

## SYBEX Bonus Chapter

# Mastering™ Red Hat® Linux 9

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## Web Chapter 5: Red Hat Linux Packages By Group

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## Web Chapter 5

# Red Hat Linux Packages By Group

This appendix serves two purposes. First, it helps you create a custom Red Hat Linux installation CD. In fact, this is how Red Hat creates the Publisher's Edition included with this book. If your needs are limited and you know the packages you need for your organization, you can use this appendix to help set up Red Hat Linux 9 installations from a single CD. Second, it provides a brief description of the RPM packages that you can normally install from the CD.

If you want to change the way your users install Red Hat Linux, you can edit the `comps.xml` file. For example, with the right changes, you can configure all installations from your source with the language support of your choice. All you need is the following XML line in the right stanza:

```
<default>true</default>
```

More details on XML commands in the `comps.xml` file are available in Chapter 5.

We organized this appendix by package group. It can help you determine what package groups you need to install. It can also help you plan the additional “optional” packages that you want to install.

As you read through the `comps.xml` file, you may notice some duplicate packages in separate groups. As long as they don't conflict, this is not a problem. In a few cases, a package in `comps.xml` may no longer exist and is therefore ignored both by the Red Hat Linux installation process and here as well. This appendix covers the following package group categories:

- ◆ Mandatory package groups
- ◆ Desktops
- ◆ Applications
- ◆ Servers
- ◆ Development
- ◆ System
- ◆ Other package groups

## Mandatory Package Groups

A mandatory package group is installed with every installation of Red Hat Linux 9. Unless you change `/RedHat/base/comps.xml`, you don't even see these groups during the normal installation process. You're not allowed to deselect most of the RPMs in these groups, because most of them are essential to the Linux operating system.

There are three mandatory package groups. As defined by their name in the `comps.xml` file, they are Core, Base, and Dialup Networking Support. You don't have to install all of the packages in these groups; however, you can't deselect any package unless you choose the Select Individual Packages option during the Red Hat Linux installation process.

### Core

The Core package group is not visible by default. All but three Core packages are “mandatory”; they must be installed when you install Red Hat Linux. These packages are briefly described in Table W5.1.

**TABLE W5.1: CORE MANDATORY PACKAGES**

NAME	DESCRIPTION
<code>authconfig</code>	Installs a utility for configuring shadow passwords, NIS authentication, and more
<code>basesystem</code>	Defines the components of a basic Linux system
<code>bash</code>	Adds the Bourne Again Shell
<code>coreutils</code>	Includes GNU core utilities; includes many <code>/bin</code> and <code>/usr/bin</code> commands
<code>cpio</code>	Adds <code>cpio</code> for copying files to and from archives
<code>e2fsprogs</code>	Includes basic filesystem checking utilities such as <code>fsck</code> and <code>mkfs</code>
<code>ed</code>	Installs the original Unix editor; predates <code>vi</code>
<code>file</code>	Adds the <code>file</code> command, which identifies file types
<code>filesystem</code>	Includes the basic Linux Filesystem Hierarchy Standard layout
<code>glibc</code>	Contains the standard GNU C language and a math library; used by many other programs and is essential to Linux
<code>grub</code>	Includes the Grand Unified Bootloader
<code>hdparm</code>	Installs the <code>hdparm</code> command, which allows you to set IDE hard drive parameters
<code>hotplug</code>	Supports hot-pluggable components, including USB, IEEE1394, and the new PCI Hotplug industry standard; for more information see: <a href="http://www.intel.com/network/connectivity/resources/technologies/pci_hotplug.htm">www.intel.com/network/connectivity/resources/technologies/pci_hotplug.htm</a>
<code>initscripts</code>	Adds basic boot scripts, including those in <code>/etc/rc.d</code> and <code>/etc/sysconfig</code>
<code>iproute</code>	Includes networking utilities
<code>iputils</code>	Includes network management utilities such as <code>ping</code>
<code>kbd</code>	Installs console management tools
<code>kernel</code>	Adds the Linux kernel

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**TABLE W5.1: CORE MANDATORY PACKAGES** *(continued)*

<b>NAME</b>	<b>DESCRIPTION</b>
kudzu	Includes the Red Hat hardware configuration and detection tool
libgcc	Supports GNU C compiler 3.0 and later libraries
libtermcap	Installs the basic library for termcap, which allows for different virtual text consoles
losetup	Adds the network “loopback: device
passwd	Includes the passwd utility
procps	Installs basic system information utilities such as ps and top
raidtools	Allows setup of software RAID devices
readline	Lets you edit a command line in vi or Emacs modes
redhat-logos	Adds basic trademarked Red Hat logos
redhat-release	Includes the release notes for the version
rootfiles	Installs basic files for the root user in /root
rpm	Adds the Red Hat Package Manager
setserial	Includes the utility that can display or configure serial port information
setup	Includes basic system configuration files in /etc, including passwd, group, and profile
shadow-utils	Installs utilities that allow you to convert passwords from regular to shadow format
syslogd	Supports system logging with the syslogd and klogd daemons
SysVinit	Includes init
termcap	Defines capabilities and functions of various terminals
util-linux	Includes basic utilities in /bin, /sbin, and /usr/bin, such as fdisk and login
vim-minimal	Includes the vi editor

The Core package group also contains three default packages, described in Table W5.2. If you activate the Select Individual Packages option, you can deselect these packages and keep Red Hat Linux from installing them on your computer.

**TABLE W5.2: CORE DEFAULT PACKAGES**

<b>NAME</b>	<b>DESCRIPTION</b>
ash	Installs a simplified clone of the original Bourne shell
lilo	Includes the Linux Loader bootloader
redhat-config-mouse	Adds a GUI mouse configurator

## Base

The Base package group is not visible by default. Many Base packages are “mandatory,” which means they must be installed when you install Red Hat Linux. Table W5.3 briefly describes these packages.

**TABLE W5.3: BASE MANDATORY PACKAGES**

NAME	DESCRIPTION
acl	Includes <code>getfacl</code> and <code>setfacl</code> for access control lists
at	Includes <code>at</code> and <code>batch</code> for running jobs at specified times
attr	Manipulates attributes on files, especially for <code>xfs</code> -formatted filesystems
authconfig	Adds a utility that can configure shadow passwords, NIS authentication, and more
bc	Includes a calculator and math language
bind-utils	Contains commands for testing a DNS server
bzip2	Adds a file compressor similar to <code>gzip</code>
crontabs	Installs files that can help you manage root cron jobs in <code>/etc/crontab</code>
cyrus-sasl-plain	Supports the Cyrus SASL login authentication scheme
dhclient	Installs the DHCP client
diffutils	Includes utilities for comparing the contents of different files
dos2unix	Adds a converter for MS-DOS text files
ethtool	Installs a utility for managing an Ethernet card
eject	Includes a utility for ejecting removable media
kudzu	Adds the Red Hat Hardware configuration and detection tool
lha	Installs utilities for extracting DOS files from LHA archives
logrotate	Automates log file management
lsof	Lists information about open files
lokkit	Installs a firewall configuration utility
mailcap	Adds a mail agent for reading file types
man	Includes the Linux documentation system for most commands and configuration files
mkbootdisk	Allows creation of a boot floppy

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**TABLE W5.3: BASE MANDATORY PACKAGES** (*continued*)

<b>NAME</b>	<b>DESCRIPTION</b>
mt-st	Supports tape drive management
netconfig	Installs a utility for configuring Ethernet network cards
ntsysv	Allows service configuration at different runlevels
parted	Supports creating and resizing partitions; similar to fdisk
pciutils	Allows configuration of PCI devices
pinfo	Includes a pinfo browser for information pages; in many cases, configures an easily searchable man page
quota	Adds tools for administering user and group file and disk usage
redhat-logos	Installs basic trademarked Red Hat logos
rsync	Adds a tool for synchronizing files over a network
slocate	Searches through a database of files on your system
star	Installs utilities for archiving files
talk	Supports the Internet talk protocol, an early chat program
tcsh	Installs an enhanced C shell
telnet	Adds the client for the Telnet system
traceroute	Allows you to display the route of a message on a TCP/IP network
time	Monitors resources used by a program
tmpwatch	Searches and removes files that have not been accessed for a certain period of time
utempter	Allows some programs root access
unix2dos	Adds a converter to DOS text files
unzip	Extracts from a Zip archive
vim-common	Adds features to the vi editor
vixie-cron	Contains the cron daemon for regularly scheduled programs
zip	Installs the file compression utility; compatible with Microsoft Windows utilities of the same name

If you activate the Select Individual Packages option, you can deselect certain “default” packages and keep Red Hat Linux from installing them on your computer. These packages are briefly described in Table W5.4.

