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Starting with SUSE

Whether you use SUSE Linux every day or just tweak it once in a while, a book that presents efficient ways to use, check, fix, secure, and enhance your system can be an invaluable resource.

SUSE Linux Toolbox is that resource.

SUSE Linux Toolbox is aimed primarily at SUSE Linux power users and systems administrators. To give you what you need, we tell you how to quickly locate and get software, monitor the health and security of your systems, and access network resources. In short, we cut to the most efficient ways of using SUSE.

Our goal with *SUSE Linux Toolbox* is to pack a lot of useful information for using SUSE Linux into a small package that you can carry around with you. To that end, we describe:

- ❑ **Commands** — Tons of command line examples to use SUSE in helpful and clever ways.
- ❑ **GUI tools** — Quick pointers to graphical administration tools to configure your system.
- ❑ **Software repositories** — Short procedures to find and download thousands of applications.
- ❑ **Online resources** — Listings of the best locations to find SUSE forums, mailing lists, IRC channels, and other online resources.
- ❑ **Local documentation** — Tools for gathering more information from man pages, doc directories, help commands and other resources on your SUSE system.

Because you're not a beginner with Linux, you won't see a lot of screenshots of windows, icons, and menus. What you will see, however, is the quickest path to getting the information you need to use your SUSE Linux system to its fullest extent.

If this sounds useful to you, please read on.

IN THIS CHAPTER

Find SUSE resources

Learn quick and powerful commands

Have a handy reference to many useful utilities

Work as Linux gurus do

Chapter 1: Starting with SUSE

About SUSE, Novell, and Linux

SUSE (pronounced *SOO-zuh*) is a Linux operating system owned by Novell, Inc. SUSE stands for the German phrase *Software- und System-Entwicklung* (meaning Software and System Development). Its roots come from Slackware Linux, and SUSE officially became an independent Linux distribution in 1996 when SUSE released its first version: 4.2. SUSE was, and remains, one of the most popular Linux distributions in Europe.

In November of 2003, Novell acquired SUSE and put corporate drive behind the project. Today SUSE comes in three editions:

- ❑ **SUSE Linux Enterprise Desktop (SLED)** became the commercial, subscription-based Linux operating system produced by Novell, Inc. The goal was to provide an enterprise-ready desktop environment, offering support, training, documentation, hardware certification, and other products to support SLED customers.
- ❑ **SUSE Linux Enterprise Server (SLES)** is the SUSE Linux Enterprise Server edition, which focuses on server use rather than desktop use.
- ❑ **openSUSE**, an open source version of SUSE Linux without proprietary software or the support options of the enterprise Novell offerings, was launched by Novell in 2005. openSUSE is a community-driven operating system that is distributed for free (as is) and has become known for its hardware support and stability.

Comparing SUSE to Other Linux Versions

Using openSUSE Linux might be the best way to learn Linux if you have an eye toward becoming a Linux professional. With its focus on community development, you can be assured that you are getting some of the latest open source software available. The skills you learn will scale up nicely to the largest enterprise computing environments.

Besides Novell, Red Hat, Inc. is the other major corporation that is marketing Linux distributions in the enterprise market. The Red Hat operating systems follow the same basic dual-distribution model, with Red Hat Enterprise Linux (RHEL) as the basis of its commercial products and Fedora as its free, community-supported Linux system.

Debian is considered to be a high-quality Linux distribution with a strong commitment to the ideals of open source software. Many derivative Linux distributions, such as the popular Ubuntu Linux and the KNOPPIX live CD, are based on Debian. And although Debian is good for use in small business, the project doesn't have the same enterprise infrastructure (training, support, documentation, and so on) that is built around SUSE Enterprise Linux.

