

Beyond Linux From Scratch

Version 5.1-pre1

BLFS Development Team

Beyond Linux From Scratch: Version 5.1-pre1

by BLFS Development Team

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This book follows on from the Linux From Scratch book. It introduces and guides the reader through additions to the system including networking, X support, sound support and printer and scanner support.

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Dedication

This book is dedicated to the LFS community

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Preface

Foreword

Having helped out with Linux From Scratch for a short time, I noticed that we were getting many queries as to how to do things beyond the base LFS system. At the time, the only assistance specifically offered relating to LFS were the LFS hints (<http://www.linuxfromscratch.org/hints>). Most of the LFS hints are extremely good and well written but I (and others) could still see a need for more comprehensive help to go Beyond LFS - hence BLFS.

BLFS aims to be more than the LFS-hints converted to XML although much of our work is based around the hints and indeed some authors write both hints and the relevant BLFS sections. We hope that we can provide you with enough information to not only manage to build your system up to what you want, whether it be a web server or a multimedia desktop system, but also that you will learn a lot about system configuration as you go.

Thanks as ever go to everyone in the LFS/BLFS community especially those who have contributed instructions, written text, answered questions and generally shouted when things were wrong!

Finally, we encourage you to become involved in the community; ask questions on the mailing list or news gateway and join in the fun on #lfs at [irc.linuxfromscratch.org](irc://irc.linuxfromscratch.org). You can find more details about all of these in the Introduction[p.1] section of the book.

Enjoy using BLFS.

Mark Hymers
markh <at> linuxfromscratch.org
BLFS Editor (July 2001 - March 2003)

I still remember how I found the BLFS project and started using the instructions that were completed at the time. I could not believe how wonderful it was to get an application up and running very quickly, with explanations as to why things were done a certain way. Unfortunately, for me, it wasn't long before I was opening applications that had nothing more than "To be done" on the page. I did what most would do, I waited for someone else to do it. It wasn't too long before I am looking through Bugzilla for something easy to do. As with any learning experience, the definition of what was easy kept changing.

We still encourage you to become involved as BLFS is never really finished. Contributing or just using, we hope you enjoy your BLFS experience.

Larry Lawrence
larry <at> linuxfromscratch.org
BLFS Editor (March 2003 - present)

Who would want to read this book

This book is mainly aimed at those who have built a system based on the LFS book. It will also be useful for those who are using other distributions, but for one reason or another want to manually build software and are in need of some assistance. BLFS can be used to create a range of diverse systems and so the target audience is probably nearly as wide as that of the LFS book. If you found LFS useful, you should also like this!

Since Release 5.0, the BLFS book version matches the LFS book version. This book may be incompatible with a previous or latter release of the LFS book.

Organization

This book is divided into the following parts.

Part I - Introduction

This part contains information which is essential to the rest of the book.

Part II - Post LFS Configuration and Extra Software

Here we introduce basic configuration and security issues. We also discuss a range of editors, file systems and shells which aren't covered in the main LFS book.

Part III - General Libraries and Utilities

In this section we cover libraries which are often needed by the rest of the book as well as system utilities. Information on Programming (including recompiling GCC to support its full range of languages) concludes this part.

Part IV - Connecting to a Network

Here we cover how to connect to a network when you aren't using the simple static IP setup given in the main LFS book.

Part V - Basic Networking

Networking libraries and command-line networking tools make up the bulk of this part.

Part VI - Server Networking

Here we deal with setting up mail and other servers (such as SSH, CVS , etc.).

Part VII - Content Serving

In this part we deal with databases and web server software .

Part VIII - X + Window Managers

This part explains how to set up a basic XFree86 installation along with some generic X libraries and Window managers.

Part IX - KDE

For those who want to use the K Desktop Environment or some parts of it, this part covers it.

Part X - GNOME

GNOME is the main alternative to KDE in the Desktop Environment arena and we cover both GNOME-1.4 and GNOME-2.6 here.

Part XI - X Software

Office programs and graphical web browsers are important to most people. They, along with some generic X software can be found in this part of the book.

Part XII - Multimedia

Here we cover setting multimedia libraries and drivers along with some audio, video and CD-writing programs.

Part XIII - Printing, Scanning and Typesetting

The PST part of the book covers things from Ghostscript, CUPS and DocBook to installing TeX.

Appendices

The Appendices cover information which doesn't belong in the main book; they are mainly there as a reference.

Part I. Introduction

Chapter 1. Welcome to BLFS

The Beyond Linux From Scratch book is designed to carry on from where the LFS book leaves off. But unlike the LFS book, it isn't designed to be followed straight through. Reading the Which sections of the book?[p.6] part of this chapter should help guide you through the book.

Please read most of this part of the book carefully as it explains quite a few of the conventions we use throughout the book.

Acknowledgments

We would like to thank the following people and organizations for their contributions toward the BLFS and LFS projects:

- All those people listed on the Credits page for submitting patches, instructions and corrections to the book. The former editor would especially like to thank Bruce, Larry and Billy for their enormous inputs to the project.
- Mark Stone <mstone <at> linux.com> for donating the linuxfromscratch.org servers.
- Gerard Beekmans <gerard <at> linuxfromscratch.org> for starting and writing the vast majority of the LFS project.
- Jesse Tie-Ten-Quee <higho <at> @linuxfromscratch.org> for answering many questions on IRC, having a great deal of patience and for not killing the former editor for the joke in the original BLFS announcement!
- DREAMWVR.COM for their ongoing sponsorship by donating various resources to the LFS and related sub projects.
- Robert Briggs for donating the linuxfromscratch.org and linuxfromscratch.com domain names.
- Frank Skettino <bkenoah <at> oswd.org> at OSD for coming up the initial design of the LFS and BLFS websites.
- Garrett LeSage <garrett <at> linux.com> for creating the LFS banner
- Jeff Bauman (former co-editor of the book) for his assistance with getting BLFS off the ground.
- Countless other people on the various LFS and BLFS mailing lists who are making this book happen by giving their suggestions, testing the book and submitting bug reports.

Credits

Many people have contributed both directly and indirectly to BLFS. This page lists all of those we can think of. We may well have left people out and if you feel this is the case, drop us line. Many thanks to all of the LFS community for their assistance with this project. If you are in the list and wish to have your email address included, again please drop us a line to larry@linuxfromscratch.org and we'll be happy to add it. We don't include email addresses by default so if you want it included, please state so when you contact us.

Editors

- *Editor:* Larry Lawrence <larry@linuxfromscratch.org>
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- aalib, Alsa, ffmpeg, gocr, MPlayer, opendivx, sane, transcode, xvid and xsane: *Alex Kloss*
- AbiWord, at-spi, ATK, audiofile, avifile, bc, bonobo-activation, bug-buddy, cdrdao, cdrtools, cpio, curl, dhcp, enlightenment, eog, esound, fcron, fluxbox, FNLIB, gail, galeon, gconf-editor, gdbm, gedit, gimp, GLib2, gmp, gnet, gnome-applets, gnome-desktop, gnome-games, gnome-icon-theme, gnome-libs, gnome-media, gnome-mime-data, gnome-panel, gnome-session, gnome-system-monitor, gnome-terminal, gnome-themes, gnome-utils, gnome-vfs, gnome2-user-docs, gnumeric, GTK+2, gtk-doc, gtk-engines, gtk-thinice-engine, eel, imlib, intltool, lame, libao, libart_lgpl, libbonobo, libbonoboui, libgail-gnome, libglade2, libgnome, libgnomecanvas, libgnomeprint, libgnomeprintui, libgnomeui, libgsf, libgtkhtml, libgtop, libIDL, libogg, librep, librsvg, libvorbis, libwnck, libxml2, libxslt, linc, LPRng, Linux_PAM, metacity, MIT Kerberos 5, MPlayer, mutt, nautilus, nautilus-media, oaf, OpenJade,

OpenSP, OpenSSH, ORBit, ORBit2, pan, Pango, pccts, pcre, pkgconfig, postfix, procmail, Python, QT, rep-gtk, ruby, sawfish, scrollkeeper, sgml-common, sgml-dtd, shadow, startup-notification, unzip, vorbis-tools, vte, wget, XFce, xine, xml-dtd, yelp and zip: *Larry Lawrence*

- CDPParanoia, mpg123, SDL and XMMS: *Jeroen Coumans*
- alsa, cvs, dhcpcd, gpm, hdparm, libjpeg, libmng, libpng, libtiff, libungif, links, lynx, openssl, tcsh, which, zsch, zlib: *Mark Hymers*
- traceroute: *Jeff Bauman*
- db and lcms: *Jeremy Jones and Mark Hymers*
- aspell, balsa, bind, bonobo, bonobo-conf, cvs server, db-3.3.11, db-3.1.17, emacs, evolution, exim, expat, gal, gnome-print, GnuCash, gtkhtml, guppi, guile, guppi, g-wrap, leafnode, lesstif, libcaplet, libesmtplib, libfam, libghttp, libglade, pine, portmap, PostgreSQL, pspell, qpopper, readline, reiserfs, Samba, sendmail, slib, slrn, soup, tex, tcp-wrappers, and xinetd: *Billy O'Connor*
- ProFTPD and rsync: *Daniel Baumann*
- ESP Ghostscript: *Matt Rogers*
- Heimdal: *Randy McMurchy*
- PHP: *Jeremy Utley*
- Gimp-Print, libusb: *Alexander E. Patrakov*
- fetchmail and wvdial: *Paul Campbell*
- udfutils, perl modules: *Richard Downing*
- DirectFB, Epiphany, FLAC, File Roller, GNOME Magnifier, GNOME Netstatus, GNOME Speech, GOK, GPdf, GnomeMeeting, Gnopernicus, Imlib2, LZO, MC, NASM, Nautilus CD Burner, OpenQuicktime, SVGAlib, Speex, Zenity, compface, gcalctool, gucharmap, id3lib, kde-i18n, kdeaccessibility, kdebindings, kdesdk, kdevelop, quanta, libFAME, liba52, libdv, libdvdcss, libdvddread, libmad, libmikmod, libmpeg3 and quanta: *Igor Zivkovic*
- tripwire: *Manfred Glombowski*
- ALSA Firmware, ALSA OSS, inetutils, gdk, GLib, GTK+, libxml and vim: *James Iwanek*
- iptables: *Henning Rohde*
- joe, nano, nmap, slang, w3m and whois: *Timothy Bauscher*
- MySQL: *Jesse Tie-Ten-Quee*
- fontconfig, gcc, gcc2, j2sdk, mozilla, nas, openoffice, ispell, nail, ImageMagick, hd2u, STLport, tcl, tk and bind-utils: *Tushar Teredesai*
- cracklib, libpcap, ncpfs, netfs, ppp(update), RP-PPPoE and Samba-3: *DJ Lucas*
- ntp: *Eric Konopka*
- nfs-utils: *Reinhard*
- courier: *Jim Gifford*

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- *J_Man* for submitting a gpm-1.19.3.diff file on which our gpm instructions are based.
- *Scot Mc Pherson* for writing the gnome-1.4.txt hint from which was gathered useful information and for warning us that GNOME Version 2.0 may not be ready to put in the book.
- *Tushar Teredesai* for writing the Compiling Java 2 SDK from Scratch hint on which j2sdk is based and for writing the docbook hint used throughout the typesetting chapter.
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Which sections of the book do I want?

Unlike the Linux From Scratch book, BLFS isn't designed to be followed in a linear manner. This is because LFS provides instructions on how to create a base system which is capable of turning into anything from a web server to a multimedia desktop system. BLFS is where we try to guide you through going from the base system to your intended destination and so choice is very much involved.

Everyone who reads the book will want to read certain sections. The Introduction[p.1] part - which you are currently reading - contains generic information. Especially take note of the information in Important Information (Chapter 2, *Important Information*[p.24]), as this contains comments about how to unpack software and various other aspects which apply throughout the book.

The part on Post LFS Configuration and Extra Software[p.33] is where most people will want to turn next. This deals with not just configuration but also Security (Chapter 4, *Security*[p.64]), File Systems (Chapter 5, *File Systems*[p.97]), Editors (Chapter 6, *Editors*[p.102]) and Shells (Chapter 7, *Shells*[p.110]). Indeed, you may wish to reference certain parts of this chapter (especially the sections on Editors and File Systems) while building your LFS system.

Following these basic items, most people will want to at least browse through the General Libraries and Utilities[p.114] part of the book. This part contains information on many items which are prerequisites for other sections of the book as well as some items (such as Programming (Chapter 12, *Programming*[p.185]) which are useful in their own right. Note that you don't have to install all of these libraries and packages found in this part to start with, each BLFS install procedure tells you which packages it depends upon so you can choose the program you want to install and see what it needs.

Likewise, most people will probably want to look at the Connecting to a Network[p.203] and Basic Networking[p.214] parts. The first of these deals with connecting to the Internet or your LAN using a variety of methods such as DHCP (Chapter 14, *DHCP Clients*[p.208]) and Dial-Up Connections (Chapter 15, *Dial-up networking*[p.204]). The second of these parts deals with items such as Networking Libraries (Chapter 16, *Networking Libraries*[p.215]) and various basic networking programs and utilities.

Once you have dealt with these basics, you may wish to configure more advanced network services. These are dealt with in the Server Networking[p.264] and Content Serving[p.311] parts of the book. Those wanting to build servers should find enough information to give them a good starting point here. Note that Content Serving[p.311] also contains information on various database packages.

The next parts of the book principally deal with desktop systems. We start with a part talking about X and Window Managers[p.330]. This part also deals with some generic X-based libraries (Chapter 26, *X Libraries*[p.348]). After this, KDE[p.370] and gnome[p.404] are given their own parts which are followed by one on X Software[p.503].

We then move on to deal with Multimedia[p.531] packages. Note that many people may want to use the ALSA-1.0.4[p.532] instructions from this chapter quite near the start of their BLFS journey; they are placed here simply because it is the most logical place for them.

The final part of the main BLFS book deals with Printing, Scanning and Typesetting[p.591]. This is useful for most people with desktop systems and even those who are creating mainly server systems will find it useful.

We hope you enjoy using BLFS and find it useful.

Conventions used in this book

To make things easy to follow, there are a number of conventions used throughout the book. Following are some examples:

```
./configure --prefix=/usr
```

This form of text is designed to be typed exactly as seen unless otherwise noted in the surrounding text. It is also used in the explanation sections to identify which of the commands is being referred to.

```
install-info: unknown option `--dir-file=/mnt/lfs/usr/info/dir'
```

This form of text (fixed width text) is showing screen output, probably as the result of commands issued and is also used to show filenames such as `/etc/lilo.conf`

Emphasis

This form of text is used for several purposes in the book but mainly to emphasize important points or to give examples as to what to type.

<http://www.linuxfromscratch.org/>

This form of text is used for hypertext links, both within the book and to external pages such as HowTo's, download locations, websites, etc.

```
cat > $LFS/etc/group << "EOF"
    root:x:0:
    bin:x:1:
    .....
EOF
```

This type of section is used mainly when creating configuration files. The first command (in bold) tells the system to create the file `$LFS/etc/group` from whatever is typed on the following lines until the sequence EOF is encountered. Therefore, this whole section is generally typed as seen.

Book version

This is BLFS-BOOK version 5.1-pre1 dated May 28th, 2004. If this version is older than a month a newer version is probably already available for download. Check one of the mirror sites below for updated versions.

Mirror sites

The BLFS project has a number of mirrors setup world-wide to make it easier and more convenient for you to access the website. Please visit the <http://www.linuxfromscratch.org/blfs> website for the list of current mirrors.

Change Log

Please note that the change log only lists which editor was responsible for putting the changes into CVS; please read the Credits[p.3] page in Chapter 1 for details on who wrote what.

5.1-pre1 - May 28th, 2004

- May 27th, 2004 [bdubbs]: updated the /etc/profile instructions per the suggestions of Dagmar d'Surreal.
- May 27th, 2004 [larry]: www.cvshome.org is partially available, new download location noted.
- May 26th, 2004 [larry]: Upgraded to cvs-1-11-16, security release.
- May 25th, 2004 [tushar]: Added Maintainer Patch for Samba.
- May 25th, 2004 [larry]: Hopefully fixed gtkHTML dependencys.
- May 23rd, 2004 [igor]: Downgraded libsoup, GAL and GtkHTML to stable versions, compatible with Evolution, reported by Jeremy Utley and Jurg Billeter.
- May 23rd, 2004 [tushar]: Moved deb2targz and rpm2targz tarballs to official locations.
- May 23rd, 2004 [tushar]: Added ash patch for j2sdk.
- May 23rd, 2004 [igor]: Updated to KDE-3.2.2 and KOffice-1.3.1.
- May 23rd, 2004 [tushar]: Use envvar KDE_PREFIX to allow the user to install KDE into /usr or /opt. Closes Bug 760.
- May 19th, 2004 [igor]: Added winbind boot script, submitted by DJ Lucas.
- May 18th, 2004 [larry]: Updated to mysql-4.0.20, courier-0.45.5, joe-3.0 and TCL/TK-8.4.6.
- May 18th, 2004 [larry]: Editorial review, chapters 16, 17, 18, 19 and 20.
- May 18th, 2004 [larry]: updated to curl-7.11.2.
- May 17th, 2004 [larry]: added patch to xpdf.
- May 17th, 2004 [larry]: modified sgml and xml sections to reflect the new xsl processing.
- May 17th, 2004 [larry]: expanded dependencies of GnuTLS, referred to by three packages.
- May 17th, 2004 [igor]: Updated to MPlayer-1.0pre4.
- May 17th, 2004 [igor]: Removed all references to OMNI drivers as the installation instructions for them are bogus, suggested by Alexander E. Patrakov.
- May 16th, 2004 [igor]: Added gnome-print ft217 patch, submitted by Jeremy Utley.
- May 16th, 2004 [igor]: Enabled the building of ALSA static library and added the arecord patch to alsa-utils, thanks to Alexander E. Patrakov.
- May 16th, 2004 [igor]: Applied Samba cleanup patch, submitted by DJ Lucas.
- May 15th, 2004 [tushar]: Added note in the vim page for keeping an editor for emergency use.
- May 15th, 2004 [tushar]: Updated to whois-4.6.14.
- May 15th, 2004 [tushar]: Added usb and kerberos init scripts. Upgraded to blfs-bootscripts-2004-05-15.
- May 14th, 2004 [igor]: Updated to GNOME Games-2.6.1 and GDM-2.6.0.2.
- May 14th, 2004 [igor]: Added GnomeMeeting-1.0.2.
- May 14th, 2004 [tushar]: Genesis of the blfs-bootscripts package.
- May 13th, 2004 [tushar]: Improved which script as per Matthias Benkmann.
- May 13th, 2004 [tushar]: Reclassified all dependencies to XFree86 as dependencies to either XFree86 or Xorg.
- May 12th, 2004 [igor]: Added GOK-0.10.2 and Epiphany-1.2.5.

- May 12th, 2004 [larry]: Updated to db-4.2.52 and gdm-2.6.0.1.
- May 11th, 2004 [igor]: Added GNOME Magnifier-0.10.11 and Gnopernicus-0.8.4.
- May 10th, 2004 [igor]: Added libusb-0.1.8, contributed by Alexander E. Patrakov.
- May 10th, 2004 [igor]: Updated to XSane-0.93, submitted by Alexander E. Patrakov.
- May 10th, 2004 [igor]: Updated to AT SPI-1.4.2.
- May 10th, 2004 [igor]: Added Nautilus CD Burner-2.6.1, Zenity-2.6.2 and GNOME Speech-0.3.2.
- May 9th, 2004 [igor]: Updated to OpenLDAP-2.1.30, submitted by Randy McMurchy.
- May 9th, 2004 [igor]: Added GPdf-0.131 and gucharmap-1.4.1.
- May 8th, 2004 [igor]: Updated to Heimdal-0.6.2, submitted by Randy McMurchy.
- May 8th, 2004 [larry]: Updated to gcc-3.3.3.
- May 8th, 2004 [igor]: Added GNOME Netstatus-2.6.1 and gcalctool-4.3.51.
- May 8th, 2004 [igor]: Updated to GAL-2.1.8 and GNOME Media-2.6.1.
- May 8th, 2004 [tushar]: Corrected qt compilation commands when installing in /usr.
- May 7th, 2004 [igor]: Added File Roller-2.6.1.
- May 7th, 2004 [igor]: Updated to EOG-2.6.1, ggv-2.6.1, GConf Editor-2.6.1 and GNOME Utilities-2.6.2.
- May 7th, 2004 [bdubbs]: updated to qt-3.3.2. Change to the xml structure. Added md5sum. Explained alternative build procedures.
- May 7th, 2004 [bdubbs]: separated the introduction to window managers to a separate section.
- May 6th, 2004 [larry]: updated udftools for 2.4.26 kernel patch.
- May 6th, 2004 [igor]: Updated to libgtkhtml-2.6.1, Yelp-2.6.1, bug-buddy-2.6.1, gtksourceview-1.0.1 and gedit-2.6.1.
- May 5th, 2004 [larry]: Added MIT Kerberos to the security section.
- May 5th, 2004 [igor]: Updated to libgnomeprint-2.6.1, libgnomeprintui-2.6.1, libsoup-2.1.9 and GtkHTML-3.1.12.
- May 4th, 2004 [igor]: Updated to GAIL-1.6.3 and librsvg-2.6.5.
- May 3rd, 2004 [igor]: Applied DJ's patch fixing DHCP instructions, reported by Nickolaos Fotopoulos.
- May 3rd, 2004 [igor]: Updated to libgnomeui-2.6.1.1.
- May 3rd, 2004 [igor]: Applied DJ's patch which fixes cracklib instructions and added cracklib to Heimdal.
- May 2nd, 2004 [igor]: Updated to GLib-2.4.1 and GTK+-2.4.1.
- May 1st, 2004 [igor]: Updated to GMP-4.1.3.
- April 29th, 2004 [igor]: Fixed various errors in Heimdal instructions, caught by Randy, Larry, DJ and Nathan.
- April 28th, 2004 [igor]: Finished the Heimdal addition.
- April 27th, 2004 [igor]: Rolled back to libgnomeui-2.6.0 because of compilation failure, reported by Ken Moffat.
- April 27th, 2004 [igor]: Added Heimdal (not finished), contributed by Randy McMurchy.
- April 27th, 2004 [igor]: Put back lisa init script.
- April 27th, 2004 [igor]: Updated cracklib instructions, submitted by DJ Lucas.
- April 26th, 2004 [igor]: Rolled back to FreeType2-2.1.7.
- April 25th, 2004 [larry]: Update to postfix-2.1.0.
- April 25th, 2004 [bdubbs]: Fixes to X.org
- April 24th, 2003 [igor]: Updated to FreeType-2.1.8, ATK-1.6.1, ORBit2-2.10.1, GConf-2.6.1, GNOME Virtual File

System-2.6.1.1, libgnome-2.6.1.1, libgnomecanvas-2.6.1.1, GNOME Icon Theme-1.2.1, GNOME Themes-2.6.1, libwnck-2.6.1, GNOME Panel-2.6.1, GNOME Session-2.6.1, GAIL-1.6.2, gnome-keyring-0.2.1, libgnomeui-2.6.1 and GNOME Desktop-2.6.1.

- April 24th, 2004 [tushar]: Updated to openoffice-1.1.1.
- April 24th, 2004 [larry]: Updated to cvs-1.11.15.
- April 23rd, 2004 [igor]: Updated to Control Center-2.6.1.
- April 23rd, 2004 [bdubbs]: Completed X.org section.
- April 22nd, 2004 [igor]: Moved Qt installation to /usr with instructions submitted by Tushar Teredesai.
- April 22nd, 2004 [igor]: Added cracklib-2.7, contributed by DJ Lucas.
- April 21st, 2004 [igor]: Updated to OpenSSH-3.8.1p1, libxml2-2.6.9 and libxslt-1.1.6 thanks to Thomas Beneke and Matthew Burgess.
- April 21st, 2004 [igor]: Updated to libcroco-0.5.1, EEL-2.6.1 and Nautilus-2.6.1.
- April 20th, 2004 [igor]: Updated to gst-plugins-0.8.1.
- April 19th, 2004 [igor]: Updated to GNOME Terminal-2.6.1, libgtop-2.6.0, GAIL-1.6.1, libxklavier-1.02 and GStreamer-0.8.1.
- April 19th, 2004 [igor]: Updated to PHP-4.3.6, courtesy of Jeremy Uteley.
- April 18th, 2004 [bdubbs]: Started adding X.org (incomplete).
- April 18th, 2004 [bdubbs]: Updated to fontconfig-2.2.2.
- April 18th, 2004 [bdubbs]: Updated to freetype-2.1.7.
- April 18th, 2004 [igor]: Updated to startup-notification-0.6.
- April 17th, 2004 [igor]: Updated to libpcap-0.8.3, contributed by Anderson Lizardo.
- April 17th, 2004 [igor]: Fixed XFree86, Qt and KDE symlinks so they are usable if /usr or /opt is mounted somewhere else, inspired by Nico R.
- April 15th, 2004 [igor]: Updated to GAL-1.99.11 and GtkHTML-3.0.10 to fix compilation breaks, reported by Matthew Baker and confirmed by Jeremy Uteley.
- April 15th, 2004 [igor]: Updated to PHP-4.3.5.
- April 14th, 2004 [tushar]: Updated xfree86 createfiles to lfs-bootscripts-2.0.3 syntax.
- April 13th, 2004 [larry]: updated to Abiword-2.0.6 and gnumeric-1.2.10.
- April 13th, 2004 [larry]: added META data required by Linux Documentation Project.
- April 13th, 2004 [larry]: updated to at-spi-1.4.0.
- April 12th, 2004 [larry]: Added stylesheets for use with xsltproc. Removed "dir=" for dbhtml tag on children for processing to work correctly for both. Done on Preface only at this time, will continue with remainder later.
- April 11th, 2004 [larry]: Removed acme and updated to ggv-2.6.0, gconf-editor-2.6.0, gnome-utils-2.6.0, gnome-system-monitor-2.6.0, gnome-media-2.6.0, nautilus-media-0.8.0, gnome-game-2.6.0.1 and gnome2-user-docs-2.6.0.1.
- April 11th, 2004 [igor]: Updated to LPRng-3.8.26.
- April 11th, 2004 [igor]: Updated to XFSprogs-2.6.10 and removed XFS kernel patch (since XFS has been incorporated into 2.4.25).
- April 11th, 2004 [igor]: Patched XSane to enable building the GIMP plugin with GIMP-2.0.0, submitted by Alexander E. Patrakov.
- April 10th, 2004 [igor]: Updated to Courier-0.45.4 thanks to Jim Gifford.

- April 10th, 2004 [larry]: updated to bug-buddy-2.6.0, eog-2.6.0, gedit-2.6.0, gtksourceview-2.6.0, libgnomeprint-2.6.0 and libgnomeprintui-2.6.0.
- April 10th, 2004 [igor]: Updated to OpenLDAP-2.1.29, XviD-1.0.0-rc4 and ZSH-4.2.0.
- April 9th, 2004 [igor]: Updated to ALSA-1.0.4.
- April 8th, 2004 [larry]: Added libxklavier-1.00.
- April 8th, 2004 [larry]: Updated to gnome-terminal-2.6.0, gnome-applets-2.6.0, libgtkhtml-2.6.0 and yelp-2.6.0.
- April 7th, 2004 [igor]: Updated to XFce-4.0.4.
- April 6th, 2004 [larry]: Added shared-mime-info-0.14, hicolor-icon-theme-0.5 and gnome-keyring-0.2.0.
- April 6th, 2004 [igor]: Updated to KOffice-1.3.
- April 5th, 2004 [igor]: Updated to GIMP-2.0.0, courtesy of Randy McMurchy.
- April 5th, 2004 [igor]: Added /etc/shells page, suggested by Dagmar d'Surreal.
- April 4th, 2004 [larry]: Updated to gail-1.6.0, libwnck-2.6.0.1, metacity-2.8.0, libcroco-0.5.0, eel-2.6.0, gnome-desktop-2.6.0.1, gnome-panel-2.6.0, gnome-session-2.6.0, nautilus-2.6.0, gstreamer-0.8.0, gst-plugins-0.8.0 and control-panel-2.6.0.3.
- April 2nd, 2004 [larry]: Updated to gnome-vfs-2.6.0, libgnome-2.6.0, libglade-2.3.6, libgnomecanvas-2.6.0, libbonoboui-2.6.0, gnome-icon-theme-1.2.0, libgnomeui-2.6.0 and gnome-themes-2.6.0.
- April 2nd, 2004 [igor]: Updated to Nail-10.7, libao-0.8.5 and MPlayer-1.0pre3try2.
- April 1st, 2004 [larry]: Updated to gtk-doc-1.2, ORBit2-2.10.0, libbonobo-2.6.0 and GConf-2.6.0.
- April 1st, 2004 [larry]: Updated to DocBook-XML-4.3 and DocBook-4.3 (sgml).
- March 30th, 2004 [tushar]: Fixed compressdoc script so that it can be called as compressdoc instead of /usr/bin/compressdoc. Moved the script to /usr/sbin.
- March 30th, 2004 [tushar]: Updated to xfsprogs-2.6.9.
- March 27th, 2004 [tushar]: Updated mysql, postgresql, bind, dhcp apache, proftpd, gdm, alsa, cups, lprng, xfree86, openssh, rsync, samba and xinetd to use lfs-bootscripts for init scripts.
- March 27th, 2004 [tushar]: Added pico to the list of text editors.
- March 27th, 2004 [tushar]: Updated nfs, ntp, portmap, exim, postfix, and sendmail to use lfs-bootscripts for init scripts.
- March 26th, 2004 [igor]: Updated example NTP servers to stratum 2, open access, different locations.
- March 25th, 2004 [tushar]: Updated to fam-2.7.0. Added option to install bootscript.
- March 25th, 2004 [larry]: Updated to AFPL Ghostscript-8.14.
- March 24th, 2004 [larry]: Updated to galeon-1.3.14a and gnumeric-1.2.6.
- March 24th, 2004 [larry]: Updated to abiword-2.0.5.
- March 24th, 2004 [larry]: Updated to gnet-2.0.5.
- March 24th, 2004 [larry]: Updated to curl-7.11.1.
- March 24th, 2004 [larry]: Updated to libmng-1.0.7.
- March 24th, 2004 [larry]: Updated to reiserfsprogs-3.6.14.
- March 24th, 2004 [larry]: Updated to docbook-xsl-1.65.1.
- March 24th, 2004 [larry]: Update to postfix-2.0.19.
- March 24th, 2004 [larry]: Updated to libxml2-2.6.8 and libxslt-1.1.5. Returned ftp download to ftp://xmlsoft.org because gnome does not add new releases timely. ftp://xmlsoft.org does not have bzip2 available.

- March 23rd, 2004 [larry]: Updated to Esound-0.2.34.
- March 23rd, 2004 [larry]: Updated to GLib-2.4.0, pango-1.4.0, atk-1.6.0 and GTK+-2.4.0.
- March 23rd, 2004 [igor]: Updated to PostgreSQL-7.4.2, courtesy of Randy McMurphy.
- March 22nd, 2004 [igor]: Updated to xinetd-2.3.13 and removed inetd part from qpopper instructions.
- March 22nd, 2004 [igor]: Updated to Apache-2.0.49, thanks to Randy McMurphy.
- March 22nd, 2004 [tushar]: Added fam, fcron, gpm, netfs, and random lfs-bootscripts. Added note that users should refer to the check the bootscript before installing.
- March 21st, 2004 [tushar]: Updated network related bootscripts (Patch from DJ Lucas). Reworked the book to start using lfs-bootscripts instead of including the scripts in the book.
- March 20th, 2004 [igor]: Updated to OpenSSL-0.9.7d, courtesy of Dagmar d'Surreal and Matthew Burgess.
- March 20th, 2004 [tushar]: LessTif: Changed /usr/LessTif to /usr/share/LessTif. Thanks to Randy for pointing it out.
- March 18th, 2004 [igor]: Updated to KDE-3.2.1.
- March 17th, 2004 [tushar]: Update to Xvid-1.0.0-rc3.
- March 17th, 2004 [igor]: Updated to XFree86-4.4.0.
- March 16th, 2004 [tushar]: Add patch to link libpng against system libz and libm. Fixed bug in espgrs shared lib compilation. Submitted by Anderson Lizardo. See Bug # 644.
- March 15th, 2004 [tushar]: Added hd2u-0.9.0.
- March 15th, 2004 [tushar]: Updated to audiofile-0.2.6.
- March 14th, 2004 [igor]: Updated to libxml2-2.6.7, CVS-1.11.14 and XMMS-1.2.10.
- March 13th, 2004 [igor]: Added a note about CUPS replacements for PSUtils commands, contributed by Alexander E. Patrakov.
- March 13th, 2004 [igor]: Added a couple of switches to libtiff instructions to get rid of the compilation warnings, submitted by Jonas Norlander.
- March 13th, 2004 [igor]: Updated incorrect download links, submitted by Reinhard.
- March 11th, 2004 [tushar]: Updated to courier-0.45.1. Submitted by Jim Gifford.
- March 10th, 2004 [tushar]: Added nfs-utils-1.0.6. Submitted by Reinhard.
- March 10th, 2004 [igor]: Updated to nano-1.2.3.
- March 7th, 2004 [igor]: Added hdparm patch which fixes compilation problems with new glibc, contributed by Ken Moffat.
- March 5th, 2004 [tushar]: Don't run configure for xfsprogs. See Bug #581.
- March 5th, 2004 [tushar]: Moved mysql libs to /usr/lib. See Bug #474.
- March 4th, 2004 [tushar]: Simplified mozilla-enigmail instructions. See Bug #630.
- March 4th, 2004 [igor]: Updated to Qt-3.3.1.
- March 1st, 2004 [igor]: Updated to MySQL-4.0.18.
- February 29th, 2004 [igor]: Fixed OpenSSL/Tcl/Perl man page conflicts, reported by Anderson Lizardo.
- February 29th, 2004 [igor]: Updated to Dillo-0.8.0.
- February 28th, 2004 [larry]: modified udf-tools for linux-2.4.25 kernel.
- February 28th, 2004 [igor]: Updated to NCPFS-2.2.4.
- February 28th, 2004 [igor]: Updated to libxslt-1.1.4, submitted by Anderson Lizardo.
- February 27th, 2004 [larry]: updated to openssh-3.8p1.

- February 26th, 2004 [tushar]: Fixed XFree86 installation so that it really stops on encountering an error.
- February 26th, 2004 [igor]: Fixed NCPFS installation instructions, submitted by DJ Lucas.
- February 26th, 2004 [igor]: Fixed KDE download links and changed aRts' GLib dependency status to required, reported by Anderson Lizardo and Allard Welter.
- February 26th, 2004 [igor]: Updated to libmad-0.15.1b, submitted by Anderson Lizardo.
- February 24th, 2004 [igor]: Updated PPP's nobpf patch, submitted by DJ Lucas.
- February 23rd, 2004 [igor]: Updated to SDL-1.2.7.
- February 22nd, 2004 [tushar]: Updated to Firefox-0.8 and Thunderbird-0.5
- February 22nd, 2004 [igor]: Updated to libmpeg3-1.5.4.
- February 22nd, 2004 [igor]: Updated to ALSA-1.0.2c, submitted by James Iwanek.
- February 21st, 2004 [tushar]: Updated to ImageMagick-5.5.5-16, hdparm-5.5, cvs-1.11.13, aspell-0.50.5, cdrdao-1.1.8. Added optional dependency on an MTA for tripwire.
- February 21st, 2004 [tushar]: Updated libpcap-0.8.1 and ppp-2.4.2, submitted by DJ Lucas.
- February 21st, 2004 [igor]: Updated to libFAME-0.9.1.
- February 19th, 2004 [larry]: Updated to Shadow-4.0.4.1.
- February 19th, 2004 [tushar]: Added warning for j2sdk compilation w.r.t. sh being symlinked to ash.
- February 19th, 2004 [tushar]: Change gnome-games section to allow saving high scores.
- February 19th, 2004 [larry]: Made changes to iptables as recommended by Dagmar d'Surreal.
- February 19th, 2004 [larry]: Proftpd - set local state dir to /var/run instead of /var so the pid file lands in the correct directory.
- February 18th, 2004 [igor]: Updated to libxml2-2.6.6 and libxslt-1.1.3.
- February 16th, 2004 [igor]: Updated to Xvid-1.0.0-rc2.
- February 15th, 2004 [larry]: updated to xmms-1.2.9.
- February 15th, 2004 [larry]: ProFTPD - modified symlink start and stops to correspond with other web content servers.
- February 15th, 2004 [larry]: removed PATH from gnome-session installation as \$PREFIX/sbin is set in lib-config instructions. Applied GPM patch for /etc/sysconfig/mouse submitted by Anderson Lizardo.
- February 15th, 2004 [larry]: updated to nautilus-2.4.2, bug-buddy-2.4.2, ggv-2.4.1 and gnome2-user-docs-2.4.1.
- February 15th, 2004 [larry]: updated to libIDL-0.8.3, intltool-0.30, gnome-vfs-2.4.2, eel-2.4.2 and downgraded to at-spi-1.3.8, putting all libraries to GNOME-2.4.2 level.
- February 15th, 2004 [igor]: Added missing ProFTPD symlinks in the Appendix A, reported by Nathan Coulson.
- February 15th, 2004 [igor]: Updated to Lynx-2.8.5, contributed by Anderson Lizardo.
- February 15th, 2004 [igor]: Updated to KDE-3.2, courtesy of Alexander E. Patrakov, Allard Welter, "stirling" and "Jj".
- February 14th, 2004 [larry]: fix bug 608 and installed the config file to /etc, as it is not installed to /usr/share/gpm for future use.
- February 14th, 2004 [larry]: Updated to mutt-1.4.2.1.
- February 14th, 2004 [larry]: modified the wording in pkgconfig-config.xml to correct the default path.
- February 14th, 2004 [larry]: Updated to openldap-2.1.25.
- February 14th, 2004 [bdubbs]: Added a security patch to XFree86 and fixed a minor issue with the make instruction.
- February 11th, 2004 [igor]: Updated to Qt-3.3.0 and LPRng-3.8.25.
- February 7th, 2004 [igor]: Added a patch for xine User Interface which fixes compilation errors if cURL is being

utilized, reported by Nathan Coulson.