**TABLE W5.4: BASE DEFAULT PACKAGES**

<b>NAME</b>	<b>DESCRIPTION</b>
anacron	Installs a scheduler for cron jobs
apmd	Adds the Advanced power management daemon; used to monitor notebook computer batteries
aspell	Adds a spell checker alternative to ispell
autofs	Supports automatic mounting and unmounting
devlabel	Supports links to appropriate device files
dosfstools	Allows creation and checks of MS-DOS FAT filesystems
dump	Includes dump and restore for backups
fbset	Supports management of video frame buffers
finger	Displays preconfigured information about specific users
ftp	Installs the File Transfer Protocol command-line client
gpm	Provides mouse support to some console applications such as Emacs and Midnight Commander
irda-utils	Supports the use of Infrared protocols
jfsutils	Includes utilities for checking JFS filesystems
jwhois	Adds a whois client
kernel-pcmcia-cs	Allows management of PCMCIA cards
lftp	Installs a more sophisticated FTP command-line client
logwatch	Includes a log analysis system
man-pages	Adds the actual command and configuration file manuals for the man command
mttools	Installs commands for accessing MS-DOS files, such as from an unmounted floppy disk
mtr	Adds a diagnostic tool with ping and traceroute functionality
nfs-utils	Includes the NFS daemon and support utilities such as exportfs and showmount
nss_ldap	Contains Lightweight Directory Access Protocol clients
openssh-clients	Includes the client required to connect to a SSH server
openssh-server	Installs the open source SSH server
pam_krb5	Contains a Pluggable Authentication Module (PAM) for Kerberos 5 authentication
pam_smb	Contains a PAM for Samba authentication

*Continued on next page*

**TABLE W5.4: BASE DEFAULT PACKAGES** (*continued*)

<b>NAME</b>	<b>DESCRIPTION</b>
pax	Adds a standard archive tool; includes cpio and tar
rdate	Allows you to find the time and date from a remote computer
rdist	Maintains identical files on different computers
redhat-config-network-tui	Adds a text mode network configuration tool
reiserfs-utils	Includes utilities for checking ReiserFS filesystems
rp-pppoe	Adds Point-to-Point Protocol over Ethernet functionality; required for some DSL connections
rsh	Installs commands for managing remote computers
setuptools	Includes setup, which opens a menu of other text-mode configuration programs
sendmail	Installs a Linux e-mail server; a mail transport agent
specspo	Includes object catalogs for non-U.S. packages
sudo	Includes programs that allow specified users root (superuser) functionality
stunnel	Supports SSL connections
tcp_wrappers	Adds filtering tools and files, such as /etc/hosts.allow and /etc/hosts.deny
tcpdump	Allows you to monitor network traffic
up2date	Adds the Red Hat Update agent
wget	Supports file retrieval via FTP or HTTP
wireless-tools	Supports wireless LAN management
ypbind	Allows NIS clients to connect to NIS servers

If you activate the Select Individual Packages option, you can choose certain “optional” packages (see Table W5.5) and have Red Hat Linux install them on your computer.

**TABLE W5.5: BASE OPTIONAL PACKAGES**

<b>NAME</b>	<b>DESCRIPTION</b>
krb5-workstation	Includes Kerberos 5 support programs
pidentd	Allows identification of processes that own TCP/IP connections

## Dialup Networking Support

The Dialup Networking Support package group is not visible by default. There are six packages in this group—some mandatory, some default. If you want to work with this package group during the installation process, you need to change the following line from:

```
<uservisible>>false</uservisible>
```

to

```
<uservisible>>true</uservisible>
```

The mandatory packages are briefly described in Table W5.6.

**TABLE W5.6: DIALUP NETWORKING SUPPORT MANDATORY PACKAGES**

NAME	DESCRIPTION
minicom	Adds a simple terminal modem control utility
ppp	Includes the Point-to-Point Protocol daemon and documentation
statserial	Displays signals on a serial port and associated status

Table W5.7 briefly describes the default packages in the Dialup Networking Support package group.

**TABLE W5.7: DIALUP NETWORKING SUPPORT DEFAULT PACKAGES**

NAME	DESCRIPTION
isd4k-utils	Installs utilities for configuring an ISDN connection
lrzsz	Includes a Z modem style package
wvdial	Automates PPP connections

## Desktops

There are three Desktop package groups. As defined by their name in the `comps.xml` file, they are X Window System, GNOME Desktop Environment, and KDE Desktop Environment. Some of the packages in each group are mandatory. For example, the GNOME Desktop won't work unless you install mandatory packages. Several default and optional packages add applications and set up a "look and feel" for each desktop group.

### X Window System

The X Window System package group is visible during the Red Hat Linux installation process. If you never intend to use the GUI, you can deselect this package group.

As you can see in the `comps.xml` file, the X Window System won't work unless you've also installed the Printing package group, as shown by the following commands:

```
<grouplist>
  <groupreq>printing</groupreq>
</grouplist>
```

This group contains mandatory, default, and optional packages. The mandatory packages are briefly described in Table W5.8.

**TABLE W5.8: X WINDOW SYSTEM MANDATORY PACKAGES**

NAME	DESCRIPTION
<code>bitmap-fonts</code>	Supplies basic fonts for GUI terminals and more
<code>desktop-backgrounds-basic</code>	Includes basic images for the desktop background
<code>XFree86</code>	Installs the default X Window interface for Red Hat Linux
<code>XFree86-font-utils</code>	Adds the <code>mkfontdir</code> and <code>ttmkfdir</code> for installing font packages
<code>XFree86-tools</code>	Simple utilities and tools for the X window
<code>XFree86-twm</code>	Installs a simple window manager ( <code>twm</code> )
<code>XFree86-xauth</code>	Configures authorization information for X Server connections
<code>XFree86-75dpi-fonts</code>	Installs the 75 dpi (dots per inch) fonts for the X Server
<code>XFree86-100dpi-fonts</code>	Installs the 100 dpi fonts for the X Server
<code>xinitrc</code>	Adds the <code>xinitrc</code> script for configuring and starting the X Window

The default packages for the X Window System package group are briefly described in Table W5.9.

**TABLE W5.9: X WINDOW SYSTEM DEFAULT PACKAGES**

NAME	DESCRIPTION
<code>authconfig-gtk</code>	Provides a graphical interface for configuring shadow and related network passwords
<code>desktop-backgrounds-extra</code>	Includes extra desktop backgrounds
<code>firstboot</code>	Runs the first time Red Hat Linux boots after installation; supports additional configuration
<code>gdm</code>	Installs the GNOME display manager
<code>openssh-askpass</code>	Supports an X Window interface for requesting a password for connecting to an SSH server
<code>openssh-askpass-gnome</code>	Configures <code>openssh-askpass</code> for GNOME

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**TABLE W5.9:** X WINDOW SYSTEM DEFAULT PACKAGES (*continued*)

NAME	DESCRIPTION
redhat-config-date	Adds a GUI tool for configuring the time and NTP connections
redhat-config-network	Includes the GUI tool for configuring network connections
redhat-config-services	Installs the GUI tool for configuring services at various runlevels
redhat-config-soundcard	Adds the GUI tool that supports sound card configuration
redhat-config-users	Includes the GUI tool for administering users and groups
redhat-config-xfree86	Installs the GUI tool for configuring the XFree86 server
redhat-config-printer-gui	Adds the GUI tool for the printconf utility
redhat-config-packages	Includes the GUI tool for installing and removing packages by group or RPM
redhat-logviewer	Installs a GUI interface for browsing key log files
rhn-applet	Adds the icon that tells you if updated packages are available on the Red Hat Network
switchdesk	Installs the desktop switcher, which sets the default GUI desktop environment
usermode-gtk	Supports GUI account management
XFree86-xdm	Installs the X display manager
up2date-gnome	Adds a GNOME interface for up2date
xisdnload	Configures a load analyzer for an ISDN connection

If you select the Select Individual Packages option, you can choose certain “optional” packages (see Table W5.5) and have Red Hat Linux install them on your computer. The two optional packages in this group are shown in Table W5.10.

**TABLE W5.10:** X WINDOW SYSTEM OPTIONAL PACKAGES

NAME	DESCRIPTION
redhat-switch-printer-gnome	Supports a GNOME interface for the print daemon switcher (between CUPS and LPD)
redhat-switch-mail-gnome	Supports a GNOME interface for the mail transport agent switcher

## GNOME Desktop Environment

The GNOME Desktop Environment package group is visible during the Red Hat Linux installation process. It is also the default desktop, so it is normally installed when you install Red Hat Linux.