Finding SUSE Resources

The center for information about the SUSE/SLES/SLED distributions is the Novell web site at www.novell.com/linux/. The openSUSE web site at www.opensuse.org/ is the official site for the openSUSE project. Particularly useful pages from this site include:

- ❑ http://opensuse.org/Welcome_to_opensUSE.org — From the Welcome to openSUSE.org page, follow links to documentation, bug reporting, mailing lists, IRC chats, and forums.
- ❑ www.novell.com/linux/ — Links to information for downloading or purchasing SUSE installation CDs or DVDs are listed here. Links also take you to details on upgrading and purchasing Novell SLED/SLES Install media and support.
- ❑ http://opensuse.org/Users_FAQ — This FAQ contains information on where to download openSUSE and how to set up additional software repositories. You can also find the openSUSE Hardware Compatibility List here.
- ❑ <http://suseforums.net/> — This is the online forum for the Global SUSE Community. You can find a lot of information here about installation issues, hardware and software help, and tips for working with openSUSE in general.

openSUSE Community Connections

If you want to communicate with the openSUSE community, Table 1-1 shows a quick list of links to the most useful openSUSE and Novell SLED/SLES communications venues.

Table 1-1: Online Resources to Connect to the openSUSE Community

Type	Sites
Mailing lists	http://opensuse.org/Communicate/Mailinglists
IRC chats	http://opensuse.org/Communicate/IRC
Forums	http://opensuse.org/Communicate/Forums http://support.novell.com/forums/ http://forums.suselinuxsupport.de
Communities	http://opensuse-community.org
News	http://news.opensuse.org/
Social Networks	http://opensuse.org/OpenSUSE_Community/Map http://www.flickr.com/groups/opensuse/

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openSUSE Software

Some sites that offer software packages built for openSUSE that are outside the Novell project jurisdiction include <http://packman.links2linux.org/> and <http://benjiweber.co.uk:8080/webpin/>. Information on how to use these and other openSUSE software repositories is contained in Chapter 2.

Focusing on Linux Commands

These days, many important tasks in Linux can be done from both graphical interfaces and from commands. However, the command line has always been, and still remains, the interface of choice for Linux power users.

Graphical user interfaces (GUIs) are meant to be intuitive. With some computer experience, you can probably figure out, for example, how to add a user, change the time and date, and configure a sound card from a GUI. For these cases, we'll mention which graphical tool you could use for the job. For the following cases, however, you will probably need to rely on the command line:

- ❑ **Almost any time something goes wrong** — Ask a question at an online forum to solve some Linux problem you are having and the help you get will almost always come in the form of commands to run. Also, command line tools typically offer much more feedback if there is a problem configuring a device or accessing files and directories.
- ❑ **Remote systems administration** — If you are administering a remote server, you may not have graphical tools available. Although remote GUI access (using X applications or VNC) and web-based administration tools may be available, they usually run more slowly than what you can do from the command line.
- ❑ **Features not supported by GUI** — GUI administration tools tend to present the most basic ways of performing a task. More complex operations often require options that are only available from the command line.
- ❑ **GUI is broken or not installed** — If no graphical interface is available, or if the installed GUI isn't working properly, you may be forced to work from the command line. Broken GUIs can happen for lots of reasons, such as when you use a third-party, binary-only driver from NVIDIA or ATI and a kernel upgrade makes the driver incompatible.

The bottom line is that to unlock the full power of your Linux system, you must be able to use shell commands. Thousands of commands are available for Linux to monitor and manage every aspect of your Linux system.

But whether you are a Linux guru or novice, one challenge looms large. How do you remember the most critical commands and options you need, when a command shell might only show you this:

```
$
```

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NOTE Most other versions of Linux, as well as Unix, define the default command prompt as a dollar sign, \$, (with the root user prompt #). SUSE, however, defines the default command prompt as a greater-than sign (>), but follows the convention of a pound sign (#) for the root user. Throughout this book, you'll see \$ for the shell prompt for commands that can be run as any user (no special privilege required).

You can change your prompt from the default > by using a command like the following:

```
> export PS1="[\u@\h \w]\\$ "  
[ericfj@Brodgar ~]$
```

This command sets the prompt to your username, @ the current hostname, with the current working directory, all in square brackets, followed by a more traditional \$ prompt. See Chapter 3 to learn how to set this prompt for all shells by placing this command inside a bash startup script file.

