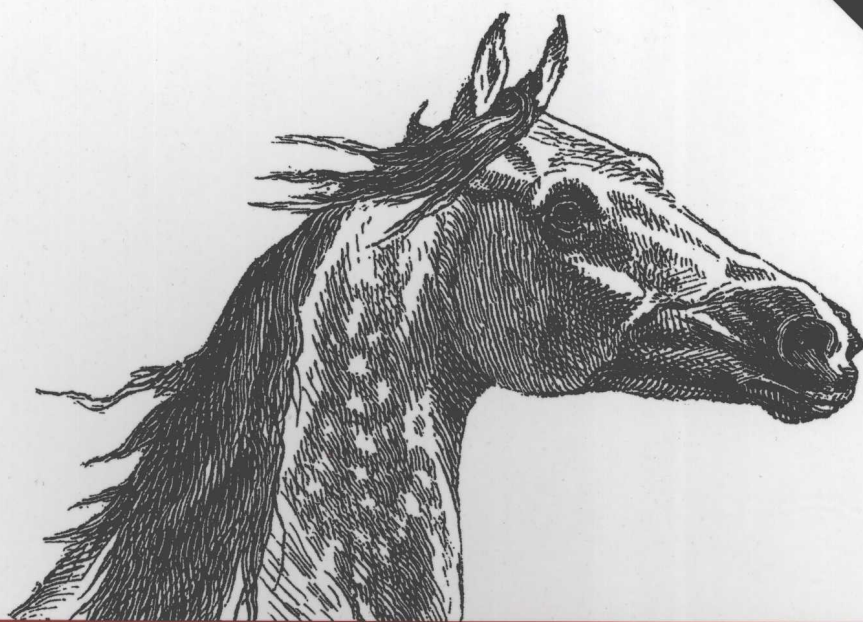


LINUX 技术手册 (影印版)

5th Edition



LINUX

IN A NUTSHELL

A Desktop Quick Reference

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东南大学出版社

*Ellen Siever, Aaron Weber, Stephen
Figgins, Robert Love & Arnold Robbins 著*

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Preface

This is a book about Linux, a freely available clone of the Unix operating system whose uses range from embedded systems and personal data assistants (PDAs) to corporate servers, web servers, and massive clusters that perform some of the world's most difficult computations.

Whether you are using Linux for personal software projects, for a small office or home office (the so-called SOHO environment), to provide services to a small group of colleagues, or to administer a site responsible for millions of email and web connections each day, you need quick access to information on a wide range of tools. This book covers all aspects of administering and making effective use of Linux systems. Among its topics are booting, package management, and revision control. But foremost in *Linux in a Nutshell* are the immeasurable utilities and commands that make Linux one of the most powerful and flexible systems available.

In addition to the tools and features written specifically for it, Linux has inherited many from the Free Software Foundation's GNU project, the Berkeley Software Distribution (BSD), the X Window System, and contributions from major corporations as well as the companies that created the major Linux distributions. More recent projects extend Linux in exciting ways, some through changes to the kernel and some through libraries and applications that radically change the user's experience.

This book is a quick reference for the basic commands and features of the Linux operating system. As with other books in O'Reilly's "In a Nutshell" series, this book is geared toward users who know what they want to do and have some idea how to do it, but can't always remember the correct command or option. The fifth edition has been examined from start to end and checked against the most common Linux distributions (Debian, Fedora, and SUSE) so that it reflects the most useful and popular commands.

Organization of This Book

This book is a reference to the most important commands and utilities available on Linux systems.

Chapter 1, *Introduction*, explains Linux's strengths and the key aspects of working with Linux, and lays out the scope of this book.

Chapter 2, *System and Network Administration Overview*, introduces TCP/IP networking and the Linux commands used for system administration and network management.

Chapter 3, *Linux Commands*, is the core of the book, a reference listing of hundreds of the most important shell commands available on Linux.

Chapter 4, *Boot Methods*, covers the commands used to control booting on Linux and dual-booting, particularly LILO, GRUB, and **initrd**.

Chapter 5, *Package Management*, explains the **apt** series of commands that manage updating and installation on Debian, and the RPM system used by Red Hat/Fedora, Novell/SUSE, and several other distributions of Linux.

Chapter 6, *The Bash Shell and Korn Shell*, documents the default command-line interpreter on Linux, Bash, and another popular interpreter, **ksh**.

Chapter 7, *Pattern Matching*, introduces regular expressions and explains how different tools interpret these powerful tools for searching and text processing.

Chapter 8, *The Emacs Editor*, provides reference information on Emacs, a text editor and full-featured development environment.

Chapter 9, *The vi, ex, and vim Editors*, describes the classic **vi** editor that is the most popular text-manipulation tool on Linux.