As you can see in the `comps.xml` file, the GNOME Desktop Environment won't work unless you've also installed `base-x`, which corresponds to the X Window System package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base-x</groupreq>
</grouplist>
```

There are mandatory and default packages in this group. Table W5.11 briefly describes the mandatory packages.

**TABLE W5.11: GNOME DESKTOP ENVIRONMENT MANDATORY PACKAGES**

NAME	DESCRIPTION
<code>control-center</code>	Adds a GUI interface to customize the look and feel of the desktop
<code>desktop-file-utils</code>	Installs utilities that manage GNOME and KDE menus
<code>desktop-printing</code>	Includes code to support drag-and-drop printing
<code>gnome-applets</code>	Provides small utilities for the GNOME panel
<code>gnome-icon-theme</code>	Includes basic icons for the GNOME desktop environment
<code>gnome-panel</code>	Installs basic GUI menus, window lists, and more for GNOME
<code>gnome-session</code>	Adds the GNOME session manager
<code>gnome-terminal</code>	Installs a terminal command-line interface
<code>gnome-utils</code>	Adds some basic applications such as a calculator and a search tool
<code>metacity</code>	Provides another GNOME window manager
<code>nautilus</code>	Installs an integrated manager of files; also serves as a simplified web browser
<code>nautilus-media</code>	Incorporates streaming audio into Nautilus
<code>switchdesk-gnome</code>	Adds a GNOME interface for the <code>switchdesk</code> package
<code>yelp</code>	Installs the GNOME help browser

The default packages for the GNOME Desktop Environment package group are briefly described in Table W5.12.

**TABLE W5.12: GNOME DESKTOP ENVIRONMENT DEFAULT PACKAGES**

NAME	DESCRIPTION
<code>eog</code>	Adds the Eye of GNOME, a Nautilus image viewer
<code>file-roller</code>	Installs an application for creating and viewing archives
<code>gconf-editor</code>	Allows modification of GConf configuration files

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**TABLE W5.12:** GNOME DESKTOP ENVIRONMENT DEFAULT PACKAGES (*continued*)

NAME	DESCRIPTION
<code>gedit</code>	Adds a small GUI text editor
<code>gftp</code>	Installs a GUI FTP client
<code>gimp-print-utils</code>	Adds <code>escputil</code> for Epson Inkjet (and compatible) printers
<code>gnome-audio</code>	Installs GUI desktop sounds
<code>gnome-media</code>	Adds multimedia applications, such as a CD player
<code>gnome-system-monitor</code>	Includes a GUI monitor of processes and system resources
<code>gnome-user-docs</code>	Includes GNOME documentation
<code>gnome-vfs-extras</code>	Installs additional modules to support the GNOME virtual filesystem
<code>gnome-vfs2-extras</code>	Installs additional modules to support the GNOME virtual filesystem
<code>gqview</code>	Adds an image viewer for graphics files
<code>gtk-engines</code>	Installs objects and configuration files in support of GTK+ version 1.2 themes
<code>gtk2-engines</code>	Installs objects and configuration files in support of GTK+ version 2.0 themes
<code>ggv</code>	Configures a front end for Ghostscript, which is the GNU interpreter of PostScript files
<code>gthumb</code>	Installs an application for viewing, organizing, and editing images
<code>mtr-gtk</code>	Adds a GTK+ interface for <code>mtr</code> , a traceroute tool
<code>magi-cdev</code>	Configures a daemon that detects newly inserted CDs while in GNOME
<code>hwbrowser</code>	Installs a graphical browser for your current hardware configuration

## KDE Desktop Environment

The KDE Desktop Environment package group is visible during the Red Hat Linux installation process. While it's more popular among users of other Linux distributions, GNOME is the default desktop, so KDE is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, the KDE Desktop Environment won't work unless you've also installed `base-x` or `dialog`, which corresponds to the X Window System and Dialup Networking Support package groups, as shown by the following commands:

```
<grouplist>
  <groupreq>base-x</groupreq>
  <groupreq>dialog</groupreq>
</grouplist>
```

There are mandatory, default, and optional packages in this group. The mandatory packages are briefly described in Table W5.13.

**TABLE W5.13: KDE DESKTOP ENVIRONMENT MANDATORY PACKAGES**

NAME	DESCRIPTION
kdeutils	Installs small utilities, such as an address book and editor for the K Desktop environment
arts	Adds the analog real-time synthesizer for sound mixing
desktop-printing	Includes code to support drag-and-drop printing
fam	Configures the File Alteration Monitor; allows applications to know when files change
htdig	Installs a small-scale web search and indexing system
kdebase	Includes the core applications for the KDE environment
kdenetwork	Adds networking applications for KDE
switchdesk-kde	Gives the GUI desktop switcher a KDE look and feel
xinetd	Installs the Extended Internet Services Daemon, with configuration files in /etc/xinetd.d

Table W5.14 briefly describes the default packages for the KDE Desktop Environment package group.

**TABLE W5.14: KDE DESKTOP ENVIRONMENT DEFAULT PACKAGES**

NAME	DESCRIPTION
autorun	Adds the KDE program that recognizes and runs autorun-style programs on a CD
kdegraphics	Includes a number of KDE graphics applications
kdeaddons	Installs plug-ins for other applications such as the Konqueror web browser
kdeartwork	Configures artwork for the KDE desktop
kdemultimedia	Includes several KDE multimedia applications

There are also optional packages for the KDE Desktop Environment package group, which are briefly described in Table W5.15.

**TABLE W5.15: KDE DESKTOP ENVIRONMENT OPTIONAL PACKAGES**

NAME	DESCRIPTION
kdepim	Installs a KDE personal information manager
kdeadmin	Includes KDE administrative tools, such as an FTP server manager and a job scheduler

## Applications

There are nine Applications package groups. As defined by their name in the `comps.xml` file, they are Editors, Engineering and Scientific, Graphical Internet, Text-Based Internet, Office/Productivity, Sound and Video, Authoring and Publishing, Graphics, and Games and Entertainment.

### Editors

The Editors package group is visible during the Red Hat Linux installation process. It's dedicated to the `vi` and Emacs text editors, popular among many Linux and Unix users. As you can see in the `comps.xml` file, the Editors group won't work unless you've also installed `base`, which corresponds to the Base package group. The `metapkg` commands shown here make it possible to install the `emacs` and `xemacs` package groups as part of Editors:

```
<grouplist>
  <groupreq>base</groupreq>
  <metapkg type="default">emacs</metapkg>
  <metapkg type="optional">xemacs</metapkg>
</grouplist>
```

There are four packages associated with the Editors package group; these packages are briefly described in Table W5.16.

**TABLE W5.16: EDITORS PACKAGES**

NAME	DESCRIPTION
<code>vim-enhanced</code>	Installs an enhanced version of <code>vi</code> ; <code>vim-common</code> and <code>vim-minimal</code> are installed by default.
<code>vim-X11</code>	Includes an enhanced version of <code>vi</code> suited for the X Window.
<code>emacs</code>	Adds the <code>emacs</code> package group, which includes <code>emacs</code> , <code>emacs-1eim</code> , and <code>psgml</code> .
<code>xemacs</code>	Adds the <code>xemacs</code> package group, which includes <code>xemacs</code> , <code>xemacs-el</code> , and <code>xemacs-info</code> .

The `emacs` and `xemacs` package groups are not visible during the Red Hat Linux installation process. They are available for installation through the Editors package group.

### Engineering and Scientific

The Engineering and Scientific package group is visible during the Red Hat Linux installation process. As you can see in the `comps.xml` file, this package group won't work unless you've also installed the Base package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

This group includes mandatory, default, and optional packages. The mandatory packages are briefly described in Table W5.17.

**TABLE W5.17: ENGINEERING AND SCIENTIFIC MANDATORY PACKAGES**

NAME	DESCRIPTION
b1as	Installs the Basic Linear Algebra Subprograms
lapack	Includes the Linear Algebra package to solve matrices

Table W5.18 briefly describes the default packages for the Engineering and Scientific package group.

**TABLE W5.18: ENGINEERING AND SCIENTIFIC DEFAULT PACKAGES**

NAME	DESCRIPTION
gnuplot	Installs an interactive plotting program
octave	Adds a high-level language for numeric calculations
units	Configures a program that converts units, e.g., metric to English

While it's an internal conflict, if you allow Red Hat to automatically satisfy dependencies during the installation process, packages like `b1as` and `lapack` are automatically installed. Table W5.19 lists the optional packages for the Engineering and Scientific package group.

**TABLE W5.19: ENGINEERING AND SCIENTIFIC OPTIONAL PACKAGES**

NAME	DESCRIPTION
lam	Adds the Local Area Multicomputer package, which handles communication between different computers working on the same problem
pvm	Configures a daemon that can use distributed processing environments; a.k.a. make calculations on different computers simultaneously

## Graphical Internet

The Graphical Internet package group is visible during the Red Hat Linux installation process and is installed by default. There are default and optional packages in this group. One mandatory package is also included:

`indexhtml`

This package includes a basic web page with instructions on how to register your copy of Red Hat Linux. The default packages are briefly described in Table W5.20.

There are also optional packages for the Graphical Internet package group, which are briefly described in Table W5.21.

**TABLE W5.20:** GRAPHICAL INTERNET DEFAULT PACKAGES

NAME	DESCRIPTION
evolution	Installs an organizer/e-mail program, similar to Microsoft Outlook
gaim	Adds a clone of AOL's instant messenger
mozilla	Includes the open source Mozilla web browser
mozilla-psm	Installs a secure layer for Mozilla
mozilla-mail	Adds an e-mail client for Mozilla
xchat	Includes an IRC chat client

**TABLE W5.21:** GRAPHICAL INTERNET OPTIONAL PACKAGES

NAME	DESCRIPTION
balsa	Installs an e-mail client that supports a wide variety of protocols; intended to be similar to Eudora
galeon	Adds another web browser; galeon is written in GTK+
gnomemeeting	Includes a teleconferencing application, per the H.323 protocol
mozilla-chat	Installs an IRC client for Mozilla
pan	Adds a newsgroup reader
licq-kde	Includes a KDE front end for ICQ
quanta	Installs an HTML editor for KDE

## Text-Based Internet

The Text-Based Internet package group is visible during the Red Hat Linux installation process and is installed by default. This group contains default and optional packages. Table W5.22 briefly describes the default packages.

**TABLE W5.22:** TEXT-BASED INTERNET DEFAULT PACKAGES

NAME	DESCRIPTION
fetchmail	Installs a mail retrieval and forwarding utility, suitable for telephone modem connections
mutt	Adds a text e-mail user agent
slrn	Includes a threaded Internet news reader

There are also optional packages for the Text-Based Internet package group, which are briefly described in Table W5.23.

**TABLE W5.23: TEXT-BASED INTERNET OPTIONAL PACKAGES**

NAME	DESCRIPTION
epic	Installs an advanced IRC chat client
lynx	Adds a text-based web browser
ncftp	Enables an advanced text FTP client
pine	Installs a text-based e-mail client

## Office/Productivity

The Office/Productivity package group is visible during the Red Hat Linux installation process. It includes basic office suites and related applications, and is installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, the Office/Productivity package group won't work unless you've also installed `base-x`, the X Window System package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base-x</groupreq>
</grouplist>
```

