. In either case, reading this book will help you to pass the LPI exam.

This book is written with the assumption that you know at least a little bit about Linux (what it is, and possibly a few Linux commands). I also assume that you know some basics about computers in general, such as how to use a keyboard, how to insert a disc into a CD-ROM drive, and so on. Chances are, you have used computers in a substantial way in the past—perhaps even Linux, as an ordinary user, or maybe you have used Windows or Mac OS. I do *not* assume that you have extensive knowledge of Linux system administration, but if you’ve done some system administration, you can still use this book to fill in gaps in your knowledge.

As a practical matter, you’ll need a Linux system with which to practice and learn in a hands-on way. Although LPI topic 102 is titled “Linux Installation and Package Management,” neither the exam nor this book covers actually installing Linux on a computer from scratch, although some of the prerequisites (such as disk partitioning) are covered. You may need to refer to your distribution’s documentation to learn how to accomplish this task. Alternatively, several vendors now sell computers with Linux pre-installed.

How This Book Is Organized

This book consists of 10 chapters plus supplementary information: a glossary, this introduction, and the assessment test after the introduction. The chapters are organized as follows:

- Chapter 1, “Exploring Linux Command-Line Tools,” covers the basic tools you need to interact with Linux. These include shells, redirection, pipes, text filters, and regular expressions.
- Chapter 2, “Managing Software,” describes the programs you’ll use to manage software. Much of this task is centered around the RPM and Debian package management systems. The chapter also covers handling shared libraries and managing processes (that is, running programs).
- Chapter 3, “Configuring Hardware,” focuses on Linux’s interactions with the hardware on which it runs. Specific hardware and procedures for using it include the BIOS, expansion cards, USB devices, hard disks, and the partitions and filesystems used on hard disks.
- Chapter 4, “Managing Files,” covers the tools used to manage files. This includes commands to manage files, ownership, and permissions, as well as Linux’s standard directory tree and tools for archiving files.
- Chapter 5, “Bootting Linux and Editing Files,” explains how Linux boots up and how you can edit files in Linux. Specific topics include the LILO and GRUB boot loaders, boot diagnostics, runlevels, and the Vi editor.
- Chapter 6, “Configuring the X Window System, Localization, and Printing,” describes the Linux GUI and printing subsystems. Topics include X configuration, managing GUI logins, configuring location-specific features, enabling accessibility features, and setting up Linux to use a printer.
- Chapter 7, “Administering the System,” describes miscellaneous administrative tasks. These include user and group management, tuning user environments, managing log files, setting the clock, and running jobs in the future.

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