- February 7th, 2004 [igor]: Added sed command for configuring fontconfig's font directories, contributed by Ken Moffat.
- February 7th, 2004 [igor]: Changed all occurrences of "source" in init scripts to ".", suggested by Nathan Coulson.
- February 7th, 2004 [igor]: Updated to Gimp-Print-4.2.6, courtesy of Alexander E. Patrakov.
- February 5th, 2004 [igor]: Created a patch which fixes the OMNI drivers compilation problem instead of temporary symlinks, suggested by Tushar Teredesai and Dagmar d'Surreal.
- February 3rd, 2004 [larry]: Updated to Postfix-2.0.18 and applied enhancement patch to postfix.
- February 3rd, 2004 [larry]: Updated to Galeon-1.3.12.
- February 3rd, 2004 [igor]: Modified NTP instructions to install in /usr/sbin.
- February 2nd, 2004 [tushar]: Changed some GNOME_PREFIX refs to use pkgconfig. Closes bug 324
- February 2nd, 2004 [tushar]: Moved some mozilla libs to /usr/lib.
- February 2nd, 2004 [tushar]: Separated firebird and thunderbird from mozilla.
- February 1st, 2004 [igor]: Updated to AFPL Ghostscript-8.13 and GSview-4.6.
- February 1st, 2004 [tushar]: OpenSSH: Added note on linking statically to OpenSSL.
- February 1st, 2004 [tushar]: Removed djbware as per Bug 584.
- February 1st, 2004 [tushar]: Moved freetype2 and fontconfig to graphics and font sections.
- February 1st, 2004 [tushar]: Added shared lib creation to lzo.
- February 1st, 2004 [tushar]: Updated to libxml2-2.6.5, gnome-games-2.4.2.
- January 31st, 2004 [tushar]: Made a note that grep may get linked against pcre and suggested appropriate actions.
- January 31st, 2004 [tushar]: Corrected man page installation for tcsh.
- January 31st, 2004 [tushar]: Added link to Linux PAM Modules page. Closes bug 362.
- January 31st, 2004 [tushar]: Added package management section.
- January 31st, 2004 [larry]: Updated to AbiWord-2.0.3.
- January 31st, 2004 [igor]: Updated to GnuPG-1.2.4 and NcFTP-3.1.7.
- January 30th, 2004 [igor]: Updated to XSane-0.92.
- January 29th, 2004 [tushar]: Updated to gcc-3.3.2.
- January 27th, 2004 [igor]: Updated to w3m-0.4.2.
- January 26th, 2004 [igor]: Patched netfs init script, contributed by DJ Lucas and Gabriel Munoz.
- January 26th, 2004 [igor]: Updated to MPlayer-1.0pre3.
- January 25th, 2004 [bdubbs]: Tweaked note regarding /tmp/.ICE-unix in XFree86 configuration section.
- January 25th, 2004 [tushar]: Added alternate technique for auto-installing perl modules using perl shell. Suggested by Richard Downing.
- January 25th, 2004 [igor]: Updated to DirectFB-0.9.20.
- January 25th, 2004 [tushar]: Added defines to set PATH at build time for XFree86. Added note regarding /tmp/.ICE-unix to XFree86 configuration section.
- January 24th, 2004 [tushar]: Updated to xpdf-3.00, cvs-1.11.11, gnome-mime-data-2.4.1, nmap-3.50, postgresql-7.4.1, curl-7.11.0, libdv-0.101, libgtop-2.0.8, libgnomeprint-2.4.2, ORBit2-2.8.3, libbonobo-2.4.3, libbonoboui-2.4.3, libgnomeprintui-2.4.2, lame-3.95.1, at-spi-1.3.11, acme-2.4.2, gdm-2.4.4.7, gnome-games-2.4.1.1, gnome-session-2.4.2, gnome-terminal-2.4.2, yelp-2.4.2, gnome-panel-2.4.2, gnome-applets-2.4.2, gnome-utils-2.4.1,

rsync-2.6.0.

- January 24th, 2004 [tushar]: Updated to j2sdk-1.4.2_03 (binary) and j2sdk-1.4.2.
- January 24th, 2004 [igor]: Updated to KDE-3.1.5.
- January 23rd, 2004 [igor]: Updated to XFce-4.0.3.1.
- January 21st, 2004 [igor]: Updated to xine User Interface-0.9.23.
- January 20th, 2004 [igor]: Updated to xine Libraries-1-rc3a.
- January 19th, 2004 [igor]: Updated to Audio File-0.2.5.
- January 18th, 2004 [igor]: Updated to libtiff-3.6.1.
- January 17th, 2004 [igor]: Updated to lcms-1.12.
- January 17th, 2004 [tushar]: Updated to mozilla-1.6.
- January 16th, 2004 [igor]: Updated to Ruby-1.8.1.
- January 15th, 2004 [igor]: Updated to Fcron-2.9.4.
- January 14th, 2004 [larry]: updated to balsa-2.0.15.
- January 14th, 2004 [igor]: Updated to libxml-2.6.4 and libxslt-1.1.2.
- January 14th, 2004 [larry]: Updated to galeon-1.3.11a.
- January 13th, 2004 [larry]: Rolled back to gal-1.99.10.
- January 12th, 2004 [igor]: Updated to librep-0.17.
- January 12th, 2004 [larry]: Updated to at-spi-1.3.8, returned --libexec to sbin on gal and gtkhtml until LFS makes the change. gcalctool, gpdf, gucharmap, nautilus-cd-burner, zenity and gnome-speech will install using Nautilus-Media installation instructions. (gcalctool, gucharmap, zenity and gnome-speech do not require --libexecdir).
- January 12th, 2004 [larry]: Updated to nautilus-media-0.3.3.1.
- January 12th, 2004 [larry]: Updated copyright dates.
- January 11th, 2004 [igor]: Updated to libmpeg3-1.5.3.
- January 10th, 2004 [igor]: Updated to transcode-0.6.12.
- January 10th, 2004 [igor]: Completed the MySQL init script fix as suggested by Alexander E. Patrakov.
- January 8th, 2004 [igor]: Updated to ProFTPD-1.2.9.
- January 7th, 2004 [igor]: Updated to libesmtplib-1.0.2.
- January 6th, 2004 [igor]: Updated to iptables-1.2.9.
- January 5th, 2004 [igor]: Added Gimp-Print-4.2.5 and fixes to CUPS and Ghostscript, contributed by Alexander E. Patrakov
- January 4th, 2004 [igor]: Updated to MySQL-4.0.17.
- December 23rd, 2003 [larry]: Updated to gnome-utils-2.4.0, gal-2.1.1, gstreamer-0.6.4, gst-plugins-0.6.4 and gnome-media-2.4.1.1.
- December 23rd, 2003 [larry]: Added ggv-2.4.0.2.
- December 23rd, 2003 [tushar]: Updated to tcl-8.4.5, tk-8.4.5, firebird-0.7.1, thunderbird-0.4.
- December 23rd, 2003 [tushar]: Mozilla and OpenOffice nitpicks.
- December 21st, 2003 [igor]: Updated to Python-2.3.3.
- December 17th, 2003 [larry]: Added acme-2.4.1.
- December 17th, 2003 [larry]: Updated to GConf-edit-2.4.0, espgs-7.07.1.

- December 15th, 2003 [igor]: Clarified the usage of NVidia drivers in the XFree86 DRI section, submitted by Simon Geard.
- December 13th, 2003 [igor]: Updated to Gtk-Perl-0.7009, XML-Writer-0.4.1, XML-Parser-2.34 and Astro-FITS-Header-2.8.1.
- December 13th, 2003 [igor]: Modified MySQL instructions to utilize mysqladmin utility, added /usr/lib/mysql to ld.so.conf.
- December 12th, 2003 [igor]: Updated to libsoup-1.99.26, libxslt-1.1.1 and ScrollKeeper-0.3.14.
- December 12th, 2003 [larry]: Updated to CUPS-1.1.20, wget-1.9.1, bug-buddy-2.4.1, libgnomeprint-2.4.0, libgnomeprintui-2.4.0, gedit-2.4.1 and eog-2.4.1. Added gtksourceview-0.7.0.
- December 10th, 2003 [igor]: Updated to GSview-4.5.
- December 10th, 2003 [larry]: Updated to pcre-4.4, libxml2-2.6.3, libxslt-1.1.0, libao-1.0, libogg-1.0.1, libvorbis-1.0.1, speex-1.0.3, vorbis-tools-1.0.1 and curl-7.10.8.
- December 10th, 2003 [larry]: Update to libgtkhtml-2.4.1 and yelp-2.4.1.
- December 7th, 2003 [larry]: Update to libwnck-2.4.0.1, gnome-panel-2.4.1, vte-0.11.10, gnome-session-2.4.1, gnome-terminal-2.4.1, libgtop-2.0.5, gail-1.4.1, gnome-applets-2.4.1, metacity-2.6.3, libcroco-0.3.0, librsvg-2.4.0, eel-2.4.1, nautilus-2.4.1 and control-center-2.4.0.
- December 7th, 2003 [billyoc]: Update to rsync-2.5.7.
- December 7th, 2003 [billyoc]: Update to gal-1.99.10.
- December 7th, 2003 [billyoc]: Update to gtkhtml-3.0.9.
- December 7th, 2003 [billyoc]: Update to Evolution-1.4.5.
- December 7th, 2003 [igor]: Update to ALSA-0.9.8 submitted by James Iwanek.
- December 6th, 2003 [larry]: updated to Gnome-VFS-2.4.1, libgnome-2.4.0, libgnomecanvas-2.4.0, libbonoboui-2.4.1, gnome-icon-theme-1.0.9, libgnomeui-2.4.0.1, gnome-themes-2.4.1 and gnome-desktop-2.4.1.1.
- December 6th, 2003 [igor]: Updated to Nail-10.6 and SANE-1.0.13.
- December 6th, 2003 [igor]: Applied Whois-4.6.9 update submitted by DJ Lucas.
- December 5th, 2003 [igor]: Added libjpeg dependency to tiff package and modified instructions to utilize zlib as suggested by Alexander E. Patrakov.
- December 5th, 2003 [tushar]: Updated to ispell-3.2.06.epa7.
- December 3rd, 2003 [tushar]: Added patch from DJ Lucas for correcting /etc/hosts for DHCP.
- December 2nd, 2003 [igor]: Updated to Xpdf-2.03.
- November 30th, 2003 [billyoc]: Updated to PostgreSQL-7.4.
- November 30th, 2003 [billyoc]: Updated to lesstif-0.93.94.
- November 30th, 2003 [billyoc]: Updated to bind-9.2.3.
- November 30th, 2003 [billyoc]: Updated to gnucash-1.8.8.
- November 30th, 2003 [billyoc]: Updated to abiword-2.0.1.
- November 29th, 2003 [igor]: Updated to Qt-3.2.3 and ImageMagick-5.5.7-13.
- November 26th, 2003 [tushar]: Added a link to the various mozilla extensions available (courtesy Archaic).
- November 26th, 2003 [igor]: Added a warning about network scripts for DHCP submitted by DJ Lucas.
- November 25th, 2003 [igor]: Updated to MySQL-4.0.16.
- November 24th, 2003 [tushar]: Updated ppp patch.
- November 22nd, 2003 [tushar]: Added note on setting QTDIR in Configuring QT section.

- November 22nd, 2003 [larry]: Updated to GNOME MIME Data-2.4.0.
- November 22nd, 2003 [tushar]: Updated to whois 4.6.8.
- November 22nd, 2003 [tushar]: Added sgml-common patch.
- November 21st, 2003 [igor]: Updated to XFce-4.0.1.
- November 20th, 2003 [tushar]: Added note to download source for mozilla firebird and thunderbird. Changed tail -1 to tail -n 1 in the compressdoc script.
- November 17th, 2003 [tushar]: Regenerate autotools files for sgml-common.
- November 17th, 2003 [igor]: Updated to NTP-4.2.0.
- November 16th, 2003 [igor]: Updated to FFmpeg-0.4.8 and MPlayer-1.0pre2.
- November 16th, 2003 [tushar]: Added ImageMagick instructions.
- November 16th, 2003 [tushar]: Added dependency to which for pciutils.
- November 16th, 2003 [tushar]: Fixed udfutils and cpio typos.
- November 16th, 2003 [igor]: Updated to Links-2.1pre14.
- November 15th, 2003 [igor]: Applied the compressdoc patch submitted by Joel Croteau.
- November 15th, 2003 [igor]: Updated to XMMS-1.2.8.
- November 14th, 2003 [igor]: Added libmikmod-3.1.10.
- November 14th, 2003 [igor]: Updated to OpenSP-1.5.1, Audio File-0.2.4 and Esound-0.2.32.
- November 13th, 2003 [igor]: Updated to libxml2-2.6.2, fetchmail-6.2.5, slrn-0.9.8.0 and cvs-1.11.9.
- November 12th, 2003 [igor]: Dillo: Reworded config section.
- November 11th, 2003 [larry]: updated to GConf-2.4.0.1.
- November 11th, 2003 [igor]: Updated to libmng-1.0.6.
- November 11th, 2003 [larry]: converted GNOME_PREFIX to `pkg-config --variable=prefix ORBit-2.0` for version 2.4 installs.
- November 10th, 2003 [igor]: Updated to expat-1.95.7 and which-2.16.
- November 10th, 2003 [larry]: gnome: removed linc package; updated to ORBit2-2.8.2; updated to intltool-0.27.2; removed bonobo-activation; updated to libbonobo-2.4.2.
- November 10th, 2003 [larry]: gnome: updating to GNOME-2.4.1, specifically gtk-doc-1.1.
- November 8th, 2003 [tushar]: cpio: Modify installation to not install rmt executable.
- November 8th, 2003 [tushar]: Fixed a typo in gnupg.
- November 8th, 2003 [tushar]: Fixed a typo in metacity.

5.0 - November 6th, 2003

Mailing lists

The linuxfromscratch.org server is hosting a number of mailing lists that are used for the development of the BLFS. These lists include, among others, the main development and support lists.

For more information regarding which lists are available, how to subscribe to them, archive locations, etc. visit <http://www.linuxfromscratch.org/mail.html>.

News server

All the mailing lists hosted at linuxfromscratch.org are also accessible via the NNTP server. All messages posted to a mailing list will be copied to its correspondent newsgroup, and vice versa.

The news server can be reached at news.linuxfromscratch.org.

Asking for help and the FAQ

If you encounter a problem while using this book, and your problem is not listed in the FAQ (<http://www.linuxfromscratch.org/faq>), you will find that most of the people on Internet Relay Chat (IRC) and on the mailing lists are willing to help you. An overview of the LFS mailing lists can be found in Mailing lists[p.20]. To assist us in diagnosing and solving your problem, include as much relevant information as possible in your request for help.

Things to check prior to asking

Before asking for help, you should review the following items:

- Is the hardware support compiled into the kernel or available as a module to the kernel. If it is a module, is it configured properly in `modules.conf` and has it been loaded. You should use **lsmod** as root to see if it's loaded. Check the `sys.log` or run **modprobe <driver>** to review any error message. If it loads properly, you may need to add the **modprobe** to your boot scripts.
- Are your permissions properly set, especially for devices. LFS uses groups to make these settings easier, but it also adds the step of adding users to groups to allow access. A simple **moduser -G audio <user>** may be all that's necessary for that user to have access to the sound system. Any question that starts out with "It works as root, but not as ..." should review permissions thoroughly prior to asking.
- BLFS liberally uses `/opt/<package>`. The main objection to this centers around the need to expand your environment variables for each package placed there (e.g. `PATH=$PATH:/opt/kde/bin`). In some cases, the package will walk you through the changes, but some will not. the section called "Going Beyond BLFS"[p.32] is available to help you check.

Things to mention

Apart from a brief explanation of the problem you're having, the essential things to include in your request are:

- the version of the book you are using (being 5.1-pre1),
- the package or section giving you problems,
- the exact error message or symptom you are receiving,
- whether you have deviated from the book or LFS at all.

(Note that saying that you've deviated from the book doesn't mean that we won't help you. It'll just help us to see other possible causes of your problem.)

Expect guidance instead of specific instructions. If you are instructed to read something, please do so, it generally implies that the answer was way too obvious and that the question would not have been asked if a little research was done prior to asking. The volunteers in the mailing list prefer not to be used as an alternative to doing reasonable research on your end. In addition, the quality of your experience with BLFS is also greatly enhanced by this research, and the quality of volunteers is enhanced because they don't feel that their time has been abused, so they are far more likely to participate.

An excellent article on asking for help on the Internet in general has been written by Eric S. Raymond. It is available online at <http://www.catb.org/~esr/faqs/smart-questions.html>. Read and follow the hints in that document and you are much more likely to get a response to start with and also to get the help you actually need.

Contact information

Please direct your emails to one of the BLFS mailing lists. See Mailing lists[p.20] for more information on the available mailing lists.

The current BLFS maintainer is Larry Lawrence. If you need to reach Larry, send an email to larry@linuxfromscratch.org.

Chapter 2. Important Information

Package Management

Package Management is an often requested addition to the LFS Book. A Package Manager allows tracking the installation of files making it easy to remove and upgrade packages. And before you begin to wonder, NO - this section does not talk about any particular package manager, nor does it recommend one. What it provides is a roundup of the more popular techniques and how they work. The perfect package manager for you may be among these techniques or may be a combination of two or more of these techniques. This section briefly mentions issues that may arise when upgrading packages.

Some reasons why no package manager is mentioned in LFS or BLFS:

- Dealing with package management takes the focus away from the goals of these books - Teaching how a Linux System is built.
- There are multiple solutions for package management, each having its strengths and drawbacks. Including one that satisfies all audiences is difficult.

There are some hints written on the topic of package management. Visit the Hints subproject to find if one of them fits your need.

Upgrade Issues

A Package Manager makes it easy to upgrade to newer versions as and when they are released. Generally the instructions in the LFS and BLFS Book can be used to upgrade to the newer versions. Following are some points that you should be aware of when upgrading packages, especially on a running system.

- It is recommended that if one of the toolchain package (glibc, gcc, binutils) needs to be upgraded to a newer minor version, it is safer to rebuild LFS. Though you *may* be able to get by rebuilding all the packages in their dependency order. We do not recommend the latter. For example, if glibc-2.2.x needs to be updated to glibc-2.3.x, it is safer to rebuild. For micro version updates, a simple reinstallation usually works, but is not guaranteed. For example, upgrading from glibc-2.3.1 to glibc-2.3.2 will not usually cause any problems.
- If a package containing a shared library is updated, and if the soname of the library changes, then all the packages dynamically linked to the library need to be recompiled to link against the newer library. (Note that there is no correlation between the package version and the soname of the library.) For example, consider a package foo-1.2.3 that installs a shared library with soname `libfoo.so.1`. Say you upgrade the package to a newer version foo-1.2.4 that installs a shared library with soname `libfoo.so.2`. In this case, all packages that are dynamically linked to `libfoo.so.1` need to be recompiled to link against `libfoo.so.2`. Note that you should not remove the previous libraries till the dependent packages are recompiled.
- If you are upgrading a running system, be on the lookout for packages that use **cp** instead of **install** to install files. The latter command is usually safer if the executable or library is already loaded in memory.

Package Management Techniques

The following are some common package management techniques. Before making a decision on a package manager, do a research on the various techniques, particularly the drawbacks of the particular scheme.

It is all in my head!

Yes, this is a package management technique. Some folks do not find the need for a package manager because they know the packages intimately and know what files are installed by each package. Some users also do not need any package management because they plan on rebuilding the entire LFS when a package is changed.

Install in separate directories

This is a simplistic package management that does not need any extra package to manage the installations. Each package is installed in a separate directory. For example, package `foo-1.1` is installed in `/usr/pkg/foo-1.1` and a symlink is made from `/usr/pkg/foo` to `/usr/pkg/foo-1.1`. When installing a new version `foo-1.2`, it is installed in `/usr/pkg/foo-1.2` and the previous symlink is replaced by a symlink to the new version.

The environment variables such as those mentioned in the section called “Going Beyond BLFS”[p.32] need to be expanded to include `/usr/pkg/foo`. For more than a few packages, this scheme becomes unmanageable.

Symlink style package management

This is a variation of the previous package management technique. Each package is installed similar to the previous scheme. But instead of making the symlink, each file is symlinked into `/usr` hierarchy. This removes the need to expand the environment variables. Though the symlinks can be created by the user, to automate the creation, many package managers have been written on this approach. Few of the popular ones are Stow, Epkg, Graft, and Depot.

The installation needs to be faked, so that the package thinks that it is installed in `/usr` though in reality it is installed in `/usr/pkg` hierarchy. Installing in this manner is not usually a trivial task. For example, consider that you are installing a package `libfoo-1.1`. The following instructions may not install the package properly:

```
./configure --prefix=/usr/pkg/libfoo/1.1 &&
make &&
make install
```

The installation will work, but the dependent packages may not link to `libfoo` as you would expect. If you compile a package that links against `libfoo`, you may notice that it is linked to `/usr/pkg/libfoo/1.1/lib/libfoo.so.1` instead of `/usr/lib/libfoo.so.1` as you would expect. The correct approach is to use `DESTDIR` strategy to fake installation of the package. This approach works as follows:

```
./configure --prefix=/usr &&
make &&
make DESTDIR=/usr/pkg/libfoo/1.1 install
```

Most of the packages do support this approach, but there are some which do not. For the non-compliant packages, you may either need to manually install the package, or you may find that it is easier to install some problematic packages into `/opt`.

Timestamp based

In this technique, a file is timestamped before the installation of the package. After the installation, a simple use of the **find** command with the appropriate options can generate a log of all the files installed after the timestamp file was created. A package manager written with this approach is `install-log`.

Though this scheme has the advantage of being simple, it has two drawbacks. If during installation, the files are installed with any timestamp other than the current time, those files will not be tracked by the package manager. Also, this scheme can only be used when one package is installed at a time. The logs are not reliable if two packages are being installed on two different consoles.

LD_PRELOAD based

In this approach, a library is preloaded before installation. During installation, this library tracks the packages that are being installed by attaching itself to various executables such as **cp**, **install**, **mv** and tracking the system calls that modify the filesystem. For this approach to work, all the executables need to be dynamically linked without the `suid` or `sgid` bit. Preloading the library may cause some unwanted side-effects during installation; hence do perform some tests to ensure that the package manager does not break anything and logs all the appropriate files.

Creating Package Archives

In this scheme, the package installation is faked into a separate tree as described in the Symlink style package management. After the installation, a package archive is created using the installed files. This archive is then used to install the package either on the local machine or can even be used to install the package on other machines.

This approach is used by most of the package managers found in the commercial distributions. Examples of package Managers that follow this approach are RPM, pkg-utils, Debian's apt, Gentoo's Portage system.

User Based Management

This scheme, that is unique to LFS, was devised by Matthias Benkmann, and is available from the Hints Project. In this scheme, each package is installed as a separate user into the standard locations. Files belonging to a package are easily identified by checking the user id. The features and shortcomings of this approach are too complex to describe in this section. For the details please see the hint at http://www.linuxfromscratch.org/hints/downloads/files/more_control_and_pkg_man.txt.

Notes on downloading, unpacking and compiling software

Those people who have built a LFS system will be aware of the general principles of downloading and unpacking software. We will however repeat some of that information here for those new to building their own software.

Each set of installation instructions contains a URL from which you can download the package. We do however keep a selection of patches available via http. These are referenced as needed in the installation instructions.

While you can keep the source TAR balls anywhere you like, we assume that you have unpacked them and unzipped any required patches into `/usr/src`.

We can not emphasize strongly enough that you should start from a *clean source tree* each time. This means that if you have had an error, it's usually best to delete the source tree and re-unpack it *before* trying again. This obviously doesn't apply if you're an advanced user used to hacking Makefiles and C code, but if in doubt, start from a clean tree.

Unpacking the software

If a file is tar'ed and gzip'ed, it is unpacked by running one of the following two commands, depending on the filename:

```
tar -xvzf filename.tar.gz
tar -xvzf filename.tgz
tar -xvzf filename.tar.Z
```

If a file is tar'ed and bzip2'ed, it can usually be unpacked by running:

```
tar -jxvf filename.tar.bz2
```

You can also use a slightly different method:

```
bzcat filename.tar.bz2 | tar -xv
```

Finally, you need to be able to unpack patches which are generally not tar'ed. The best way to do this is to copy the patch file to `/usr/src` and then to run one of the following commands depending on whether the file is `.gz` or `.bz2`:

```
gunzip patchname.gz
bunzip2 patchname.bz2
```

Verifying file integrity using md5sum

Generally, to verify that the downloaded file is genuine and complete, most package maintainers also distribute md5sums of the files. To verify the md5sum of the downloaded files, download both the file and the corresponding md5sum file to the same directory (preferably from different on-line locations), and (assuming `file.md5sum` is the md5sum file downloaded) run the following command:

```
md5sum -c file.md5sum
```

If there are any errors, they will be reported.

Creating Log files during installation

For larger packages, it is convenient to create log files instead of staring at the screen hoping to catch a particular error or warning. Log files are also useful for debugging and keeping records. The following command allows you to create a installation log. Replace `<command>` with the command you intend to execute.

```
( <command> 2>&1 | tee compile.log && exit $PIPESTATUS )
```

`2>&1` redirects error messages to the same location as normal output. The `tee` command allows viewing of the output

while logging the results to a file. The parentheses around the command run the entire command in a subshell and finally the **exit \$PIPESTATUS** ensures the result of the <command> is returned as the result and not the result of the **tee** command.

The `/usr` versus `/usr/local` debate

Should I install XXX in `/usr` or `/usr/local`?

This is a question without an obvious answer for an LFS based system.

In traditional Unix systems, `/usr` usually contains files that come with the system distribution, and the `/usr/local` tree is free for the local administrator to add things to. The only really hard and fast rule is that Unix distributions should not touch `/usr/local`, except perhaps for creating the basic directories within it.

With Linux distributions, like Red Hat, Debian etc. a possible rule is that `/usr` is managed by the distribution's package system and `/usr/local` is not. This way the package manager's database knows about every file within `/usr`.

LFS users build their own system and so deciding where the system ends and local files begin is not straightforward. So the choice should be made in order to make things easier to administer. There are several reasons for dividing files between `/usr` and `/usr/local`.

- On a network of several machines all running LFS, or mixed LFS and other Linux distributions, `/usr/local` could be used to hold packages that are common between all the computers in the network. It can be NFS mounted or mirrored from a single server. Here local indicates local to the site.
- On a network of several computers all running an identical LFS system `/usr/local` could hold packages that are different between the machines. In this case local refers to the individual computers.
- Even on a single computer `/usr/local` can be useful if you have several distributions installed simultaneously, and want a place to put packages that will be the same on all of them.
- Or you might regularly rebuild your LFS, but want a place to put files that you don't want to rebuild each time. This way you can wipe the LFS file system and start from a clean partition every time without losing everything.

Some people ask why not use your own directory tree, e.g. `/usr/site` rather than `/usr/local`?

There is nothing stopping you, many sites do make their own trees, however it makes installing new software more difficult. Automatic installers often look for dependencies in `/usr` and `/usr/local`, and if the file it is looking for is in `/usr/site` instead, the installer will probably fail unless you specifically tell it where to look.

What is the BLFS position on this?

All of the BLFS instructions install programs in `/usr` with optional instructions to install into `/opt` for some specific packages.

Optional Patches

As you follow the various sections in the book, you will observe that the book includes various patches that are required for a successful and secure installation of the packages. The general policy of the book is to include patches that fall in one of the following criteria:

- Fixes a compilation problem.
- Fixes a security problem.
- Fixes a broken functionality.

In short, the book only includes patches that are either Required or Recommended. There is a Patches subproject which hosts various patches (including the patches included in the books) to enable you to configure your LFS the way you like it:)

BLFS Boot Scripts

The BLFS Bootscripts package contains the init scripts that are used throughout the book. It is assumed that you will be using the blfs-bootscripts package in conjunction with a compatible lfs-bootscripts package. Refer to <http://www.linuxfromscratch.org/lfs/view/5.1/chapter07/bootscripts.html> for more information on the lfs-bootscripts package.

Package information

- Download: <http://downloads.linuxfromscratch.org/blfs-bootscripts-5.1.tar.bz2>

The blfs-bootscripts package will be used throughout the BLFS book for startup scripts. Unlike LFS, each init script has a separate install target in the blfs-bootscripts package. It is recommended you keep the package source directory around until completion of your BLFS system. When a script is requested from blfs-bootscripts, simply change to the directory and execute the given **make install-<init-script>** command. This command installs the init script to its proper location (along with any auxiliary configuration scripts) and also creates the appropriate symlinks to start and stop the service at the appropriate run-level.

Note

It is advisable to peruse each bootscript before installation to ascertain that it satisfies your need. Also verify that the start and stop symlinks it creates match your preferences.

Going Beyond BLFS

The packages that are installed in this book are only the tip of the iceberg. We hope that the experience you gained with the LFS book and the BLFS book will give you the background needed to compile, install and configure packages that are not included in this book.

When you want to install a package to a location other than `/`, or `/usr`, you are installing outside the default environment settings on most machines. The following examples should assist you in determining how to correct this situation. The examples cover the complete range of settings that may need updating, but they are not all needed in every situation.

- Expand the `PATH` to include `$PREFIX/bin`.
- Expand the `PATH` for root to include `$PREFIX/sbin`.
- Add `$PREFIX/lib` to `/etc/ld.so.conf` or expand `LD_LIBRARY_PATH` to include it. Before using the latter option, check out <http://www.visi.com/~barr/ldpath.html>. If you modify `/etc/ld.so.conf` remember to update `/etc/ld.so.cache` by executing **ldconfig**.
- Add `$PREFIX/man` to `/etc/man.conf` or expand `MANPATH`.
- Add `$PREFIX/info` to `INFOPATH`.
- Add `$PREFIX/lib/pkgconfig` to `PKG_CONFIG_PATH`.
- Add `$PREFIX/include` to `CPPFLAGS` when compiling packages that depend on the package you installed.

If you are in search of a package that is not in the book, the following are different ways you can search for the concerned package.

- If you know the name of the package, then search FreshMeat for at <http://freshmeat.net/>. Also search Google at <http://google.com/>. Sometimes a search for the rpm at <http://rpmfind.net/> or the deb at http://www.debian.org/distrib/packages#search_packages can also lead to the website for the package.
- If you know the name of the executable, but not the package that the executable belongs to, first try a google search with the name of the executable. If the results are overwhelming, try searching for the given executable in the Debian repository at http://www.debian.org/distrib/packages#search_contents.

Some general hints on handling new packages:

- Many of the newer packages follow the **`./configure && make && make install`** *dance* routine. Help on the options accepted by configure can be obtained via the command **`./configure --help`**.
- Most of the packages contain documentation on compiling and installing the package. Some of the documents are excellent, some not so excellent. Check out the homepage of the package for any additional and updated hints for compiling and configuring the package.
- If you are having a problem compiling the package, try searching the lfs archives at <http://search.linuxfromscratch.org/> for the error or if that fails try searching google. If everything else fails, try the blfs support mailing-list/news-server.

Tip

If you have found a package that is only available in `.deb` or `.rpm` format, there are two small scripts `rpm2targz` and `deb2targz` that are available at <http://downloads.linuxfromscratch.org/deb2targz.tar.bz2> and <http://downloads.linuxfromscratch.org/rpm2targz.tar.bz2> to convert the archives into a simple `tar.gz` format.

Part II. Post LFS Configuration and Extra Software

Chapter 3. After LFS Configuration Issues

The intention of LFS is to provide a basic system which you can build upon. There are several things, about tidying up the system, which many people wonder about once they have done the base install. We hope to cover these issues in this chapter.

Most people coming from a Windows background to Linux find the concept of text-only configuration files slightly strange. In Linux, just about all configuration is done via text files. The majority of these files can be found in the `/etc` hierarchy. There are often graphical configuration programs available for different subsystems but most are simply pretty front ends to the process of editing the file. The advantage of text-only configuration is that you can edit parameters using your favorite text editor, whether that be vim, emacs or anything else.

The first task is making a recovery diskette because it's the most critical need. Then the system is configured to ease addition of new users, in "Configuring for Adding Users", because this can affect the choices you make in the three subsequent topics - `/etc/inputrc`, "The Bash Shell Startup Files" and `/etc/vimrc`, `~/.vimrc`.

The remaining topics, `/etc/issue` (Customizing your logon), `/etc/shells`, "Random number generation", "Man page issues" and "Info page issues" are then addressed, in that order. They don't have much interaction with the other topics in this chapter.

Creating a Custom Boot Disk

Decent Rescue Boot Disk Needs

This section is really about creating a *rescue* diskette. As the name *rescue* implies, the host system has a problem, often lost partition information or corrupted file systems, that prevents it from booting and/or operating normally. For this reason, you *must not* depend on resources from the host being "rescued". To presume that any given partition or hard drive *will* be available is a risky presumption.

Heeding the warning, the rescue disk created here has no dependency on the host system's resources, other than basic bootability and hardware soundness. At a minimum, the most common sorts of failures requiring a rescue boot disk should be addressed by the contents of the boot disk. This would include the common loss of partitioning (master boot record is lost or corrupted), file system corruption, and the need to allow creation and editing of files that may have been lost or corrupted, possibly as an effect of the other two problems.

Additional utilities should be available to search for text or files, copy, move and remove files, and many other normal operations that might be expected to be needed when reconstructing.

This Minimal Decent Rescue Disk

The intent here is to create a "rescue boot disk" that will support the common operations listed above. These functions are provided by including selected executables from busybox and e2fsprogs. A basic editor and rudimentary disk partitioning utility may also be optionally included.

This, however, is not the limit. A minimal disk is described here, but you can add anything you can fit on the floppy. Furthermore, if one floppy is not enough to meet your needs, you can make a multi-diskette rescue set that means, essentially, the sky is the limit. This is discussed below. The number of other possible variations are just too numerous to mention here.

Build the Rescue Boot Disk

Prerequisites

You should have known-good floppy diskettes available. Some people prefer to use the **fdformat** command to prepare these because it also does a verification. See the man page for more details. Another good idea is to always prepare duplicates of the rescue diskette. Media does deteriorate.

These instructions presume a base LFS install using ext2/ext3 file systems.

You need to have loopback device support enabled in your host's kernel to use this procedure.

You should make a custom kernel that includes only those features needed to rescue your system, so it will have the least size. No sense in building in support for things like XFree86, DRI, etc, as most rescues are performed from the command prompt. Along the same lines, if you have GCC-2.95.3[p.200], it is known to produce smaller kernels. So you might want to use that compiler for this kernel. If you do so, don't overlook any loadable modules (which are not addressed here) you might need - they need to be compiled with same compiler used to make the kernel.

The rescue image must include support for the file system of your choice (we presume ext2/3 here), ramdisk and initial ramdisk (initrd). Disable everything that you can in the kernel configuration. You should keep support for the proc file system and tempfs file system enabled because of their general utility. The proc file system is needed for the **mount** to report properly.