SUSE Linux Toolbox is not just another command reference or rehash of man pages. Instead, this book presents commands in SUSE Linux by the way you use them. In other words, instead of listing commands alphabetically, we group commands for working with file systems, connecting to networks, and managing processes in their own sections, so you can access commands by what you want to do, not only by how they're named.

Likewise, we won't just give you a listing of every option available for every command. Instead, we'll show you working examples of the most important and useful options to use with each command. From there, we'll tell you quick ways to find more options, if you need them, from man pages, the info facility, and help options.

Finding Commands

Some of the commands described in this book may not be installed when you go to run them. You might type a command and see a message similar to:

```
$ bash sillycommand  
bash: sillycommand: No such file or directory
```

There are a few reasons this might happen:

- ☐ You mistyped the command name.
- ☐ The command is not in your PATH.
- ☐ You may need to be root user for the command to be in your PATH.
- ☐ The command is not installed on your computer.

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Here are some commands you can run to look for a command you want to use:

```
$ type mount                Show the first mount command in PATH
mount is /bin/mount

$ whereis mount             Show binary, source and man pages for mount
mount: /bin/mount /sbin/mount.nfs /sbin/mount.ntfs-3g /sbin/mount.nfs4
/usr/share/man/man8/mount.8.gz /usr/share/man/man2/mount.2.gz

$ which umount              Find umount anywhere in file system
/bin/umount

$ rpm -qal |grep umount      Find umount in any installed package
/usr/share/man/man2/umount.2.gz
/usr/share/man/man2/umount2.2.gz
/bin/umount
/usr/share/man/man8/umount.8.gz
/sbin/umount.nfs
/sbin/umount.nfs4
/usr/share/man/man8/umount.nfs.8.gz
/opt/kde3/share/icons/crystalsvg/scalable/devices/mo_umount.svgz
/usr/lib/YaST2/startup/First-Stage/F03-umount
/usr/share/YaST2/clients/pre_umount_finish.ycp
/usr/share/YaST2/clients/umount_finish.ycp

$ rpm -q --whatprovides tar Find out which package provides the tar command
tar-1.17-21
```

If the command you want is in a package that isn't installed, you can install the package using either a shell or GUI:

- ❑ **Installing from a shell** — Type `yast` at the command line to see a screen-oriented YaST2 Control Center. Then follow the text menus to Software ⇄ Software Management ⇄ Search and search for the package you want. Highlight the package and then click Accept. You can use the Tab key to navigate to the Accept button. (The `zypper` command, described in Chapter 2, is another tool you can use to install SUSE software packages from the command line.)
- ❑ **Installing from a GUI** — Choose Install Software from the Computer section of the SUSE green creature menu. This launches the graphical version of YaST2. You will need to enter the root password to run this application.

Command Reference Information in SUSE

Original Linux and Unix documentation was all done on manual pages, generally referred to as *man pages*. A slightly more sophisticated documentation effort came a bit later with the *info* facility. Within each command itself, help messages are almost always available.

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This reference information is component oriented — in other words, there are separate man pages for nearly every command, file format, system call, device, and other component of a Linux system. Documentation more closely aligned to whole software packages is typically stored in a subdirectory of the `/usr/share/doc` directory.

All three reference features — man pages, info documents, and help messages — are available in SUSE and openSUSE.

Using help Messages

The `-h` or `--help` options are often used to **display help messages** for a command. The following example illustrates how to display help for the `ls` command:

```
$ ls --help | less
Usage: ls [OPTION]... [FILE]...
List information about the FILES (the current directory by default).
Sort entries alphabetically if none of -cftuSUX nor --sort.

Mandatory arguments to long options are mandatory for short options.
  -a, --all                do not hide entries starting with .
  -A, --almost-all        do not list implied . and ..
  ...
```

The preceding output shows how the `ls` command line is used and lists available options. Piping the output to the `less` command lets you page through it. You can **format the help messages into a reference card** using the `card` command. For example:

```
$ card ls --output=/tmp/ls.ps
$ lpr ls.ps
```

The result shown here is a file named `ls.ps` that you can open in a PostScript document reader (such as `gs`) to view the card. (Select View ⇄ Rotate Right to view the card properly.) You can use the `lpr` command to print the card or, if you don't use the `--output` option, it is sent to your default printer automatically.