There are default and optional packages in this group. The default packages are briefly described in Table W5.24.

**TABLE W5.24: OFFICE/PRODUCTIVITY DEFAULT PACKAGES**

NAME	DESCRIPTION
mrproject	Adds a visual project management application.
openoffice	Installs an open source multiplatform office productivity suite; a version is also available for Microsoft Windows.
xpdf	Enables a small efficient PDF reader; not as capable as Adobe Acrobat.

There are also optional packages for the Office/Productivity package group, which are briefly described in Table W5.25. A few packages belong to the GNOME Office suite, which strangely enough, is not the default for GNOME on Red Hat Linux.

**TABLE W5.25: OFFICE/PRODUCTIVITY OPTIONAL PACKAGES**

NAME	DESCRIPTION
Magi cPoint	Installs a GUI presentation tool, configured through text files
abiword	Includes the word processor associated with GNOME Office
ggv	Adds GNOME Ghostview, for PostScript documents
gnnumeric	Installs the spreadsheet associated with GNOME Office
gnucash	Includes the GNU personal finance manager
kdepim	Adds the KDE personal information manager
koffice	Installs the KOffice suite, the standard office suite associated with KDE
kdegraphics	Includes a series of graphics applications designed for KDE
tetex-xdvi	Adds Xdvi, which allows you to preview formatted TeX files

## Sound and Video

The Sound and Video package group is visible during the Red Hat Linux installation process. It includes various music players, CD and DVD recorders, as well as a sound configurator. This package group is installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, Sound and Video won't work unless you've also installed `base` and `base-x`, which correspond to the Base and X Window System package groups, respectively, as shown by the following commands

```
<grouplist>
  <groupreq>base</groupreq>
  <groupreq>base-x</groupreq>
</grouplist>
```

There are mandatory, default, and optional packages in this group. Table W5.26 describes the mandatory packages.

**TABLE W5.26: SOUND AND VIDEO MANDATORY PACKAGES**

NAME	DESCRIPTION
amix	Installs an interactive control for a sound card mixer
sox	Adds a sound file format converter
vorbis-tools	Includes a sound encoder and playback tool

The default packages for the Sound and Video package group are briefly described in Table W5.27.

**TABLE W5.27: SOUND AND VIDEO DEFAULT PACKAGES**

NAME	DESCRIPTION
<code>cdda2wav</code>	Installs a CD music player/sampling utility
<code>cdlabelgen</code>	Adds a utility for creating CD jewelcase covers
<code>cdp</code>	Allows you to play CDs in a text console
<code>cdparanoia</code>	Reads audio from a CD and writes to a file
<code>cdrecord</code>	Installs a CD recording application for sound and data
<code>dvdrecord</code>	Adds a utility for creating sound and data CDs and DVDs
<code>grip</code>	Includes a GUI interface for <code>cdparanoia</code> and <code>cdda2wav</code>
<code>gtoaster</code>	Installs a CD creator, designed for use in GNOME
<code>xawtv</code>	Includes a TV viewer for Linux
<code>xmms</code>	Installs a multimedia player; supports playlists

The optional packages for the Sound and Video package group are briefly described in Table W5.28.

**TABLE W5.28: SOUND AND VIDEO OPTIONAL PACKAGES**

NAME	DESCRIPTION
<code>dvgrab</code>	Installs a utility that captures digital video attached via an IEEE 1394 connection
<code>kdemultimedia</code>	Includes a group of multimedia applications designed for the KDE desktop
<code>mikmod</code>	Adds a music file player
<code>sndconfig</code>	Installs a text-based sound configuration utility; deprecated and may be removed in a future release of Red Hat Linux
<code>xcdroast</code>	Includes a GUI interface for CD management commands such as <code>cdrecord</code> and <code>mkisofs</code>
<code>xmms-skins</code>	Adds several custom graphical views of the <code>xmms</code> player

## Authoring and Publishing

The Authoring and Publishing package group is visible during the Red Hat Linux installation process. It supports the packages behind the DocBook format, along with converters to other graphical formats, including HTML, PostScript, and PDF. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, Authoring and Publishing won't work unless you've also installed `base`, which corresponds to the Base package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

There are mandatory and default packages in this group. The mandatory packages are briefly described in Table W5.29.

**TABLE W5.29: AUTHORING AND PUBLISHING MANDATORY PACKAGES**

NAME	DESCRIPTION
<code>docbook-style-dsssl</code>	Installs style sheets for converting DocBook files to other formats
<code>docbook-utils</code>	Includes scripts that convert DocBook files to other formats
<code>docbook-utils-pdf</code>	Adds scripts for converting DocBook files to PDF
<code>linuxdoc-tools</code>	Installs text formatting tools for the Standard Generalized Markup Language (SGML)
<code>tetex</code>	Adds the TeX document formatting system
<code>tetex-afm</code>	Includes a converter for PostScript fonts
<code>xmlto</code>	Installs converters for XML files

The default packages for the Authoring and Publishing package group are briefly described in Table W5.30.

**TABLE W5.30: AUTHORING AND PUBLISHING DEFAULT PACKAGES**

NAME	DESCRIPTION
<code>xhtml1-dtds</code>	Installs the Document Type Definitions (DTD) associated with XHTML
<code>tetex-xdvi</code>	Allows previews of TeX document output

## Graphics

The Graphics package group is visible during the Red Hat Linux installation process. It contains various graphical applications, including ImageMagick and The GIMP. This package group is installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `base` and `base-x`, which correspond to the Base and X Window System package groups, respectively, as shown by the following commands:

```
<grouplist>
  <groupreq>base</groupreq>
  <groupreq>base-x</groupreq>
</grouplist>
```

There are default and optional packages in this group. The default packages are briefly described in Table W5.31.

**TABLE W5.31: GRAPHICS DEFAULT PACKAGES**

NAME	DESCRIPTION
ImageMagick	Installs an image display and manipulation program
sane-frontends	Adds the xscanimage program; can also be used as a plug-in for The GIMP
xsane	Includes a GUI interface for the SANE library; supports scanner access
xsane-gimp	Installs the xsane front end for the SANE scanner program; also works as a plug-in for The GIMP
dia	Adds the dia drawing program; used for diagrams
gimp	Installs The GIMP, the GNU Image Manipulation Program
gimp-data-extras	Adds extra patterns for use by The GIMP
gimp-print-plugin	Allows The GIMP to communicate with your printer
gtkam	Installs a GTK+ GUI front end for the gphoto2 digital camera interface
netpbm-progs	Includes scripts for converting between graphics formats

The optional packages for the Graphics package group are briefly described in Table W5.32.

**TABLE W5.32: GRAPHICS OPTIONAL PACKAGES**

NAME	DESCRIPTION
gtkam-gimp	Installs a plug-in for The GIMP with an interface through gphoto2
kdegraphics	Includes a number of KDE graphics applications
xfig	Adds a GUI tool

## Games and Entertainment

The Games and Entertainment package group is visible during the Red Hat Linux installation process. It includes games associated with GNOME and KDE, as well as several specialized games. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `base`, which corresponds to the Base package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

From a practical point of view, many of these packages also require the X Window and at least the GNOME or KDE package groups. The group includes a mandatory and several default packages. The one mandatory package is

```
joystick
```

which provides Linux support for a number of joystick and related devices. The other Games and Entertainment packages, all installed by default, are briefly described in Table W5.33.

**TABLE W5.33: GAMES AND ENTERTAINMENT DEFAULT PACKAGES**

NAME	DESCRIPTION
Maelstrom	Installs a game that simulates space combat with asteroids and other ships
chromium	Adds a cargo ship–based war game
freeciv	Includes a game similar to Civilization II
gnome-games	Installs a suite of games designed for GNOME
kdegames	Installs a suite of games designed for KDE
tuxracer	Includes a game with a penguin sliding down a snowy mountain
xboard	Adds a graphical chessboard that can be used with GNUchess

## Servers

There are nine Servers package groups. As defined by their name in the `comps.xml` file, they are Server Configuration Tools, Web Server, Mail Server, Windows File Server, DNS Name Server, FTP Server, SQL Database Server, News Server, and Network Servers.