If you install *only* the minimal set of components shown in this document, you will need a kernel that is 643 or fewer blocks in size. If you want the optional programs - a very basic editor, like **ed**, and rudimentary disk partitioning, like **sfdisk** - the kernel will need to be 595 or fewer blocks in size. This should not be a major problem unless your needs are fairly esoteric. On the system used to develop this version of the procedures, using only ext2 file systems and not using networking or CDs for recovery, the kernel image is only 481 blocks. And there may be more to gain - it has not been closely examined for additional gains.

This kernel image will be called "rescueimage" hereinafter. You can actually name your image anything you like and just use its name instead in any commands that include "rescueimage".

If you can not get your rescueimage down to the size needed to allow all you need on the ramdisk image, don't fret. You can always build a two diskette set, one boot and one root diskette. The kernel will prompt you to insert the root file system diskette. This will allow room for a compressed ramdisk image of 1440 blocks and a rescueimage of the same size.

The rescueimage size limits given above are likely to vary as local system-specific configurations change. Use them only as a guideline and not as gospel. The size of rescueimage as shown by **ls -sk** is only an approximation because of some "overhead". On the system used to develop this version of these procedures, that command shows 488 blocks but the actual number of blocks written is only 480 and a fraction, which means that 481 blocks are actually used.

Rescue Disk Build Process

The basic process will be:

- make a mount point for a file system
- make an empty file to hold the file system
- bind the empty file to a loopback device
- make a 4MB file system
- mount the file system
- add components to the file system
- make the compressed initrd
- join rescueimage and initrd onto a diskette

The initial ramdisk will be automatically loaded at boot time if setup is done correctly.

Make a mount point and an empty file to hold a file system

```
mkdir -p /mnt/loop1
dd if=/dev/zero of=/tmp/rfloppy bs=1k count=4096
```

Command explanations

dd: This is a generalized input-to-output copy utility that also has many transformation capabilities.

if=/dev/zero: This parameter assigns **dd**'s input file to a device that returns an infinite stream of zeroes.

of=/tmp/rfloppy: This parameter directs **dd**'s output to */tmp/rfloppy*.

bs=1k count=4096: These parameters tell **dd** to read and write in "chunks" of 1024 bytes and process 4096 "chunks".

Bind the file to a loopback device, make a file system and mount it.

The reason these commands are used is that they work regardless of the version of **mount** (older ones don't have the **-o loop** option) or if */etc/mtab* is symlinked to */proc* (which causes mount to be unable to properly "unbind" a loop device, due to "lost" information). An alternate set of commands is provided, after these three commands, that you can use if you don't have either of these situations.

```
losetup /dev/loop1 /tmp/rfloppy
mke2fs -m 0 -N 504 /dev/loop1
mount -t ext2 /dev/loop1 /mnt/loop1
```

Command explanations

losetup /dev/loop1 /tmp/rfloppy: This command "binds" a loopback device to the empty file.

mke2fs -m 0 -N 504 /dev/loop1: This command makes an ext2 file system on the loopback device (which really means it is created in the file to which the loopback device is bound) and reserves no blocks. The **-N 504** parameter causes only 504 inodes to be allocated, leaving more space for other things needed in the file system.

mount -t ext2 /dev/loop1 /mnt/loop1: This mounts the file system just created, just as if it were a real device, like a hard drive or diskette. This allows all the normal system I/O commands to operate as if a real device were present.

If your **mount** supports the **-o loop** option *and* your */etc/mtab* is a real file, rather than a symlink to */proc*, the three above commands can be replaced by these next two commands.

```
mke2fs -F -m 0 -N 504 /tmp/rfloppy
mount -o loop /tmp/rfloppy /mnt/loop1
```

Command explanations

mke2fs -F -m 0 -N 504 /tmp/rfloppy: As before, a file system is made, with only 504 inodes and no reserved blocks, that will be bound to a loopback device. The **-F** parameter just suppresses an irritating question issued when **mke2fs** realizes that you are not accessing a device.

mount -o loop /tmp/rfloppy /mnt/loop1: This command tells **mount** to bind the named file to a loopback device it automatically selects (the first available) and mount the device on */mnt/loop1*.

Add components to the file system

A cautionary note: if you are not running in a **chroot** environment, be sure that you do not accidentally omit the */mnt/loop1* reference in the commands. If you do so, you might replace the equivalent components on your host with the components that are installed by these procedures. Even if you are in a **chroot** environment, you may need to be careful if the environment is your freshly built LFS system which you intend to use as a host in the future.

First, to have as much free space as possible, remove the *lost+found* directory, which is not needed because it is only used by **fsck**. Since **fsck** will never be run on this file system, it is unneeded.

```
rmdir /mnt/loop1/lost+found/
```

Now make a minimal set of directories.

```
mkdir /mnt/loop1/{dev,proc,etc,sbin,bin,lib,mnt,usr,var}
```

Add needed device files to the initrd image. If you use devfs, the following command works well, as you only have the devices you use anyway.

```
cp -dpr /dev/* /mnt/loop1/dev
```

If you used **MAKEDEV** to create your devices on your host, you'll want to use something similar to this longer command, to minimize wasting space with unneeded inodes.

You must modify this to suit your rescueimage configuration and other needs. For example, you may need SCSI devices and may not need frame buffer devices or the pseudo-terminal directory. Also, the number of hard drives and partitions that you include should be the minimal that you need. Extensive analysis has not been done on the list below, so there are more inodes and space to be gained by "fine tuning" this set.

```
mkdir /mnt/loop1/dev/pts
cp -a \
  /dev/null /dev/console \
  /dev/fb[0-7] /dev/fd /dev/fd0 /dev/fd0h1440 /dev/full \
  /dev/hda* /dev/hdb* /dev/hdc* /dev/hdd* /dev/initctl /dev/kmem \
  /dev/loop[0-3] /dev/lp0 /dev/mem /dev/port \
  /dev/psaux /dev/ram \
  /dev/ram0 /dev/ram1 /dev/ram2 /dev/ram3 /dev/random /dev/rtc \
  /dev/shm /dev/stderr /dev/stdin /dev/stdout /dev/tty \
  /dev/tty[0-9] /dev/ttyS0 /dev/ttyS1 /dev/urandom /dev/zero \
  /mnt/loop1/dev
```

What is needed in the /etc directory

If you choose, you can copy all or selected parts of your `/etc/passwd` and `/etc/group` files. But even if each is less than 1024 bytes, you will lose two inodes and two blocks of space on the initial ramdisk. This only really matters because of trying to squeeze everything onto a 1.44MB diskette. Every little bit helps. The strategy taken here is to create these two files as part of the rescue boot and initialization process. The commands that make the two files will be embedded inside the `rcS` script that `linuxrc` (really `busybox`) invokes after the `initrd` is loaded. This way no more inodes or blocks are used on the diskette to carry these files.

Some might like to copy their `/etc/rc*` directory into the ramdisk image, but this may have no value, other than archival use, in a worst-case recovery scenario. If you want automatic initialization of the system after repair, they may have some value. But few people need or want this to happen. If the file system on the hard drives are corrupted, what good will mount scripts do? Some scripts may be useful, like access to a network to copy over backup data when the hard drive's file systems are usable again. The point is that you should copy only the parts that you can use because space is at a premium on the diskette.

Here, only the `fstab` will be included. This is handy because it eases mounting of partitions that may be useful and also can be examined and used as a guide as to what is available and what may need reconstruction. Because it may be larger than needed, you should edit it to remove any useless entries and minimize commentary. No other editing is needed because the boot scripts are not included and no automatic mounting will be done using the `fstab`. If you decide to include some boot scripts that might try to mount things, change the `fstab`'s entries to **noauto** in the options field so they don't cause an attempt to mount a potentially corrupt partition. Copy it to `/tmp`, edit it as desired and then:

```
cp -a /tmp/fstab /mnt/loop1/etc
```

Now the initialization script will be added. As mentioned above, **linuxrc** is symlinked to `busybox`. After the kernel and initial ramdisk have been loaded, the kernel gives control to **linuxrc** (`busybox`). It wants to run an `/etc/init.d/rcS` script to do any initial setup.

If you use `devfsd`, you will need to set up the `rcS` script to handle the `devfsd` startup. Put the following commands in `/mnt/loop1/etc/init.d/rcS`. You may also want to add some of the processes shown in the non-`devfs` version that follows.

```
#!/bin/sh
mount -t devfs devfs /dev
```

```
/sbin/devfsd /dev
```

If you don't use devfsd, but created a static /dev directory using **MAKEDEV**, or any similar process, the rcS script will do slightly different things. Also, don't forget that it is creating the /etc/passwd and /etc/group files, thus saving space on the diskette.

The script made next will mount /proc, turn on swap (no harm is done if it fails), make the /etc/passwd and /etc/group files, create a log directory and turn on swapping. Create the script with:

```
mkdir -p /mnt/loop1/etc/init.d
cat >/mnt/loop1/etc/init.d/rcS << EOD
#!/bin/sh
mount -t proc proc /proc
swapon -a

echo "root:x:0:0:root:/root:/bin/bash" > /etc/passwd

cat > /etc/group <<EOF
root:x:0:
bin:x:1:
sys:x:2:
kmem:x:3:
tty:x:4:
tape:x:5:
daemon:x:6:
floppy:x:7:
disk:x:8:
lp:x:9:
dialout:x:10:
audio:x:11:
EOF
chmod 644 /etc/passwd /etc/group

mkdir /var/log

EOD
chmod u+x /mnt/loop1/etc/init.d/rcS
```

Unless you add a lot to this script, which *is* encouraged, the above should be reasonably close to what you need.

Install packages

There are two packages that must be installed. The busybox package incorporates the core functions that provide a shell and many basic utilities. A file system package, like e2fsprogs, or a package for the file system you are using, will provide a minimal set of utilities for file system checking and reconstruction. The whole package will not be installed, but only certain needed components.

If you use devfsd, you will also need to install that software.

Install busybox into the initial ramdisk image. Busybox incorporates many Unix utility program functions into a single small executable file.

```
make &&
make PREFIX=/mnt/loop1 install &&
> /mnt/loop1/var/utmp
```

A var/utmp is made because busybox needs it for the reboot command to work properly. If this file doesn't exist when busybox is started, the reboot command will not work. This would be a bad thing for people that have no reset button available to them.

If you use devfs to create devices on the fly and free up precious inodes on the floppy, you'll also install devfsd to facilitate the devices that busybox expects to find. Use the following commands to do the install.

```
mv GNUmakefile Makefile &&
make &&
make PREFIX=/mnt/loop1 install &&
```

Install part of e2fsprogs

If you use the ext2 or ext3 (journaling) file system, you can use the commands below to install the minimal functionality that should allow you to get your hard drives usable again. If you use ext3, keep in mind that it is a part of the e2fsprogs package and you can get the components, which are mostly hard links, from the same places shown below. If you use some other file system, such as reiserfs, you should apply the *principals* you see here to install parts of that package instead.

```
LDFLAGS='-s'
mkdir build &&
cd build &&
../configure --prefix=/mnt/loop1/usr --with-root-prefix="" \
  --disable-swapsfs --disable-debugfs \
  --enable-dynamic-e2fsck --disable-nls --disable-evms \
  --disable-rpath &&
make LDFLAGS="$LDFLAGS" &&
strip -p --strip-unneeded --remove-section=.comment \
  -o /mnt/loop1/sbin/mke2fs misc/mke2fs &&
strip -p --strip-unneeded --remove-section=.comment \
  -o /mnt/loop1/sbin/e2fsck e2fsck/e2fsck &&
chmod 555 /mnt/loop1/sbin/{mke2fs,e2fsck}
```

Two useful utilities

There are two very useful utilities that any rescue disk should have, to help in faster and more accurate recovery. The first is a partitioning utility. The **sfdisk** program is used here because of its small size and great power. Be warned though - it is not what is considered to be "user friendly". But the **fdisk** and **cdisk** programs are substantially larger or require more shared objects, like ncurses .

The second utility is an editor. Most graphical editors are inherently too large and also require additional shared objects. For this reason, **ed** is used here. It is small, requires no additional shared objects and is a regex-based editor that is the ancestor to almost all subsequent editors that support regex-based editing, whether graphical or not. It is a "context editor" and offers powerful, but non-graphical, editing features. There are many other editors that may be suitable - feel free to use one of them instead.

Read the busybox **INSTALL** and **README** files to see how to include a **vi** editor. It has not been investigated here yet, so it may or may not easily fit onto a single diskette image such as is made here.

You can install these or not, but it is important for you to have some capability such as these offer. Exactly how you would install the utilities you choose will have to be determined by you.

Sfdisk and **ed** are installed by, essentially, copying them from your host. Strip is used, just to assure that they carry no "excess baggage", even though the base LFS install should have stripped them already. Use the following commands:

```
strip -p --strip-unneeded --remove-section=.comment \
  -o /mnt/loop1/sbin/sfdisk /sbin/sfdisk
strip -p --strip-unneeded --remove-section=.comment \
  -o /mnt/loop1/bin/ed /bin/ed
chmod 555 /mnt/loop1/sbin/sfdisk /mnt/loop1/bin/ed
```

Also, keeping in mind your space limitations, copy any other binaries and libraries you need to the image. Use the **ldd** command to see which libraries you will need to copy over for any executables. Don't forget to also strip them *before* copying them to the ramdisk image or use the **strip**, as above, to "copy" them.

Set up the lib directory

Once you have installed all the utilities from above and any additional ones you want, use the **ldd** command, as mentioned

above, on those that were not listed in this document. If any additional libraries are needed, add them into the setup commands shown next.

If you installed only those things shown above, the shared objects needed will be minimal. You can add them to the ramdisk image with:

```
strip -p --strip-unnneeded --remove-section=.comment \
-o /mnt/loop1/lib/libc.so.6 /lib/libc-2.3.2.so &&
strip -p --strip-unnneeded --remove-section=.comment \
-o /mnt/loop1/lib/ld-linux.so.2 /lib/ld-2.3.2.so &&
strip -p --strip-unnneeded --remove-section=.comment \
-o /mnt/loop1/lib/libdl.so.2 /lib/libdl-2.3.2.so &&
chmod 555 /mnt/loop1/lib/{libc.so.6,ld-linux.so.2,libdl.so.2}
```

Note that the above commands change the names of the libraries, eliminating the need for the usual symlinks. If you add any additional shared objects, be alert for similar opportunities and also the pitfalls that may be present.

Make the compressed initrd

Unmount the loopback file. If you used **mount**'s `-o loop` option, the "bond" between the loop device and the file will be removed when the unmount is done. Just omit the **losetup -d /dev/loop1** from the following sequence. The `-9` parameter is used with **gzip** to make the smallest possible compressed image. To make sure it will fit on the diskette, list the file's size.

```
umount /mnt/loop1 &&
losetup -d /dev/loop1 && # Omit if mount's -o loop was used
gzip -9 < /tmp/rfloppy > /tmp/rootfs.gz
ls -l /tmp/rootfs.gz
```

Join rescueimage and initrd onto a diskette

Now the rescueimage and initial ramdisk image will be written to the boot diskette. Before doing this, calculate the number of blocks needed for rescueimage and for `/tmp/rootfs.gz` (the initial ramdisk), individually, by dividing each size by 1024 and adding one if there is any remainder. Add these two results together. They must total 1,440 or fewer blocks. If they total more than this, don't worry too much. Changes to make a two-diskette set are presented later. Of course, you could reexamine your choices and try to shrink either the rescueimage or the initial ramdisk image.

To make a single-floppy rescue, using devfs, use the following commands. If you use the static `/dev` setup, use `/dev/fd0` instead of the `/dev/floppy/0`.

```
dd if=rescueimage of=/dev/floppy/0 bs=1k
rdev /dev/floppy/0 0,0
rdev -R /dev/floppy/0 0
```

Command explanations

rdev /dev/floppy/0 0,0: sets the root file system the kernel will use when it boots. Because it loads an **initrd**, it will automatically set that as the root device, initially. So, the `0,0` gives it "no value", telling the kernel to not mount any other device. Some folks give `/dev/fd0` or something similar. But this has effect *only* when **linuxrc** (really busybox) exits and the normal **init** processes get invoked. Since this is not being done here, and the floppy is *not* a valid file system, it would be useless here. A hard drive would be a better choice if you are looking to automatically bring the system up after repair. Since busybox provides the **reboot** command, automatic initialization is not needed.

The **rdev -R /dev/floppy/0 0** will set the "root flags" to zero. They have no use in this application.

The **dd** from above showed some results, like

```
480+1 records in
480+1 records out
```

In this example the rescueimage (kernel) was 480+1 blocks in size. Make sure that this number, which may be different

for you, matches your calculations from above. You need to calculate a "magic number" now that will be inserted into rescueimage. The value consists of three significant parts. Two are discussed here. The third is touched upon later.

Bits 0 - 10 will contain the size of rescueimage, in blocks, that you calculated above, and which should match the results from the `dd` above. Bit 14 (the 15th bit, which is 2 to the 14th power, or 16,384) is a flag that, when set to 1, tells the kernel an initial ramdisk is to be loaded. So for the single-floppy rescue diskette, the two numbers 16,384 and 481 (or whatever number is right for your rescueimage size) are added together to produce a decimal value, like 16865. This value is inserted into the proper place in rescueimage by the **rdev** command done next.

Insert the "magic number" into rescueimage and then write the root file system right after rescueimage on the floppy by executing the following commands, with the proper numbers inserted. Notice that the **seek** parameter's number must be the size, in blocks, of your rescueimage. If you use the static `/dev` setup, use `/dev/fd0` in the commands below, instead of `/dev/floppy/0`.

```
rdev -r /dev/floppy/0 16865
dd if=/tmp/rootfs.gz of=/dev/floppy/0 bs=1k seek=481
```

In this command, **seek** was used to position to the block following the end of the rescueimage (480+1) and begin writing the root file system to the floppy.

A Two-diskette Rescue Setup

If you just can't live with a single-diskette rescue system, here is what to do to make a simple two-diskette system. Note that the endless possibilities presented by the availability of **linuxrc** and other components are not addressed here. Here you will just use the kernel's ability to prompt for a second diskette that contains the `initrd` image and load it.

Modify the above instructions as follows. First a different magic number is needed. The 15th bit (bit 14) still needs to be set, but the size of the rescueimage, in blocks, is replaced with a zero. The third component, which was not discussed above, is now used. This is the 16th bit (bit 15) of the "magic number". When set, it tells the kernel to ask the user to insert the "root" floppy. It then loads the `initrd` image from that diskette. Because the size of the rescueimage was replaced by zero, the kernel starts loading from the "zero'th" block (the first one) on the second diskette.

The 16th bit (bit 15) represents 2 raised to the 15th power, or 32,768. So the new magic number is 32,768 + 16384, which is 49,152. This value tells the kernel to prompt for, and then load, an initial ramdisk image from the first block on the inserted floppy. So your first modification is to the command to write the "magic number" to the rescueimage image on the diskette.

```
rdev -r /dev/floppy/0 49152
```

Note that the `initrd` image is *not* copied to the diskette yet. Remove the boot diskette and insert another diskette that will hold your root file system. Run this modified command (don't forget to use `/dev/fd0` if you don't use `devfs`). Note that no **seek** parameter is used.

```
dd if=/tmp/rootfs.gz of=/dev/floppy/0 bs=1k
```

That's all there is to it. The possibilities from here are limited only by your imagination and tenacity in pursuing enhancements. And your willingness to research available documentation. A good starting point is the "Documentation" directory in your kernel source tree. More help may be gained at LFS Hints (please use a mirror site that is suitable) and TLDP.

Configuring for Adding Users

Together, the `/usr/sbin/useradd` command and `/etc/skel` directory (both are easy to setup and use) provide a way to assure new users are added on your LFS system with the same beginning settings for things like `PATH`, keyboard processing and environmental variables. Using these two facilities makes it easier to assure this initial state for each new user.

The `/etc/skel` directory holds copies of various initialization and other files that may be copied to the new user's home directory when the `/usr/sbin/useradd` program adds the new user.

Useradd

The **useradd** program uses a collection of default values kept in `/etc/default/useradd`, if it exists. If the file does not exist, then it uses some internal defaults. You can see the default values by running `/usr/sbin/useradd -D`.

To change these values to something new, create a base `/etc/default/useradd` file with the same values as the output of `/usr/sbin/useradd -D`. Here is a sample.

```
# Begin /etc/default/useradd

GROUP=100
HOME=/home
INACTIVE=-1
EXPIRE=
SHELL=
SKEL=/etc/skel

# End /etc/default/useradd
```

The only thing missing from the file is a default shell. Add that by running:

```
/usr/sbin/useradd -D -s/bin/bash
```

This will set the `SHELL=` line to `SHELL=/bin/bash`.

Useradd has many parameters that can be set in the `/etc/default/useradd` file.

For more information see **man useradd**.

/etc/skel

To get started create an `/etc/skel` directory and make sure it is writable only by the system administrator, usually root. Creating the directory as root is the best way to go.

The mode of any files from this part of the book that you put in `/etc/skel` should be writable only by the owner. Also, since there is no telling what kind of sensitive information a user may eventually place in their copy of these files, you should make them unreadable by "group" and "other".

You can also put other files in `/etc/skel` and different permissions may be needed for them.

Decide which initialization files should be provided in every (or most) new user's home directory. The decisions you make will affect what you do in the next three sections, `/etc/inputrc`[p.44], `The Bash Shell Startup Files`[p.45] and `/etc/vimrc`, `~/vimrc`[p.51]. Some or all of those files will be useful for root, any already-existing users, and new users.

The files from those sections that you might want to place in `/etc/skel` include `.inputrc`, `.bash_profile`, `.bashrc`, `.bash_logout`, `.dircolors`, and `.vimrc`. If you are unsure which of these should be placed there, just continue to the following sections, read each section and any references provided, and then make your decision.

You will run a slightly modified set of commands for files which are placed in `/etc/skel`. Each section will remind you of this. In brief, the book's commands have been written for files *not* added to `/etc/skel` and just send the results to the user's home directory. If the file is going to be in `/etc/skel`, change the book's command(s) to send output there

instead and then just copy the file from `/etc/skel` to the appropriate directories, like `/etc`, `~` or the home directory of any other user already in the system.

When Adding a User

When adding a new user with **useradd** use the `-m` parameter, which tells **useradd** to create the user's home directory and copy files from `/etc/skel` (can be overridden) to the new user's home directory. For example:

```
useradd -m jwrober
```

/etc/inputrc

Inputrc deals with the mapping of the keyboard for certain situations. This file is the start-up file used by readline - the input related library used by Bash and most other shells.

For more information see **info bash** -- *Node: Readline Init* file as well as **info readline**. There is a lot that can be done with this one rc file.

Global values are set in /etc/inputrc. Personal user values are set in ~/.inputrc. The ~/.inputrc file will override the global settings file. A later page sets up Bash to use /etc/inputrc if there is no .inputrc for a user when /etc/profile is read (usually at login). If you want your system to use both, or don't want *global* keyboard handling, it is a good idea to place a default .inputrc into the /etc/skel directory for use with new users.

Below is a base /etc/inputrc along with comments to explain what the various options do. Note that comments can *not* be on the same line as commands.

If you will create an .inputrc in /etc/skel using the command below, change the command's output to /etc/skel/.inputrc and be sure to check/set permissions afterward. Then you can just copy that file to /etc/inputrc and the home directory of any user already existing in the system, including root, that needs a private version of the file. Be sure to use the -p parameter of **cp** to maintain permissions and be sure to change owner and group appropriately.

```
cat > /etc/inputrc << "EOF"
# Begin /etc/inputrc

# Make sure we don't output everything on the 1 line
set horizontal-scroll-mode Off

# Enable 8bit input
set meta-flag On
set input-meta On

# Turns off 8th bit stripping
set convert-meta Off

# Keep the 8th bit for display
set output-meta On

# none, visible or audible
set bell-style none

# All of the following map the escape sequence of the
# value contained inside the 1st argument to the
# readline specific functions

"\eOd": backward-word
"\eOc": forward-word

# for linux console
"\e[1~": beginning-of-line
"\e[4~": end-of-line
"\e[5~": beginning-of-history
"\e[6~": end-of-history
"\e[3~": delete-char
"\e[2~": quoted-insert

# for xterm
"\eOH": beginning-of-line
"\eOF": end-of-line

# End /etc/inputrc
EOF
```

The Bash Shell Startup Files

The shell program `/bin/bash` (hereafter referred to as just "the shell") uses a collection of startup files to help create an environment. Each file has a specific use and may affect login and interactive environments differently. The files in the `/etc` directory generally provide global settings. If an equivalent file exists in your home directory it may override the global settings.

An interactive login shell is started after a successful login, using `/bin/login`, by reading the `/etc/passwd` file. This shell invocation normally reads `/etc/profile` and its private equivalent `~/.bash_profile` upon startup.

An interactive non-login shell is normally started at the command-line (e.g. `[prompt]$/bin/bash`) or by the `/bin/su` command. An interactive non-login shell is also started with a terminal program such as **xterm** or **konsole** from within a graphical environment. This type of shell invocation normally copies the parent environment and then reads the user's `~/.bashrc` file for additional startup configuration instructions.

A non-interactive shell is usually present when a shell script is running. It is non-interactive because it is processing a script and not waiting for user input between commands. For these shell invocations, only the environment inherited from the parent shell is used.

The file `~/.bash_logout` is not used for an invocation of the shell. It is read and executed when a user exits from an interactive login shell.

To the standard files, we also add `/etc/bashrc` which is called from the user's `~/.bashrc` for system wide initialization of non-login shells.

For more information see **info bash** -- *Nodes: Bash Startup Files and Interactive Shells*.

`/etc/profile`

Here is a base `/etc/profile`. This file starts by setting up some helper functions and some basic parameters. It specifies some bash history parameters and, for security purposes, disables keeping a permanent history file for the root user. It also sets a default user prompt. It then calls small, single purpose scripts in the `/etc/profile.d` directory to provide most initialization.

For more information on the escape sequences you can use for your prompt (e.g. the `PS1` environment variable) see **info bash** -- *Node: Printing a Prompt*.

```
cat > /etc/profile << "EOF"
# Begin /etc/profile
# Written for Beyond Linux From Scratch
# by James Robertson <jameswrobertson@earthlink.net>
# modifications by Dagmar d'Surreal <rivyqntzne@pbzpnfg.arg>

# System wide environment variables and startup programs.

# System wide aliases and functions should go in /etc/bashrc. Personal
# environment variables and startup programs should go into
# ~/.bash_profile. Personal aliases and functions should go into
# ~/.bashrc.

# Functions to help us manage paths. Second argument is the name of the
# path variable to be modified (default: PATH)
pathremove () {
    local IFS=':'
    local NEWPATH
    local DIR
    local PATHVARIABLE=${2:-PATH}
    for DIR in ${!PATHVARIABLE} ; do
        if [ "$DIR" != "$1" ] ; then
            NEWPATH=${NEWPATH:+$NEWPATH:}$DIR
        fi
    done
```

```

    export $PATHVARIABLE="$NEWPATH"
}

pathprepend () {
    pathremove $1 $2
    local PATHVARIABLE=${2:-PATH}
    export $PATHVARIABLE="$1${!PATHVARIABLE:+:${!PATHVARIABLE}}$"
}

pathappend () {
    pathremove $1 $2
    local PATHVARIABLE=${2:-PATH}
    export $PATHVARIABLE="$${!PATHVARIABLE:+${!PATHVARIABLE}:}$1"
}

if [ $EUID -eq 0 ] ; then
    unset HISTFILE
fi

# Setup some environment variables.
export HISTSIZE=1000
export HISTIGNORE="&:[bf]g:exit"
#export PS1="[\u@\h \w]\$ "
export PS1='\u@\h:\w\$ '

for script in /etc/profile.d/*.sh ; do
    if [ -x $script ] ; then
        . $script
    fi
done

# Now to clean up after ourselves
unset pathremove pathprepend pathappend

# End /etc/profile
EOF

```

Now create the `/etc/profile.d` directory.

```
install --directory --mode=0755 --owner=root --group=root /etc/profile.d
```

`/etc/profile.d/dircolors.sh`

This script uses the `~/ .dircolors` and `/etc/dircolors` files to control the colors of file names in a directory listing. They control colorized output of things like `ls --color`. The explanation of how to initialize these files is at the end of this section.

```

cat > /etc/profile.d/dircolors.sh << "EOF"
# Setup for /bin/ls to support color, the alias is in /etc/bashrc.
if [ -f "/etc/dircolors" ] ; then
    eval $(dircolors -b /etc/dircolors)

    if [ -f "$HOME/.dircolors" ] ; then
        eval $(dircolors -b $HOME/.dircolors)
    fi
fi
alias ls='ls --color=auto'
EOF

```

`/etc/profile.d/extrapaths.sh`

This script adds several useful paths to the `PATH` and `PKG_CONFIG_PATH` environment variables. If you want, you can

uncomment the last section to put a dot at the end of your path. This will allow executables in the current working directory to be executed without specifying a `./`, however you are warned that this is generally considered a security hazard.

```
cat > /etc/profile.d/extrapaths.sh << "EOF"
if [ -d /usr/local/lib/pkgconfig ] ; then
    pathappend /usr/local/lib/pkgconfig PKG_CONFIG_PATH
fi
if [ -d /usr/local/bin ]; then
    pathprepend /usr/local/bin
fi
if [ -d /usr/local/sbin -a $EUID -eq 0 ]; then
    pathprepend /usr/local/sbin
fi
for directory in $(find /opt/*/lib/pkgconfig -type d); do
    pathappend $directory PKG_CONFIG_PATH
done
for directory in $(find /opt/*/bin -type d); do
    pathappend $directory
done
if [ -d ~/bin ]; then
    pathprepend ~/bin
fi
#if [ $EUID -gt 99 ]; then
#    pathappend .
#fi
EOF
```

`/etc/profile.d/readline.sh`

This script sets up the default `inputrc` configuration file. If the user does not have individual settings, it uses the global file.

```
cat > /etc/profile.d/readline.sh << "EOF"
# Setup the INPUTRC environment variable.
if [ -z "$INPUTRC" -a ! -f "$HOME/.inputrc" ] ; then
    INPUTRC=/etc/inputrc
fi
export INPUTRC
EOF
```

`/etc/profile.d/tinker-term.sh`

Some applications need a specific `TERM` setting to support color.

```
cat > /etc/profile.d/tinker-term.sh << "EOF"
# This will tinker with the value of TERM in order to convince certain apps
# that we can, indeed, display color in their window.

if [ -n "$COLORTERM" ]; then
    export TERM=xterm-color
fi

if [ "$TERM" = "xterm" ]; then
    export TERM=xterm-color
fi
EOF
```

`/etc/profile.d/umask.sh`

Setting the `umask` value is important for security. Here we turn off the default group write permissions for system users and when the user name and group name are not the same.

```
cat > /etc/profile.d/umask.sh << "EOF"
# By default we want the umask to get set.
if [ "$(id -gn)" = "$(id -un)" -a $EUID -gt 99 ] ; then
    umask 002
else
    umask 022
fi
EOF
```

/etc/profile.d/X.sh

If X is installed, we also update the PATH and PKG_CONFIG_PATH variables.

```
cat > /etc/profile.d/X.sh << "EOF"
if [ -x /usr/X11R6/bin/X ]; then
    pathappend /usr/X11R6/bin
fi
if [ -d /usr/X11R6/lib/pkgconfig ] ; then
    pathappend /usr/X11R6/lib/pkgconfig PKG_CONFIG_PATH
fi
EOF
```

/etc/profile.d/xterm-titlebars.sh

This script shows an example of a different way of setting the prompt. The normal variable, PS1, is supplemented by PROMPT_COMMAND. If set, the value of PROMPT_COMMAND is executed as a command prior to issuing each primary prompt.

```
cat > /etc/profile.d/xterm-titlebars.sh << "EOF"
# The substring match ensures this will work for "xterm" and "xterm-xfree86".
if [ "${TERM:0:5}" = "xterm" ]; then
    PROMPT_COMMAND='echo -ne "\033]0;${USER}@${HOSTNAME} : ${PWD}\007"'
    export PROMPT_COMMAND
fi
EOF
```

Other initialization can easily be added to the profile by adding additional scripts to the /etc/profile.d directory.

/etc/bashrc

Here is a base /etc/bashrc. Comments in the file should explain everything you need.

```
cat > /etc/bashrc << "EOF"
# Begin /etc/bashrc
# Written for Beyond Linux From Scratch
# by James Robertson <jameswrobertson@earthlink.net>

# System wide aliases and functions.

# System wide environment variables and startup programs should go into
# /etc/profile.  Personal environment variables and startup programs
# should go into ~/.bash_profile.  Personal aliases and functions should
# go into ~/.bashrc

# Provides a colored /bin/ls command.  Used in conjunction with code in
# /etc/profile.

alias ls='ls --color=auto'

# Provides prompt for non-login shells, specifically shells started
# in the X environment. [Review the LFS archive thread titled
```

```
# PS1 Environment Variable for a great case study behind this script addendum.]
export PS1="[\u@\h \w]\$ "

# End /etc/bashrc
EOF
```

~/.bash_profile

Here is a base ~/.bash_profile. If you want each new user to have this file automatically, just change the output of the command to /etc/skel/.bash_profile and check the permissions after the command is run. You can then copy /etc/skel/.bash_profile to the home directories of already existing users, including root, and set the owner and group appropriately.

```
cat > ~/.bash_profile << "EOF"
# Begin ~/.bash_profile
# Written for Beyond Linux From Scratch
# by James Robertson <jameswrobertson@earthlink.net>
# updated by Bruce Dubbs <bdubbs@linuxfromscratch.org>

# Personal environment variables and startup programs.

# Personal aliases and functions should go in ~/.bashrc. System wide
# environment variables and startup programs are in /etc/profile.
# System wide aliases and functions are in /etc/bashrc.

append () {
    # First remove the directory
    local IFS=:
    local NEWPATH
    for DIR in $PATH; do
        if [ "$DIR" != "$1" ]; then
            NEWPATH = ${NEWPATH:+$NEWPATH:}$DIR
        fi
    done

    # Then append the directory
    export PATH=$NEWPATH:$1
}

if [ -f "$HOME/.bashrc" ] ; then
    source $HOME/.bashrc
fi

if [ -d "$HOME/bin" ] ; then
    append $HOME/bin
fi

unset append

# End ~/.bash_profile
EOF
```

~/.bashrc

Here is a base ~/.bashrc. The comments and instructions for using /etc/skel for .bash_profile above also apply here. Only the target file names are different.

```
cat > ~/.bashrc << "EOF"
# Begin ~/.bashrc
# Written for Beyond Linux From Scratch
```



```
# by James Robertson <jameswrobertson@earthlink.net>

# Personal aliases and functions.

# Personal environment variables and startup programs should go in
# ~/.bash_profile. System wide environment variables and startup
# programs are in /etc/profile. System wide aliases and functions are
# in /etc/bashrc.

if [ -f "/etc/bashrc" ] ; then
    source /etc/bashrc
fi

# End ~/.bashrc
EOF
```

~/.bash_logout

This is an empty ~/.bash_logout that can be used as a template. You will notice that the base ~/.bash_logout does not include a **clear** command. This is because the clear is handled in the /etc/issue file.

```
cat > ~/.bash_logout << "EOF"
# Begin ~/.bash_logout
# Written for Beyond Linux From Scratch
# by James Robertson <jameswrobertson@earthlink.net>

# Personal items to perform on logout.

# End ~/.bash_logout
EOF
```

/etc/dircolors

If you want to use the dircolors capability then run the following command. The /etc/skel setup steps seen above also can be used here to provide a .dircolors file when a new user is set up. As before, just change the output file name on the following command and assure the permissions, owner and group are correct on the files created and/or copied.

```
dircolors -p > /etc/dircolors
```

If you wish to customize the colors used for different file types, you can edit the /etc/dircolors file. The instructions for setting the colors are embedded in the file.

Finally, Ian Macdonald has written an excellent collection of tips and tricks to enhance your shell environment. You can read it online at <http://www.caliban.org/bash/index.shtml>

/etc/vimrc, ~/.vimrc

The LFS book installs vim as its editor. At this point we should state that there are a *lot* of different editors out there including emacs, nano, joe and many more. Anyone who has been around the Internet (especially usenet) for a short time will certainly have observed at least one flame war, usually involving vim and emacs users!

The LFS book gives a basic vimrc file. Here, we attempt to enhance this file. At startup, **vim** reads /etc/vimrc and ~/.vimrc (i.e., the global vimrc and the user-specific one.). Note that this is only true if you compiled vim using LFS-3.1 onwards. Prior to this, the global vimrc was /usr/share/vim/vimrc .