Chapter 10, *The sed Editor*, describes this "stream editor" that is useful for processing files in standardized ways.

Chapter 11, *The gawk Programming Language*, documents another valuable tool for processing text files, the GNU version of **awk** that is the default on Linux systems.

Chapter 12, *Source Code Management: An Overview*, provides the background for understanding CVS and Subversion, which are valuable tools for tracking changes to files and projects, and are discussed in the following two chapters.

Chapter 13, *The Concurrent Versions System (CVS)*, provides a description of a popular source code management and version-control tool.

Chapter 14, *The Subversion Version Control System*, describes what is generally considered the next generation of CVS.

Other Resources

This book doesn't tell you how to install and get up to speed on a Linux system. For that, you will probably want O'Reilly's *Running Linux*, an in-depth guide suitable for all major distributions. For networking information, check out

Linux Network Administrator's Guide (O'Reilly). In addition to these and other Linux titles, O'Reilly's wide range of Unix, X, web-related, and scripting and programming language titles may also be of interest to the Linux user.

Online Documentation

The Internet is full of information about Linux. One of the best resources is the Linux Documentation Project at <http://www.tldp.org> (or one of the dozens of mirror sites around the world), which has numerous short guides called HOWTOs, along with some full manuals. For online information about the GNU utilities covered in this book, consult <http://www.gnu.org> (also widely mirrored). The Free Software Foundation, which is in charge of the GNU project, publishes its documentation in a number of hardcopy and online books about various tools.

Each distribution maintains its own web site, and contains documentation for the software it provides as well as guides to maintaining your system under that distribution.

Web Sites

As befits a hot phenomenon, Linux is the central subject of several web sites and a frequent topic of discussion on others. Some sites offer original content; others just have links to articles posted elsewhere and threaded discussions (which can be a useful service). Among the sites frequented by Linux users are:

<http://lwn.net>

Linux Weekly News, a site with weekly in-depth articles and frequent news updates

<http://www.linuxgazette.net>

Linux Gazette, a site published monthly with articles and tips in many languages

<http://www.linuxquestions.org>

A very popular source for technical guidance, including a growing Wiki (site maintained by user contributions) at <http://wiki.linuxquestions.org>

<http://www.tuxmagazine.com>

TUX, an online magazine focusing on tools and techniques for desktop Linux users

<http://linuxsecurity.com>

Linux Security, a collection of security-related news

<http://linuxinsider.com>

Linux Insider, a news feed

<http://linuxtoday.com>

Linux Today, another news feed

<http://slashdot.org>

Slashdot, a famous discussion list

<http://newsforge.com>

NewsForge, a more general computing-related news feed

Linux Journal and Linux Magazine

Linux Journal and *Linux Magazine* are monthly magazines for the Linux community, written and published by a number of Linux activists. With both print editions and web sites, they offer articles ranging from questions and answers for novices to kernel programming internals. *Linux Journal*, at <http://www.linuxjournal.com>, is the older magazine and is published by S.S.C. Incorporated, <http://www.ssc.com>. *Linux Magazine* is at <http://www.linuxmagazine.com>.

Usenet Newsgroups

Most people can receive Usenet news at work or through their ISPs. While this communications technology has lost ground in the past several years to web-based threaded discussions, it is still a valuable source of help and community connections on many topics. The following Linux-related newsgroups are popular:

comp.os.linux.announce

A moderated newsgroup containing announcements of new software, distributions, bug reports, and goings-on in the Linux community. All Linux users should read this group. Submissions may be mailed to linux-announce@news.ornl.gov.

comp.os.linux.development.apps

Guidance for using features of Linux for application development, and for understanding the effects of the operating system on user-space programs.

comp.os.linux.development.system

Discussions about developing the Linux kernel and the system itself.

comp.os.linux.networking

Discussions relating to networking with Linux.

comp.os.linux.x

Help on getting the X graphical window system to work. This list used to see some of the highest traffic of any Linux group back when distributions had more trouble setting up graphics automatically. This is no longer the case, thanks to the increasing sophistication of autodetection and configuration software.

There are also several newsgroups devoted to Linux in languages other than English, such as *fr.comp.os.linux* in French and *de.comp.os.linux* in German.

Online Linux Support

There are many ways of obtaining help online, where volunteers from around the world offer expertise and services to assist users with questions and problems.

The freenode IRC service is an Internet relay chat network devoted to so-called “peer-directed” projects, particularly those involving free software. Some of its channels are designed to provide online Linux support services.

Internet relay chat is a network service that allows you to talk interactively on the Internet to other users. IRC networks support multiple channels where different

groups of people type their thoughts. Whatever you type in a channel is seen by all other users of that channel.