Using man Pages

Suppose you want to **find man pages for commands related to a certain word**. Use the `apropos` command to search the man page database. This shows man pages that have `crontab` in the man page `NAME` line:

```
$ apropos crontab
Config::Crontab (3pm) - Read/Write Vixie compatible crontab(5) files
crontab (1)           - maintain crontab files for individual users (ISC Cron
V4.1)
crontab (1p)         - schedule periodic background work
crontab (5)          - tables for driving cron (ISC Cron V4.1)
```

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The `apropos` output here shows each man page `NAME` line that contains `crontab`. The number shows the man page section in which the man page appears. (We discuss sections shortly.)

The `whatis` command is a way to show `NAME` lines alone for commands that contain the word you enter:

```
$ whatis cat
cat (1)          - concatenate files and print on the standard output
cat (1p)         - concatenate and print files
```

The easiest way to **display the man page for a term** is with the `man` command and the command name. For example:

```
$ man find
FIND(1)                                FIND(1)
NAME
    find - search for files in a directory hierarchy
SYNOPSIS
    find [-H] [-L] [-P] [path...] [expression]
...
```

The preceding command displays the first man page found for the `find` command. As you saw in the earlier example, some terms have multiple man pages. For example, there is a man page for the `crontab` command and one for the `crontab` files. Man pages are organized into sections, as shown in Table 1-2.

Table 1-2: man Page Sections

Section	Description
0	Header files (usually found in <code>/usr/include</code>)
1	Executable programs or shell commands
2	System calls
3	Library calls
4	Special files
5	File formats and conventions
6	Games
7	Miscellaneous
8	System administration commands
9	Kernel routines [Non standard]

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The following code shows some other examples of useful options with the `man` command.

```
$ man mount -a      Shows all man pages related to component
$ man 5 crontab      Shows section 5 man page for component
$ man mount -P more  Use more, not less to page through
$ man -f mount       Same as the whatis command
$ man -k mount       Same as the apropos command
```

Man pages are also available on the Internet. A nicely organized reference site is <http://linuxmanpages.com>.

Using info Documents

In some cases, developers have put more complete descriptions of commands, file formats, devices, or other Linux components in the info database. You can enter the info database by simply typing the `info` command or by opening a particular component:

```
$ info ls
```

The previous command shows information on the `ls` command. Use up, down, left and right arrows and Page Up and Page Down to move around the screen. Home and End keys go to the beginning and end of a node, respectively. Once you are displaying the info screen, you can get around using the keystrokes shown in Table 1-3.

Table 1-3: Moving through the info Screen

Keystroke	Movement
?	Display the basic commands to use in info windows.
Shift+l	Go back to the previous node you were viewing.
n, p, u	Go to the node that is next, previous, or up, respectively.
Tab	Go to the next hyperlink that is in this node.
Enter	Go to the hyperlink that is under the cursor.
Shift+r	Follow a cross reference.
Shift+q or q	Quit and exit from info.

Software packages that have particularly extensive text available in the info database include `gimp`, `festival`, `libc`, `automake`, `zsh`, `sed`, `tar`, and `bash`. Files used by the info database are stored in the `/usr/share/info` directory.

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Summary

While you certainly can read this book from cover-to-cover if you like, the book is designed to be a reference to hundreds of features in SUSE Linux that are most useful to power users and systems administrators. Because information is organized by topic, instead of alphabetically, you don't have to know the commands in advance to find what you need to get the job done.

Most of the features described in this book will work equally well in openSUSE, SUSE Linux Enterprise, and other SUSE-based Linux systems. In fact, many of the commands described here are in such widespread use that you could use them exactly as described here on most Linux and Unix systems.

The next chapter describes how to get and install SUSE Linux software.