Here is a slightly expanded vimrc that you can put in /etc/vimrc to provide global effect. Of course, if you put it into /etc/skel/.vimrc instead, it will be made available to users you add to the system later. You can also copy the file from /etc/skel/.vimrc to /etc/vimrc and the home directory of users already on the system, like root. Be sure to set permissions, owner and group if you do copy anything directly from /etc/skel.

```
" Begin .vimrc

set nocompatible
set bs=2
set columns=80
set background=dark
set wrapmargin=8
syntax on
set ruler

" End .vimrc
```

A FAQ on the lfs mailing lists regards the comment tags in vimrc. Note that they are " instead of the more usual # or //. This is correct, the syntax for vimrc is slightly unusual.

We'll run through a quick explanation of what each of the options in this example file means here:

- `set nocompatible`: This option stops **vim** from behaving in a strongly **vi**-compatible way. It should be at the start of any vimrc file as it can affect lots of other options which you may want to override.
- `set bs=2`: This influences the behavior of the backspace option. It is fairly complex so see **:help 'bs'** for more details.
- `set columns=80`: This simply sets the number of columns used on the screen.
- `set background=dark`: This tells **vim** to use colors which look good on a dark background.
- `set wrapmargin=8`: This is the number of characters from the right window border where wrapping starts.
- `syntax on`: Enables **vim**'s syntax highlighting.
- `set ruler`: This makes **vim** show the current row and column at the bottom right of the screen.

More information on the *many* **vim** options can be found by reading the help inside **vim** itself. Do this by typing **:help** in **vim** to get the general help, or by typing **:help usr_toc.txt** to view the User Manual Table of Contents.

/etc/issue (Customizing your logon)

When you first boot up your new LFS system, the logon screen will be nice and plain (as it should be in a bare-bones system). Many people however, will want their system to display some information in the logon message. This can be accomplished using the file `/etc/issue`.

The `/etc/issue` file is a plain text file which will also accept certain Escape sequences (see below) in order to insert information about the system. There is also the file `issue.net` which can be used when logging on remotely. **ssh** however, will only use it if you set the option in the configuration file and will also *not* interpret the escape sequences shown below.

One of the most common things which people want to do is to clear the screen at each logon. The easiest way of doing that is to put a "clear" escape-sequence into `/etc/issue`. A simple way of doing this is to do **clear > /etc/issue**. This will insert the relevant escape code into the start of the `/etc/issue` file. Note that if you do this, when you edit the file, you should leave the `^[c` character on the first line alone.

The following escapes are recognized by `agetty` (the program which usually parses `/etc/issue`). This information is from **man agetty** where you can find extra information about the logon process.

The `issue` file can contain certain escape codes to display various information. All escape codes consist of a backslash (`\`) immediately followed by one of the letters explained below (so `\d` in `/etc/issue` would insert the current date).

```
b  Insert the baudrate of the current line.
d  Insert the current date.
s  Insert the system name, the name of the operating system.
l  Insert the name of the current tty line.
m  Insert the architecture identifier of the machine, e.g. i486
n  Insert the nodename of the machine, also known as the hostname.
o  Insert the domainname of the machine.
r  Insert the release number of the kernel, e.g. 2.4.16.
t  Insert the current time.
u  Insert the number of current users logged in.
U  Insert the string "1 user" or "<n> users" where <n> is the
   number of current users logged in.
v  Insert the version of the OS, e.g. the build-date etc.
```

/etc/shells

The `shells` file contains a list of login shells on the system. Applications use this file to determine whether a shell is valid. For each shell a single line should be present, consisting of the shell's path, relative to root.

For example, this file is consulted by **chsh** to determine whether a normal user may change the login shell for her own account. If the command name is not listed, the user will be denied of change.

It is a requirement for applications such as GDM which does not populate the face browser if it can't find `/etc/shells` or FTP daemons which traditionally disallow access to users with shells not included in this file.

```
cat > /etc/shells << "EOF"
# Begin /etc/shells

/bin/sh
/bin/bash

# End /etc/shells
EOF
```

Random number generation

The Linux kernel supplies a random number generator which is accessed through `/dev/random` and `/dev/urandom`. Programs that utilize the random and urandom devices, such as OpenSSH, will benefit from these instructions.

When a Linux system starts up without much operator interaction, the entropy pool, data used to compute a random number, may be in a fairly predictable state. This creates the real possibility that the number generated at startup may always be the same. In order to counteract this effect, you should carry the entropy pool information across your shut-downs and start-ups.

Install the `/etc/rc.d/init.d/random` init script included with the `blfs-bootscripts-5.1`[p.31] package.

```
make install-random
```

Compressing man and info pages

Man and info reader programs can transparently process gzip'ed or bzip2'ed pages, a feature you can use to free some disk space while keeping your documentation available. However, things are not that simple: man directories tend to contain links - hard and symbolic - which defeat simple ideas like recursively calling **gzip** on them. A better way to go is to use the script below.

```
cat > /usr/sbin/compressdoc << "EOF"
#!/bin/bash
# VERSION: 20040320.0026
#
# Compress (with bzip2 or gzip) all man pages in a hierarchy and
# update symlinks - By Marc Heerdink <marc @ koelkast.net>
# Modified to be able to gzip or bzip2 files as an option and to deal
# with all symlinks properly by Mark Hymers <markh @ linuxfromscratch.org>
#
# Modified 20030930 by Yann E. Morin <yann.morin.1998 @ anciens.enib.fr>
# to accept compression/decompression, to correctly handle hard-links,
# to allow for changing hard-links into soft- ones, to specify the
# compression level, to parse the man.conf for all occurrences of MANPATH,
# to allow for a backup, to allow to keep the newest version of a page.
# Modified 20040330 by Tushar Teredesai to replace $0 by the name of the script.
# (Note: It is assumed that the script is in the user's PATH)
#
# TODO:
# - choose a default compress method to be based on the available
#   tool : gzip or bzip2;
# - offer an option to automatically choose the best compression method
#   on a per page basis (eg. check which ofgzip/bzip2/whatever is the
#   most effective, page per page);
# - when a MANPATH env var exists, use this instead of /etc/man.conf
#   (useful for users to (de)compress their man pages;
# - offer an option to restore a previous backup;
# - add other compression engines (compress, zip, etc?). Needed?

# Funny enough, this function prints some help.
function help ()
{
    if [ -n "$1" ]; then
        echo "Unknown option : $1"
    fi
    ( echo "Usage: $MY_NAME <comp_method> [options] [dirs]" && \
      cat << EOT
Where comp_method is one of :
    --gzip, --gz, -g
    --bzip2, --bz2, -b
        Compress using gzip or bzip2.

    --decompress, -d
        Decompress the man pages.

    --backup
        Specify a .tar backup shall be done for every directories.
        In case a backup already exists, it is saved as .tar.old prior
        to making the new backup. If an .tar.old backup exist, it is
        removed prior to saving the backup.
        In backup mode, no other action is performed.

And where options are :
    -1 to -9, --fast, --best
        The compression level, as accepted by gzip and bzip2. When not
        specified, uses the default compression level for the given
        method (-6 for gzip, and -9 for bzip2). Not used when in backup
        or decompress modes.
```

```

--force, -F    Force (re-)compression, even if the previous one was the same
               method. Useful when changing the compression ratio. By default,
               a page will not be re-compressed if it ends with the same suffix
               as the method adds (.bz2 for bzip2, .gz for gzip).

--soft, -S     Change hard-links into soft-links. Use with caution as the
               first encountered file will be used as a reference. Not used
               when in backup mode.

--hard, -H     Change soft-links into hard-links. Not used when in backup mode.

--conf=dir, --conf dir
               Specify the location of man.conf. Defaults to /etc.

--verbose, -v  Verbose mode, print the name of the directory being processed.
               Double the flag to turn it even more verbose, and to print the
               name of the file being processed.

--fake, -f     Fakes it. Print the actual parameters compman will use.

dirs           A list of space-separated absolute pathname to the man
               directories.
               When empty, and only then, parse ${MAN_CONF}/man.conf for all
               occurrences of MANPATH.

```

Note about compression

There has been a discussion on blfs-support about compression ratios of both gzip and bzip2 on man pages, taking into account the hosting fs, the architecture, etc... On the overall, the conclusion was that gzip was much efficient on 'small' files, and bzip2 on 'big' files, small and big being very dependent on the content of the files.

See the original post from Mickael A. Peters, titled "Bootable Utility CD", and dated 20030409.1816(+0200), and subsequent posts:
<http://linuxfromscratch.org/pipermail/blfs-support/2003-April/038817.html>

On my system (x86, ext3), man pages were 35564kiB before compression. gzip -9 compressed them down to 20372kiB (57.28%), bzip2 -9 got down to 19812kiB (55.71%). That is a 1.57% gain in space. YMMV.

What was not taken into consideration was the decompression speed. But does it make sense to? You gain fast access with uncompressed man pages, or you gain space at the expense of a slight overhead in time. Well, my P4-2.5GHz does not even let me notice this... :-)

EOT

```

) | less
}

```

```

# This function checks that the man page is unique amongst bzip2'd, gzip'd and
# uncompressed versions.

```

```

# $1 the directory in which the file resides

```

```

# $2 the file name for the man page

```

```

# Returns 0 (true) if the file is the latest and must be taken care of, and 1

```

```

# (false) if the file is not the latest (and has therefore been deleted).

```

```

function check_unique ()

```

```

{

```

```

# NB. When there are hard-links to this file, these are
# not deleted. In fact, if there are hard-links, they
# all have the same date/time, thus making them ready
# for deletion later on.

```

```

# Build the list of all man pages with the same name

```

```

DIR=$1

```

```

BASENAME=`basename "${2}" .bz2`
BASENAME=`basename "${BASENAME}" .gz`
GZ_FILE="${BASENAME}.gz"
BZ_FILE="${BASENAME}.bz2"

# Look for, and keep, the most recent one
LATEST=`(cd "$DIR"; ls -lrt "${BASENAME}" "${GZ_FILE}" "${BZ_FILE}" 2>/dev/null | tail -n 1)`
for i in "${BASENAME}" "${GZ_FILE}" "${BZ_FILE}"; do
    [ "$LATEST" != "$i" ] && rm -f "$DIR"/"$i"
done

# In case the specified file was the latest, return 0
[ "$LATEST" = "$2" ] && return 0
# If the file was not the latest, return 1
return 1
}

# Name of the script
MY_NAME=`basename $0`

# OK, parse the command-line for arguments, and initialize to some sensible
# state, that is : don't change links state, parse /etc/man.conf, be most
# silent, search man.conf in /etc, and don't force (re-)compression.
COMP_METHOD=
COMP_SUF=
COMP_LVL=
FORCE_OPT=
LN_OPT=
MAN_DIR=
VERBOSE_LVL=0
BACKUP=no
FAKE=no
MAN_CONF=/etc
while [ -n "$1" ]; do
    case $1 in
        --gzip|--gz|-g)
            COMP_SUF=.gz
            COMP_METHOD=$1
            shift
            ;;
        --bzip2|--bz2|-b)
            COMP_SUF=.bz2
            COMP_METHOD=$1
            shift
            ;;
        --decompress|-d)
            COMP_SUF=
            COMP_LVL=
            COMP_METHOD=$1
            shift
            ;;
        -[1-9]|--fast|--best)
            COMP_LVL=$1
            shift
            ;;
        --force|-F)
            FORCE_OPT=-F
            shift
            ;;
        --soft|-S)
            LN_OPT=-S
            shift
            ;;
        --hard|-H)

```



```

    LN_OPT=-H
    shift
    ;;
--conf=*)
    MAN_CONF=`echo $1 | cut -d '=' -f2-`
    shift
    ;;
--conf)
    MAN_CONF="$2"
    shift 2
    ;;
--verbose|-v)
    let VERBOSE_LVL++
    shift
    ;;
--backup)
    BACKUP=yes
    shift
    ;;
--fake|-f)
    FAKE=yes
    shift
    ;;
--help|-h)
    help
    exit 0
    ;;
/*)
    MAN_DIR="${MAN_DIR} ${1}"
    shift
    ;;
-*)
    help $1
    exit 1
    ;;
*)
    echo "\"$1\" is not an absolute path name"
    exit 1
    ;;
esac
done

# Redirections
case $VERBOSE_LVL in
0)
    # 0, be silent
    DEST_FD0=/dev/null
    DEST_FD1=/dev/null
    VERBOSE_OPT=
    ;;
1)
    # 1, be a bit verbose
    DEST_FD0=/dev/stdout
    DEST_FD1=/dev/null
    VERBOSE_OPT=-v
    ;;
*)
    # 2 and above, be most verbose
    DEST_FD0=/dev/stdout
    DEST_FD1=/dev/stdout
    VERBOSE_OPT="-v -v"
    ;;
esac

```

```

# Note: on my machine, 'man --path' gives /usr/share/man twice, once with a trailing '/', o
if [ -z "$MAN_DIR" ]; then
    MAN_DIR=`man --path -C "$MAN_CONF"/man.conf \
        sed 's:/\|\\n/g' \
        while read foo; do dirname "$foo"/.; done \
        sort -u \
        while read bar; do echo -n "$bar "; done`
fi

# If no MANPATH in ${MAN_CONF}/man.conf, abort as well
if [ -z "$MAN_DIR" ]; then
    echo "No directory specified, and no directory found with `man --path`"
    exit 1
fi

# Fake?
if [ "$FAKE" != "no" ]; then
    echo "Actual parameters used:"
    echo -n "Compression.....: "
    case $COMP_METHOD in
        --bzip2|--bz2|-b) echo -n "bzip2";;
        --gzip|--gz|-g) echo -n "gzip";;
        --decompress|-d) echo -n "decompressing";;
        *) echo -n "unknown";;
    esac
    echo " ($COMP_METHOD)"
    echo "Compression level.: $COMP_LVL"
    echo "Compression suffix: $COMP_SUF"
    echo -n "Force compression.: "
    [ "foo$FORCE_OPT" = "foo-F" ] && echo "yes" || echo "no"
    echo "man.conf is.....: ${MAN_CONF}/man.conf"
    echo -n "Hard-links.....: "
    [ "foo$LN_OPT" = "foo-S" ] && echo "convert to soft-links" || echo "leave as is"
    echo -n "Soft-links.....: "
    [ "foo$LN_OPT" = "foo-H" ] && echo "convert to hard-links" || echo "leave as is"
    echo "Backup.....: $BACKUP"
    echo "Faking (yes!).....: $FAKE"
    echo "Directories.....: $MAN_DIR"
    echo "Verbosity level....: $VERBOSE_LVL"
    exit 0
fi

# If no method was specified, print help
if [ -z "${COMP_METHOD}" -a "${BACKUP}" = "no" ]; then
    help
    exit 1
fi

# In backup mode, do the backup solely
if [ "$BACKUP" = "yes" ]; then
    for DIR in $MAN_DIR; do
        cd "${DIR}/.."
        DIR_NAME=`basename "${DIR}"`
        echo "Backing up $DIR..." > $DEST_FD0
        [ -f "${DIR_NAME}.tar.old" ] && rm -f "${DIR_NAME}.tar.old"
        [ -f "${DIR_NAME}.tar" ] && mv "${DIR_NAME}.tar" "${DIR_NAME}.tar.old"
        tar cfv "${DIR_NAME}.tar" "${DIR_NAME}" > $DEST_FD1
    done
    exit 0
fi

# I know MAN_DIR has only absolute path names
# I need to take into account the localized man, so I'm going recursive
for DIR in $MAN_DIR; do

```

```

MEM_DIR=`pwd`
cd "$DIR"
for FILE in *; do
    # Fixes the case were the directory is empty
    if [ "foo$FILE" = "foo*" ]; then continue; fi

    # Fixes the case when hard-links see their compression scheme change
    # (from not compressed to compressed, or from bz2 to gz, or from gz to bz2)
    # Also fixes the case when multiple version of the page are present, which
    # are either compressed or not.
    if [ ! -L "$FILE" -a ! -e "$FILE" ]; then continue; fi

    # Do not compress whatis files
    if [ "$FILE" = "whatis" ]; then continue; fi

    if [ -d "$FILE" ]; then
        cd "${MEM_DIR}" # Go back to where we ran "$0", in case "$0"=="./compressdoc" ...
        # We are going recursive to that directory
        echo "-> Entering ${DIR}/${FILE}..." > $DEST_FD0
        # I need not pass --conf, as I specify the directory to work on
        # But I need exit in case of error
        "$MY_NAME" ${COMP_METHOD} ${COMP_LVL} ${LN_OPT} ${VERBOSE_OPT} ${FORCE_OPT} "${DIR}/${FILE}"
        echo "<- Leaving ${DIR}/${FILE}." > $DEST_FD1
        cd "$DIR" # Needed for the next iteration of the loop
    else # !dir
        if ! check_unique "$DIR" "$FILE"; then continue; fi

        # Check if the file is already compressed with the specified method
        BASE_FILE=`basename "$FILE" .gz`
        BASE_FILE=`basename "$BASE_FILE" .bz2`
        if [ "${FILE}" = "${BASE_FILE}${COMP_SUF}" -a "foo${FORCE_OPT}" = "foo" ]; then continue; fi

        # If we have a symlink
        if [ -h "$FILE" ]; then
            case "$FILE" in
                *.bz2)
                    EXT=bz2 ;;
                *.gz)
                    EXT=gz ;;
                *)
                    EXT=none ;;
            esac

            if [ ! "$EXT" = "none" ]; then
                LINK=`ls -l "$FILE" | cut -d ">" -f2 | tr -d " " | sed s/\. $EXT$//`
                NEWNAME=`echo "$FILE" | sed s/\. $EXT$//`
                mv "$FILE" "$NEWNAME"
                FILE="$NEWNAME"
            else
                LINK=`ls -l "$FILE" | cut -d ">" -f2 | tr -d " "`
            fi

            if [ "$LN_OPT" = "-H" ]; then
                # Change this soft-link into a hard- one
                rm -f "$FILE" && ln "${LINK}${COMP_SUF}" "${FILE}${COMP_SUF}"
                chmod --reference "${LINK}${COMP_SUF}" "${FILE}${COMP_SUF}"
            else
                # Keep this soft-link a soft- one.
                rm -f "$FILE" && ln -s "${LINK}${COMP_SUF}" "${FILE}${COMP_SUF}"
            fi
            echo "Relinked $FILE" > $DEST_FD1
        # else if we have a plain file

```

```

elif [ -f "$FILE" ]; then
    # Take care of hard-links: build the list of files hard-linked
    # to the one we are {de,}compressing.
    # NB. This is not optimum as the file will eventually be compressed
    # as many times it has hard-links. But for now, that's the safe way.
    inode=`ls -li "$FILE" | awk '{print $1}'`
    HLINKS=`find . \! -name "$FILE" -inum $inode`

    if [ -n "$HLINKS" ]; then
        # We have hard-links! Remove them now.
        for i in $HLINKS; do rm -f "$i"; done
    fi

    # Now take care of the file that has no hard-link
    # We do decompress first to re-compress with the selected
    # compression ratio later on...
    case "$FILE" in
        *.bz2)
            bunzip2 $FILE
            FILE=`basename "$FILE" .bz2`
            ;;
        *.gz)
            gunzip $FILE
            FILE=`basename "$FILE" .gz`
            ;;
    esac

    # Compress the file with the given compression ratio, if needed
    case $COMP_SUF in
        *bz2)
            bzip2 ${COMP_LVL} "$FILE" && chmod 644 "${FILE}${COMP_SUF}"
            echo "Compressed $FILE" > $DEST_FD1
            ;;
        *gz)
            gzip ${COMP_LVL} "$FILE" && chmod 644 "${FILE}${COMP_SUF}"
            echo "Compressed $FILE" > $DEST_FD1
            ;;
        *)
            echo "Uncompressed $FILE" > $DEST_FD1
            ;;
    esac

    # If the file had hard-links, recreate those (either hard or soft)
    if [ -n "$HLINKS" ]; then
        for i in $HLINKS; do
            NEWFILE=`echo "$i" | sed s/\.gz$// | sed s/\.bz2$//`
            if [ "$LN_OPT" = "-S" ]; then
                # Make this hard-link a soft- one
                ln -s "${FILE}${COMP_SUF}" "${NEWFILE}${COMP_SUF}"
            else
                # Keep the hard-link a hard- one
                ln "${FILE}${COMP_SUF}" "${NEWFILE}${COMP_SUF}"
            fi
            chmod 644 "${NEWFILE}${COMP_SUF}" # Really work only for hard-links. Harmless for
        done
    fi

else
    # There is a problem when we get neither a symlink nor a plain file
    # Obviously, we shall never ever come here... :-(
    echo "Whaooo... \"${DIR}/${FILE}\" is neither a symlink nor a plain file. Please ch
    ls -l "${DIR}/${FILE}"
    exit 1
fi

```

```

    fi
done # for FILE
done # for DIR
EOF
chmod 755 /usr/sbin/compressdoc

```

Now, as root, you can issue a **compressdoc --bz2** to compress all your system man pages. You can also run **compressdoc --help** to get a comprehensive help about what the script is able to do.

Don't forget that a few programs, like the X Window system, XEmacs, also install their documentation in non standard places (such as `/usr/X11R6/man`, etc...). Don't forget to add those locations in the file `/etc/man.conf`, as a `MANPATH=`*path* section.

Example:

```

...
MANPATH=/usr/share/man
MANPATH=/usr/local/man
MANPATH=/usr/X11R6/man
MANPATH=/opt/qt/doc/man
...

```

Generally, package installation systems do not compress man/info pages, which means you will need to run the script again if you want to keep the size of your documentation as small as possible. Also, note that running the script after upgrading a package is safe: when you have several versions of a page (for example, one compressed and one uncompressed), the most recent one is kept and the others deleted.

Configuring for Network Filesystems

While LFS is capable of mounting network file systems such as NFS these are not mounted by `mountfs` init script since the tools needed to mount these systems may not be available on the root partition and also since network file systems need to be mounted after the networking is on and need to be unmounted before the network goes down.

Install the `/etc/rc.d/init.d/netfs` network mount script included with the `blfs-bootscripts-5.1[p.31]` package.

```
make install-netfs
```

Chapter 4. Security

Security takes many forms in a computing environment. This chapter gives examples of three different types of security: access, prevention and detection.

Access for users is usually handled by **login** or an application designed to handle the login function. In this chapter, we show how to enhance **login** by setting policies with PAM modules. Access via networks can also be secured by policies set by iptables, commonly referred to as a firewall.

Prevention of breaches, like a trojan, are assisted by applications like GnuPG, specifically the ability to confirm signed packages, which prevents modification of the TAR ball after the packager creates it.

Finally, we touch on detection with a package that stores "signatures" of critical files (defined by the administrator) and then regenerates those "signatures" and compares for files that have been changed.

cracklib-2.7

Introduction to cracklib

The cracklib package contains a library used to enforce strong passwords by comparing user selected passwords to words in a chosen wordlist.

Package information

- Download (HTTP): <http://www.crypticide.com/users/alecm/security/cracklib,2.7.tar.gz>
- Download (FTP): <ftp://ftp.cerias.purdue.edu/pub/tools/unix/libs/cracklib/cracklib.2.7.tar.gz>
- Download size: 21 KB
- Estimated Disk space required (with cracklib wordlist): 17 MB
- Estimated build time: 0.10 SBU

Additional downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/cracklib-2.7-blfs-1.patch>
- Recommended patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/cracklib-2.7-heimdal-1.patch>

You will also need to download a wordlist for use with cracklib. There are two wordlists to choose from at the following location. Use the `cracklib` word list for good security, or opt for the `allwords` word list for lightweight machines short on RAM. You can of course choose any other word list that you have at your disposal.

cracklib (15.6MB): <http://www.cotse.com/wordlists/cracklib>

allwords (466KB): <http://www.cotse.com/wordlists/allwords>

Installation of cracklib

First, we need to install the chosen word list for cracklib:

```
install -d -m755 /usr/share/dict &&
install -m644 [wordlist] /usr/share/dict &&
ln -sf [wordlist] /usr/share/dict/words &&
echo $(hostname) >> /usr/share/dict/extra.words
```

Our wordlist is linked to `/usr/share/dict/words` as historically, `words` is the primary wordlist in the `/usr/share/dict` directory. We also echo the value of `hostname` to a file called `extra.words`. This extra file is intended to be a site specific list which includes easy to guess passwords such as company or department name, user's names, product names, computer name, domain name, etc.

Now apply BLFS patch:

```
patch -Np1 -i ../cracklib-2.7-blfs-1.patch
```

If necessary, apply the heimdal patch:

```
cp -R cracklib cracklib_krb5 &&  
patch -Np1 -i ../cracklib-2.7-heimdal-1.patch
```

Finally install the package:

```
make install
```

Contents

The cracklib package contains the `libcrack` library.

Description

libcrack library

The `libcrack` library provides a fast dictionary lookup method for strong password enforcement.

Linux-PAM-0.77

Introduction to Linux-PAM

The Linux-PAM package contains Pluggable Authentication Modules. This is useful to enable the local system administrator to choose how applications authenticate users.

Package information

- Download (HTTP): <http://www.kernel.org/pub/linux/libs/pam/pre/library/Linux-PAM-0.77.tar.bz2>
- Download (FTP): <ftp://ftp.kernel.org/pub/linux/libs/pam/pre/library/Linux-PAM-0.77.tar.bz2>
- Download size: 332 KB
- Estimated Disk space required: 4.1 MB
- Estimated build time: 0.07 SBU

Additional download

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/Linux-PAM-0.77-linkage-3.patch>

Linux-PAM dependencies

Optional

cracklib-2.7[p.64]

Installation of Linux-PAM

Install Linux-PAM by running the following commands:

```
patch -Np1 -i ../Linux-PAM-0.77-linkage-3.patch &&
autoconf &&
./configure --enable-static-libpam --with-mailspool=/var/mail \
  --enable-read-both-confs --sysconfdir=/etc &&
make &&
make install &&
mv /lib/libpam.a /lib/libpam_misc.a /lib/libpamc.a /usr/lib &&
ln -sf ../../lib/libpam.so.0.77 /usr/lib/libpam.so &&
ln -sf ../../lib/libpam_misc.so.0.77 /usr/lib/libpam_misc.so &&
ln -sf ../../lib/libpamc.so.0.77 /usr/lib/libpamc.so
```

Command explanations

autoconf: This is necessary as in the patch, we change where PAM looks for the cracklib libs. This requires that the configure script be recreated.

--enable-static-libpam: This switch builds static PAM libraries as well as the dynamic libraries.

--with-mailspool=/var/mail: This switch makes the mailspool directory FHS compliant.

--enable-read-both-confs: This switch lets the local administrator choose which configuration file setup to use.

mv /lib/libpam.a /lib/libpam_misc.a /lib/libpamc.a /usr/lib: This command moves the static libraries to /usr/lib to comply with FHS.

Configuring Linux-PAM

Config files

/etc/pam.d or /etc/pam.conf

Configuration Information

Configuration information is placed in /etc/pam.d or /etc/pam.conf depending on the application that is using PAM. Below are example files of each type:

```
# Begin /etc/pam.d/other
auth                required      pam_unix.so      nullok
account             required      pam_unix.so
session             required      pam_unix.so
password            required      pam_unix.so      nullok

# End /etc/pam.d/other
# Begin /etc/pam.conf
other               auth          required        pam_unix.so     nullok
other               account        required        pam_unix.so
other               session        required        pam_unix.so
other               password       required        pam_unix.so     nullok

# End /etc/pam.conf
```

The PAM man page (**man pam**) provides a good starting point for descriptions of fields and allowable entries. The Linux-PAM guide for system administrators is recommended for further reading.

Refer to <http://www.kernel.org/pub/linux/libs/pam/modules.html> for a list of various modules available.

Contents

The Linux-PAM package contains **unix-chkpwd** and **libpam** libraries.

Description

unix-chkpwd

No description available.

libpam libraries

libpam libraries provide the interfaces between applications and the modules included with PAM.

Shadow-4.0.4.1

Introduction to Shadow

Shadow was indeed installed in LFS and there is no reason to reinstall it unless you installed Linux-PAM. If you did, this will allow programs like **login** and **su** to utilize PAM.

Additional downloads

- Patch to fix linking against PAM: <http://www.linuxfromscratch.org/patches/blfs/5.1/shadow-4.0.4.1-pam-1.patch>

Shadow dependencies

Required

Linux-PAM-0.77[p.66]

Installation of shadow

Reinstall shadow by running the following commands:

```
patch -Np1 -i ../shadow-4.0.4.1-pam-1.patch &&
LIBS="-lpam -lpam_misc" ./configure --libdir=/usr/lib \
    --enable-shared --with-libpam --without-libcrack &&
echo '#define HAVE_SETLOCALE 1' >> config.h &&
make &&
make install &&
mv /bin/sg /usr/bin &&
mv /bin/vigr /usr/sbin &&
rm /bin/groups &&
mv /usr/lib/lib{misc,shadow}.so.0* /lib &&
ln -sf ../../lib/libshadow.so.0 /usr/lib/libshadow.so &&
ln -sf ../../lib/libmisc.so.0 /usr/lib/libmisc.so
```

Command explanations

--without-libcrack: This switch tells shadow not to use libcrack. This is desired as Linux-PAM already contains libcrack.

Configuring PAM to work with shadow

Config files

/etc/pam.d/login, /etc/pam.d/passwd, /etc/pam.d/su, /etc/pam.d/shadow,
/etc/pam.d/useradd

Configuration Information

Add the following PAM configuration files to /etc/pam.d (or add them to /etc/pam.conf with the additional field for the program).

```
cat > /etc/pam.d/login << "EOF"
# Begin /etc/pam.d/login

auth      requisite      pam_securetty.so
auth      requisite      pam_nologin.so
auth      required       pam_env.so
auth      required       pam_unix.so
```

```

account      required      pam_access.so
account      required      pam_unix.so
session      required      pam_motd.so
session      required      pam_limits.so
session      optional      pam_mail.so      dir=/var/mail standard
session      optional      pam_lastlog.so
session      required      pam_unix.so

# End /etc/pam.d/login
EOF
cat > /etc/pam.d/passwd << "EOF"
# Begin /etc/pam.d/passwd

password     required      pam_unix.so      md5 shadow

# End /etc/pam.d/passwd
EOF
cat > /etc/pam.d/shadow << "EOF"
# Begin /etc/pam.d/shadow

auth         sufficient     pam_rootok.so
auth         required       pam_unix.so
account      required       pam_unix.so
session      required       pam_unix.so
password     required       pam_permit.so

# End /etc/pam.d/shadow
EOF
cat > /etc/pam.d/su << "EOF"
# Begin /etc/pam.d/su

auth         sufficient     pam_rootok.so
auth         required       pam_unix.so
account      required       pam_unix.so
session      required       pam_unix.so

# End /etc/pam.d/su
EOF
cat > /etc/pam.d/useradd << "EOF"
# Begin /etc/pam.d/useradd

auth         sufficient     pam_rootok.so
auth         required       pam_unix.so
account      required       pam_unix.so
session      required       pam_unix.so
password     required       pam_permit.so

# End /etc/pam.d/useradd
EOF
cat > /etc/pam.d/chage << "EOF"
# Begin /etc/pam.d/chage

auth         sufficient     pam_rootok.so
auth         required       pam_unix.so
account      required       pam_unix.so
session      required       pam_unix.so
password     required       pam_permit.so

# End /etc/pam.d/chage
EOF

```

Currently, `/etc/pam.d/other` is configured to allow anyone with an account on the machine to use programs that do not specifically have a configuration file of their own. After testing PAM for proper configuration, it can be changed to the

following:

```
cat > /etc/pam.d/other << "EOF"
# Begin /etc/pam.d/other

auth      required      pam_deny.so
auth      required      pam_warn.so
account   required      pam_deny.so
session   required      pam_deny.so
password  required      pam_deny.so
password  required      pam_warn.so

# End /etc/pam.d/other
EOF
```

Finally, edit `/etc/login.defs` by adding '#' to the beginning of the following lines:

```
LASTLOG_ENAB
MAIL_CHECK_ENAB
PORTTIME_CHECKS_ENAB
CONSOLE
MOTD_FILE
NOLOGINS_FILE
PASS_MIN_LEN
SU_WHEEL_ONLY
MD5_CRYPT_ENAB
CONSOLE_GROUPS
ENVIRON_FILE
```

This stops **login** from performing these functions, as they will now be performed by PAM modules.

iptables-1.2.9

The next part of this chapter deals with firewalls. The principle firewall tool for Linux, as of the 2.4 kernel series, is iptables. It replaces ipchains from the 2.2 series and ipfwadm from the 2.0 series. You will need to install iptables if you intend on using any form of a firewall.

Introduction to iptables

To use a firewall, as well as installing iptables, you will need to configure the relevant options into your kernel. This is discussed in the next part of this chapter - getting a firewalling-enabled Kernel[p.74].

If you intend to use IPv6 you might consider extending the kernel by running **make patch-o-matic** in the top-level directory of the sources of iptables. If you are going to do this, on a freshly untarred kernel, you need to run **yes "" | make config && make dep** first because otherwise the patch-o-matic command is likely to fail while setting up some dependencies.

If you are going to patch the kernel, you need to do it before you compile iptables, because during the compilation, the kernel source tree is checked (if it is available at `/usr/src/linux-[version]`) to see which features are available. Support will only be compiled into iptables for the features recognized at compile-time. Applying a kernel patch may result in errors, often because the hooks for the patches have changed or because the runme script doesn't recognize that a patch has already been incorporated.

Note that for most people, patching the kernel is unnecessary. With the later 2.4.x kernels, most functionality is already available and those who need to patch it are generally those who need a specific feature; if you don't know why you need to patch the kernel, you're unlikely to need to!

Package information

- Download (HTTP): <http://www.iptables.org/files/iptables-1.2.9.tar.bz2>
- Download (FTP): <ftp://ftp.netfilter.org/pub/iptables/iptables-1.2.9.tar.bz2>
- Download size: 183 KB
- Estimated Disk space required: 3.4 MB
- Estimated build time: 0.13 SBU

Installation of iptables

Install iptables by running the following commands:

```
make PREFIX=/usr LIBDIR=/lib BINDIR=/sbin &&
make PREFIX=/usr LIBDIR=/lib BINDIR=/sbin install
```

Command explanations

`PREFIX=/usr LIBDIR=/lib BINDIR=/sbin`: Compiles and installs iptables libraries into `/lib`, binaries into `/sbin` and the remainder into the `/usr` hierarchy instead of `/usr/local`. Firewalls are generally set during the boot process and `/usr` may not be mounted at that time.

Contents

The iptables package contains **iptables**, **iptables-restore**, **iptables-save**, **ip6tables** and some libraries.

Description

iptables

iptables is used to set up, maintain, and inspect the tables of IP packet filter rules in the Linux kernel.

iptables-restore, iptables-save

These are used to save and to restore your elaborated set of chains and rules. Until iptables-1.2.5, they were declared experimental.

ip6tables

This is the same as **iptables** but for use with IPv6. As of v1.2.5, it is not as complete as the standard IPv4 version, especially with regard to some of the modules.

libip*.so

These are various modules (implemented as dynamic libraries) which extend the core functionality of **iptables**.

Setting up a network firewall

Before you read this part of the chapter, note that we assume that you have already installed iptables as described in the previous section.

Introduction to Firewall Creation

The general purpose of a firewall is to protect a network against malicious access by using a single machine as a firewall. This does imply that the firewall is to be considered a single point of failure, but it can make the administrators life a lot easier.

In a perfect world where you knew that every daemon or service on every machine was perfectly configured and was immune to, e.g., buffer-overflows and any other imaginable problem regarding its security, and where you trusted every user accessing your services to aim no harm, you wouldn't need to do have a firewall! In the real world however, daemons may be misconfigured, exploits against essential services are freely available, you may wish to choose which services are accessible by certain machines, you may wish to limit which machines or applications are allowed to have Internet access, or you may simply not trust some of your apps or users. In these situations you might benefit by using a firewall.

Don't assume however, that having a firewall makes careful configuration redundant, nor that it makes any negligent misconfiguration harmless, nor that it prevents anyone from exploiting a service you intentionally offer but haven't recently updated or patched after an exploit went public. Despite having a firewall, you need to keep applications and daemons on your system well-configured and up-to-date; a firewall is not a cure-all!

Meaning of the word firewall.

The word firewall can have several different meanings.