There are a number of active channels on the freenode IRC network, where you will find users 24 hours a day, 7 days a week who are willing and able to help you solve any Linux problems you may have, or just chat. You can use this service by installing an IRC client (some distributions install them by default), connecting to server name *irc.freenode.org:6667*, and joining a channel focusing on Linux, such as:

#linpeople

General help and discussion

#debian

Help for Debian distribution

#gentoo

Help for Gentoo distribution

#redhat

Help for Red Hat distribution

#suse

Help for SUSE distribution

And so on. Please be sure to read up on the rules of chat etiquette before chatting. In particular, the participants in these groups tend to expect people to read documentation and do some experimentation before asking for help with a problem.

Linux User Groups

Many Linux User Groups around the world offer direct support to users. Typically, Linux User Groups engage in such activities as installation days, talks and seminars, demonstration nights, and purely social events. Linux User Groups are a great way of meeting other Linux users in your area. There are a number of published lists of Linux User Groups. Some of the better-known ones are:

<http://www.ssc.com/glue/groups>

Groups of Linux Users Everywhere

<http://www.linux.org/users>

LUGregistry

Using Code Examples

This book is here to help you get your job done. In general, you may use the code in this book in your programs and documentation. You do not need to contact O'Reilly for permission unless you're reproducing a significant portion of the code. For example, writing a program that uses several chunks of code from this book does not require permission. Selling or distributing a CD-ROM of examples from O'Reilly books does require permission. Answering a question by citing this book and quoting example code does not require permission. Incorporating a significant amount of example code from this book into your product's documentation does require permission.

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Conventions

This desktop quick reference follows certain typographic conventions:

Bold

Used for commands, programs, and options. All terms shown in bold are typed literally.

Italic

Used to show arguments and variables that should be replaced with user-supplied values. Italic is also used to introduce new terms, indicate filenames and directories, and to highlight comments in examples.

Constant Width

Used to show the contents of files or the output from commands.

Constant Width Bold

Used in examples to show commands or other text that should be typed literally by the user.

Constant Width Italic

Used in examples to show text that should be replaced with user-supplied values.

\$ Used in some examples as the **bash** shell prompt (\$).

[] Surround optional elements in a description of syntax. (The brackets themselves should never be typed.) Note that many commands show the argument *[files]*. If a filename is omitted, standard input (e.g., the keyboard) is assumed. End with an end-of-file character.

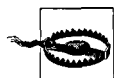
EOF

Indicates the end-of-file character (normally Ctrl-D).

| Used in syntax descriptions to separate items for which only one alternative may be chosen at a time.



This icon indicates a note, which is an important aside to its nearby text.



This icon indicates a warning.

A final word about syntax. In many cases, the space between an option and its argument can be omitted. In other cases, the spacing (or lack of spacing) must be followed strictly. For example, `-wn` (no intervening space) might be interpreted differently from `-w n`. It's important to notice the spacing used in option syntax.

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About the Authors

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Colophon

Our look is the result of reader comments, our own experimentation, and feedback from distribution channels. Distinctive covers complement our distinctive approach to technical topics, breathing personality and life into potentially dry subjects.

The animal featured on the cover of *Linux in a Nutshell*, Fifth Edition is an Arabian horse. Known for its grace and intelligence, the Arabian is one of the oldest breeds of horse, with evidence of its existence dating back 5000 years. The Arabian was instrumental as an ancestor to other popular breeds, most notably the Thoroughbred in the 17th and 18th centuries. Possibly one of the more distinctive horse breeds, the typical Arabian has large, expressive eyes and nostrils, small ears, and a short, sturdy back. Its stamina suits it particularly well for endurance riding, a sport dominated by the Arabian breed. Its wonderful temperament makes the Arabian an all-around favorite riding horse in North America, although it also can be found in more specialized competitions such as dressage, jumping, and reining.

Sanders Kleinfeld was the production editor and proofreader for *Linux in a Nutshell*, Fifth Edition. Adam Witwer and Claire Cloutier provided quality control. Ellen Troutman-Zaig wrote the index.

Edie Freedman designed the cover of this book, using a 19th-century engraving from the Dover Pictorial Archive. Karen Montgomery produced the cover layout with Adobe InDesign CS using Adobe's ITC Garamond font.

David Futato designed the interior layout. This book was converted by Keith Fahlgren to FrameMaker 5.5.6 with a format conversion tool created by Erik Ray, Jason McIntosh, Neil Walls, and Mike Sierra that uses Perl and XML technologies. The text font is Linotype Birka; the heading font is Adobe Myriad Condensed; and the code font is LucasFont's TheSans Mono Condensed. The illustrations that appear in the book were produced by Robert Romano, Jessamyn Read, and Lesley Borash using Macromedia FreeHand MX and Adobe Photoshop CS. The tip and warning icons were drawn by Christopher Bing.

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