### Server Configuration Tools

The Server Configuration Tools package group is visible during the Red Hat Linux installation process. It includes various tools developed by Red Hat for servers from DNS through printers. While this package group is not installed by default when you install Red Hat Linux, these tools are helpful to any system administrator.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `base`, which corresponds to the Base package group, as shown by these commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

In reality, this also requires the X Window System package group, since only a few of these tools work outside the GUI. There are default and optional packages in this group. The default packages are briefly described in Table W5.34.

**TABLE W5.34: SERVER CONFIGURATION TOOLS PACKAGES**

NAME	DESCRIPTION
redhat-config-bind	Installs a configuration tool for a DNS server
redhat-config-httpd	Adds a configuration tool for an Apache web server
redhat-config-nfs	Includes a configuration tool for an NFS server
redhat-config-network	Installs an all-in-one network configuration tool
redhat-config-printer	Adds a printer configuration utility; works with CUPS and LPD
redhat-config-printer-gui	Includes a GUI for redhat-config-printer
redhat-config-samba	Installs a GUI tool for sharing with Microsoft Windows via Samba
redhat-config-securitylevel	Adds a firewall configuration tool
redhat-config-services	Allows you to configure services at different runlevels

The optional packages for the Server Configuration Tools package group are briefly described in Table W5.35.

**TABLE W5.35: SERVER CONFIGURATION TOOLS OPTIONAL PACKAGES**

NAME	DESCRIPTION
redhat-switch-printer	Installs an interface that allows you to switch between print daemons such as CUPS and LPD
redhat-switch-printer-gnome	Adds a GNOME interface for the redhat-switch-printer utility
redhat-switch-mail	Installs an interface that allows you to switch between mail transport agents
redhat-switch-mail-gnome	Adds a GNOME interface for the redhat-switch-mail utility

## Web Server

The Web Server package group is visible during the Red Hat Linux installation process. It includes various tools and modules for Apache as well as the TUX web servers. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `base`, which corresponds to the Base package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

Believe it or not, you don't have to install the X Window System package group. Web servers can be tested from remote computers. There are mandatory, default, and optional packages in this group. One mandatory package is associated with this group: the Apache web server, also known as

`httpd`

The default packages for the Web Server package group are briefly described in Table W5.36.

**TABLE W5.36: WEB SERVER DEFAULT PACKAGES**

NAME	DESCRIPTION
<code>httpd-manual</code>	Installs a complete manual for Apache
<code>hwcrypto</code>	Allows interfaces with Linux hardware cryptographic accelerators
<code>mod_python</code>	Adds a Python language interpreter to Apache
<code>mod_perl</code>	Adds a Perl language interpreter to Apache
<code>mod_ssl</code>	Includes SSL security in Apache
<code>php</code>	Installs PHP for dynamic scripts (PHP stands for "PHP: Hypertext Preprocessor")
<code>php-imap</code>	Provides IMAP mail server support to PHP applications through Apache
<code>php-ldap</code>	Allows LDAP support for PHP applications through Apache
<code>squid</code>	Installs a proxy server
<code>tux</code>	Adds a kernel-based web server
<code>webalizer</code>	Includes a log analysis program for your web server

The optional packages for the Web Server package group are briefly described in Table W5.37.

**TABLE W5.37: WEB SERVER OPTIONAL PACKAGES**

NAME	DESCRIPTION
<code>php-odbc</code>	Allows PHP interaction with Open Data Base Connectivity (ODBC)-based databases
<code>php-mysql</code>	Implements PHP support of MySQL-based databases
<code>php-pgsql</code>	Installs a PHP interface with PostgreSQL-based databases
<code>mod_auth_pgsq1</code>	Allows access limits to PostgreSQL-databases
<code>mod_auth_mysql</code>	Supports access limits to MySQL-based databases

## Mail Server

The Mail Server package group is visible during the Red Hat Linux installation process. It includes various servers and transport agents for sending and receiving e-mail. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `base`, which corresponds to the Base package group, as shown by these commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

One mandatory package is associated with this group:

```
sendmail
```

which may be the most common e-mail server on the Internet. There are also default Mail Server packages, as briefly described in Table W5.38.

**TABLE W5.38: MAIL SERVER DEFAULT PACKAGES**

NAME	DESCRIPTION
imap	Installs the IMAP and POP incoming e-mail servers
sendmail-cf	Adds the files and scripts to create a sendmail configuration file

There are also optional Mail Server packages, briefly described in Table W5.39.

**TABLE W5.39: MAIL SERVER OPTIONAL PACKAGES**

NAME	DESCRIPTION
mailman	Installs software to help manage e-mail discussion lists
spamassassin	Includes programs that can reduce spam
squirrelmail	Adds a web-based e-mail package
postfix	A mail transport agent (MTA) that works in a chroot environment

## Windows File Server

The Windows File Server package group is visible during the Red Hat Linux installation process. It's a simple group; it includes a client and a server for connecting to other computers in a Microsoft Windows-based network. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `base`, which corresponds to the Base package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

There are two packages in this group; both are mandatory. If you review the dependencies in `comps.xml`, you'll find that `samba-common` is also required. The packages are shown in Table W5.40.

**TABLE W5.40: WINDOWS FILE SERVER PACKAGES**

NAME	DESCRIPTION
samba-client	Includes commands that allow you to view and connect to shared directories and printers on a Microsoft Windows-based network
samba	Installs the basic server services required to share directories and printers with other computers on a Microsoft Windows-based network

## DNS Name Server

The DNS Name Server package group is visible during the Red Hat Linux installation process. It's a simple group; it includes a caching and actual name server program for a network. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `base`, which corresponds to the Base package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

There are two packages in this group; while `bind` is mandatory, `caching-nameserver` is installed by default. These packages are briefly described in Table W5.41.

**TABLE W5.41: DNS NAME SERVER PACKAGES**

NAME	DESCRIPTION
bind	Installs the Berkeley Internet Name Domain software, which configures a DNS server on Linux
caching-nameserver	Adds the configuration files required to let the local computer maintain a cache of common requests from a DNS server

## FTP Server

The FTP Server package group is visible during the Red Hat Linux installation process. It's a simple group with the default FTP server used on `ftp.redhat.com`. As you can see in the `comps.xml` file, this group won't work unless you've also installed `base`, which corresponds to the Base package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

The one package in this group is associated with the very secure FTP daemon:

```
vsftpd
```

**NOTE** *The Washington University FTP daemon is no longer included with Red Hat Linux but is still available from ftp.wu-ftp.org.*

## SQL Database Server

The SQL Database Server package group is visible during the Red Hat Linux installation process. The mandatory packages configure the PostgreSQL server for Linux. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `base`, which corresponds to the Base package group, as shown by these commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

All packages except one are mandatory; the following is optional:

```
mysql-server
```

This implements the MySQL database server package.

The mandatory packages included with the SQL Database Server group are briefly described in Table W5.42.

**TABLE W5.42: SQL DATABASE SERVER PACKAGES**

NAME	DESCRIPTION
perl-DBD-Pg	Installs a Database Interface (DBI) implementation in Perl for PostgreSQL
perl-DB_File	Adds database file modules for Perl
postgresql-server	Installs the programs needed for a PostgreSQL server
unixODBC	Supports database access through ODBC-based databases

## News Server

The News Server package group is visible during the Red Hat Linux installation process. It's a simple group, with one package. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `base`, which corresponds to the Base package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

The one package in this group

```
inn
```

installs the InterNetNews package, which sets up a Usenet-style newsgroup system.

## Network Servers

The Network Servers package group is visible during the Red Hat Linux installation process. It includes various network applications, such as DHCP, RSH, and Telnet. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `base`, the Base package group, as shown by the following commands:

```
<grouplist>
  <groupreq>base</groupreq>
</grouplist>
```

This group includes both default and optional packages. The default packages are briefly described in Table W5.43.

**TABLE W5.43: NETWORK SERVERS DEFAULT PACKAGES**

NAME	DESCRIPTION
<code>cipe</code>	Installs the Crypto IP Encapsulation server, which supports Virtual Private Network (VPN) connections
<code>finger-server</code>	Adds the finger server package, which maintains information about users on your system
<code>pxe</code>	Includes the Preboot Execution Environment (PXE), which allows Linux to start from a remote boot disk image
<code>rsh-server</code>	Installs the Remote Shell ( <code>rsh</code> ), which allows login connections to remote computers
<code>talk-server</code>	Provides the daemon programs to support the Internet talk protocol
<code>telnet-server</code>	Installs the Telnet server, which allows remote users to use <code>telnet</code> to log into your computer
<code>ypserv</code>	Adds the Network Information Service (NIS) server, which consolidates authentication and other selected files in a common network database

The optional packages included with the Network Servers group are briefly described in Table W5.44.