Personal Firewall[p.74]

This is a setup or program, for Windows commercially sold by companies such as Symantec, of which they claim or pretend that it secures a home or desktop-pc with Internet access. This topic is highly relevant for users who do not know the ways their computers might be accessed via the Internet and how to disable these, especially if they are always online and if they are connected via broadband links.

Masquerading Router[p.75]

This is a box placed between the Internet and an intranet. To minimize the risk of compromising the firewall itself it should generally have only one role, that of protecting the intranet. Although not completely risk free, the tasks of doing the routing and eventually IP masquerading (rewriting IP-headers of the packets it routes from clients with private IP-addresses onto the Internet so that they seem to come from the firewall itself) are commonly considered harmless.

BusyBox[p.76]

This is often an old box you may have retired and nearly forgotten, performing masquerading or routing functions, but offering a bunch of services, e.g., web-cache, mail, etc. This may be very commonly used for home networks, but can definitely not to be considered as secure anymore because the combining of server and router on one machine raises the complexity of the setup.

Firewall with a demilitarized zone [not further described here]

This box performs masquerading or routing, but grants public access to some branch of your network which, because of public IP's and a physically separated structure, is neither considered to be part of the inter- nor intranet. These servers are those which must be easily accessible from both the inter- and intranet. The firewall protects them all.

Packetfilter / partly accessible net [partly described here, see BusyBox[p.76]]

Doing routing or masquerading, but permitting only selected services to be accessible, sometimes only by selected internal users or boxes; mostly used in highly secure business contexts, sometimes by distrusting employers. This was the common

configuration of a firewall at the time of the Linux 2.2 kernel. It's still possible to configure a firewall this way, but it makes the rules quite complex and lengthy.

Disclaimer

This document is meant as an introduction to how to setup a firewall - it is not a complete guide to securing systems. Firewalling is a complex issue that requires careful configuration. The scripts quoted here are simply intended to give examples as to how a firewall works, they are not intended to fit into any imaginable configuration and may not prevent any imaginable attack.

The purpose of this text is simply to give you a hint on how to get started with a firewall.

Customization of these scripts for your specific situation will be necessary for an optimal configuration, but you should make a serious study of the iptables documentation and creating firewalls in general before hacking away. Have a look at the list of Links for further reading[p.78] at the end of this section for more details. Here you will find a list of URLs that contain quite comprehensive information about building your own firewall.

Getting a firewall enabled Kernel

If you want your Linux-Box to have a firewall, you must first ensure that your kernel has been compiled with the relevant options turned on .

How to configure your kernel, with enabling the options to be either compiled into the kernel or as modules, depends on your personal preferences and experience. Note, that for the quoted scripts it is assumed that the modules need to be loaded at first.

```
Network options menu
Network packet filtering:                Y
Unix domain sockets:                    Y or M
TCP/IP networking:                      Y
IP: advanced router:                    Y
IP: verbose route monitoring:            Y
IP: TCP Explicit Congestion Notification support: Y
IP: TCP syncookie support:              Y
IP: Netfilter Configuration menu
  Every option except:                  Y or M
    ipchains (2.2-style) support         N
    ipfwadm (2.0-style) support         N
Fast switching:                         N
```

Now you can start to build your Firewall

Personal Firewall

A Personal Firewall is supposed to let you access the all services offered on the Internet, but keep your box secure and your data private.

Below is a slightly modified version of Rusty Russell's recommendation from the Linux 2.4 Packet Filtering HOWTO:

```
cat > /etc/rc.d/init.d/firewall << "EOF"
#!/bin/sh

# Begin $src_base/init.d/firewall

# Insert connection-tracking modules (not needed if built into the kernel).
modprobe ip_tables
modprobe iptable_filter
modprobe ip_conntrack
modprobe ip_conntrack_ftp
modprobe ipt_state
modprobe ipt_LOG
```

```
# allow local-only connections
iptables -A INPUT -i lo -j ACCEPT
# free output on any interface to any ip for any service (equal to -P ACCEPT)
iptables -A OUTPUT -j ACCEPT

# permit answers on already established connections
# and permit new connections related to established ones (eg active-ftp)
iptables -A INPUT -m state --state ESTABLISHED,RELATED -j ACCEPT

# Log everything else: What's Windows' latest exploitable vulnerability?
iptables -A INPUT -j LOG --log-prefix "FIREWALL:INPUT "

# set a sane policy: everything not accepted > /dev/null
iptables -P INPUT DROP
iptables -P FORWARD DROP
iptables -P OUTPUT DROP

# be verbose on dynamic ip-addresses (not needed in case of static IP)
echo 2 > /proc/sys/net/ipv4/ip_dynaddr

# disable ExplicitCongestionNotification - too many routers are still ignorant
echo 0 > /proc/sys/net/ipv4/tcp_ecn

# End $src_base/init.d/firewall
EOF
```

His script is quite simple, it drops all traffic coming in into your computer that wasn't initiated from your box, but as long as you are simply surfing the Internet you are unlikely to exceed its limits.

If you frequently encounter certain delays at accessing ftp-servers, please have a look at BusyBox[p.76] - example no. 4[p.?].

Even if you have daemons / services running on your box, these should be inaccessible everywhere but from your box itself. If you want to allow access to services on your machine, such as ssh or pinging, take a look at BusyBox[p.76].

Masquerading Router

A true Firewall has two interfaces, one connected to an intranet, in this example, *eth0*, and one connected to the Internet, here, *ppp0*. To provide the maximum security against the box itself being broken into, make sure that there are no servers running on it, especially not X11 et al. And, as a general principle, the box itself should not access any untrusted service (Think of a name server giving answers that make your bind crash, or, even worse, that implement a worm via a buffer-overflow).

```
cat > /etc/rc.d/init.d/firewall << "EOF"
#!/bin/sh

# Begin $src_base/init.d/firewall

echo
echo "You're using the example-config for a setup of a firewall"
echo "from the firewalling-hint written for LinuxFromScratch."
echo "This example is far from being complete, it is only meant"
echo "to be a reference."
echo "Firewall security is a complex issue, that exceeds the scope"
echo "of the quoted configuration rules."
echo "You can find some quite comprehensive information"
echo "about firewalls in Chapter 4 of the BLFS book."
echo "http://www.linuxfromscratch.org/blfs"
echo

# Insert iptables modules (not needed if built into the kernel).
```

```

modprobe ip_tables
modprobe iptable_filter
modprobe ip_conntrack
modprobe ip_conntrack_ftp
modprobe ipt_state
modprobe iptable_nat
modprobe ip_nat_ftp
modprobe ipt_MASQUERADE
modprobe ipt_LOG
modprobe ipt_REJECT

# allow local-only connections
iptables -A INPUT -i lo -j ACCEPT
iptables -A OUTPUT -o lo -j ACCEPT

# allow forwarding
iptables -A FORWARD -m state --state ESTABLISHED,RELATED -j ACCEPT
iptables -A FORWARD -m state --state NEW -i ! ppp+ -j ACCEPT

# do masquerading (not needed if intranet is not using private ip-addresses)
iptables -t nat -A POSTROUTING -o ppp+ -j MASQUERADE

# Log everything for debugging (last of all rules, but before DROP/REJECT)
iptables -A INPUT -j LOG --log-prefix "FIREWALL:INPUT "
iptables -A FORWARD -j LOG --log-prefix "FIREWALL:FORWARD"
iptables -A OUTPUT -j LOG --log-prefix "FIREWALL:OUTPUT "

# set a sane policy
iptables -P INPUT DROP
iptables -P FORWARD DROP
iptables -P OUTPUT DROP

# be verbose on dynamic ip-addresses (not needed in case of static IP)
echo 2 > /proc/sys/net/ipv4/ip_dynaddr

# disable ExplicitCongestionNotification
echo 0 > /proc/sys/net/ipv4/tcp_ecn

# activate TCPSyncookies
echo 1 > /proc/sys/net/ipv4/tcp_syncookies

# activate Route-Verification = IP-Spoofing protection
for f in /proc/sys/net/ipv4/conf/*/rp_filter; do
    echo 1 > $f
done

# activate IP-Forwarding
echo 1 > /proc/sys/net/ipv4/ip_forward
EOF

```

With this script your intranet should be sufficiently secure against external attacks: no one should be able to setup a new connection to any internal service and, if it's masqueraded, it's even invisible; furthermore, your firewall should be nearly immune because there are no services running that a cracker could attack.

Note: if the interface you're connecting to the Internet doesn't connect via ppp, you will need to change *ppp+* to the name of the interface which you are using. If you are using the same interface type to connect to both your intranet and the Internet, you need to use the actual name of the interface such as *eth0*, on both interfaces.

If you need stronger security (e.g., against DOS, connection highjacking, spoofing, etc.) have a look at the list of Links for further reading[p.78] at the end of this section.

BusyBox

This scenario isn't too different from (Masquerading Router[p.75]), but in this case you want to offer some services to your intranet. Examples of this can be when you want to admin your box from another host on your intranet or use it as a proxy or a name server. Note: Outlining a true concept of how to protect a server that offers services on the Internet goes far beyond the scope of this document, see Disclaimer[p.74].

Be cautious. Every service you offer and have enabled makes your setup more complex and your box less secure: You induce the risks of misconfigured services or running a service with an exploitable bug, both risks that a firewall principally should be immune of. See the introduction to Masquerading Router[p.75] for some more details.

If the services you'd like to offer do not need to access the Internet themselves, like internal-only samba- or name-servers, it's quite simple and should still be acceptable from a security standpoint. Just add the following lines *before* the logging-rules into the script.

```
iptables -A INPUT -i ! ppp+ -j ACCEPT
iptables -A OUTPUT -o ! ppp+ -j ACCEPT
```

If your daemons have to access the web themselves, like squid would need to, you could open OUTPUT generally and restrict INPUT.

```
iptables -A INPUT -m state --state ESTABLISHED,RELATED -j ACCEPT
iptables -A OUTPUT -j ACCEPT
```

However, it is generally not advisable to leave OUTPUT unrestricted: you lose any control on trojans who'd like to "call home", and a bit of redundancy in case you've (mis-)configured a service so that it does broadcast its existence to the world.

If you prefer to have this protection, you may restrict INPUT and OUTPUT on all ports except those that it's absolutely necessary to have open. Which ports you have to open depends on your needs: mostly you will find them by looking for failed accesses in your log-files.

Have a look at the following examples:

- Squid is caching the web:

```
iptables -A OUTPUT -p tcp --dport 80 -j ACCEPT
iptables -A INPUT -p tcp --sport 80 -m state --state ESTABLISHED -j ACCEPT
```

- Your caching name server (e.g., dnscache) does its lookups via udp:

```
iptables -A OUTPUT -p udp --dport 53 -j ACCEPT
iptables -A INPUT -p udp --sport 53 -m state --state ESTABLISHED -j ACCEPT
```

- Alternatively, if you want to be able to ping your box to ensure it's still alive:

```
iptables -A INPUT -p icmp -m icmp --icmp-type echo-request -j ACCEPT
iptables -A OUTPUT -p icmp -m icmp --icmp-type echo-reply -j ACCEPT
```

- If you are frequently accessing ftp-servers or enjoy chatting you might notice certain delays because some implementations of these daemons have the feature of querying an identd on your box for your username for logging. Although there's really no harm in this, having an identd running is not recommended because some implementations are known to be vulnerable.

To avoid these delays you could reject the requests with a 'tcp-reset':

```
iptables -A INPUT -p tcp --dport 113 -j REJECT --reject-with tcp-reset
iptables -A OUTPUT -p tcp --sport 113 -m state --state RELATED -j ACCEPT
```

- To log and drop invalid packets, mostly harmless packets that came in after netfilter's timeout, sometimes scans:

```
iptables -I INPUT 1 -p tcp -m state --state INVALID -j LOG --log-prefix \
"FIREWALL:INVALID"
iptables -I INPUT 2 -p tcp -m state --state INVALID -j DROP
```

- Anything coming from the outside should not have a private address, this is a common attack called IP-spoofing:

```
iptables -t nat -A PREROUTING -i ppp+ -s 10.0.0.0/8 -j DROP
iptables -t nat -A PREROUTING -i ppp+ -s 172.16.0.0/12 -j DROP
iptables -t nat -A PREROUTING -i ppp+ -s 192.168.0.0/16 -j DROP
```

- To simplify debugging and be fair to anyone who'd like to access a service you have disabled, purposely or by mistake, you should REJECT those packets that are dropped.

Obviously this must be done directly after logging as the very last lines before the packets are dropped by policy:

```
iptables -A INPUT -j REJECT
iptables -A OUTPUT -p icmp --icmp-type 3 -j ACCEPT
```

These are only examples to show you some of the capabilities of the new firewall code in Linux-Kernel 2.4. Have a look at the man page of iptables. There you will find more of them. The port-numbers you'll need for this can be found in `/etc/services`, in case you didn't find them by trial and error in your log file.

If you add any of your offered or accessed services such as the above, maybe even in FORWARD and for intranet-communication, and delete the general clauses, you get an old fashioned packet filter.

Conclusion

Finally, I'd like to remind you of one fact we must not forget: The effort spent attacking a system corresponds to the value the cracker expects to gain from it. If you are responsible for such valuable assets that you expect great effort to be made by potential crackers, you hopefully won't be in the need of this hint!

Extra Information

Where to start with further reading on firewalls.

```
www.netfilter.org - Homepage of the netfilter/iptables project
Netfilter related FAQ
Netfilter related HOWTO's
www.linuxdoc.org/LDP/nag2/x-087-2-firewall.html
www.linuxdoc.org/HOWTO/Security-HOWTO.html
www.linuxdoc.org/HOWTO/Firewall-HOWTO.html
www.ibm.com/developerworks/security/library/s-fire.html
www.ibm.com/developerworks/security/library/s-fire2.html
www.interhack.net/pubs/fw-faq/
www.linuxsecurity.com/docs/
www.little-idiot.de/firewall (German & outdated, but very comprehensive)
www.linuxgazette.com/issue65/stumpel.html
linux.oreillynet.com/pub/a/linux/2000/03/10/netadmin/ddos.html
staff.washington.edu/dittrich/misc/ddos
ipmasq.cjb.net/
www.e-infomax.com/ipmasq
www.circlemud.org/~jelson/writings/security/index.htm
www.securityfocus.com
www.cert.org - tech_tips
www.infoserversecurity.org/pointers.html
security.ittoolbox.com
www.linux-firewall-tools.com/linux/
logi.cc/linux/athome-firewall.php3
www.insecure.org/reading.html
www.robertgraham.com/pubs/firewall-seen.html
```

firewall.status

If you'd like to have a look at the chains your firewall consists of and the order in which the rules take effect:

```
cat > /etc/rc.d/init.d/firewall.status << "EOF"
#!/bin/sh

# Begin $src_base/init.d/firewall.status

echo "iptables.mangling:"
iptables -t mangle -v -L -n --line-numbers

echo
echo "iptables.nat:"
iptables -t nat -v -L -n --line-numbers

echo
echo "iptables.filter:"
iptables -v -L -n --line-numbers
EOF
```

firewall.stop

If you need to turn the firewall off, this script will do it:

```
cat > /etc/rc.d/init.d/firewall.stop << "EOF"
#!/bin/sh

# Being $src_base/init.d/firewall.stop

# deactivate IP-Forwarding
echo 0 > /proc/sys/net/ipv4/ip_forward

iptables -Z
iptables -F
iptables -t nat -F PREROUTING
iptables -t nat -F OUTPUT
iptables -t nat -F POSTROUTING
iptables -t mangle -F PREROUTING
iptables -t mangle -F OUTPUT
iptables -X
iptables -P INPUT ACCEPT
iptables -P FORWARD ACCEPT
iptables -P OUTPUT ACCEPT
EOF
```

GnuPG-1.2.4

Introduction to GnuPG

The GnuPG package contains a public/private key encryptor. This is becoming useful for signing files or emails as proof of identity and preventing tampering with contents of the file or email.

Package information

- Download (HTTP): <http://public.ftp.planetmirror.com/pub/gnupg/gnupg-1.2.4.tar.bz2>
- Download (FTP): <ftp://ftp.gnupg.org/gcrypt/gnupg/gnupg-1.2.4.tar.bz2>
- Download size: 2.3 MB
- Estimated Disk space required: 26 MB
- Estimated build time: 0.44 SBU

GnuPG dependencies

Optional

OpenLDAP-2.1.30[p.302]

Installation of GnuPG

Install GnuPG by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/lib &&
make &&
make install &&
chmod 4755 /usr/bin/gpg
```

Command explanations

`--libexecdir=/usr/lib`: This command creates a `gnupg` directory in `/usr/lib` instead of `/usr/libexec`.

`chmod 4755 /usr/bin/gpg`: We install `gpg` setuid root to avoid swapping out of sensitive data.

Contents

The GnuPG package contains `gpg`, `gpgsplit` and `gpgv`.

Description

`gpg`

`gpg` is the backend (command-line interface) for this OpenPGP implementation.

`gpgsplit`

`gpgsplit` separates key rings.

`gpgv`

`gpgv` is a verify only version of `gpg`.

Tripwire-2.3.1-2

Introduction to Tripwire

The Tripwire package contains the programs used by Tripwire to verify the integrity of the files on a given system.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/tripwire/tripwire-2.3.1-2.tar.gz>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/security/tripwire/tripwire-2.3.1-2.tar.gz>
- Download size: 1.4 MB
- Estimated Disk space required: 63 MB
- Estimated build time: 2.35 SBU

Additional downloads

- Required patch to fix multiple build issues (see patch for more information):
<http://www.linuxfromscratch.org/patches/blfs/5.1/tripwire-2.3.1-2-gcc3-build-fixes.patch>

Shadow dependencies

Optional

MTA (See Chapter 21, *Mail Server Software*[p.265])

Installation of Tripwire

Compile Tripwire by running the following commands:

```
patch -Np1 -i ../tripwire-2.3.1-2-gcc3-build-fixes.patch &&
make -C src release &&
cp install/install.{sh,cfg} .
```

The default configuration is to use a local MTA. If you don't have a MTA installed and have no wish to install one, modify the `install.cfg` to use an SMTP server instead. Install Tripwire by running the following commands:

```
./install.sh &&
cp /etc/tripwire/tw.cfg /usr/sbin &&
cp policy/*.txt /usr/share/doc/tripwire
```

Command explanations

make release: This command creates the Tripwire binaries.

cp install.{sh,cfg} .: These are copied to the main Tripwire directory so that the script can be used to install the package.

cp policy/*.txt /usr/share/doc/tripwire: This command installs the documentation.

Configuring Tripwire

Config files

`/etc/tripwire`

Configuration Information

Tripwire uses a policy file to determine which files integrity are checked. The default policy file (`twpol.txt` found in `/etc/tripwire/`) is for a default installation of Redhat 7.0 and is woefully outdated.

Policy files are also a custom thing and should be tailored to each individual distribution and/or installation. Some custom policy files can be found below:

```
http://home.iprimus.com.au/glombowski/blfs/twpol-all.txt
Checks integrity of all files
http://home.iprimus.com.au/glombowski/blfs/twpol-lfs.txt
Custom policy file for Base LFS 3.0 system
http://home.iprimus.com.au/glombowski/blfs/twpol-suse7.2.txt
Custom policy file for SuSE 7.2 system
```

Download the custom policy file you'd like to try, copy it into `/etc/tripwire/`, and use it instead of `twpol.txt`. It is, however, recommended that you make your own policy file. Get ideas from the examples above and read `/usr/share/doc/tripwire/policyguide.txt`. `twpol.txt` is a good policy file for beginners as it will note any changes to the file system and can even be used as an annoying way of keeping track of changes for uninstallation of software.

After your policy file has been transferred to `/etc/tripwire/` you may begin the configuration steps:

```
twadmin -m P /etc/tripwire/twpol.txt &&
tripwire -m i
```

During configuration Tripwire will create two (2) keys: a site key and a local key which will be stored in `/etc/tripwire/`.

Usage Information

To use Tripwire after this and run a report, use the following command:

```
tripwire -m c > /etc/tripwire/report.txt
```

View the output to check the integrity of your files. An automatic integrity report can be produced by using a cron facility to schedule the runs.

Please note that after you run an integrity check, you must check the report or email and then modify the Tripwire database of the files on your system so that Tripwire will not continually notify you that files you intentionally changed are a security violation. To do this you must first **ls** `/var/lib/tripwire/report/` and note the name of the newest file which starts with `linux-` and ends in `.twr`. This encrypted file was created during the last report creation and is needed to update the Tripwire database of your system. Then, type in the following command making the appropriate substitutions for `'?'`:

```
tripwire -m u -r /var/lib/tripwire/report/linux-???????-????????.twr
```

You will be placed into vim with a copy of the report in front of you. If all the changes were good, then just type **:x** and after entering your local key, the database will be updated. If there are files which you still want to be warned about, please remove the `x` before the filename in the report and type **:x**.

Changing the Policy File

If you are unhappy with your policy file and would like to modify it or use a new one, modify the policy file and then execute the following commands:

```
twadmin -m P /etc/tripwire/twpol.txt &&
tripwire -m i
```

Contents

The Tripwire package contains **siggen** , **tripwire**, **twadmin** and **twprint**.

Heimdal-0.6.2

Introduction to Heimdal

Heimdal is a free implementation of Kerberos 5, that aims to be compatible with MIT krb5 and is backwards compatible with krb4. Kerberos is a network authentication protocol. Basically it preserves the integrity of passwords in any untrusted network (like the Internet). Kerberized applications work hand-in-hand with sites that support Kerberos to ensure that passwords cannot be stolen. A Kerberos installation will make changes to the authentication mechanisms on your network and will overwrite several programs and daemons from the Coreutils, Inetutils, Qpopper and Shadow packages.

Package information

- Download (HTTP): <http://ftp.vc-graz.ac.at/mirror/crypto/kerberos/heimdal/heimdal-0.6.2.tar.gz>
- Download (FTP): <ftp://ftp.pdc.kth.se/pub/heimdal/src/heimdal-0.6.2.tar.gz>
- Download size: 3.2 MB
- Estimated Disk space required: 142 MB
- Estimated build time: 2.55 SBU

Additional downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/heimdal-0.6.2-fhs-compliance-1.patch>
- Required patch for cracklib: <http://www.linuxfromscratch.org/patches/blfs/5.1/heimdal-0.6.2-cracklib-1.patch>

Heimdal dependencies

Required

OpenSSL-0.9.7d[p.115] and Berkeley DB-4.2.52.2[p.312]

Optional

readline-4.3[p.125], Linux-PAM-0.77[p.66], OpenLDAP-2.1.30[p.302], X (X.org-6.7.0[p.331] or XFree86-4.4.0[p.337]), cracklib-2.7[p.64] and krb4

Note

Some sort of time synchronization facility on your system (like NTP-4.2.0[p.244]) is required since Kerberos won't authenticate if the time differential between a kerberized client and the KDC server is more than 5 minutes.

Installation of Heimdal

Before installing the package, you may want to preserve the **ftp** program from the Inetutils package. This is because using the Heimdal **ftp** program to connect to non kerberized ftp servers may not work properly. It will allow you to connect (letting you know that transmission of the password is clear text) but will have problems doing puts and gets.

```
mv /usr/bin/ftp /usr/bin/ftpn
```

If you wish the Heimdal package to link against the cracklib library, you must apply a patch:

```
patch -Np1 -i ../heimdal-0.6.2-cracklib-1.patch
```

Install Heimdal by running the following commands:

```
patch -Np1 -i ../heimdal-0.6.2-fhs-compliance-1.patch &&  
./configure --prefix=/usr --sysconfdir=/etc/heimdal \
```

```

--datadir=/var/lib/heimdal --libexecdir=/usr/sbin \
--sharedstatedir=/usr/share --localstatedir=/var/lib/heimdal \
--enable-shared --with-openssl=/usr &&
make &&
make install &&
mv /bin/login /bin/login.shadow &&
mv /bin/su /bin/su.coreutils &&
mv /usr/bin/{login,su} /bin &&
ln -sf ../../bin/login /usr/bin &&
mv /usr/lib/lib{otp.so.0,otp.so.0.1.4,kafs.so.0,kafs.so.0.4.0} /lib &&
mv /usr/lib/lib{krb5.so.17,krb5.so.17.3.0,asn1.so.6,asn1.so.6.0.2} /lib &&
mv /usr/lib/lib{roken.so.16,roken.so.16.0.3,crypto.so.0.9.7} /lib &&
mv /usr/lib/lib{com_err.so.2,com_err.so.2.1,db-4.1.so} /lib &&
ln -sf ../../lib/lib{otp.so.0,otp.so.0.1.4,kafs.so.0,kafs.so.0.4.0} /usr/lib &&
ln -sf ../../lib/lib{krb5.so.17,krb5.so.17.3.0,asn1.so.6,asn1.so.6.0.2} /usr/lib &&
ln -sf ../../lib/lib{roken.so.16,roken.so.16.0.3,crypto.so.0.9.7} /usr/lib &&
ln -sf ../../lib/lib{com_err.so.2,com_err.so.2.1,db-4.1.so} /usr/lib &&
ldconfig

```

Command explanations

`--libexecdir=/usr/sbin`: This switch puts the daemon programs into `/usr/sbin`.

Note

If you want to preserve all your existing Inetutils package daemons, install the Heimdal daemons into `/usr/sbin/heimdal` (or wherever you want). Since these programs will be called from **(x)inetd** or **rc** scripts, it really doesn't matter where they live, as long as they are correctly specified in the `/etc/(x)inetd.conf` file and **rc** scripts. If you choose something other than `/usr/sbin`, you may want to move some of the user programs (such as **kadmin**) to `/usr/sbin` manually.

```

mv /bin/login /bin/login.shadow
mv /bin/su /bin/su.coreutils
mv /usr/bin/{login,su} /bin
ln -sf ../../bin/login /usr/bin

```

The **login** and **su** programs installed by Heimdal belong in the `/bin` directory. The **login** program is symlinked because Heimdal is expecting to find it in `/usr/bin`. We preserve the old executables before the move to keep things sane should breaks occur.

```

mv /usr/lib/lib{otp.so.0,otp.so.0.1.4,kafs.so.0,kafs.so.0.4.0} /lib
mv /usr/lib/lib{krb5.so.17,krb5.so.17.3.0,asn1.so.6,asn1.so.6.0.2} /lib
mv /usr/lib/lib{roken.so.16,roken.so.16.0.3,crypto.so.0.9.7} /lib
mv /usr/lib/lib{com_err.so.2,com_err.so.2.1,db-4.1.so} /lib
ln -sf ../../lib/lib{otp.so.0,otp.so.0.1.4,kafs.so.0,kafs.so.0.4.0} /usr/lib
ln -sf ../../lib/lib{krb5.so.17,krb5.so.17.3.0,asn1.so.6,asn1.so.6.0.2} /usr/lib
ln -sf ../../lib/lib{roken.so.16,roken.so.16.0.3,crypto.so.0.9.7} /usr/lib
ln -sf ../../lib/lib{com_err.so.2,com_err.so.2.1,db-4.1.so} /usr/lib

```

The **login** and **su** programs installed by Heimdal link against Heimdal libraries as well as crypto and db libraries. We move these libraries to `/lib` to be FHS compliant and in case when `/usr` is located on a separate partition which may not always be mounted.

Configuring Heimdal

Config files

`/etc/heimdal/*`

Configuration Information

Master KDC Server Configuration

Create the Kerberos configuration file with the following command:

```
install -d /etc/heimdal &&
cat > /etc/heimdal/krb5.conf << "EOF"
# Begin /etc/heimdal/krb5.conf

[libdefaults]
    default_realm = [LFS.ORG]
    encrypt = true

[realms]
    [LFS.ORG] = {
        kdc = [belgarath.lfs.org]
        admin_server = [belgarath.lfs.org]
        kpasswd_server = [belgarath.lfs.org]
    }

[domain_realm]
    .[lfs.org] = [LFS.ORG]

[logging]
    kdc = FILE:/var/log/kdc.log
    admin_server = FILE:/var/log/kadmin.log
    default = FILE:/var/log/krb.log

# End /etc/heimdal/krb5.conf
EOF
```

You will need to substitute your domain and proper hostname for the occurrences of the `belgarath` and `lfs.org` names.

default_realm should be the name of your domain changed to ALL CAPS. This isn't required, but both Heimdal and MIT recommend it.

encrypt = true provides encryption of all traffic between kerberized clients and servers. It's not necessary and can be left off. If you leave it off, you can encrypt all traffic from the client to the server using a switch on the client program instead.

The **[realms]** parameters tell the client programs where to look for the KDC authentication services.

The **[domain_realm]** section maps a domain to a realm.

Store the master password in a key file using the following commands:

```
install -d -m 755 /var/lib/heimdal &&
kstash
```

Create the KDC database:

```
kadmin -l
```

Choose the defaults for now. You can go in later and change the defaults, should you feel the need. At the **kadmin>** prompt, issue the following statement:

```
init [LFS.ORG]
```

Now we need to populate the database with principles (users). For now, just use your regular login name or root.

```
add [loginname]
```

The KDC server and any machine running kerberized server daemons must have a host key installed:

```
add --random-key host/[belgarath.lfs.org]
```

After choosing the defaults when prompted, you will have to export the data to a keytab file:

```
ext host/[belgarath.lfs.org]
```

This should have created two files in `/etc/heimdal`; `krb5.keytab` (Kerberos 5) and `srvtab` (Kerberos 4). Both files should have 600 (root rw only) permissions. Keeping the keytab files from public access is crucial to the overall security of the Kerberos installation.

Eventually, you'll want to add server daemon principles to the database and extract them to the keytab file. You do this in the same way you created the host principles. Below is an example:

```
add --random-key ftp/[belgarath.lfs.org]
```

(choose the defaults)

```
ext ftp/[belgarath.lfs.org]
```

Exit the **kadmin** program (use **quit** or **exit**) and return back to the shell prompt. Start the KDC daemon manually, just to test out the installation:

```
/usr/sbin/kdc &
```

Attempt to get a TGT (ticket granting ticket) with the following command:

```
kinit [loginname]
```

You will be prompted for the password you created. After you get your ticket, you should list it with the following command:

```
klist
```

Information about the ticket should be displayed on the screen.

To test the functionality of the keytab file, issue the following command:

```
ktutil list
```

This should dump a list of the host principals, along with the encryption methods used to access the principals.

At this point, if everything has been successful so far, you can feel fairly confident in the installation and configuration of the package.

Install `/etc/rc.d/init.d/heimdal` init script included in the `blfs-bootscripts-5.1[p.31]` package.

```
make install-heimdal
```

Using Kerberized Client Programs

To use the kerberized client programs (**telnet**, **ftp**, **rsh**, **rxterm**, **rxtnet**, **rcp**, **xnlock**), you first must get a TGT. Use the **kinit** program to get the ticket. After you've acquired the ticket, you can use the kerberized programs to connect to any kerberized server on the network. You will not be prompted for authentication until your ticket expires (default is one day), unless you specify a different user as a command line argument to the program.

The kerberized programs will connect to non kerberized daemons, warning you that authentication is not encrypted. As

mentioned earlier, only the **ftp** program gives any trouble connecting to non kerberized daemons.

For additional information consult the Heimdal hint on which the above instructions are based.

Contents

The Heimdal package contains **afslog**, **dump_log**, **ftp**, **ftpd**, **hprop**, **hpropd**, **ipropd-master**, **ipropd-slave**, **kadmin**, **kadmind**, **kauth**, **kdc**, **kdestroy**, **kf**, **kfd**, **kgetcred**, **kinit**, **klist**, **kpasswd**, **kpasswdd**, **krb5-config**, **kstash**, **ktutil**, **kx**, **kxd**, **login**, **mk_cmds**, **otp**, **otpprint**, **pagsh**, **pfrom**, **popper**, **push**, **rcp**, **replay_log**, **rsh**, **rshd**, **rxtnet**, **rxterm**, **string2key**, **su**, **telnet**, **telnetd**, **tenletxr**, **truncate_log**, **verify_krb5_conf**, **xnlock**, **libasn1**, **libeditline**, **libgssapi**, **libhdb**, **libkadm5clnt**, **libkadm5srv**, **libkafs**, **libkrb5**, **libotp**, **libroken**, **libsl** and **libss**.

Description

afslog

afslog obtains AFS tokens for a number of cells.

hprop

hprop takes a principal database in a specified format and converts it into a stream of Heimdal database records.

hpropd

hpropd receives a database sent by **hprop** and writes it as a local database.

kadmin

kadmin is an utility used to make modifications to the Kerberos database.

kadmind

kadmind is a server for administrative access to Kerberos database.

kauth, kinit

kauth and **kinit** are used to authenticate to the Kerberos server as principal and acquire a ticket granting ticket that can later be used to obtain tickets for other services.

kdc

kdc is a Kerberos 5 server.

kdestroy

kdestroy removes the current set of tickets.

kf

kf is a program which forwards tickets to a remote host through an authenticated and encrypted stream.

kfd

kfd receives forwarded tickets.

kgetcred

kgetcred obtains a ticket for a service.

klist

klist reads and displays the current tickets in the credential cache.

kpasswd

kpasswd is a program for changing Kerberos 5 passwords.

kpasswd

kpasswd is a Kerberos 5 password changing server.

krb5-config

krb5-config gives information on how to link programs against Heimdal libraries.

kstash

kstash stores the KDC master password in a file.

ktutil

ktutil is a program for managing Kerberos keytabs.

kx

kx is a program which securely forwards X connections.

kxd

kxd is the daemon for **kx**.

otp

otp manages one-time passwords.

otpprint

otpprint prints lists of one-time passwords.

rxtnet

rxtnet program starts an **xterm** window with a telnet to given host and forwards X connections.

rxterm

rxterm starts a secure remote **xterm**.

string2key

string2key maps a password into a key.

tenletxr

tenletxr forwards X connections backwards.

verify_krb5_conf

verify_krb5_conf checks `krb5.conf` file for obvious errors.

xnlock

xnlock is a program that acts as a secure screen saver for workstations running X.

MIT krb5-1.3.3

Introduction to MIT krb5

MIT krb5 is a free implementation of Kerberos 5. Kerberos is a network authentication protocol. It centralizes the authentication database and uses kerberized applications to work with servers or services that support Kerberos allowing single logins and encrypted communication over internal networks or the Internet.

Package information

- Download (HTTP): <http://web.mit.edu/kerberos/www/dist/krb5/1.3/krb5-1.3.3.tar>
- Download (FTP):
- Download size: 6.2 MB
- Estimated Disk space required: 137.4 MB
- Estimated build time: 2.55 SBU

MIT krb5 dependencies

Optional

xinetd-2.3.13[p.309] (services servers only), Linux-PAM-0.77[p.66] (for xdm based logins) and OpenLDAP-2.1.30[p.302] (alternative for krb5kdc password database)

Note

Some sort of time synchronization facility on your system (like NTP-4.2.0[p.244]) is required since Kerberos won't authenticate if there is a time difference between a kerberized client and the KDC server.

Installation of MIT krb5

Install MIT krb5 by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
  --localstatedir=/var/lib --enable-dns --enable-shared --mandir=/usr/share/man &&
make &&
make install &&
mv /bin/login /bin/login.shadow &&
cp /usr/sbin/login.krb5 /bin/login &&
mv /usr/bin/ksu /bin &&
mv /usr/lib/libkrb5.so.3* /lib &&
mv /usr/lib/libkrb4.so.2* /lib &&
mv /usr/lib/libdes425.so.3* /lib &&
mv /usr/lib/libk5crypto.so.3* /lib &&
mv /usr/lib/libcom_err.so.3* /lib &&
ln -sf ../../lib/libkrb5.so /usr/lib &&
ln -sf ../../lib/libkrb4.so /usr/lib &&
ln -sf ../../lib/libdes425.so /usr/lib &&
ln -sf ../../lib/libk5crypto.so /usr/lib &&
ln -sf ../../lib/libcom_err.so /usr/lib &&
ldconfig
```

Command explanations

`--enable-dns`: This switch allows realms to be resolved using the DNS server.

```
mv /bin/login /bin/login.shadow
cp /usr/sbin/login.krb5 /bin/login
```

```
mv /usr/bin/ksu /bin
```

Preserves Shadow's **login** command, moves **ksu** and **login** to the `/bin` directory.

```
mv /usr/lib/libkrb5.so.3* /lib
mv /usr/lib/libkrb4.so.2* /lib
mv /usr/lib/libdes425.so.3* /lib
mv /usr/lib/libk5crypto.so.3* /lib
mv /usr/lib/libcom_err.so.3* /lib
ln -sf ../../lib/libkrb5.so /usr/lib
ln -sf ../../lib/libkrb4.so /usr/lib
ln -sf ../../lib/libdes425.so /usr/lib
ln -sf ../../lib/libk5crypto.so /usr/lib
ln -sf ../../lib/libcom_err.so /usr/lib
```

The **login** and **ksu** programs are linked against these libraries, therefore we move these libraries to `/lib` to allow logins without mounting `/usr`.