**TABLE W5.44: NETWORK SERVERS OPTIONAL PACKAGES**

NAME	DESCRIPTION
<code>amanda-server</code>	Installs a backup application; also requires <code>amanda</code> and possibly <code>amanda-client</code>
<code>am-utils</code>	Adds a version of the Amd automounter, which maintains a cache of mounted filesystems
<code>dhcp</code>	Includes the DHCP (Dynamic Host Configuration Protocol) server
<code>krb5-server</code>	Installs the programs associated with the Kerberos 5 server
<code>radvd</code>	Adds the advertisement daemon associated with an IPv6 network
<code>vnc-server</code>	Installs a server that allows remote access of the desktop from a variety of different operating systems
<code>zebra</code>	Includes the routing server that supports various RIP (Routing Information Protocol), OSPF (Open Shortest Path First), and BGP (Border Gateway Protocol) style protocols

## Development

There are six Development package groups. As defined by their name in the `comps.xml` file, they are Development Tools, Kernel Development, X Software Development, GNOME Software Development, KDE Software Development, and Development Libraries. None of these groups are installed by default. A Legacy Software Development package is also available, primarily for programs that require older C language libraries.

A substantial number of packages in this section relate to programming language libraries and utilities. Since this is not a book on programming, the description of each package may motivate you to look at a book on Linux programming.

### Development Tools

The Development Tools package group is visible during the Red Hat Linux installation process. It includes a wide variety of tools suitable for developers and those who need to recompile certain applications. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `development-libs`, the Development Libraries package group, as shown by the following commands:

```
<grouplist>
  <groupreq>development-libs</groupreq>
</grouplist>
```

There are mandatory, default, and optional packages in this group. Table W5.45 briefly describes the mandatory packages.

**TABLE W5.45: DEVELOPMENT TOOLS MANDATORY PACKAGES**

NAME	DESCRIPTION
autoconf	Adds a tool for configuring source code and creating a Makefile
automake	Installs a Makefile generator
binutils	Includes a collection of binary utilities
bison	Adds a C language development tool
byacc	Incorporates a tool used during a program build process
cdecl	Used to translate from English to C or C++ programming language declarations
dev86	Includes an assembler and linker for real-mode programs, including LILO and the kernel bootstrap routine
flex	Installs programs that can search for text inside files
gcc	Adds the GNU C compilers
gcc-c++	Includes C++ support for the GNU C compiler
gdb	Installs the GNU debugger for C and C++
gettext	Includes tools for setting up messages in multiple languages

*Continued on next page*

**TABLE W5.45:** DEVELOPMENT TOOLS MANDATORY PACKAGES (*continued*)

NAME	DESCRIPTION
libtool	Adds the GNU libtool to build shared libraries
make	Controls processing from source files
perl-CPAN	Adds CPAN (Comprehensive Perl Archive Network) modules to Perl
pkgconfig	Installs tools to determine the way programs are compiled
python-devel	Allows the development of Python language extensions
rpm-build	Includes the scripts required to build RPM packages
redhat-rpm-config	Installs Red Hat-specific RPM configuration files
strace	Adds a program that records system calls from a running process
texinfo	Installs the TeX documentation system

The default packages included with the Development Tools group are briefly described in Table W5.46.

**TABLE W5.46:** DEVELOPMENT TOOLS DEFAULT PACKAGES

NAME	DESCRIPTION
automake14	Installs automake version 1.4
automake15	Installs automake version 1.5
cvs	Incorporates the Concurrent Version System (CVS)
diffstat	Adds diffstat, which summarizes output from diff
doxygen	Includes a program that generates HTML browsers and LaTeX reference manuals
gcc-g77	Supports processing Fortran 77 programs with the GNU C language compiler
gcc-gnat	Incorporates an Ada 95 language front end for the GNU C language compiler
gcc-java	Adds support for Java
indent	Installs a program that formats C language instructions
ltrace	Includes a debugging program that reads signals and system calls
memprof	Adds a tool to create a memory usage profile; can detect memory leaks
patchutils	Includes a group of utilities that can manage a group of patch files
rsc	Incorporates the Revision Control System (RCS) for file version control
splint	Adds a C language checker

The optional packages included with the Development Tools group are briefly described in Table W5.47.

**TABLE W5.47: DEVELOPMENT TOOLS OPTIONAL PACKAGES**

NAME	DESCRIPTION
ElectricFence	Installs a C language programming/debugging utility
cproto	Adds a C language generator of function prototypes and variable declarations
ddd	Includes a debugger of programs in several programming languages
dejagnu	Installs a TCL-based configuration for program testing
dmalloc	Adds the debug memory allocation library
expect	Incorporates a TCL language extension for automating interactive utilities
gcc-objc	Supports the GNU C language compiler with Objective C support
nasm	Installs the Netwide Assembler for real-mode programs
njamd	Supports malloc with a debugger
pmake	Installs the BSD version of make
pstack	Adds a utility that dumps the stack trace for a process

## Kernel Development

The Kernel Development package group is visible during the Red Hat Linux installation process. It includes four packages that can help you when reconfiguring your Linux kernel. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `development-libs`, the Development Libraries package group, as shown by these commands:

```
<grouplist>
  <groupreq>development-libs</groupreq>
</grouplist>
```

All packages except one are mandatory; the following is optional:

```
tk
```

This implements the X Window widgets that interact with the TCL scripting language. You'll need it (and `tc1`) if you want to configure the kernel in an X Window interface.

The mandatory packages are briefly described in Table W5.48.

**TABLE W5.48: KERNEL DEVELOPMENT MANDATORY PACKAGES**

NAME	DESCRIPTION
kernel-source	Installs the source code for the Linux kernel
libattr-devel	Adds libraries and headers for programs that need extended attributes
libacl-devel	Adds libraries and headers for programs that use access control lists

## X Software Development

The X Software Development package group is visible during the Red Hat Linux installation process. It includes the packages and libraries that help you develop applications for the Linux X Window system. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `development-tools`, the Development Tools package group, as shown by these commands:

```
<grouplist>
  <groupreq>development-tools</groupreq>
</grouplist>
```

There are mandatory and default packages in this group. The mandatory packages are briefly described in Table W5.49.

**TABLE W5.49: X SOFTWARE DEVELOPMENT MANDATORY PACKAGES**

NAME	DESCRIPTION
<code>Glide3-devel</code>	Installs headers, documentation, and test files for the 3Dfx Voodoo graphics card series
<code>XFree86-devel</code>	Adds libraries, headers, and documentation needed to develop X Window applications
<code>Xaw3d-devel</code>	Includes an enhanced version of the MIT Athena widget set
<code>gd-devel</code>	Installs libraries and headers for the <code>gd</code> graphics library
<code>libjpeg-devel</code>	Adds headers and libraries for programs that manipulate JPEG graphics files
<code>libtiff-devel</code>	Adds headers and libraries for programs that manipulate TIFF graphics files
<code>libpng-devel</code>	Adds headers and libraries for programs that manipulate PNG graphics files
<code>libmng-devel</code>	Includes a library for accessing graphics files in MNG and JNG format
<code>libungif-devel</code>	Adds headers and libraries for programs that manipulate GIF files
<code>freetype-devel</code>	Adds headers and libraries for programs that use the FreeType (TrueType clone) library
<code>netpbm-devel</code>	Installs the headers and libraries associated with <code>netpbm</code>

The default packages included with the X Software Development group are briefly described in Table W5.50.

**TABLE W5.50: X SOFTWARE DEVELOPMENT DEFAULT PACKAGES**

NAME	DESCRIPTION
<code>lesstif-devel</code>	Installs the <code>lesstif</code> library and headers associated with Motif development
<code>libpng10-devel</code>	Adds the libraries and headers associated with PNG version 1.0
<code>openmotif-devel</code>	Includes the Open Motif 2.2.1 development environment

*Continued on next page*

**TABLE W5.50:** X SOFTWARE DEVELOPMENT DEFAULT PACKAGES (*continued*)

NAME	DESCRIPTION
SDL-devel	Installs the Simple DirectMedia Layer (SDM) multimedia library and more
SDL_image-devel	Includes the SDL image loading library in SDL-devel
SDL_mixer-devel	Includes an audio mixer in SDL-devel
SDL_net-devel	Incorporates libraries for SDL networked applications

## GNOME Software Development

The GNOME Software Development package group is visible during the Red Hat Linux installation process. It includes the packages and libraries that help you develop applications for the Linux X Window system. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `x-software-development`, the X Software Development package group, as shown by these commands:

```
<grouplist>
  <groupreq>x-software-development</groupreq>
</grouplist>
```

There is one optional package:

```
glade
```

This implements a user interface builder for GTK+ widgets for GNOME applications.

There are also mandatory and default packages in this group. Table W5.51 briefly describes the mandatory packages.