Configuring MIT krb5

Config files

`/etc/krb5.conf` and `/var/lib/krb5kdc/kdc.conf`

Configuration Information

Kerberos Configuration

Create the Kerberos configuration file with the following command:

```
cat > /etc/krb5.conf << "EOF"
# Begin /etc/krb5.conf

[libdefaults]
    default_realm = [LFS.ORG]
    encrypt = true

[realms]
    [LFS.ORG] = {
        kdc = [belgarath.lfs.org]
        admin_server = [belgarath.lfs.org]
    }

[domain_realm]
    .[lfs.org] = [LFS.ORG]

[logging]
    kdc = SYSLOG[:INFO[:AUTH]]
    admin_server = SYSLOG[INFO[:AUTH]]
    default = SYSLOG[:,SYS]]

# End /etc/krb5.conf
EOF
```

You will need to substitute your domain and proper hostname for the occurrences of the `belgarath` and `lfs.org` names.

default_realm should be the name of your domain changed to ALL CAPS. This isn't required, but both Heimdal and MIT recommend it.

encrypt = true provides encryption of all traffic between kerberized clients and servers. It's not necessary and can be left off. If you leave it off, you can encrypt all traffic from the client to the server using a switch on the client program

instead.

The **[realms]** parameters tell the client programs where to look for the KDC authentication services.

The **[domain_realm]** section maps a domain to a realm.

Create the KDC database:

```
kdb5_util create -r [LFS.ORG] -s
```

Now we need to populate the database with principles (users). For now, just use your regular login name or root.

```
kadmin.local
kadmin:addprinc [loginname]
```

The KDC server and any machine running kerberized server daemons must have a host key installed:

```
kadmin:addprinc --randkey host/[belgarath.lfs.org]
```

After choosing the defaults when prompted, you will have to export the data to a keytab file:

```
kadmin:ktadd host/[belgarath.lfs.org]
```

This should have created a file in `/etc` named `krb5.keytab` (Kerberos 5). This file should have 600 (root rw only) permissions. Keeping the keytab files from public access is crucial to the overall security of the Kerberos installation.

Eventually, you'll want to add server daemon principles to the database and extract them to the keytab file. You do this in the same way you created the host principles. Below is an example:

```
kadmin:addprinc --randkey ftp/[belgarath.lfs.org]
kadmin:ktadd ftp/[belgarath.lfs.org]
```

Exit the **kadmin** program (use **quit** or **exit**) and return back to the shell prompt. Start the KDC daemon manually, just to test out the installation:

```
/usr/sbin/krb5kdc &
```

Attempt to get a ticket with the following command:

```
kinit [loginname]
```

You will be prompted for the password you created. After you get your ticket, you can list it with the following command:

```
klist
```

Information about the ticket should be displayed on the screen.

To test the functionality of the keytab file, issue the following command:

```
ktutil
ktutil:rkt /etc/krb5.keytab
ktutil:l
```

This should dump a list of the host principal, along with the encryption methods used to access the principal.

At this point, if everything has been successful so far, you can feel fairly confident in the installation and configuration of the package.

Install `/etc/rc.d/init.d/kerberos` init script included in the `blfs-bootscripts-5.1`[p.31] package.

```
make install-kerberos
```

Using Kerberized Client Programs

To use the kerberized client programs (**telnet**, **ftp**, **rsh**, **rcp**, **rlogin**), you first must get an authentication ticket. Use the **kinit** program to get the ticket. After you've acquired the ticket, you can use the kerberized programs to connect to any kerberized server on the network. You will not be prompted for authentication until your ticket expires (default is one day), unless you specify a different user as a command line argument to the program.

The kerberized programs will connect to non kerberized daemons, warning you that authentication is not encrypted.

Using Kerberized Server Programs

Using kerberized server programs (**telnetd**, **kpropd**, **klogind** and **kshd**) requires two additional configuration steps. First the `/etc/services` file must be updated to include `eklogin` and `krb5_prop`. Second, the `inetd.conf` or `xinetd.conf` must be modified for each server that will be activated, usually replacing the server from `inetutils`.

Additional Information

For additional information consult Documentation for `krb-1.3.3` on which the above instructions are based.

Contents

The MIT `krb5` package contains **compile-et**, **ftp**, **ftpd**, **gss-client**, **gss-server**, **k5srvutil**, **kadmin**, **kadmin.local**, **kadmind**, **kadmind4**, **kdb5_util**, **kdestroy**, **kinit**, **klist**, **klogind**, **kpasswd**, **kprop**, **kpropd**, **krb5-send-pr**, **krb5-config**, **krb524d**, **krb524init**, **krb5kdc**, **kshd**, **ksu**, **ktutil**, **kvno**, **login.krb5**, **rcp**, **rlogin**, **rsh**, **rshd**, **rxtnet**, **rxterm**, **scient**, **sim_client**, **sim_server**, **sserver**, **telnet**, **telnetd**, **uucient**, **uuserver**, **v5passwd**, **v5passwdd**, **libcom_err**, **libdes425**, **libgssapi**, **libgssrpc**, **lib5crypto**, **libkadm5clnt**, **libkadm5srv**, **libkdb5**, **libkrb4**, **libkrb5**.

Description

compile_et

compile_et converts the table listing error-code names into a C source file.

k5srvutil

k5srvutil is a host keytable manipulation utility.

kadmin

kadmin is an utility used to make modifications to the Kerberos database.

kadmind

kadmind is a server for administrative access to Kerberos database.

kinit

kinit is used to authenticate to the Kerberos server as principal and acquire a ticket granting ticket that can later be used to obtain tickets for other services.

krb5kdc

kdc is a Kerberos 5 server.

kdestroy

kdestroy removes the current set of tickets.

kdb5_util

kdb5_util is the KDC database utility.

klist

klist reads and displays the current tickets in the credential cache.

klogind

klogind is the server that responds to rlogin requests.

kpasswd

kpasswd is a program for changing Kerberos 5 passwords.

kprop

kprop takes a principal database in a specified format and converts it into a stream of Heimdal database records.

kpropd

kpropd receives a database sent by **hprop** and writes it as a local database.

krb5-config

krb5-config gives information on how to link programs against libraries.

ksu

ksu is the super user program using Kerberos protocol. Requires a properly configured `/etc/shells` and `~/ .k5login` containing principals authorized to become super users.

ktutil

ktutil is a program for managing Kerberos keytabs.

kvno

kvno prints keyversion numbers of Kerberos principals.

Chapter 5. File Systems

Journaling file systems reduce the time needed to recover a file system that was not unmounted properly. While this can be extremely important in reducing downtime for servers, it has also become popular for desktop environments. This chapter contains a variety of journaling file systems.

Ext3

Ext3 is a journaling file system that is an extension to the ext2 file system. It is backward compatible with ext2 and the conversion from ext2 to ext3 is trivial.

You don't need to install anything to use ext3, all the required packages are available with a bare LFS system.

When building the kernel, ensure that you have compiled in ext3 support. If you want your root partition to be ext3, then compile the ext3 support in the kernel, else you may compile it as a module. Recompile the kernel if needed.

Edit your `/etc/fstab`. For each partition that you want to convert into ext3, edit the entry so that it looks similar to the following line.

```
/dev/hdXX /mnt_point ext3 defaults 1 0
```

In the above line, replace `/dev/hdXX` by the partition (e.g. `/dev/hda2`), `/mnt_point` by the mount point (e.g. `/home`). The 0 in the last field ensures that the partition will not be checked for consistency during the boot process by the **checkfs** script. You may replace the `ext3` fs type in the above by `auto` if you want to ensure that the partition is mounted if you accidentally skip enabling the ext3 support in the kernel.

For each partition that you have converted to ext3 in `/etc/fstab`, enable the journal for the partition by running the following command.

```
tune2fs -j /dev/hdXX
```

Remount the concerned partitions, or simply reboot if you have recompiled the kernel to enable ext3 support.

More information is available at <http://www.zip.com.au/~akpm/linux/ext3/ext3-usage.html>

ReiserFS-3.6.14

Introduction to ReiserFS

The ReiserFS package contains various utilities for use with the Reiser file system.

Package information

- Download (HTTP): <http://ftp.namesys.com/pub/reiserfsprogs/reiserfsprogs-3.6.14.tar.gz>
- Download (FTP): <ftp://ftp.namesys.com/pub/reiserfsprogs/reiserfsprogs-3.6.14.tar.gz>
- Download size: 388 KB
- Estimated Disk space required: 9.4 MB
- Estimated build time: 0.16 SBU

Installation of ReiserFS

Install ReiserFS by running the following commands:

```
./configure --prefix=/usr --sbindir=/sbin &&
make &&
make install &&
ln -sf reiserfsck /sbin/fsck.reiserfs &&
ln -sf mkreiserfs /sbin/mkfs.reiserfs
```

Command explanations

`--prefix=/usr`: This ensures that the manual pages are installed in the correct location while still installing the programs in `/sbin` as they should be.

`--sbindir=/sbin`: This ensures that the ReiserFS utilities are installed in `/sbin` as they should be.

Contents

ReiserFS contains **debugreiserfs**, **mkreiserfs**, **reiserfsck**, **resize_reiserfs** and **unpack**.

Description

debugreiserfs

debugreiserfs can sometimes help to solve problems with ReiserFS file systems. If it is called without options it prints the super block of any reiserfs file system found on the device.

mkreiserfs

mkreiserfs creates a ReiserFS file system.

reiserfsck

reiserfsck checks a ReiserFS file system.

reiserfstune

reiserfstune is used for tuning the ReiserFS journal. *WARNING*: Don't use this utility without first reading the man page thoroughly.

resize_reiserfs

resize_reiserfs is used to resize an unmounted ReiserFS file system.

unpack

The **unpack** utility can be used to dump ReiserFS file system information to files for debugging, much like **debugreiserfs**.

XFS-2.6.10

Introduction to XFS

The XFS package contains administration and debugging tools for the XFS file system.

Package information

- Download (HTTP):
- Download (FTP): ftp://oss.sgi.com/projects/xfs/download/cmd_tars/xfsprogs-2.6.10.src.tar.gz
- Download size: 824 KB
- Estimated Disk space required: 42 MB
- Estimated build time: 0.56 SBU

Installation of XFS

Install XFS by running the following commands:

```
sed -i -e 's/autoconf//' Makefile &&
make &&
make install
```

Contents

XFS contains **fsck.xfs**, **mkfs.xfs**, **xfs_admin**, **xfs_bmap**, **xfs_check**, **xfs_copy**, **xfs_db**, **xfs_freeze**, **xfs_growfs**, **xfs_info**, **xfs_io**, **xfs_logprint**, **xfs_mkfile**, **xfs_ncheck**, **xfs_repair** and **xfs_rtcp**.

Description

fsck.xfs

fsck.xfs simply exits with a zero status, since XFS partitions are checked at mount time.

mkfs.xfs

mkfs.xfs constructs an XFS file system.

xfs_admin

xfs_admin changes the parameters of an XFS file system.

xfs_bmap

xfs_bmap prints block mapping for an XFS file.

xfs_check

xfs_check checks XFS file system consistency.

xfs_copy

xfs_copy copies the contents of an XFS file system to one or more targets in parallel.

xfs_db

xfs_db is used to debug an XFS file system.

xfs_freeze

xfs_freeze suspends access to an XFS file system.

xfs_growfs

xfs_growfs expands an XFS file system.

xfs_info

xfs_info is equivalent to invoking **xfs_growfs**, but specifying that no change to the file system is to be made.

xfs_io

xfs_io is a debugging tool like **xfs_db**, but is aimed at examining the regular file I/O path rather than the raw XFS volume itself.

xfs_logprint

xfs_logprint prints the log of an XFS file system.

xfs_mkfile

xfs_mkfile creates an XFS file, padded with zeroes by default.

xfs_ncheck

xfs_ncheck generates pathnames from inode numbers for an XFS file system.

xfs_repair

xfs_repair repairs corrupt or damaged XFS file systems.

xfs_rtcp

xfs_rtcp copies a file to the real-time partition on an XFS file system.

Chapter 6. Editors

This chapter is referenced in the LFS book for those wishing to use other editors on their LFS system. We also have the opportunity to show how some LFS installed programs benefit from being recompiled after GUI libraries have been installed.

Vim-6.2

Introduction to Vim

The Vim package, which is an abbreviation for VI IMproved, contains a **vi** clone with extra features as compared to the original **vi**.

The default LFS instructions install vim as a part of the base system. If you would prefer to link vim against X, you should recompile vim to enable GUI mode. There is no need for special instructions since X support is automatically detected.

Package information

- Download (HTTP): <http://ftp.at.vim.org/pub/vim/unix/vim-6.2.tar.bz2>
- Download (FTP): <ftp://ftp.vim.org/pub/vim/unix/vim-6.2.tar.bz2>
- Download size: 3.2 MB
- Estimated Disk space required: 46 MB
- Estimated build time: 0.59 SBU

Vim dependencies

Recommended

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331])

Optional

GTK+-2.4.1[p.354] or LessTif-0.93.94[p.355], Python-2.3.3[p.185], Tcl-8.4.6[p.198] and Ruby-1.8.1[p.193]

Installation of Vim

Note

If you recompile vim to link against X, and your X libs are not on the root partition, you will no longer have an editor for use in emergencies. You may choose to install an additional editor, not link vim against X, or move the current **vim** executable to the `/bin` directory under a different name such as **vi**.

Install Vim by running the following commands:

```
echo '#define SYS_VIMRC_FILE "/etc/vimrc"' >> src/feature.h &&
echo '#define SYS_GVIMRC_FILE "/etc/gvimrc"' >> src/feature.h &&
./configure --prefix=/usr \
  --with-features=huge &&
make &&
make install
```

Command explanations

`--with-features=huge`: This switch enables all the additional features available in Vim.

`--enable-gui=no`: If you prefer not to link vim against X, use this switch.

Contents

The Vim package contains **eview**, **evim**, **ex**, **gview**, **gvim**, **gvimdiff**, **rgview**, **rgvim**, **rview**, **rvim**, **view**, **vim**, **vimdiff**, **vimtutor** and **xxd**. Except for **vimtutor** and **xxd**, all the other commands are symlinks to **vim** and start **vim** with different options. **vimtutor** is a tool to learn the various **vim** commands and **xxd** is a command used to create hex dumps.

Emacs-21.3

Introduction to Emacs

The Emacs package contains the extensible, customizable, self-documenting real-time display editor.

Package information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/emacs/emacs-21.3.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/emacs/emacs-21.3.tar.gz>
- Download size: 20 MB
- Estimated Disk space required: 92.5 MB
- Estimated build time: 4.20 SBU

Emacs dependencies

Optional

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), libjpeg-6b[p.141], libpng-1.2.5[p.143], libtiff-3.6.1[p.145] and libungif-4.1.0b1[p.?]]

Installation of Emacs

Install Emacs by running the following commands:

```
./configure --prefix=/usr \
  --libexecdir=/usr/sbin &&
make bootstrap &&
make install
```

Contents

The Emacs package contains **emacs**, **b2m**, **ctags**, **ebrowse**, **emacsclient**, **etags**, **grep-changelog**, **rsc-checkin**, **cvt-mail**, **digest-doc**, **emacsserver**, **fakemail**, **hexl**, **movemail**, **profile**, **rsc2log**, **sorted-doc**, **vcdiff** and **yow**.

Description

emacs

The editor proper.

b2m

b2m is a program to convert mail files from RMAIL format to Unix `mbox' format.

ctags

ctags creates cross-reference tagfile database files for source code.

ebrowse

ebrowse permits browsing of C++ class hierarchies from with emacs.

emacsclient

emacsclient attaches an emacs session to an already running emacsserver instance.

etags

etags is another program to generate source code cross-reference tagfiles.

grep-changelog

grep-changelog prints entries in Change Logs matching various criteria.

rcs-checkin

rcs-checkin is a shell script used to check files into RCS.

cvt-mail

cvt-mail converts old style goslings emacs mail directories into gnu-rmail format.

digest-doc

digest-doc is a filter to create nroff output for man pages.

emacsserver

emacsserver allows other applications/shells to access an already running emacs instance and share buffers with it.

fakemail

fakemail is a sendmail-like interface to `/bin/mail`.

hexl

hexl converts files for editing with emacs hexl-mode binary file editing mode.

movemail

movemail provide access to POP3 mailboxes.

profile

profile generates periodic events for profiling of Emacs Lisp code.

rcs2log

rcs2log generates change log prefixes from RCS files.

sorted-doc

sorted-doc is a filter to generate texinfo files.

vcdiff

vcdiff compares SCCS files.

yow

yow prints a quotation from Zippy the Pinhead.

nano-1.2.3

Introduction to nano

The nano package contains a small, simple text editor which aims to replace Pico, the default editor in the Pine package.

Package information

- Download (HTTP): <http://www.nano-editor.org/dist/v1.2/nano-1.2.3.tar.gz>
- Download (FTP): <ftp://ftp.uni-koeln.de/editor/nano-1.2.3.tar.gz>
- Download size: 942 KB
- Estimated Disk space required: 4.6 MB
- Estimated build time: 0.08 SBU

nano dependencies

Optional

slang-1.4.9[p.119]

Installation of nano

Install nano by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
    --enable-color --enable-multibuffer --enable-nanorc &&
make &&
make install &&
mkdir -p /usr/share/doc/nano/examples &&
cp nanorc.sample /usr/share/doc/nano/examples
```

Configuring nano

Config files

/etc/nanorc, ~/.nanorc

Example Configuration

```
set autoindent
set const
set fill 72
set historylog
set multibuffer
set nohelp
set regexp
set smooth
set suspend
```

Another example is in the /usr/share/doc/nano/examples directory in the nanorc.sample file. It includes color configurations and has some documentation included in the comments.

Contents

The nano package contains **nano**.

Description

nano

nano is a small, simple text editor which aims to replace Pico, the default editor in the Pine package.

JOE-3.0

Introduction to JOE

JOE (Joe's own editor) is a small text editor capable of emulating WordStar, Pico, and Emacs.

Package information

- Download (HTTP): <http://unc.dl.sourceforge.net/sourceforge/joe-editor/joe-3.0.tar.gz>
- Download (FTP):
- Download size: 308 KB
- Estimated Disk space required: 4.8 MB
- Estimated build time: 0.11 SBU

Installation of JOE

Install JOE by running the following commands:

```
./configure --sysconfdir=/etc --prefix=/usr &&  
make &&  
make install
```

Configuration files

JOE can make use of several configuration files. Information about these files may be found in the joe man page. These files are `/etc/jmacsrc`, `/etc/joerc`, `/etc/jpicorc`, `/etc/jstarrc`, and `/etc/rjoerc`. JOE can also make use of `~/.joerc`, which may be copied from `/etc/joerc` and customized for each user's taste.

Contents

The JOE package contains **jmacs**, **joe**, **jpico**, **jstar**, **rjoe** and **termidx**.

Description

jmacs

jmacs is a symbolic link to **joe** used to launch Emacs emulation mode.

joe

joe is a small text editor capable of emulating WordStar, Pico, and Emacs.

jpico

jpico is a symbolic link to **joe** used to launch Pico emulation mode.

jstar

jstar is a symbolic link to **joe** used to launch WordStar emulation mode.

rjoe

rjoe is a symbolic link to **joe** that restricts JOE to editing only files which are specified on the command-line.

termidx

termidx is a program used by **joe** to generate the termcap index file.

Pico

pico is installed as a part of Pine-4.58[p.259].

Chapter 7. Shells

We are all familiar with the Bourne Again SHell, but there are two other user interfaces that are considered useful modern shells -- the Berkeley Unix C shell and the Korn shell. This chapter installs packages compatible with these additional shell types.

ASH-0.4.0

Introduction to ASH

ash is a shell that is the most compliant with the Bourne Shell (not to be confused with Bourne Again SHell i.e. Bash installed in LFS) without any additional features. Bourne Shell is available on most commercial UNIX systems. Hence **ash** is useful for testing scripts to be **sh**-compliant. It also has a small memory and space requirements compared to the other **sh**-compliant shells.

Package information

- Download (HTTP):
- Download (FTP): ftp://distro.ibiblio.org/pub/Linux/distributions/slackware/slackware_source/ap/ash/ash-0.4.0.tar.gz
- Download size: 118 KB
- Estimated Disk space required: 2.7 MB
- Estimated build time: 0.06 SBU

Additional downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/ash-0.4.0-cumulative-fixes.patch>

Installation of ASH

Install ASH by running the following commands:

```
patch -Np1 -i ../ash-0.4.0-cumulative-fixes.patch &&
make &&
install -m 755 sh /bin/ash &&
install -m 644 sh.1 /usr/share/man/man1/ash.1
```

If you would like to make **ash** the default sh shell, make a symlink.

```
ln -sf ash /bin/sh
```

Configuring ASH

Config files

ASH sources `/etc/profile` and `$HOME/.profile`

Contents

The ASH package contains **ash**, a **sh** compliant shell.

Description

ash

ash is a **sh**-compliant shell.

Tcsh-6.12.00

Introduction to Tcsh

The Tcsh package contains "an enhanced but completely compatible version of the Berkeley Unix C shell (csh)". This is useful as an alternative shell for those who prefer C syntax to that of the bash shell, and also because some programs require the C shell in order to install.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/utils/shells/tcsh/tcsh-6.12.00.tar.gz>
- Download (FTP): <ftp://ftp.funet.fi/pub/unix/shells/tcsh/tcsh-6.12.00.tar.gz>
- Download size: 804 KB
- Estimated Disk space required: 9.0 MB
- Estimated build time: 0.16 SBU

Installation of Tcsh

Install Tcsh by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install &&
make install.man &&
ln -sf /usr/bin/tcsh /bin/csh
```

Command explanations

ln -sf /usr/bin/tcsh /bin/csh: The FHS states that if there is a C shell installed, there should be a symlink from `/bin/csh` to it. This creates that symlink.

Configuring Tcsh

Config files

There are numerous configuration files for the C shell. Examples of these are `/etc/csh.cshrc`, `/etc/csh.login`, `~/.tcshrc`, `~/.cshrc`, `~/.history`, `~/.login`, `~/.cshdirs`, `/etc/csh.logout`, `~/.logout` and `~/.logout`. More information on these files can be found in the `tcsh(1)` man page.

Contents

The Tcsh package contains **tcsh**.

Description

tcsh

tcsh is an enhanced but completely compatible version of the Berkeley Unix C shell, `csh`. It is usable as both an interactive shell and a script processor.

ZSH-4.2.0

Introduction to ZSH

The ZSH package contains a command interpreter (shell) usable as an interactive login shell and as a shell script command processor. Of the standard shells, ZSH most closely resembles KSH but includes many enhancements.

Package information

- Download (HTTP): <http://www.zsh.org/pub/zsh-4.2.0.tar.bz2>
- Download (FTP): <ftp://ftp.zsh.org/zsh/zsh-4.2.0.tar.bz2>
- Download size: 1.9 MB
- Estimated Disk space required: 17 MB
- Estimated build time: 0.51 SBU

ZSH dependencies

Optional

PCRE-4.5[p.117]

Installation of ZSH

Install ZSH by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Configuring ZSH

Config files

There are a whole host of configuration files for ZSH including `/etc/zshenv`, `/etc/zprofile`, `/etc/zshrc`, `/etc/zlogin` and `/etc/zlogout`. You can find more information on these in the `zsh(1)` and related man pages.

Contents

The ZSH package contains **zsh**.

Description

zsh

zsh is a shell which has command-line editing, built-in spelling correction, programmable command completion, shell functions (with autoloading), a history mechanism, and a host of other features.

Part III. General Libraries and Utilities

Chapter 8. General Libraries

Libraries contain code which is often required by more than one program. This has the advantage that each program doesn't need to duplicate code (and risk introducing bugs), it just has to call functions from the libraries installed on the system. The most obvious example of a set of libraries is glibc which is installed during the LFS book. This contains all of the C library functions which programs use.

There are two types of library, static and shared. Shared libraries (usually `libXXX.so`) are loaded into memory from the shared copy at runtime (hence the name). Static libraries (`libXXX.a`) are actually linked into the program executable file itself, thus making the program file larger. Quite often, you will find both static and shared copies of the same library on your system.

Generally, you only need to install libraries when you are installing software which requires functionality which they supply. In the BLFS book, each package is listed with a list of (known) dependencies. Thus, you can figure out which libraries you need to have before installing that program. If you are installing something without using BLFS instructions, usually the `README` or `INSTALL` file will contain details of the programs requirements.

There are certain libraries which nearly *everyone* will need at some point. In this chapter we list these and some others and explain why you may want to install them.

OpenSSL-0.9.7d

Introduction to OpenSSL

The OpenSSL package contains management tools and libraries relating to cryptography. These are useful for providing cryptography functions to other packages, notably OpenSSH and web browsers (for accessing secure https sites).

Package information

- Download (HTTP): <http://www.openssl.org/source/openssl-0.9.7d.tar.gz>
- Download (FTP): <ftp://ftp.openssl.org/source/openssl-0.9.7d.tar.gz>
- Download size: 2.7 MB
- Estimated Disk space required: 25 MB
- Estimated build time: 1.16 SBU

Installation of OpenSSL

Install OpenSSL by running the following commands:

```
sed 's/^passwd/openssl-passwd/' doc/apps/passwd.pod \
    > doc/apps/openssl-passwd.pod &&
rm doc/apps/passwd.pod &&
mv doc/crypto/{,openssl_}threads.pod &&
sed -i -e 's/-m486/-march=i486/' Configure &&
./config --openssldir=/etc/ssl --prefix=/usr shared &&
make MANDIR=/usr/share/man &&
make MANDIR=/usr/share/man install &&
cp -r certs /etc/ssl &&
rmdir /etc/ssl/lib
```

Command explanations

no-rc5 no-idea: When added to the `./config` command, this will eliminate the building of those encryption methods. Patent licenses may be needed for you to utilize either of those methods in your projects.

rm doc/apps/passwd.pod: This command prevents OpenSSL from installing its passwd man page over an existing man page with the same name.

mv doc/crypto/{,openssl_}threads.pod: This command prevents OpenSSL from overwriting an existing man page from Perl.

sed -i -e 's/-m486/-march=i486/' Configure: GCC issues a warning on every compilation because the **Configure** command uses deprecated `-m486` instead of `-march=i486`.

```
make MANDIR=/usr/share/man
make MANDIR=/usr/share/man install
```

These commands install OpenSSL with the man pages in `/usr/share/man` instead of the default which is `/etc/ssl/man`.

cp -r certs /etc/ssl: The certificates must be copied manually since the install script skips this step.

rmdir /etc/ssl/lib: This is simply a tidy-up command. For some reason, the openssl install routine creates the `/etc/ssl/lib` directory even though the libraries have been installed in `/usr/lib`. We remove it to keep things nice and tidy!

Configuring OpenSSL

Config files

`/etc/ssl/openssl.cnf`

Configuration Information

Most people who just want to use openssl for providing functions to other programs such as OpenSSH and web browsers won't need to worry about configuring OpenSSL. Configuring OpenSSL is an advanced topic and so those who do would normally be expected to either know how to do it or to be able to find out how to do it.

Contents

The OpenSSL package contains **c_rehash**, **openssl**, **libcrypto** libraries and **libssl** libraries.

Description

c_rehash

c_rehash is a Perl script that scans all files in a directory and adds symbolic links to their hash values.

openssl

The **openssl** program is a command-line tool for using the various cryptography functions of OpenSSL's crypto library from the shell. It can be used for various functions which are documented in **man 1 openssl**.

libcrypto

The OpenSSL crypto library implements a wide range of cryptographic algorithms used in various Internet standards. The services provided by this library are used by the OpenSSL implementations of SSL, TLS and S/MIME, and they have also been used to implement OpenSSH, OpenPGP, and other cryptographic standards.

libssl

The OpenSSL SSL library implements the Secure Sockets Layer (SSL v2/v3) and Transport Layer Security (TLS v1) protocols. It provides a rich API, documentation on which can be found by running **man 3 ssl**.

PCRE-4.5

Introduction to PCRE

The PCRE package contains Perl Compatible Regular Expression libraries. These are useful for implementing regular expression pattern matching using the same syntax and semantics as Perl 5.

Package information

- Download (HTTP): <http://ftp.jg555.com/linux/libs/pcre-4.5.tar.bz2>
- Download (FTP): <ftp://ftp.csx.cam.ac.uk/pub/software/programming/pcre/pcre-4.5.tar.bz2>
- Download size: 344 KB
- Estimated Disk space required: 3.5 MB
- Estimated build time: 0.08 SBU

Installation of PCRE

Install PCRE by running the following commands:

```
./configure --prefix=/usr --enable-utf8 &&  
make &&  
make install
```

If you reinstall `grep` after installing `pcre`, `grep` will get linked against `pcre` and may cause problems if `/usr` is a separate mount point. To avoid this, either pass the option `--disable-perl-regex` when executing `./configure` for `grep` or move `libpcre` to `/lib` as follows.

```
mv /usr/lib/libpcre.so.* /lib/ &&  
ln -sf ../../lib/libpcre.so.0 /usr/lib/libpcre.so
```

Command explanations

`--enable-utf8`: This switch includes the code for handling UTF-8 character strings in the library.

Contents

The PCRE package contains the `libpcre` libraries, `pcregrep`, `pcretest` and `pcre-config`.

Description

`pcregrep`

`pcregrep` is a `grep` that understands Perl compatible regular expressions.

`pcretest`

`pcretest` can test your Perl compatible regular expression.

`pcre-config`

`pcre-config` is used during the compile process of programs linking to this library.

popt-1.7

Introduction to popt

The popt package contains the popt libraries which are used by some programs to parse command-line options.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/utils/rpm.org/dist/rpm-4.1.x/popt-1.7.tar.gz>
- Download (FTP): <ftp://ftp.rpm.org/pub/rpm/dist/rpm-4.1.x/popt-1.7.tar.gz>
- Download size: 564 KB
- Estimated Disk space required: 17.4 MB
- Estimated build time: 0.06 SBU

Installation of popt

Install popt by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The popt package contains the `libpopt` libraries.

Description

popt library

The `libpopt` library is used to parse command-line options.

slang-1.4.9

Introduction to slang

The slang package contains the slang library, which provides facilities such as display/screen management, keyboard input, and keymaps.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/editors/davis/slang/v1.4/slang-1.4.9.tar.bz2>
- Download (FTP): <ftp://space.mit.edu/pub/davis/slang/v1.4/slang-1.4.9.tar.bz2>
- Download size: 624 KB
- Estimated Disk space required: 9.6 MB
- Estimated build time: 0.16 SBU

Installation of slang

Install slang by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install &&
make elf &&
make install-elf &&
make install-links &&
chmod 755 /usr/lib/libslang.so.1.4.9
```

Configuring slang

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, **/sbin/ldconfig** should be run while logged in as root.

Contents

The slang package contains the `libslang` libraries.

FAM-2.7.0

Introduction to FAM

The FAM package contains a File Alteration Monitor which is useful for notifying applications of changes to the file system.

Package information

- Download (HTTP):
- Download (FTP): <ftp://oss.sgi.com/projects/fam/download/stable/fam-2.7.0.tar.gz>
- Download size: 320 KB
- Estimated Disk space required: 6.9 MB
- Estimated build time: 0.68 SBU

Additional downloads

- Dnotify patch (Recommended): <http://www.linuxfromscratch.org/patches/blfs/5.1/fam-2.7.0-dnotify-1.patch>

FAM dependencies

Required

portmap-5beta[p.234]

Installation of FAM

Install FAM by running the following commands:

```
patch -Np1 -i ../fam-2.7.0-dnotify-1.patch &&
autoreconf -f -i &&
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install
```

Command explanations

patch -Np1 -i ../fam-2.7.0-dnotify-1.patch: This patch enables FAM to use the Linux kernel dnotify mechanism to inform the calling process of file modifications, rather than polling the file system for modifications.

autoreconf -f -i This command is necessary since the dnotify patch affects the `configure.ac` and `Makefile.am`.

Configuring FAM

Config files

`/etc/rpc`, `/etc/fam.conf`, `/etc/inetd.conf`, `/etc/xinetd.d/fam` or `/etc/xinetd.conf`

Configuration Information

Configuring the file alteration monitor.

If you use `inetd`, add the FAM entry to `/etc/inetd.conf` with the following command:

```
echo "sgi_fam/1-2 stream  rpc/tcp wait root /usr/sbin/famd fam" >> /etc/inetd.conf
```

If you use xinetd, add an entry to `/etc/xinetd.conf` with the following command (be sure the "nogroup" group exists):

```
cat >> /etc/xinetd.conf << "EOF"
# description: FAM - file alteration monitor
service sgi_fam
{
    type                = RPC UNLISTED
    socket_type         = stream
    user                = root
    group               = nogroup
    server               = /usr/sbin/famd
    wait                = yes
    protocol             = tcp
    rpc_version          = 2
    rpc_number           = 391002
}
EOF
```

If you do not have any inetd daemon installed and have no wish to install one, you can also start fam during system startup by installing `/etc/rc.d/init.d/fam` init script included in the `blfs-bootscripts-5.1`[p.31] package.

```
make install-fam
```

Contents

The FAM package contains **famd** executable and `libfam` libraries.

Description

famd

famd is the file alteration monitor.

libxml-1.8.17

Introduction to libxml

The libxml package contains the libxml libraries. These are useful for parsing XML files.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libxml/1.8/libxml-1.8.17.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libxml/1.8/libxml-1.8.17.tar.bz2>
- Download size: 973 KB
- Estimated Disk space required: 11 MB
- Estimated build time: 0.41 SBU

Installation of libxml

Install libxml by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The libxml package contains `libxml` libraries, `xmllint` and `xmlcatalog`.

Description

libxml libraries

`libxml` libraries provide the functions for programs to parse files that use the XML format.

libxml2-2.6.9

Introduction to libxml2

The libxml2 package contains XML libraries. These are useful for parsing XML files.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libxml2/2.6/libxml2-2.6.9.tar.bz2>
- Download (FTP): <ftp://xmlsoft.org/libxml2-2.6.9.tar.gz>
- Download size: 2.6 MB
- Estimated Disk space required: 56 MB
- Estimated build time: 1.10 SBU

libxml2 dependencies

Optional

Python-2.3.3[p.185] and readline-4.3[p.125]

Installation of libxml2

Install libxml2 by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Command explanations

`--with-history`: Enables readline support.

Contents

The libxml2 package contains `libxml2` libraries, `xmllint`, `xmlcatalog` and `xml2-config`.

Description

libxml2 libraries

`libxml2` libraries provide the functions for programs to parse files that use the XML format.

xmllint

`xmllint` parses XML files and outputs reports (based upon options) to detect errors in XML coding.

xmlcatalog

`xmlcatalog` allows users to monitor and manipulate XML and SGML catalogs.

libxslt-1.1.6

Introduction to libxslt

The libxslt package contains XSLT libraries. These are useful for extending libxml2 libraries to support XSLT files.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libxslt/1.1/libxslt-1.1.6.tar.bz2>
- Download (FTP): <ftp://xmlsoft.org/libxslt-1.1.6.tar.gz>
- Download size: 1.7 MB
- Estimated Disk space required: 34 MB
- Estimated build time: 0.40 SBU

libxslt dependencies

Required

libxml2-2.6.9[p.123]

Optional

Python-2.3.3[p.185]

Installation of libxslt

Install libxslt by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The libxslt package contains libxslt libraries, libexslt libraries, xsltproc and xslt-config.

Description

libxslt libraries

libxslt libraries provide extensions to the libxml2 libraries to parse files that use the XSLT format.

xsltproc

xsltproc is used to apply XSLT stylesheets to XML documents.

readline-4.3

Introduction to readline

The readline library provides a set of functions for use by applications that allow users to edit command-lines as they are typed in. Both Emacs and vi editing modes are available.

Package information

- Download (HTTP): <http://ftp.gnu.org/gnu/readline/readline-4.3.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/readline/readline-4.3.tar.gz>
- Download size: 944 KB
- Estimated Disk space required: 9.2 MB
- Estimated build time: 0.10 SBU

Installation of readline

Install readline by running the following commands:

```
./configure --prefix=/usr &&  
make SHLIB_LIBS=-lcurses &&  
make install
```

Command explanations

make SHLIB_LIBS=-lcurses: These command makes the proper symbols available for applications that assume readline is compiled linked to ncurses.

Configuring readline

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, **/sbin/ldconfig** should be run while logged in as root.

Contents

The readline package contains the `libreadline` libraries and `libhistory` libraries.

GMP-4.1.3

Introduction to GMP

The GMP package contains an math library. This has useful functions for arbitrary precision arithmetic.

Package information

- Download (HTTP):
- Download (FTP): <ftp://ftp.gnu.org/gnu/gmp/gmp-4.1.3.tar.gz>
- Download size: 1.7 MB
- Estimated Disk space required: 29 MB
- Estimated build time: 0.74 SBU

GMP dependencies

Optional

readline-4.3[p.125]

Installation of GMP

Install GMP by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The GMP package contains `libgmp` libraries.

Description

gmp libraries

`libgmp` libraries contain the functions to operate on signed integers, rational numbers, and floating point numbers.

GDBM-1.8.3

Introduction to GDBM

The GDBM package contains the GNU Database Manager. This is a disk file format database which stores key/data-pairs in single files. The actual data of any record being stored is indexed by a unique key, which can be retrieved in less time than if it was stored in a text file.

Package information

- Download (HTTP): <http://ftp.gnu.org/gnu/gdbm/gdbm-1.8.3.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/gdbm/gdbm-1.8.3.tar.gz>
- Download size: 223 KB
- Estimated Disk space required: 4.1 MB
- Estimated build time: 0.08 SBU

Installation of GDBM

Install GDBM by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make BINOWN=root BINGRP=root install
```

In addition, you may need to install the DBM and NDBM compatibility headers since some applications look for these older dbm routines.

```
make BINOWN=root BINGRP=root install-compat
```

Command explanations

BINOWN=root BINGRP=root: This command changes the file ownership to root instead of the bin user.