**TABLE W5.51:** GNOME SOFTWARE DEVELOPMENT MANDATORY PACKAGES

NAME	DESCRIPTION
glib-devel	Installs static libraries and headers for GTK+
glib2-devel	Adds more to glib-devel
gtk+-devel	Includes static libraries, headers, and documentation for GTK+ development
GConf-devel	Incorporates the GConf development package
GConf2-devel	Adds more to GConf-devel
ORBit-devel	Installs headers, libraries, and utilities that support Common Object Request Broker Architecture (COBRA)
ORBit2-devel	Adds more to ORBit-devel
atk-devel	Includes libraries, headers, and documentation associated with the Application Tool Kit (ATK)

*Continued on next page*

**TABLE W5.51:** GNOME SOFTWARE DEVELOPMENT MANDATORY PACKAGES (*continued*)

NAME	DESCRIPTION
bonobo-activation-devel	Configures a framework for activating objects
bonobo-devel	Adds the libraries associated with the Bonobo document model
eel2-devel	Incorporates development libraries associated with the Eazel Extensions Language (EEL)
fontconfig-devel	Installs the headers and documents associated with fontconfig
gail-devel	Supports compiling against the GNOME Accessibility Implementation Libraries (GAIL)
gal-devel	Supports application development with the GNOME Application Library (GAL)
gdk-pixbuf-devel	Installs libraries, headers, and “include” files associated with the GdkPixBuf image loading library
gnome-libs-devel	Adds library and “include” files associated with GNOME applications
gnome-print-devel	Supports GNOME print-related application development
gnome-vfs-devel	Includes development libraries associated with the GNOME virtual file system (VFS)
gnome-vfs2-devel	Adds more to gnome-vfs-devel
gtkhtml-devel	Installs libraries and “include” files associated with GtkHTML applications
gtk-doc	A document builder related to GTK+, GLib, and GNOME
libIDL-devel	Adds a library for parsing the Interface Development Language (IDL)
libart_lgpl-devel	Installs graphics routines used by GnomeCanvas
libbonobo-devel	Includes headers required to compile Bonobo-based programs
libbonoboui-devel	Includes header files associated with the libbonobo user interface
libglade-devel	Adds libraries and “include” files associated with libglade (which is associated with XML)
libglade2-devel	Adds more to libglade-devel
libgnome-devel	Supports compiling GNOME applications
libgnomecanvas-devel	Allows creation of custom display objects
libgnomeui-devel	Supports compiling GNOME user interface applications
libgtop-devel	Supports the GNOME version of top with library and “include” files
libole2-devel	Adds library and “include” files for OLE (Object Linking and Embedding) applications

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**TABLE W5.51:** GNOME SOFTWARE DEVELOPMENT MANDATORY PACKAGES (*continued*)

NAME	DESCRIPTION
librsvg-devel	Installs development libraries and “include” files needed to support Scalable Vector Graphics (SVG) applications
librsvg2-devel	Adds more to librsvg-devel
libunicode-devel	Installs libraries and headers to support Unicode strings
libxslt-devel	Adds libraries to transform XML files
linc-devel	Incorporates headers and more libraries associated with the linc library for network applications
oaf-devel	Adds a library for OAF (Objects Activated by Factories) applications
pango-devel	Adds libraries, headers, and documentation associated with Pango, a system for international text

The default packages included with the GNOME Software Development group are briefly described in Table W5.52.

**TABLE W5.52:** GNOME SOFTWARE DEVELOPMENT DEFAULT PACKAGES

NAME	DESCRIPTION
bug-buddy	Installs a GNOME bug reporting utility
pygtk2-devel	Includes files to build pygtk wrappers for GTK+ libraries
Guppi-devel	Adds programs that use the Guppi libraries for data analysis
bonobo-conf-devel	Installs libraries and “include” files associated with the Bonobo configuration monitor
gnome-pilot-devel	Adds libraries and “include” files for GNOME handheld computer applications such as the PalmPilot
imlib-devel	Includes the development tools for the X Window image library
glade2	Installs Glade for GTK+ 2.0

## KDE Software Development

The KDE Software Development package group is visible during the Red Hat Linux installation process. It includes the packages and libraries that help you develop applications for the Linux X Window system. This package group is not installed by default when you install Red Hat Linux.

As you can see in the `comps.xml` file, this group won't work unless you've also installed `x-software-development`, the X Software Development package group, as shown by these commands:

```
<grouplist>
  <groupreq>x-software-development</groupreq>
</grouplist>
```

All the packages in this group, if you choose to install it, are mandatory. These packages are briefly described in Table W5.53.

**TABLE W5.53: KDE SOFTWARE DEVELOPMENT PACKAGES**

NAME	DESCRIPTION
<code>PyQt-devel</code>	Installs files needed for bindings to C++ command classes
<code>arts-devel</code>	Supports development of applications for the Analog Real-Time Synthesizer (ARTS)
<code>cdparanoia-devel</code>	Adds libraries and headers needed to read CD audio disks
<code>cups-devel</code>	Includes the development package to create more printer drivers and other CUPS services
<code>kdbg</code>	Installs a front end for the GNU Debugger (gdb)
<code>kdebase-devel</code>	Supports headers for kdebase applications such as Konqueror or Kate
<code>kdelibs-devel</code>	Includes headers required to compile applications for KDE
<code>kdenetwork-devel</code>	Adds development files for working with KDE networking applications
<code>kdesdk</code>	Installs the KDE Software Development Kit (SDK)
<code>kdesdk-devel</code>	Includes development files for working with or compiling KDE SDK applications
<code>kdepim-devel</code>	Adds libraries for KDE Personal Information Manager (kdepim) plug-ins
<code>kdevelop</code>	Provides a unified KDE interface for programs such as gdb, the GNU C language compiler, and make
<code>kdeutils-devel</code>	Adds development files for KDE utilities
<code>kdegraphics-devel</code>	Includes development files for KDE graphics applications
<code>pilot-link-devel</code>	Installs development headers for linking to handheld computers
<code>qt-designer</code>	Contains a user interface for the Qt toolkit
<code>qt-devel</code>	Includes development files that support creating GUI applications with the Qt toolkit
<code>sane-backends-devel</code>	Adds libraries and headers associated with scanner interfaces
<code>sip-devel</code>	Installs files used to create Python bindings for C++ classes libraries
<code>libxslt-devel</code>	Adds libraries to transform XML files

## Development Libraries

The Development Libraries package group is not visible by default. There are a large number of packages in this group; two are installed by default, and the remaining packages are mandatory. If you want to work with this package group during the installation process, you need to change the following line from:

```
<uservisible>>false</uservisible>
```

to

```
<uservisible>>true</uservisible>
```

The mandatory packages are briefly described in Table W5.54.

**TABLE W5.54: DEVELOPMENT LIBRARIES MANDATORY PACKAGES**

NAME	DESCRIPTION
curl-devel	Installs a tool for getting files from remote servers
cyrus-sasl-devel	Allows developers to compile applications using the Cyrus SASL (Simple Authentication and Security Layer) library
db4-devel	Supports embedded databases
db4-utils	Adds utilities for supporting embedded databases
dialog	Allows support of dialog boxes in text-mode interfaces
expat-devel	Installs libraries and “include” files to develop XML applications
fam-devel	Supports libraries and headers for the File Alteration Monitor (FAM)
gdbm-devel	Adds libraries and headers for the GNU database system
gmp-devel	Adds libraries and headers for the GNU MP package for arbitrary precision arithmetic
gpm-devel	Installs libraries and headers for mouse control at the console text interface
hesiod-devel	Includes headers and libraries to support Hesiod on DNS
krb5-devel	Includes headers and libraries to support Kerberos 5 programs
krbafs-devel	Includes headers and libraries to support an AFS network with Kerberos IV tokens
kudzu-devel	Installs the libkudzu library for hardware probing and configuration
libcap-devel	Allows development of applications to libcap
libtermcap-devel	Includes headers and libraries to support programs that define the capabilities of a terminal
libusb-devel	Allows development of applications that access USB devices
libuser-devel	Installs files required for developing interfaces for managing users and groups
libxml-devel	Installs the files required to customize applications that manage XML files

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**TABLE W5.54:** DEVELOPMENT LIBRARIES MANDATORY PACKAGES (*continued*)

NAME	DESCRIPTION
libxml2-devel	Adds to libxml-devel
lockdev-devel	Installs libraries that support locking of various devices
modutils-devel	Allows other programs to use insmod and rmmod
ncurses-devel	Includes libraries required to support ncurses menus on a terminal screen
newt-devel	Adds headers and libraries for Newt text-mode style applications
openldap-devel	Adds headers and libraries for LDAP applications
openssl-devel	Installs a toolkit that supports cryptography
pam-devel	Includes headers and libraries that support Pluggable Authentication Modules (PAM)
pciutils-devel	Adds a library for inspecting and setting PCI devices
readline-devel	Includes functions that allow users to edit typed command lines
rpm-devel	Installs the RPM C library and header files
slang-devel	Adds the S-Lang extension libraries and headers
swig	Installs the Simplified Wrapper and Interface Generator (SWIG) for connecting C and C++ programs with higher-level languages
zlib-devel	Includes the headers and libraries needed to support zlib compression and decompression

The default packages included with the Development Libraries group are briefly described in Table W5.55.

**TABLE W5.55:** DEVELOPMENT LIBRARIES DEFAULT PACKAGES

NAME	DESCRIPTION
libogg-devel	Installs a library that supports sound development
libvorbis-devel	Supports a streaming media format similar to MP3

## Legacy Software Development

The Legacy Software Development package group is not visible and is not installed by default. If you want to work with this package group during the installation process, you need to change the following line from:

```
<uservisible>>false</uservisible>
```

to

```
<uservisible>>true</uservisible>
```

There are five mandatory packages associated with this group, briefly described in Table W5.56.

**TABLE W5.56: LEGACY SOFTWARE DEVELOPMENT PACKAGES**

NAME	DESCRIPTION
compat-gcc	Includes older (pre-3.0) GNU C language compilers; suitable for creating software for Red Hat Linux 7.3 and below
compat-gcc-c++	Includes older (pre-3.0) GNU C++ language compilers; suitable for creating software for Red Hat Linux 7.3 and below
compat-gcc-g77	Includes older Fortran 77 language compilers; suitable for creating software for Red Hat Linux 7.3 and below
compat-libstdc++	Includes older C++ language libraries; suitable for creating software for Red Hat Linux 6.2 and KDE 1.x and below
compat-libstdc++-devel	Includes older C++ language libraries and headers; suitable for creating software for Red Hat Linux 7.3 and below

## System

There are three System package groups. As defined by their name in the `comps.xml` file, they are Administration Tools, System Tools, and Printing Support. None of these groups are installed by default.

### Administration Tools

The Administration Tools package group is visible during the Red Hat Linux installation process. It includes various tools developed by Red Hat for configuring a local computer. While this package group is not installed by default when you install Red Hat Linux, these tools are very helpful to any system administrator.

Unlike many other packages, Administration Tools does not directly depend on other package groups. However, some of the individual packages do have dependencies.

In reality, this also requires the X Window System package group, because only a few of these tools work outside the GUI. All of the packages in this group are normally installed by default. In other words, once you select this package group, you can deselect any of the individual packages shown in Table W5.57.

**TABLE W5.57: ADMINISTRATION TOOLS PACKAGES**

NAME	DESCRIPTION
authconfig-gtk	Installs a program that can help you configure your computer to use shadow passwords and more
redhat-config-date	Adds a GUI interface for date, time, time zone, and the NTP daemon

*Continued on next page*

**TABLE W5.57: ADMINISTRATION TOOLS PACKAGES** (*continued*)

NAME	DESCRIPTION
redhat-config-keyboard	Allows users to change the default system keyboard
redhat-config-kickstart	Lets users open a GUI interface for creating Kickstart files
redhat-config-language	Allows users to change the default system language
redhat-config-rootpassword	Installs a GUI interface for changing the password for the root user
redhat-config-soundcard	Adds a GUI interface for detecting and configuring a sound card
redhat-config-users	Installs a GUI interface for configuring users and groups
redhat-config-packages	Includes the Red Hat Package Manager, which looks similar to some graphical installation screens
redhat-config-proc	Allows you to configure tunable parameters for optimizing your system
redhat-logviewer	Installs a GUI interface for viewing major log files

## System Tools

The System Tools package group is visible during the Red Hat Linux installation process. It includes various administrative applications such as `amanda-client`, `gnome-lookit`, and `vnc`. This package group is not installed by default when you install Red Hat Linux.

This group contains both default and optional packages. The default packages are briefly described in Table W5.58.

**TABLE W5.58: SYSTEM TOOLS DEFAULT PACKAGES**

NAME	DESCRIPTION
etherreal	Installs a network traffic analyzer (a.k.a. <i>sniffer</i> )
nmap	Adds a utility for network exploration and auditing
samba-client	Includes Samba client utilities
screen	Installs a screen manager for multiple logins on a single terminal
xdelta	Adds a program associated with revision-control packages

The optional packages included with the System Tools group are briefly described in Table W5.59.

**TABLE W5.59: SYSTEM TOOLS OPTIONAL PACKAGES**

NAME	DESCRIPTION
<code>amanda-client</code>	Installs a client for computers to be backed up by the Amanda system
<code>ethtool-gnome</code>	Adds a GNOME interface for <code>ethtool</code>
<code>mc</code>	Installs Midnight Commander, a text-mode visual file manager interface
<code>nmap-frontend</code>	Adds a GTK+ front end for <code>nmap</code>
<code>rdesktop</code>	Includes a client for Microsoft Windows Terminal Server
<code>shaper</code>	Installs a network traffic shaper
<code>tsclient</code>	Adds a front end usable by <code>rdesktop</code> and <code>vnc</code>
<code>vnc</code>	Installs the Virtual Network Computing (VNC) system, which can open a window on a remote computer

## Printing Support

The Printing Support package group is visible during the Red Hat Linux installation process. It includes packages associated with both major print services, CUPS and LPD. This package group is not installed by default when you install Red Hat Linux.

There are mandatory, default, and optional packages in this group. The mandatory packages are briefly described in Table W5.60.

**TABLE W5.60: PRINTING SUPPORT MANDATORY PACKAGES**

NAME	DESCRIPTION
<code>4Suite</code>	Installs XML-related tools and libraries
<code>XFree86-font-utils</code>	Adds <code>mkfontdir</code> and <code>ttmkfdir</code> for installing font packages
<code>a2ps</code>	Includes the <code>a2ps</code> filter for converting to PostScript format
<code>ghostscript</code>	Provides a GNU PostScript interpreter
<code>ttfprint</code>	Installs a utility that creates a PostScript file from a Chinese text file
<code>redhat-config-printer</code>	Adds a printer configuration utility; works with CUPS and LPD

The default packages included with the Printing Support group are briefly described in Table W5.61.

**TABLE W5.61: PRINTING SUPPORT DEFAULT PACKAGES**

NAME	DESCRIPTION
cups	Installs the Common Unix Printing System, the new default Red Hat Linux print service
hpijs	Adds drivers for HP printers

There are also optional Printing Support packages, briefly described in Table W5.62.

**TABLE W5.62: PRINTING SUPPORT OPTIONAL PACKAGES**

NAME	DESCRIPTION
LPRng	Implements the Line Print Daemon, which is the old default print service before Red Hat Linux 9
redhat-switch-printer	Includes the printing system switcher; allows you to switch between CUPS and LPD

## Other Package Groups

Not all package groups are shown when you install Red Hat Linux. For example, the Dialup Networking Support package group was described early in this appendix.

There are several package groups associated with different character sets. They typically install specialized KDE fonts and KDE language support; many also include spell checkers. Some languages include additional packages, such as specialized man pages. Those configured in `comps.xml` are described in Table W5.63.

**TABLE W5.63: LANGUAGE SUPPORT PACKAGE GROUPS**

LANGUAGE/DIALECT	DESCRIPTION
Brazilian	Depends on Portuguese support; includes font and spell check packages
British	Includes British fonts and a spell checker
Canadian	Adds just a spell checker
Catalan	Includes Catalan fonts and a spell checker
Chinese	Installs a variety of fonts, man pages, a dictionary, and more
Cyrillic	Adds several font packages

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**TABLE W5.63: LANGUAGE SUPPORT PACKAGE GROUPS** *(continued)*

<b>LANGUAGE/DIALECT</b>	<b>DESCRIPTION</b>
Czech	Includes Czech fonts and a spell checker; requires ISO8859-2 support
Danish	Includes Danish fonts, man pages, and a spell checker
Dutch	Includes Dutch fonts and a spell checker
Estonian	Includes Estonian fonts; requires ISO8859-2 support
Finnish	Includes KDE Finnish fonts and support
French	Includes French fonts, man pages, and a spell checker
German	Includes German fonts, man pages, and a spell checker
Greek	Includes KDE Greek fonts and support
Hebrew	Includes a couple of Hebrew font packages
Hungarian	Includes Hungarian fonts; requires ISO8859-2 support
Icelandic	Includes KDE Icelandic fonts and support
ISO8859-2	Installs fonts associated with Eastern European languages
ISO8859-9	Installs fonts associated with the Turkish language
Italian	Includes Italian fonts, man pages, and a spell checker
Japanese	Installs a variety of fonts, man pages, a dictionary, and more
Korean	Installs a variety of fonts, man pages, a dictionary, and more
Norwegian	Includes Norwegian fonts and a spell checker
Polish	Includes Polish fonts and man pages; requires ISO8859-2 support
Portuguese	Includes Portuguese fonts and a spell checker
Romanian	Includes Romanian fonts; requires ISO8859-2 support
Russian	Includes Russian fonts and man pages; requires Cyrillic support
Serbian	Includes Serbian fonts; requires ISO8859-2 support
Slovak	Includes Slovak fonts; requires ISO8859-2 support
Slovenian	Includes Slovenian fonts; requires ISO8859-2 support
Spanish	Includes Spanish fonts, man pages, and a spell checker
Swedish	Includes Swedish fonts and a spell checker
Turkish	Includes Turkish fonts; requires ISO8859-9 support
Ukrainian	Includes Russian fonts; requires Cyrillic support