Contents

The GDBM package contains `libgdbm` libraries.

Description

`gdbm` libraries

`libgdbm` libraries contain functions that perform database routines using extendible hashing.

GLib-1.2.10

Introduction to GLib

The glib package contains a low-level core library. This is useful for providing data structure handling for C, portability wrappers and interfaces for such runtime functionality as an event loop, threads, dynamic loading, and an object system.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/graphics/gimp/gtk/v1.2/glib-1.2.10.tar.gz>
- Download (FTP): <ftp://ftp.gtk.org/pub/gtk/v1.2/glib-1.2.10.tar.gz>
- Download size: 412 KB
- Estimated Disk space required: 7 MB
- Estimated build time: 0.26 SBU

Installation of GLib

Install glib by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The glib package contains libglib-1.2 libraries.

Description

GLib libraries

GLib libraries contain a low-level core library for the GIMP Toolkit.

GLib-2.4.1

Introduction to GLib

The glib package contains a low-level core library. This is useful for providing data structure handling for C, portability wrappers and interfaces for such runtime functionality as an event loop, threads, dynamic loading, and an object system.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/graphics/gimp/gtk/v2.4/glib-2.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.gtk.org/pub/gtk/v2.4/glib-2.4.1.tar.bz2>
- Download size: 2.0 MB
- Estimated Disk space required: 30 MB
- Estimated build time: 0.49 SBU

GLib dependencies

Required

pkgconfig-0.15.0[p.181]

Optional

GTK-Doc-1.2[p.407]

Installation of GLib

Install glib by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The glib package contains `libglib-2.0`, `libgobject-2.0`, `libgmodule-2.0` and `libgthread-2.0` libraries.

Description

GLib libraries

GLib libraries contain a low-level core library for the GIMP Toolkit.

expat-1.95.7

Introduction to expat

The expat package contains a stream oriented C library for parsing XML.

Package information

- Download (HTTP): <http://umh.dl.sourceforge.net/sourceforge/expat/expat-1.95.7.tar.gz>
- Download (FTP): <ftp://ftp.at.linuxfromscratch.org/opsys/linux/sf/e/expat/expat-1.95.7.tar.gz>
- Download size: 290 KB
- Estimated Disk space required: 3.2 MB
- Estimated build time: 0.11 SBU

Installation of expat

Install expat by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The expat package contains the `libexpat` libraries and `xmlwf`.

Description

xmlwf

`xmlwf` is a non-validating utility to check whether or not XML documents are well formed.

libesmtp-1.0.2

Introduction to libesmtp

The libesmtp package contains the libesmtp libraries which are used by some programs to manage email submission to a mail transport layer.

Package information

- Download (HTTP): <http://www.stafford.uklinux.net/libesmtp/libesmtp-1.0.2.tar.bz2>
- Download (FTP):
- Download size: 263 KB
- Estimated Disk space required: 5.4 MB
- Estimated build time: 0.16 SBU

libesmtp dependencies

Optional

OpenSSL-0.9.7d[p.115]

Installation of libesmtp

Install libesmtp by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The libesmtp package contains the libesmtp library.

Description

libesmtp library

The libesmtp library is used to manage submission of electronic mail to a Mail Transport Agent.

aspell-0.50.5

Introduction to aspell

The aspell package contains the aspell library, used to interface to spell checking libraries.

Package information

- Download (HTTP):
- Download (FTP): <ftp://ftp.gnu.org/gnu/aspell/aspell-0.50.5.tar.gz>
- Download size: 917 KB
- Estimated Disk space required: 9.8 MB
- Estimated build time: 0.97 SBU

aspell dependencies

Required

which-2.16[p.176]

Installation of aspell

Install aspell by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Configuring aspell

Configuration Information

After Aspell is installed at least one dictionary needs to be installed. You can find them at <http://aspell.net/>.

Install your dictionary or dictionaries by running the following commands:

```
./configure &&  
make &&  
make install
```

Contents

The aspell package contains the `libaspell` libraries.

Description

aspell library

The `libaspell` library is a spell checking library interface.

ispell-3.2.06.epa7

Introduction to ispell

The ispell package contains a spell checker that can handle international languages.

Package information

- Download (HTTP): <http://membled.com/work/patches/ispell/ispell-3.2.06.epa7.tar.bz2>
- Download (FTP):
- Download size: 1.2 MB
- Estimated Disk space required: 11 MB
- Estimated build time: 0.03 SBU

Installation of ispell

The first step is to create `local.h`.

```
sed -e "s:/usr/local:/usr:g" local.h.linux > local.h
```

By default, ispell only installs American English dictionary. To install other languages, check out the `config.X` file for the define to append to `local.h`.

Compile and install ispell using the following commands:

```
make &&  
make install
```

Contents

The ispell package contains the **ispell** program used for spell checking.

Guile-1.6.4

Introduction to Guile

The Guile package contains the Project GNU's extension language library. Guile also contains a stand alone Scheme interpreter.

Package information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/guile/guile-1.6.4.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/guile/guile-1.6.4.tar.gz>
- Download size: 2.7 MB
- Estimated Disk space required: 30 MB
- Estimated build time: 0.79 SBU

Guile dependencies

Optional

readline-4.3[p.125]

Installation of Guile

Install Guile by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

In addition to the `libguile` libraries, the Guile package contains **guile**, **guile-config** and **guile-snarf**.

Description

guile

guile is a stand-alone scheme interpreter for Guile.

guile-config

guile-config is a Guile script which provides the information necessary to link your programs against the Guile library, in much the same way `pkgconfig-0.15.0`[p.181] does.

guile-snarf

guile-snarf a script to parse declarations in your C code for Scheme visible C functions, Scheme objects to be used by C code, etc.

slib-2d6

Introduction to slib

The slib package is a Scheme library used with Guile.

Package information

- Download (HTTP): <http://www.swiss.ai.mit.edu/ftplib/scm/OLD/slib2d6.tar.gz>
- Download (FTP):
- Download size: 636 KB
- Estimated Disk space required: 2.9 MB
- Estimated build time: 0.00 SBU

slib dependencies

Required

Guile-1.6.4[p.134]

Installation of slib

Installation of slib is merely a copy command:

```
cp -R slib /usr/share/guile
```

Contents

The slib package contains a Scheme library.

G-Wrap-1.3.4

Introduction to G-Wrap

The G-Wrap package contains tools for exporting C libraries into Scheme interpreters.

Package information

- Download (HTTP): <http://www.gnucash.org/pub/g-wrap/source/g-wrap-1.3.4.tar.gz>
- Download (FTP):
- Download size: 400 KB
- Estimated Disk space required: 4.6 MB
- Estimated build time: 0.09 SBU

G-wrap dependencies

Required

Guile-1.6.4[p.134] and slib-2d6[p.135]

Installation of G-Wrap

Install G-Wrap by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

In addition to the Scheme libraries, the G-Wrap package contains **g-wrap-config**.

Description

g-wrap-config

g-wrap-config is a tool to generate CFLAGS for linking C code to the Scheme runtime libraries.

LZO-1.08

Introduction to LZO

LZO is a data compression library which is suitable for data decompression and compression in real-time. This means it favors speed over compression ratio.

Package information

- Download (HTTP): <http://www.oberhumer.com/opensource/lzo/download/lzo-1.08.tar.gz>
- Download (FTP): <http://ftp.uni-koeln.de/util/arc/lzo-1.08.tar.gz>
- Download size: 421 KB
- Estimated Disk space required: 5.4 MB
- Estimated build time: 0.22 SBU

Installation of LZO

Install LZO by running the following commands:

```
./configure --prefix=/usr --enable-shared &&  
make &&  
make install
```

Contents

LZO package provides `liblzo` library.

Description

`liblzo`

`liblzo` is a data compression and decompression library.

libpcap-0.8.3

Introduction to libpcap

libpcap provides functions for user-level packet capture, used in low-level network monitoring.

Package information

- Download (HTTP): <http://www.tcpdump.org/release/libpcap-0.8.3.tar.gz>
- Download (FTP): <ftp://ftp.hacettepe.edu.tr/pub/linux/sunfreeware/freeware/SOURCES/libpcap-0.8.3.tar.gz>
- Download size: 299 KB
- Estimated Disk space required: 1.9 MB
- Estimated build time: 0.05 SBU

Installation of libpcap

Install libpcap by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

libpcap package provides the `libpcap` library.

Description

libpcap

`libpcap` is a library for user-level packet capture.

libusb-0.1.8

Introduction to libusb

The libusb package contains a library used by some applications for USB device access.

Package information

- Download (HTTP): <http://umh.dl.sourceforge.net/sourceforge/libusb/libusb-0.1.8.tar.gz>
- Download (FTP):
- Download size: 314 KB
- Estimated Disk space required: 2.1 MB
- Estimated build time: 0.03 SBU

libusb dependencies

Optional

OpenJade-1.3.2[p.614] and DocBook SGML DTD-3.1[p.608]

Installation of libusb

Install libusb by running the following commands:

```
./configure --prefix=/usr --disable-build-docs &&  
make &&  
make install
```

Command explanations:

--disable-build-docs: This switch turns off by default enabled building of documentation since it requires OpenJade.

Configuring libusb

libusb requires the usbfs kernel filesystem to be mounted on `/proc/bus/usb`. Applications require the files in this directory to be accessible to the user, sometimes for both reading and writing.

To restrict access to USB devices, create the usb group:

```
groupadd -g 15 usb
```

To get usbfs mounted on boot, we will create a special init script, because just putting an extra line into `/etc/fstab` does not work for those who compiled "USB device filesystem" as a kernel module. Install `/etc/rc.d/init.d/usb` init script included in the `blfs-bootscripts-5.1`[p.31] package.

```
make install-usb
```

Contents

The libusb package contains libusb libraries, the `/usr/include/usb.h` header, and a **usb-config** script.

Description

libusb libraries

`libusb` libraries contain C functions for accessing USB hardware.

usb-config

The **usb-config** script provides the right compiler and linker flags for programs using this library.

Chapter 9. Graphics and Font Libraries

Depending on what your system will be used for, you may or may not require the graphics and font libraries. Most desktop machines will want them for use with graphical applications. Most servers on the other hand, will not require them.

libjpeg-6b

Introduction to libjpeg

The libjpeg package contains libraries that allow compression of image files based on the Joint Photographic Experts Group standard. It is a "lossy" compression algorithm.

Package information

- Download (HTTP): <http://www.ijg.org/files/jpegsrc.v6b.tar.gz>
- Download (FTP): <ftp://ftp.uu.net/graphics/jpeg/jpegsrc.v6b.tar.gz>
- Download size: 599 KB
- Estimated Disk space required: 3.7 MB
- Estimated build time: 0.26 SBU

Installation of libjpeg

Install libjpeg by running the following commands:

```
./configure --enable-static --enable-shared --prefix=/usr &&  
make &&  
make install
```

Command explanations

./configure --enable-static --enable-shared --prefix=/usr: This command tells libjpeg to build both shared and static libraries and to install them with a base of **/usr**.

Configuring libjpeg

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. **/opt/lib** or **/usr/local/lib** should appear in **/etc/ld.so.conf** so that **ldd** can find the shared libraries. After checking that this is the case, **/sbin/ldconfig** should be run while logged in as root.

Contents

The libjpeg package contains **cjpeg**, **djpeg**, **jpegtran**, **rdjpgcom**, **wrjpgcom** and **libjpeg** libraries.

Description

cjpeg

cjpeg compresses image files to produce a JPEG/JFIF file on the standard output. Currently supported input file formats are: PPM (PBMPLUS color format), PGM (PBMPLUS gray-scale format), BMP, and Targa.

djpeg

djpeg decompresses image files from JPEG/JFIF format to either PPM (PBMPLUS color format), PGM (PBMPLUS

gray-scale format), BMP, or Targa format.

jpegtran

jpegtran is used for lossless transformation of JPEG files.

rdjpgcom

rdjpgcom displays text comments from within a JPEG file.

wrjpgcom

wrjpgcom inserts text comments into a JPEG file.

jpeg libraries

These libraries are used by many programs for reading and writing jpeg format files.

libpng-1.2.5

Introduction to libpng

The libpng package contains libraries used by other programs for reading and writing PNG files.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/libpng/libpng-1.2.5.tar.bz2>
- Download (FTP): <ftp://ftp.iasi.roedu.net/pub/mirrors/ftp.gimp.org/gimp/libs/libpng-1.2.5.tar.bz2>
- Download size: 376 KB
- Estimated Disk space required: 4.1 MB
- Estimated build time: 0.16 SBU

Additional downloads

- Required Patch to explicitly link libpng against system libraries:
<http://www.linuxfromscratch.org/patches/blfs/5.1/libpng-1.2.5-link-to-proper-libs.patch>

Installation of libpng

Install libpng by running the following commands:

```
patch -Np1 -i ../libpng-1.2.5-link-to-proper-libs.patch &&
make prefix=/usr ZLIBINC=/usr/include \
    ZLIBLIB=/usr/lib -f scripts/makefile.linux &&
make prefix=/usr install -f scripts/makefile.linux
```

Command explanations

ZLIBINC=/usr/include ZLIBLIB=/usr/lib: This forces libpng to look for the zlib includes and libraries where we have them installed.

-f scripts/makefile.linux: This points make at the Linux version of the makefile as libpng doesn't use a autoconf routine instead coming with various makefiles for different platforms.

Configuring libpng

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. */opt/lib* or */usr/local/lib* should appear in */etc/ld.so.conf* so that **ldd** can find the shared libraries. After checking that this is the case, **/sbin/ldconfig** should be run while logged in as root.

Contents

The libpng package contains **libpng** libraries and **libpng-config**.

Description

png libraries

The PNG library is a collection of routines used to create and manipulate PNG format graphics files. The PNG format was designed as a replacement for GIF and, to a lesser extent, TIFF, with many improvements and extensions and lack of patent problems.

libpng-config

libpng-config provides configuration info for libpng.

libtiff-3.6.1

Introduction to libtiff

The libtiff package contains the tiff libraries and associated utilities. The libraries are used by many programs for reading and writing tiff files and the utilities are useful for general work with tiff files.

Package information

- Download (HTTP): <http://libtiff.maptools.org/dl/tiff-v3.6.1.tar.gz>
- Download (FTP): <ftp://ftp.remotesensing.org/pub/libtiff/tiff-v3.6.1.tar.gz>
- Download size: 1.1 MB
- Estimated Disk space required: 11 MB
- Estimated build time: 0.16 SBU

libtiff dependencies

Optional

libjpeg-6b[p.141]

Installation of libtiff

Install libtiff by running the following commands:

```
./configure --prefix=/usr --noninteractive \
    --with-DIR_MAN=/usr/share/man \
    --with-ZIP=yes --with-DIR_GZLIB=/usr/lib &&
make &&
make install
```

Note

configure prints a false error message that it is unable to find the library directories for ZIP (and JPEG) support. Ignore them. To verify that libtiff is indeed linked to these libraries, you can use **ldd** to verify that it is indeed linked against these.

Command explanations

--noninteractive: This switch is used to avoid the configuration routine asking for confirmation of the directories to install to (which we pass using switches to configure anyways).

--with-DIR_MAN=/usr/share/man: This is used because despite the fact we pass **--prefix=/usr**, the configure routine tries to install the man pages in **/usr/local/man** instead of the correct place.

--with-ZIP=yes --with-DIR_GZLIB=/usr/lib: This enables support for the handling of TIFF images with deflate-encoded data.

--with-JPEG=yes --with-DIR_JPEGLIB=/usr/lib: Use these switches to enable support for the handling of TIFF images with JPEG-encoded data.

Configuring libtiff

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. **/opt/lib** or **/usr/local/lib** should appear in **/etc/ld.so.conf** so that **ldd** can find the shared libraries. After checking that

this is the case, `/sbin/ldconfig` should be run while logged in as root.

Contents

The libtiff package contains `fax2ps`, `fax2tiff`, `gif2tiff`, `pal2rgb`, `ppm2tiff`, `ras2tiff`, `raw2tiff`, `rgb2ycbcr`, `thumbnail`, `tiff2bw`, `tiff2pdf`, `tiff2ps`, `tiff2rgba`, `tiffcmp`, `tiffcp`, `tiffdither`, `tiffdump`, `tiffinfo`, `tiffmedian`, `tiffset`, `tiffsplit` and `libtiff` libraries.

Description

`fax2ps`

`fax2ps` converts a TIFF facsimile to compressed PostScript file.

`fax2tiff`

`fax2tiff` creates a TIFF Class F fax file from raw fax data.

`gif2tiff`

`gif2tiff` creates a TIFF file from a GIF87 format image file.

`pal2rgb`

`pal2rgb` converts a palette color TIFF image to a full color image.

`ppm2tiff`

`ppm2tiff` creates a TIFF file from a PPM image file.

`ras2tiff`

`ras2tiff` creates a TIFF file from a Sun rasterfile.

`raw2tiff`

`raw2tiff` converts a raw byte sequence into TIFF.

`rgb2ycbcr`

`rgb2ycbcr` converts non-YCbCr TIFF images to a YCbCr TIFF image.

`thumbnail`

`thumbnail` creates a TIFF file with thumbnail images.

`tiff2bw`

`tiff2bw` converts a color TIFF image to grayscale.

`tiff2pdf`

`tiff2pdf` converts a TIFF image to a PDF document.

`tiff2ps`

`tiff2ps` converts a TIFF image to a PostScript file.

`tiff2rgba`

tiff2rgba converts a wide variety of TIFF images into an RGBA TIFF image.

tiffcmp

tiffcmp compares two TIFF files.

tiffcp

tiffcp copies (and possibly converts) a TIFF file.

tiffdither

tiffdither converts a grayscale image to bilevel using dithering.

tiffdump

tiffdump prints verbatim information about TIFF files.

tiffinfo

tiffinfo prints information about TIFF files.

tiffmedian

tiffmedian applies the median cut algorithm to data in a TIFF file.

tiffsplit

tiffsplit splits a multi-image TIFF into single-image TIFF files.

tiff libraries

The tiff libraries are used by many programs to read and write tiff files.

libungif-4.1.0b1

Introduction to libungif

The libungif package contains libraries for reading all GIFs and writing non-compressed ones as well as programs for converting and working with GIF files. The libraries are useful for any graphics program wishing to deal with GIF files while the programs are useful for conversion purposes as well as cleaning up images.

The reason libungif only writes non-compressed GIFs is due to a legal issue with LZW compression (which Unisys claims a patent on). Reading GIFs is not a problem as the decompression routines do not seem to be limited in this way. Note that this has in the past been disputed. The best way to avoid this whole mess is to simply use libungif for looking at GIF images on the web, while in any pages which you design, use the open source PNG format instead (which uses, not surprisingly, the libpng library) which has no patent issues at all.

Package information

- Download (HTTP): <http://ftp.sunfreeware.com/ftp/pub/freeware/SOURCES/libungif-4.1.0b1.tar.gz>
- Download (FTP): <ftp://sunfreeware.secsup.org/pub/solaris/freeware/SOURCES/libungif-4.1.0b1.tar.gz>
- Download size: 343 KB
- Estimated Disk space required: 3.1 MB
- Estimated build time: 0.11 SBU

Additional downloads

- Required patch: http://www.linuxfromscratch.org/patches/blfs/5.1/libungif-4.1.0b1-va_start.patch

Installation of libungif

Install libungif by running the following commands:

```
patch -Np1 -i ../libungif-4.1.0b1-va_start.patch &&
./configure --prefix=/usr &&
make &&
make install
```

Contents

The libungif package contains **gif2epsn**, **gif2ps**, **gif2rgb**, **gifasm**, **gifbg**, **gifburst**, **gifclip**, **gifclrmf**, **gifcolor**, **gifcomb**, **gifcompose**, **giffiltr**, **giffix**, **gifflip**, **gifhisto**, **gifinfo**, **gifinter**, **gifinto**, **gifovly**, **gifpos**, **gifrotat**, **gifsize**, **gifspnge**, **gifttext**, **gifwedge**, **icon2gif**, **raw2gif**, **rgb2gif**, **text2gif** and **libungif** libraries.

Description

gif2epsn

Dumps images saved as GIF files on Epson type printers.

gif2ps

Print GIF file on laser printers supporting PostScript.

gif2rgb

Convert images saved as GIF to 24-bit RGB image(s).

gifasm

assemble multiple GIFs into one, or burst a multiple-image GIF.

gifbg

Generate a single-color test pattern GIF.

gifburst

Burst a GIF image into subrectangles.

gifclip

Clip or crop a GIF image.

gifclrmp

Modify GIF image colormaps.

gifcolor

Generate color test patterns.

gifcomb

Combine 2 GIF images of exactly the same size into one.

gifcompose

Use (un)giflib tools to compose images.

giffiltr

Template code for filtering a GIF sequentially.

giffix

Clumsily attempts to fix truncated GIF images.

gifflip

Flip GIF image along X or Y axis or rotate by 90 degrees.

gifhisto

Generate color-frequency histogram from a GIF.

gifinfo

Gives information on a GIF file.

gifinter

Convert between interlaced and non interlaced images.

gifinto

End-of-pipe fitting for GIF-processing pipelines.

gifovly

Generate one composite GIF from a multiple-image GIF.

gifpos

Change a GIF's screen size or recondition it.

gifrotat

Rotate a GIF through any desired angle.

gifsize

Resize a GIF by deletion or duplication of bits.

gifspnge

Template code for filtering a GIF with in-core operations.

gifttext

Print (text only) general information about a GIF.

gifwedge

Create a test GIF image resembling a color monitor test pattern.

icon2gif

Converter/deconverter to/from an editable text format.

raw2gif

Convert raw 8-bit image data into GIF files.

rgb2gif

Convert 24 bit images to a GIF image using color quantization.

text2gif

Generate GIF images out of regular text in 8x8 font.

libmng-1.0.7

Introduction to libmng

The libmng libraries are used by programs wanting to read and write Multiple-image Network Graphics (MNG) files which are the animation equivalents to PNG files.

Package information

- Download (HTTP): <http://twtelecom.dl.sourceforge.net/sourceforge/libmng/libmng-1.0.7.tar.gz>
- Download (FTP):
- Download size: 492 KB
- Estimated Disk space required: 13.7 MB
- Estimated build time: 0.41 SBU

libmng dependencies

Required

libjpeg-6b[p.141] and lcms-1.12[p.152]

Installation of libmng

Install libmng by running the following commands:

```
./autogen.sh &&
./configure --prefix=/usr &&
make &&
make install &&
cp doc/man/*.3 /usr/share/man/man3 &&
cp doc/man/*.5 /usr/share/man/man5
```

Command explanations

./autogen.sh: This package does not ship with the configure script. The autotool files need to be generated before configuring the package.

cp doc/man/*.X /usr/share/man/manX: The install procedure doesn't properly install the man pages so we do it manually.

Contents

The libmng package contains `libmng` libraries.

Description

MNG libraries

`libmng` provides functions for programs wishing to read and write MNG files which are animation files without the patent problems associated with certain other formats.

lcms-1.12

Introduction to lcms

The lcms library is used by other programs to provide color management facilities.

Package information

- Download (HTTP): <http://www.littlecms.com/lcms-1.12.tar.gz>
- Download (FTP): <ftp://gd.tuwien.ac.at/graphics/libs/alsolib/lcms-1.12.tar.gz>
- Download size: 555 KB
- Estimated Disk space required: 17 MB
- Estimated build time: 0.32 SBU

lcms dependencies

Optional

libtiff-3.6.1[p.145], libjpeg-6b[p.141], Python-2.3.3[p.185] and SWIG

Installation of lcms

Install lcms by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The lcms package contains the `liblcms` libraries, **icc2ps**, **icclink**, **icctrans**, **wtpt** and optionally, **tifficc**, **jpegicc** and lcms Python module.

Description

liblcms library

The `liblcms` libraries are used by other programs to provide color management facilities.

icc2ps

icc2ps generates PostScript CRD or CSA from ICC profiles.

icclink

icclink links two or more profiles into a single device link profile.

icctrans

icctrans is a Color Space conversion calculator.

tifficc

tifficc is an ICC profile applier for TIFF files.

jpegicc

jpegicc is an ICC profile applier for JPEG files.

FreeType-2.1.7

Introduction to FreeType2

The FreeType2 package contains a library to allow applications to properly render TrueType fonts.

Package information

- Download (HTTP): <http://unc.dl.sourceforge.net/sourceforge/freetype/freetype-2.1.7.tar.bz2>
- Download (FTP):
- Download size: 954 KB
- Estimated Disk space required: 18 MB
- Estimated build time: 0.32 SBU

Additional downloads

- Recommended Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/freetype-2.1.7-bytecode-interpreter.patch>

Installation of FreeType2

Install FreeType2 by running the following commands:

```
patch -Np1 -i ../freetype-2.1.7-bytecode-interpreter.patch &&
./configure --prefix=/usr &&
make &&
make install
```

Contents

The FreeType2 package contains `libfreetype` libraries.

Description

FreeType2 libraries

FreeType2 libraries add TrueType font capabilities to XFree86.

Fontconfig-2.2.2

Introduction to Fontconfig

The Fontconfig package is a library for configuring and customizing font access.

Package information

- Download (HTTP): <http://freedesktop.org/~fontconfig/release/fontconfig-2.2.2.tar.gz>
- Download (FTP): <ftp://ftp.us.sinuspl.net/pub/src/fontconfig-2.2.2.tar.gz>
- Download size: 727 KB
- Estimated Disk space required: 11 MB
- Estimated build time: 0.18 SBU

Note

The numbering system of Fontconfig is unusual. The beta versions of the package are numbered with a 9x in the last portion of the release number. This means that 2.2.90 is a beta release and the most current release is of the form 2.2.1

Fontconfig dependencies

Required

FreeType-2.1.7[p.154] and expat-1.95.7[p.130]

Optional

docbook-utils

Installation of Fontconfig

Install Fontconfig by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install
```

Configuring Fontconfig

Config files

`/etc/fonts/*`

Configuration Information

The configuration file for Fontconfig is `/etc/fonts/fonts.conf`. Generally you do not want to edit this file. To put a new font directory in the configuration, update the `/etc/fonts/local.conf` file with your local information. The default location of fonts in Fontconfig is:

- `/usr/share/fonts`
- `~/.fonts`

Because we have not built XFree86 yet, put the following directory entries into `/etc/fonts/local.conf`, inside the fontconfig tags:

```
sed -i -e '/^<\/fontconfig>/i\  
<dir>/usr/X11R6/lib/X11/fonts/TTF</dir>\  
<dir>/usr/X11R6/lib/X11/fonts/Type1</dir>\  
<dir>/usr/X11R6/lib/X11/fonts/truetype</dir>' /etc/fonts/local.conf
```

The Fontconfig program will automatically search the above directories and all subdirectories for needed fonts.

Note

X also includes an internal (and older) version of Fontconfig and unless it is explicitly disabled when building XFree86, the internal version is created leaving two slightly incompatible libraries on your system. It is recommended that you only install one version.

Contents

The Fontconfig package contains the `libfontconfig` library, **fc-cache**, and **fc-list**.

Description

fc-cache

fc-cache is a command to create font information caches.

fc-list

fc-list is a command to list fonts.

Imlib-1.9.14

Introduction to Imlib

The Imlib package contains image libraries. These are useful for loading, rendering and dithering a wide variety of image data formats.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/imlib/1.9/imlib-1.9.14.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/imlib/1.9/imlib-1.9.14.tar.bz2>
- Download size: 580 KB
- Estimated Disk space required: 16.4 MB
- Estimated build time: 0.43 SBU

Imlib dependencies

Required

GTK+-1.2.10[p.351] and libungif-4.1.0b1[p.148]

Installation of Imlib

Install Imlib by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc/imlib &&  
make &&  
make install
```

Command explanations

`--sysconfdir=/etc/imlib`: This installs and combines the configurations files into `/etc` instead of `/usr/etc`.

Contents

The Imlib package contains `libimlib` libraries.

Description

imlib libraries

`libimlib` libraries provide the functions for programs to display and edit a wide variety of image data formats.

AAlib-1.4rc5

Introduction to AAlib

AAlib is a library to render any graphic into ASCII Art.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/aa-project/aalib-1.4rc5.tar.gz>
- Download (FTP): <ftp://ftp.sourceforge.net/pub/sourceforge/aa-project/aalib-1.4rc5.tar.gz>
- Download size: 388 KB
- Estimated Disk space required: 6.5 MB
- Estimated build time: 0.15 SBU

AAlib dependencies

Optional

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]) and slang-1.4.9[p.119]

Installation of AAlib

Install AAlib by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The AAlib package contains the `libaa` libraries, **aalib-config**, **aainfo**, **aatest** and **aasavefont**.

Description

ASCII Art libraries

The ASCII Art library is a collection of routines to render any graphical input in portable format to ASCII Art. It can be used through many programs and has a very well documented API, so you can easily put it into your own programs.

aalib-config

aalib-config provides configuration info for AAlib.

aainfo

aainfo provides information for your current settings related to AAlib.

aatest

aatest shows the abilities of AAlib in a little test.

aafire

aafire is another little toy of AAlib , rendering an animated fire in ASCII Art.

aasavefont

Currently no information available.

SVGAlib-1.4.3

Introduction to SVGAlib

SVGAlib is a low-level graphics library that provides VGA and SVGA modes in a console. This is useful for programs running on a console that require graphics capabilities.

Package information

- Download (HTTP): <http://www.svgalib.org/svgalib-1.4.3.tar.gz>
- Download (FTP): <ftp://ftp.ibiblio.org/pub/Linux/libs/graphics/svgalib-1.4.3.tar.gz>
- Download size: 827 KB
- Estimated Disk space required: 9.7 MB
- Estimated build time: 0.20 SBU

Additional downloads

- Download (HTTP): <http://www.linuxfromscratch.org/patches/blfs/5.1/svgalib-1.4.3-gcc3-1.patch>

Installation of SVGAlib

Note

You must compile and install as root. If you don't nothing bad will happen during compilation, but certain tools won't be able to become SUID root which is required for proper operation. However, this raises a risk of exposing your system to any holes in those tools that might be used to gain root access so use with caution.

Install SVGAlib by running the following commands:

```
patch -Np1 -i ../svgalib-1.4.3-gcc3-1.patch &&
make prefix=/usr install &&
cd doc &&
for dir in man?; do for file in $dir/*; do \
gunzip /usr/share/man/$file; done; done
```

Command explanations

`cd doc && for dir in man?; do for file in $dir/*; do gunzip /usr/share/man/$file; done; done`: SVGAlib installs it's man pages in compressed format so we uncompress them.

Configuring SVGAlib

Config files

`/etc/vga/libvga.config`, `~/.svgalibrc`

Configuration information

You must edit the config file to set the monitor and mouse type. Depending on your hardware, other setup might be required.

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, `/sbin/ldconfig` should be run while logged in as root.

Contents

The SVGAlib package contains `libvga` and `libvgagl` libraries, **`dumpreg`**, **`mode3`**, **`restorefont`**, **`restorepalette`**, **`restoretextmode`**, **`savetextmode`**, **`textmode`** and **`svgakeymap`**.

Description

libvga library

`libvga` is a low-level graphics library.

libvgagl library

`libvgagl` is a fast frame buffer level graphics library based on `libvga`.

dumpreg

`dumpreg` dumps the state of the card as the `svgalib` chipset driver sees it.

mode3

`mode3` sets a VESA mode.

restorefont

`restorefont` saves or restores the SVGA font for `textmode`.

restorepalette

`restorepalette` sets the color palette for `textmode`.

restoretextmode

`restoretextmode` saves or restores the SVGA registers for `textmode`.

savetextmode, textmode

`savetextmode` and **`textmode`** save or restore the complete SVGA status for `textmode`.

svgakeymap

`svgakeymap` generates keymaps for `svgalib`.

DirectFB-0.9.20

Introduction to DirectFB

DirectFB is a graphics library on top of the Linux frame buffer device. It offers maximum hardware accelerated performance at a minimum of resource usage and overhead.

Package information

- Download (HTTP): <http://www.directfb.org/download/DirectFB/DirectFB-0.9.20.tar.gz>
- Download (FTP):
- Download size: 1.3 MB
- Estimated Disk space required: 13 MB
- Estimated build time: 0.65 SBU

Additional downloads

- Optional image and video providers: <http://www.directfb.org/download/DirectFB-extra/DirectFB-extra-0.9.16.tar.gz>

DirectFB dependencies

Required

FreeType-2.1.7[p.154], libjpeg-6b[p.141] and libpng-1.2.5[p.143]

Optional

SDL-1.2.7[p.546], libmpeg3-1.5.4[p.551] pkgconfig-0.15.0[p.181], Imlib2-1.1.0[p.164], OpenQuicktime-1.0[p.553] and Avifile-0.7.38[p.575]

Installation of DirectFB

Note

DirectFB needs a Linux kernel with frame buffer support. Check the documentation in the kernel tree (`/usr/src/linux/Documentation/fb/`) on how to enable the frame buffer device for your graphics card.

Install DirectFB by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

If you decided to add optional image and video providers then you have to install DirectFB-extra package too:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Note

The current version of avifile does not work with DirectFB. You have to use the avifile version which can be found at <http://www.directfb.org/download/contrib/> or alternatively disable the avifile video provider by calling configure with **--disable-avifile**.

Configuring DirectFB

Config files

`/etc/directfbrc`, `~/ .directfbrc`

Configuration information

DirectFB is shipped with reasonable defaults but you might have to tweak things. There are several ways to do this. You may edit the system-wide configuration file `/etc/directfbrc`, the user-specific `~/ .directfbrc` or you may configure the DirectFB application via the command-line. Consult the `directfbrc(5)` manual page for details.

Contents

The DirectFB package provides **dfbdump**, **dfbg**, **dfbinfo**, **dfblayer**, **directfb-config**, **directfb-csource** and **libdirectfb** libraries.

Description

dfbdump

This is a simple debugging tool for DirectFB that shows a list of surfaces and windows.

dfbg

dfbg is a background configuration tool.

dfbinfo

This tool enumerates input devices.

dfblayer

dfblayer is a display layer configuration tool.

directfb-config

directfb-config provides all flags to link static binaries with selectable drivers and other modules built in.

directfb-csource

This is a C code generation utility for DirectFB surfaces.

libdirectfb libraries

They provide hardware graphics acceleration, input device handling and abstraction, integrated windowing system with support for translucent windows and multiple display layers on top of the Linux frame buffer device.

Imlib2-1.1.0

Introduction to Imlib2

Imlib2 is a graphics library for fast file loading, saving, rendering and manipulation.

Package information

- Download (HTTP): <http://heanet.dl.sourceforge.net/sourceforge/enlightenment/imlib2-1.1.0.tar.gz>
- Download (FTP): <ftp://ftp.tux.org/X-Windows/enlightenment/ftp/enlightenment/imlib2-1.1.0.tar.gz>
- Download size: 796 KB
- Estimated Disk space required: 20 MB
- Estimated build time: 0.53 SBU

Imlib2 dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]) and libjpeg-6b[p.141]

Optional

libtiff-3.6.1[p.145] and libungif-4.1.0b1[p.148]

Installation of Imlib2

Install Imlib2 by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

This package contains `libImlib2` library as well as various filters and image loader libraries.

Description

libImlib2

`libImlib2` provides the functions for programs to deal with various image data formats.

Chapter 10. General Utilities

bc-1.06

Introduction to bc

The bc package contains an arbitrary precision numeric processing language.

Package information

- Download (HTTP): <http://ftp.gnu.org/gnu/bc/bc-1.06.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/bc/bc-1.06.tar.gz>
- Download size: 280 KB
- Estimated Disk space required: 1.6 MB
- Estimated build time: 0.07 SBU

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/bc-1.06-flex-invocation.patch>
- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/bc-1.06-readline.patch>

bc dependencies

Required

readline-4.3[p.125]

Installation of bc

Install **bc** by running the following commands:

```
patch -Np1 -i ../bc-1.06-flex-invocation.patch &&
patch -Np1 -i ../bc-1.06-readline.patch &&
./configure --prefix=/usr --with-readline &&
make &&
make install
```

Contents

The bc package contains **bc** and **dc**.

Description

bc

bc is a calculator.

dc

dc is a reverse-polish calculator.

rep-gtk-0.18

Introduction to rep-gtk

The rep-gtk package contains a Lisp and GTK binding. This is useful for extending GTK-2 and GDK libraries with Lisp. The rep-gtk-0.15 package contains the bindings to GTK and uses the same instructions. Both can be installed, if needed.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/rep-gtk/rep-gtk-0.18.tar.gz>
- Download (FTP):
- Download size: 152 KB
- Estimated Disk space required: 7.7 MB
- Estimated build time: 0.18 SBU

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/rep-gtk-0.18-gtk2.4.patch>

rep-gtk dependencies

Required

GTK+-2.4.1[p.354], libglade-2.3.6[p.418] and librep-0.17[p.187]

Installation of rep-gtk

Install rep-gtk by running the following commands:

```
patch -Np1 -i ../rep-gtk-0.18-gtk2.4.patch &&
./configure --prefix=/usr &&
make &&
make install
```

Contents

The rep-gtk package contains Lisp bindings.

Description

Lisp bindings

Lisp bindings are libraries stored in `/usr/lib/rep/i686-pc-linux-gnu/gui/` that assist communications between Lisp and the GTK libraries.

Compface-1.4

Introduction to Compface

Compface provides utilities and a library to convert from/to X-Face format, a 48x48 bitmap format used to carry thumbnails of email authors in a mail header.

Package information

- Download (HTTP): <http://www.ibiblio.org/pub/Linux/apps/graphics/convert/compface-1.4.tar.gz>
- Download (FTP): <ftp://ftp.ibiblio.org/pub/Linux/apps/graphics/convert/compface-1.4.tar.gz>
- Download size: 28 KB
- Estimated Disk space required: 520 KB
- Estimated build time: 0.01 SBU

Additional downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/compface-1.4-errno-2.patch>

Installation of Compface

Install Compface by running the following commands:

```
patch -Np1 -i ../compface-1.4-errno-2.patch &&
./configure --prefix=/usr &&
make &&
make install
```

Contents

This package contains **compface**, **uncompface** and **libcompface**.

Description

compface

compface is a filter for generating highly compressed representations of 48x48x1 face image files.

uncompface

uncompface is an inverse filter which performs an inverse transformation with no loss of data.

libcompface

libcompface allows the compression and decompression algorithms to be used in other programs such as MTAs.

ImageMagick-5.5.7-16

Introduction to ImageMagick

ImageMagick is a collection of tools and libraries to read, write, and manipulate an image in various image formats. Image processing operations are available from the command line. Bindings to various programming languages are also available.

Package information

- Download (HTTP): <http://aleron.dl.sourceforge.net/sourceforge/imagemagick/ImageMagick-5.5.7-16.tar.bz2>
- Download (FTP): <ftp://ftp.imagemagick.org/pub/ImageMagick/ImageMagick-5.5.7-16.tar.bz2>
- Download size: 4.1 MB
- Estimated Disk space required: 107 MB
- Estimated build time: 3.80 SBU

ImageMagick dependencies

Recommended

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]) and ESP Ghostscript-7.07.1[p.598]

Optional (Install based on the format support needed)

lcms-1.12[p.152], libjpeg-6b[p.141], libpng-1.2.5[p.143], libtiff-3.6.1[p.145], libxml2-2.6.9[p.123], libwmf, libexif, FlashPIX, JBIG, Jasper and corefonts

Installation of Imagemagick

Install Imagemagick by running the following commands:

```
./configure --prefix=/usr --enable-shared --with-modules &&
make &&
make install
```

Additional Configure Options

There are additional switches that can be passed to ImageMagick to customize the installation to your need. Check out the ImageMagick installation instructions at <http://www.imagemagick.org/www/Install-unix.html>.

Contents

ImageMagick contains **animate**, **composite**, **conjure**, **convert**, **display**, **identify**, **import**, **mogrify**, **montage**, and the **libMagick** and **libMagick++** libraries.

Description

animate

Animates a sequence of images.

composite

Composites various images into the given base image.

conjure

Processes a Magick Scripting Language (MSL) script to create an image.

convert

Convert image(s) from one format to another.

display

Display the image.

identify

Describes the format and characteristics of an image file.

import

Captures an X window.

mogrify

Transforms an image.

montage

Composites various images into a new image.

hd2u-0.9.0

Introduction to hd2u

The hd2u contains any to any text format converter.

Package information

- Download (HTTP): http://www.megaloman.com/~hany/_data/hd2u/hd2u-0.9.0.tgz
- Download (FTP):
- Download size: 11 KB
- Estimated Disk space required: 280 KB
- Estimated build time: 0.1 SBU

hd2u dependencies

Required

popt-1.7[p.118]

Installation of hd2u

Install hd2u by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The hd2u package contains **dos2unix**.

Description

dos2unix

dos2unix converts text between various OS formats (such as converting from DOS format to Unix).

Chapter 11. System Utilities

This chapter contains mainly hardware utilities. It also contains some applications used by other applications in the book for installation purposes.

GPM-1.20.1

Introduction to GPM

The GPM (General Purpose Mouse daemon) package contains a mouse server for the console and **xterm**. It not only provides cut and paste support generally, but its library component is used by various software such as Links to provide mouse support to the application generally. It is useful on desktops, especially if following (Beyond) Linux From Scratch instructions - it's often much easier (and less error prone) to cut and paste between two console windows than to type everything by hand!

Package information

- Download (HTTP):
- Download (FTP): <ftp://arcana.linux.it/pub/gpm/gpm-1.20.1.tar.bz2>
- Download size: 556 KB
- Estimated Disk space required: 5.3 MB
- Estimated build time: 0.09 SBU

Additional downloads

- Recommended patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/gpm-1.20.1-segfault.patch>
- Recommended patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/gpm-1.20.1-silent.patch>

Installation of GPM

Install GPM by running the following commands:

```
patch -Np1 -i ../gpm-1.20.1-segfault.patch &&
patch -Np1 -i ../gpm-1.20.1-silent.patch &&
LDLFLAGS="-lm" ./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install &&
cp conf/gpm-root.conf /etc &&
ldconfig -n -l /usr/lib/libgpm.so.1.19.0
```

Command explanations

LDLFLAGS="-lm": The math library must be linked with **gpm**, as `ceil()` is used in some cursor scrolling logic. **LDLFLAGS** is only needed if you optimize **gpm** for size.

ldconfig -n -l: During installation, **gpm** outputs a message to run the above command to create the proper library links.

Configuring GPM

gpm init.d script

Install the `/etc/rc.d/init.d/gpm` init script included in the `blfs-bootscripts-5.1[p.31]` package.

```
make install-gpm
```

Config files

`/etc/sysconfig/mouse` This file contains the name of your mouse device and the protocol which it uses. To create this file, run the following:

```
cat > /etc/sysconfig/mouse << "EOF"
# Begin /etc/sysconfig/mouse

MDEVICE=[yourdevice]
PROTOCOL=[yourprotocol]

# End /etc/sysconfig/mouse
EOF
```

Configuration Information

Examples of values to set `MDEVICE` and `PROTOCOL` to are

```
MDEVICE=/dev/psaux
PROTOCOL=imps2
```

A list of which protocol values are known can be found by running **gpm -t -help**. Your `MDEVICE` setting depends on which type of mouse you have. For example, `/dev/ttyS0` for a serial mouse (on Windows this is COM1), `/dev/input/mice` is often used for USB mice and `/dev/psaux` for PS2 mice. It is normally thought not a good idea to link `/dev/mouse` to the relevant device, but instead to reference it directly.

Contents

The GPM package contains **gpm**, **gpm-root**, **disable-paste** and **mev**.

Description

gpm

gpm is a cut and paste utility and mouse server for virtual consoles.

gpm-root

gpm-root is a default handler for **gpm**. It is used to draw menus on the root window.

disable-paste

No description available.

mev

mev is a program to report mouse events.

Fcron-2.9.4

Introduction to Fcron

The Fcron package contains a periodical command scheduler which aims at replacing Vixie Cron.

Package information

- Download (HTTP): <http://fcron.free.fr/fcron-2.9.4.src.tar.gz>
- Download (FTP): <ftp://ftp.seul.org/pub/fcron/fcron-2.9.4.src.tar.gz>
- Download size: 371 KB
- Estimated Disk space required: 2.7 MB
- Estimated build time: 0.10 SBU

Fcron dependencies

Optional

MTA, Linux-PAM-0.77[p.66], SELinux, OpenJade-1.3.2[p.614] and DocBook DSSSL Stylesheets-1.78[p.616]

Installation of Fcron

Fcron uses the cron facility of **syslog** to log all messages. Since LFS does not set up this facility in `/etc/syslog.conf`, it needs to be done prior to installing Fcron. This command will append the necessary line to the current `/etc/syslog.conf`:

```
cat >> /etc/syslog.conf << "EOF"
# Begin fcron addition to /etc/syslog.conf

cron.* -/var/log/cron.log

# End fcron addition
EOF
```

The configuration file has been modified, so reloading the **sysklogd** daemon will activate the changes.

```
/etc/rc.d/init.d/sysklogd reload
```

For security reasons, we need to create an unprivileged user and group for fcron:

```
groupadd fcron &&
useradd -d /dev/null -g fcron -s /bin/false fcron
```

Install Fcron by running the following commands:

```
./configure --without-sendmail --with-answer-all=no &&
make &&
make install
```

Command explanations

`--without-sendmail`: Fcron does not require an MTA to run but will use one, if it is installed, to email you the results of the **fcron** script. If you wish to utilize this feature change the switch to `--with-sendmail=[path to your MTA]`.

`--with-answer-all=no`: After the files are installed, the make install script enters into a configuration routine. The first test will be whether to install a boot script in the `/etc/rc.d/init.d` directory with the appropriate symbolic

links in run levels 2, 3, 4, and 5. The second is to stop any current fcron processes and start a new one. Since this is probably your first install and we want a boot script based upon the BLFS template we answer 'n' to both tests.

`--with-dsssl-dir=/usr/share/sgml/docbook/dsssl-stylesheets-1.78` : This switch can be added if you have installed OpenJade and dsssl-stylesheets to generate the documentation from the DocBook source files.

Configuring Fcron

Config files

`/etc/fcron.conf`, `/etc/fcron.allow`, `/etc/fcron.deny`

Configuration Information

There are no required changes in any of the config files. Configuration information can be found in the man page for `fcron.conf`.

fcron scripts are written using **fcrontab**. Refer to the man page for `fcrontab` for proper parameters for your situation.

Install `/etc/rc.d/init.d/fcron` init script from the `blfs-bootscripts-5.1[p.31]` package.

```
make install-fcron
```

Contents

The Fcron package contains **fcron**, **fcrontab**, **fcronsighup** and **fcrondyn**.

Description

fcron

fcron is the scheduling daemon.

fcrontab

fcrontab is the program used to install, edit, list and remove the tables used by **fcron**.

fcronsighup

fcronsighup instructs **fcron** to reread the fcron tables.

fcrondyn

fcrondyn is a user tool intended to interact with a running **fcron** daemon.

hdparm-5.5

Introduction to hdparm

The **hdparm** package contains a utility that is useful for controlling ATA/IDE controllers and hard drives both to increase performance and sometimes to increase stability.

Warning

As well as being useful, incorrect usage of **hdparm** can destroy your information and in rare cases, drives. Use with caution and make sure you know what you are doing. If in doubt, we recommend you leave the default kernel parameters alone.

Package information

- Download (HTTP): <http://www.ibiblio.org/pub/Linux/system/hardware/hdparm-5.5.tar.gz>
- Download (FTP): <ftp://ftp.ibiblio.org/pub/Linux/system/hardware/hdparm-5.5.tar.gz>
- Download size: 33 KB
- Estimated Disk space required: 257 KB
- Estimated build time: 0.01 SBU

Additional downloads

- Required Patch: http://www.linuxfromscratch.org/patches/blfs/5.1/hdparm-5.5-glibc_CVS-1.patch

Installation of hdparm

First apply the required patch:

```
patch -Np1 -i ../hdparm-5.5-glibc_CVS-1.patch
```

Install **hdparm** by running the following commands:

```
make &&
make install
```

Note that by default, **hdparm** is installed in `/sbin` as some systems may require it during the boot process before `/usr` is mounted. If you wish to install **hdparm** under the `/usr` hierarchy, then replace the above commands with the following:

```
make &&
make binprefix=/usr install
```

Contents

The **hdparm** package contains **hdparm**.

Description

hdparm

hdparm provides a command-line interface to various hard disk ioctls supported by the stock Linux ATA/IDE device driver subsystem.

which-2.16 and alternatives

The presence / absence of the `which` program in the main LFS book is probably one of the most contentious issues we have on the mailing lists. It has resulted in at least one flame war in the recent past. To hopefully put an end to this once and for all, we here present two of the options for equipping your system with "which". The question of which "which" is for you to decide.

The first option is to install the actual GNU program *which*.

Introduction to which

Package information

- Download (HTTP): <http://www.xs4all.nl/~carlo17/which/which-2.16.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/which/which-2.16.tar.gz>
- Download size: 123 KB
- Estimated Disk space required: 940 KB
- Estimated build time: 0.03 SBU

Installation of which

Install `which` by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The `which` package contains **which**.

Description

`which`

which shows the full path of (shell) commands.

The 'which' script

The second option (for those who don't want to install the program) is to create a simple script:

```
cat > /usr/bin/which << "EOF"
#!/bin/bash
type -pa "$@" | head -n 1 ; exit ${PIPESTATUS[0]}
EOF
chmod 755 /usr/bin/which
chown root:root /usr/bin/which
```

This should generally work OK and is probably the easiest solution for boxes which don't need a good user environment to work in.

UnZip-5.50

Introduction to UnZip

The UnZip package contains ZIP extraction utilities. These are useful for extracting files from ZIP archives. ZIP archives are created with PKZIP or Info-ZIP utilities primarily in a DOS environment.

Package information

- Download (HTTP): <http://www.mirror.ac.uk/sites/ftp.info-zip.org/pub/infozip/src/unzip550.tar.gz>
- Download (FTP): <ftp://ftp.info-zip.org/pub/infozip/src/unzip550.tar.gz>
- Download size: 1.1 MB
- Estimated Disk space required: 5.8 MB
- Estimated build time: 0.16 SBU

Additional downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/unzip-5.50-fix-Makefile.patch>
- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/unzip-5.50-fix-libz.patch>
- Recommended patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/unzip-5.50-dotdot.patch>
- Recommended patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/unzip-5.50-dont-make-noise.patch>

Installation of UnZip

By default, UnZip does not support shrink decompression. To enable it or to obtain more information, check out the UnZip FAQ at <http://www.info-zip.org/pub/infozip/FAQ.html#unshrink>.

Install UnZip by running the following commands:

```
patch -Np1 -i ../unzip-5.50-fix-Makefile.patch &&
patch -Np1 -i ../unzip-5.50-fix-libz.patch &&
patch -Np1 -i ../unzip-5.50-dont-make-noise.patch &&
patch -Np1 -i ../unzip-5.50-dotdot.patch &&
cp unix/Makefile . &&
make prefix=/usr linux &&
make prefix=/usr linux_shlibz &&
make prefix=/usr install &&
cp -a libunzip.so* /usr/lib
```

Command explanations

make prefix=/usr linux: This command overrides the prefix variable that is set to `/usr/local` in the Makefile and builds the executables for a linux system. The alternatives to 'linux' can be seen with a 'make list' command.

make prefix=/usr linux_shlibz: Build shared libunzip and link UnZip against it and zlib.

Contents

The UnZip package contains **unzip**, **funzip**, **unzipfsx**, **zipgrep** and **zipinfo**.

Description

unzip

unzip lists, tests or extracts files from a ZIP archive.

funzip

funzip allows the output of **unzip** commands to be redirected.

unzipfsx

unzipfsx is the self-extracting stub that can be prepended to a ZIP archive. Files in this format allow the recipient to decompress the archive without installing UnZip.

zipgrep

zipgrep is a grep for ZIP archives.

zipinfo

zipinfo produces technical information about the files in a ZIP archive, including file access permissions, encryption status, type of compression, etc.

Zip-2.3

Introduction to Zip

The Zip package contains Zip utilities. These are useful for compressing files into ZIP archives.

Package information

- Download (HTTP): <http://www.mirror.ac.uk/sites/ftp.info-zip.org/pub/infozip/src/zip23.tar.gz>
- Download (FTP): <ftp://ftp.info-zip.org/pub/infozip/src/zip23.tar.gz>
- Download size: 839 KB
- Estimated Disk space required: 3.6 MB
- Estimated build time: 0.05 SBU

Installation of Zip

Install Zip by running the following commands:

```
cp unix/Makefile . &&
make prefix=/usr generic_gcc &&
make prefix=/usr install
```

Command explanations

make prefix=/usr generic_gcc: This command overrides the prefix variable that is set to `/usr/local` in the `Makefile` and builds the executables for a linux system. The alternatives to 'generic_gcc' can be seen with a 'make list' command.

Contents

The Zip package contains **zip** , **zipcloak**, **zipnote** and **zipsplit**.

Description

zip

zip compresses files into a ZIP archive.

zipcloak

zipcloak is disabled in this version of Zip. It will display a message about how to support encryption by recompiling with `zencrypt27.zip`.

zipnote

zipnote reads or writes comments stored in a ZIP file .

zipsplit

zipsplit is a utility to split ZIP files into smaller files.

PCI Utilities-2.1.11

Introduction to PCI Utilities

The PCI Utilities package is a set of programs for listing PCI devices, inspecting their status and setting their configuration registers.

Package information

- Download (HTTP): <http://www.kernel.org/pub/software/utils/pciutils/pciutils-2.1.11.tar.bz2>
- Download (FTP): <ftp://ftp.kernel.org/pub/software/utils/pciutils/pciutils-2.1.11.tar.bz2>
- Download size: 107 KB
- Estimated Disk space required: 1.1 MB
- Estimated build time: 0.02 SBU

PCI Utilities dependencies

Required

which-2.16[p.176]

Installation of PCI Utilities

Install PCI Utilities by running the following commands:

```
make PREFIX=/usr &&
make PREFIX=/usr install
```

Contents

The PCI Utilities package contains **lspci**, **setpci** and **update-pciids**.

Description

lspci

lspci is a utility for displaying information about all PCI buses in the system and all devices connected to them.

setpci

setpci is a utility for querying and configuring PCI devices.

update-pciids

update-pciids fetches the current version of the PCI ID list. Requires Wget-1.9.1[p.231] or Lynx-2.8.5[p.223]

pkgconfig-0.15.0

Introduction to pkgconfig

The pkgconfig package contains tools for passing the include path and/or library path to the compiler during the make script.

Package information

- Download (HTTP): <http://www.freedesktop.org/software/pkgconfig/releases/pkgconfig-0.15.0.tar.gz>
- Download (FTP): <ftp://ftp.netbuddy.org/linux/pkgconfig-0.15.0.tar.gz>
- Download size: 604 KB
- Estimated Disk space required: 5.2 MB
- Estimated build time: 0.22 SBU

Installation of pkgconfig

Install pkgconfig by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Configuring pkgconfig

The default setting for `PKG_CONFIG_PATH` is `/usr/lib/pkgconfig` because of the prefix we use to install pkgconfig. You may add to `PKG_CONFIG_PATH` by exporting additional paths on your system where pkgconfig files are installed. Note that `PKG_CONFIG_PATH` is only needed when compiling packages, not during run-time.

Contents

The pkgconfig package contains **pkg-config**.

Description

pkg-config

pkg-config is a function that returns meta information for the specified library.

cpio-2.5

Introduction to cpio

The cpio package contains tools for archiving.

Package information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/cpio/cpio-2.5.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/cpio/cpio-2.5.tar.gz>
- Download size: 188 KB
- Estimated Disk space required: 1 MB
- Estimated build time: 0.06 SBU

Installation of cpio

Install cpio by running the following commands:

```
./configure --prefix=/usr --libexecdir=/tmp/cpio \
  --bindir=/bin &&
make &&
make install &&
rm -rf /tmp/cpio
```

Command explanations

`--libexec=/tmp/cpio`: This command installs **rmt** to `/tmp/cpio` so that it can be removed. The **rmt** executable is already installed by tar package in LFS.

`--bindir=/bin`: This command installs **cpio** to `/bin` instead of `/usr/bin` as per FHS guidelines.

Contents

The cpio package contains **cpio** and **mt**.

Description

cpio

cpio copies files to and from archives.

mt

mt controls magnetic tape drive operations.

MC-4.6.0

Introduction to MC

MC (Midnight Commander) is a text-mode full-screen file manager and visual shell. It provides a clear, user-friendly, and somewhat protected interface to a Unix system while making many frequent file operations more efficient and preserving the full power of the command prompt.

Package information

- Download (HTTP): <http://www.ibiblio.org/pub/Linux/utils/file/managers/mc/mc-4.6.0.tar.gz>
- Download (FTP): <ftp://ftp.uni-koeln.de/utit/shell/mc-4.6.0.tar.gz>
- Download size: 3.6 MB
- Estimated Disk space required: 31 MB
- Estimated build time: 0.45 SBU

MC dependencies

Required

GLib-1.2.10[p.128] or GLib-2.4.1[p.129]

Optional

GPM-1.20.1[p.171], X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), Samba-3.0.4[p.305], slang-1.4.9[p.119], Zip-2.3[p.179], UnZip-5.50[p.177] and GNOME Libraries-1.4.2[p.489]

Installation of MC

Install MC by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Configuring MC

Config files

~/ .mc / *

Configuration Information

The ~/ .mc directory and its contents are created when you start **mc** for the first time. Then you can edit the main ~/ .mc / ini configuration file manually or through the MC shell. Consult the mc(1) man page for details.

Contents

The MC package contains **mc**, **mcedit**, **mcmfmt** and **mcview**.

Description

mc

mc is a visual shell.

mcedit

mcedit is an internal file editor.

mcview

mcview is an internal file viewer.

Chapter 12. Programming

An LFS is a development system, but only for C, C++ and Perl. This chapter expands the languages available.

Python-2.3.3

Introduction to Python

The Python package contains the Python development environment. This is useful for object-oriented programming, writing scripts, prototyping large programs or developing them entirely.

Package information

- Download (HTTP): <http://www.python.org/ftp/python/2.3.3/Python-2.3.3.tar.bz2>
- Download (FTP): <ftp://ftp.python.org/pub/python/2.3.3/Python-2.3.3.tar.bz2>
- Download size: 6.9 MB
- Estimated Disk space required: 69 MB
- Estimated build time: 1.25 SBU

Additional downloads

- Required patch (HTTP): <http://www.linuxfromscratch.org/patches/blfs/5.1/Python-2.3.3-gdbm-2.patch>

Python dependencies

Optional

expat-1.95.7[p.130], Tk-8.4.6[p.199], GDBM-1.8.3[p.127], Berkeley DB-4.2.52.2[p.312], GMP-4.1.3[p.126] and readline-4.3[p.125]

Installation of Python

Install Python by running the following commands:

```
patch -Np1 -i ../Python-2.3.3-gdbm-2.patch &&
./configure --prefix=/usr --enable-shared &&
make &&
make install
```

Contents

The Python package contains **python** and **pydoc**.

Description

python

python is an interpreted, interactive, object-oriented programming language.

pydoc

pydoc is the Python documentation tool.

Perl modules

Introduction to Perl modules

The Perl module packages add useful objects to the Perl language. Modules utilized by packages throughout BLFS are listed here along with their dependencies.

Perl Packages

- PDL-2.4.0
 - Astro-FITS-Header-2.8.1
- Gtk-Perl-0.7009
 - XML-Writer-0.4.1
 - XML-Parser-2.34
- Parse-RecDescent-1.94

Installation of Perl modules

Install Perl modules by running the following commands:

```
perl Makefile.PL &&
make &&
make install
```

Below are modules that require some modifications to standard instructions or certain parameters in order to install successfully.

Gtk-Perl-0.7009:

```
perl Makefile.PL --without-guessing &&
make &&
make install
```

(Alternate) Auto installation of Perl modules.

There is an alternate way of installing the modules using Perl's built-in **install** command. The command automatically downloads the source from the CPAN archive, extracts it, runs the commands mentioned above, and removes the build tree. Though note that it is not very LFS-like thing to do and as such is not supported.

Start the perl shell with the commands:

```
perl -MCPAN -e shell
```

Each module may now be installed from this shell with the command:

```
install <moduleName>
```

For additional commands and help, type **help**.

librep-0.17

Introduction to librep

The librep package contains a Lisp system. This is useful for scripting or for applications that may use the Lisp interpreter as an extension language.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/librep/librep-0.17.tar.gz>
- Download (FTP):
- Download size: 1.2 MB
- Estimated Disk space required: 11 MB
- Estimated build time: 0.64 SBU

librep dependencies

Required

GDBM-1.8.3[p.127]

Optional

GMP-4.1.3[p.126], and readline-4.3[p.125]

Installation of librep

Install librep by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/lib &&
make &&
make install
```

Command explanations

`--libexecdir=/usr/lib`: This command installs files to `/usr/lib/rep` instead of `/usr/libexec/rep`.

Contents

The librep package contains **rep**, **rep-config**, **rep-remote**, **rep-xgettext**, **repdoc** and **librep** libraries.

Description

rep

rep is the Lisp interpreter.

librep libraries

librep libraries contain the functions necessary for the Lisp interpreter.

J2SDK-1.4.2

Introduction to j2sdk

The J2SDK package contains Sun's Java development environment. This is useful for developing Java programs and provides the runtime environment necessary to run Java programs. It also includes a plug-in for browsers so that they can be Java aware.

The JDK comes in two flavors, a precompiled binary and a source package. Previously, the plugin included in the JDK binary package was unusable on LFS owing to incompatibilities with GCC-3 compiled browsers. This is not the case anymore.

The source package requires registration at the Sun developer site and accepting the Sun Community Source License. The source code cannot be downloaded from some countries, so for users from those countries, the binary may be the only option.

Even if you plan on compiling the JDK source, you will need to download the binary version to bootstrap the JDK build. Follow the below link to download both source and binary packages. When downloading the source also download the Mozilla headers package available at the same location.

Package information

- Download (HTTP): <http://freshmeat.net/projects/sunjdk>
- Version used (binary): 1.4.2_03
- Download size (binary): 35 MB
- Download size (source): 77 MB
- Estimated Disk space required: 1810 MB
- Estimated build time: 85 SBU

Additional downloads

- <http://www.linuxfromscratch.org/patches/blfs/5.1/j2sdk-1.4.2-fix-inline-asm-1.patch>
- <http://www.linuxfromscratch.org/patches/blfs/5.1/j2sdk-1.4.2-gcc33-1.patch>
- <http://www.linuxfromscratch.org/patches/blfs/5.1/j2sdk-1.4.2-motif-mkmsgcat.patch>
- <http://www.linuxfromscratch.org/patches/blfs/5.1/j2sdk-1.4.2-remove-debug-image.patch>
- <http://www.linuxfromscratch.org/patches/blfs/5.1/j2sdk-1.4.2-remove-fixed-paths-1.patch>
- http://www.linuxfromscratch.org/patches/blfs/5.1/j2sdk-1.4.2-static_cxx.patch
- <http://www.linuxfromscratch.org/patches/blfs/5.1/j2sdk-1.4.2-ash.patch> (Only required if /bin/sh is symlinked to ASH-0.4.0[p.110])

J2SDK dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), Zip-2.3[p.179], UnZip-5.50[p.177], cpio-2.5[p.182], ALSA-1.0.4[p.532], and Tcsh-6.12.00[p.112]

Installation of J2SDK

Both versions will be installed in parallel. You may choose to keep either or both.

Installation of the precompiled JDK is easy, change the executable bit for the downloaded file, change to the directory where you want it installed and execute the downloaded file. The following (slightly cryptic version) allows automatic installation.

```
VERSION=1.4.2_03 &&
MV=`echo $VERSION | cut -d "_" -f 1,1` &&
```

```
V=`echo ${VERSION} | sed -e "s/\./_/g"` &&
sed -i "s:^PATH=.*::" j2sdk-${V}-linux-i?86.bin &&
chmod +x j2sdk-${V}-linux-i?86.bin &&
mkdir -p bin &&
ln -sf /bin/true bin/more &&
yes | PATH=$PWD/bin:$PATH ./j2sdk-${V}-linux-i?86.bin &&
cd j2sdk${VERSION} &&
install -d /opt/j2sdk/j2sdk-precompiled-${MV} &&
mv * /opt/j2sdk/j2sdk-precompiled-${MV}
```

The binary version is now installed.

If you don't want to compile the source or are not in a position to download the source owing to license restrictions, skip ahead to the configuration section.

Add the recently compiled JDK to the path.

```
export JAVA_HOME=/opt/j2sdk/j2sdk-precompiled-${MV} &&
export PATH=$PATH:${JAVA_HOME}/bin
```

Unzip the source:

```
VERSION=1.4.2 &&
V=`echo $VERSION | sed -e "s/\./_/g"` &&
unzip j2sdk-${V}-src-scs1.zip &&
unzip j2sdk-${V}-mozilla_headers-unix.zip &&
unzip j2sdk-${V}-bin-scs1.zip
```

Apply all the patches downloaded above.

```
for PATCH in fix-inline-asm-1 gcc33-1 motif-mkmsgcat \
             remove-debug-image remove-fixed-paths-1 \
             static_cxx
do
    patch -Np1 -i j2sdk-1.4.2-${PATCH}.patch
done
```

Set/unset some variables which affect the build:

```
export ALT_BOOTDIR="$JAVA_HOME" &&
unset JAVA_HOME &&
unset CLASSPATH
unset CFLAGS
unset CXXFLAGS
unset LDFLAGS
export ALT_DEVTOOLS_PATH="/usr/bin" &&
export BUILD_NUMBER="blfs-`date +%s`" &&
export DEV_ONLY=true &&
export ALT_MOZILLA_PATH=$PWD &&
export INSANE=true &&
export MAKE_VERBOSE=true &&
export ALT_CACERTS_FILE=${ALT_BOOTDIR}/jre/lib/security/cacerts
```

Warning

Setting CFLAGS/CXXFLAGS/LDFLAGS is guaranteed to make the build fail. If you are interested in optimizing the build, set OTHER_CFLAGS/OTHER_CXXFLAGS/OTHER_LDFLAGS instead.

Additionally, if you would like to make in parallel, add the following (adjust MAKE_PARALLEL to your liking):

```
export HOTSPOT_BUILD_JOBS=$MAKE_PARALLEL
```

If the included Motif doesn't build properly, the error is noticed much later in the build. A solution is to build the Motif library before compiling the J2SDK.

```
cd motif/lib/Xm &&
make &&
cd ../../..
```

Make and Install J2SDK with the following commands. There will be a lot of messages about missing files that look like errors. As long as the build doesn't stop, the messages are harmless, so ignore them.

```
cd control/make &&
make &&
cd ../.. &&
cd control/build/linux-i?86 &&
cp -a j2sdk-image /opt/j2sdk/j2sdk-1.4.2
```

Command explanations

export ALT_BOOTDIR="\$JAVA_HOME": This var sets location of the bootstrap JDK.

export ALT_MOZILLA_PATH=\$PWD: This sets the variable that points to where you unzipped the Mozilla headers.

export ALT_DEVTOOLS_PATH="/usr/bin": This changes the location where the build finds the needed executables.

export BUILD_NUMBER="blfs-`date +%s`": This will help you identify this compiled version of the runtime environment and virtual machine by appending this information to the version in the output to **java -version**.

export DEV_ONLY=true: This command eliminates compiling the documentation and eliminates a dependency for rpm.

unset JAVA_HOME: This clears the JAVA_HOME variable as recommended by the build instructions.

unset CLASSPATH: This clears the CLASSPATH variable as per the recommendations in the build instructions.

unset CFLAGS...: These flags cause miscompilation of the build. Never set these.

export INSANE=true: Unless you specify that you are insane the build will not proceed. The certified platform for the build is Redhat 6.1. The above variable ensures that all the errors related to compiling on a non-certified platform will be converted to warnings.

export MAKE_VERBOSE=true: Allows the current compilation command to be displayed on the console.

export ALT_CACERTS_FILE...: Specifies the certificate file to use.

Configuring J2SDK

Configuration Information

We have two Java 2 SDK's installed in `/opt/j2sdk`. Decide on which one you would like to use as the default. For example if you decide to use the source compiled J2SDK, do the following:

```
ln -nsf j2sdk-1.4.2 /opt/j2sdk/j2sdk
```

Add the following lines to your shell startup file (e.g. `/etc/profile`).

```
export JAVA_HOME=/opt/j2sdk/j2sdk
export PATH=$PATH:$JAVA_HOME/bin
```

Add `$JAVA_HOME/man` to your MANPATH variable or to `/etc/man.conf`

The Java plugin is in the directory `$JAVA_HOME/jre/plugin/i?86/ns610/`. Make a symbolic link to the file in that directory from your plugins directory.

Handling CLASSPATH

When compiling packages, the `CLASSPATH` environment variable is used by JDK to locate classes at compile-time and run-time. It is tedious to add all the classes used to the `CLASSPATH` manually. You may add the following lines to your shell startup file to set `CLASSPATH` automatically to include all JAR files in a specified directory, which in the example below is `/usr/lib/auto-java-classpath`.

```
AUTO_CLASSPATH_DIR=/usr/lib/auto-java-classpath
if [ -z $CLASSPATH ]
then
    CLASSPATH=.:$AUTO_CLASSPATH_DIR
else
    CLASSPATH=$CLASSPATH:.$AUTO_CLASSPATH_DIR
fi
for i in $(ls $AUTO_CLASSPATH_DIR/*.jar 2>/dev/null)
do
    CLASSPATH=$CLASSPATH:$i
done
```

Contents

The J2SDK package contains **appletviewer**, **extcheck**, **idlj**, **jar**, **jarsigner**, **java**, **javac**, **javadoc**, **javah**, **javap**, **jdb**, **keytool**, **native2ascii**, **orbd**, **policytool**, **rmic**, **rmid**, **rmiregistry**, **rmiregistry**, **serialver**, **servertool** and **tnameserv**.

Description

appletviewer

appletviewer runs Java applets outside of the context of a browser.

extcheck

extcheck checks a specified JAR file for title and version conflicts with any extensions installed in the JDK software.

idlj

idlj generates Java bindings from a given IDL file.

jar

jar combines multiple files into a single JAR archive file.

jarsigner

jarsigner signs JAR (Java ARchive) files and verifies the signatures and integrity of a signed JAR.

java

java launches a Java application by starting a Java runtime environment, loading a specified class and invoking that class's main method.

javac

javac reads class and interface definitions, written in the Java programming language, and compiles them into bytecode class files.

javadoc

javadoc parses the declarations and documentation comments in a set of Java source files and produces a corresponding set of HTML pages describing the classes, interfaces, constructors, methods, and fields.

javah

javah generates C header and source files that are needed to implement native methods.

javap

javap disassembles a Java class file.

jdb

jdb is a simple command-line debugger for Java classes.

keytool

keytool is a key and certificate management utility.

native2ascii

native2ascii converts files that contain non-supported character encoding into files containing Latin-1 or Unicode-encoded characters.

orbd

orbd is used to enable clients to transparently locate and invoke persistent objects on servers in the CORBA environment.

policytool

policytool creates and manages a policy file graphically.

rmic

rmic generates stub and skeleton class files for remote objects from the names of compiled Java classes that contain remote object implementations.

rmid

rmid starts the activation system daemon.

rmiregistry

rmiregistry creates and starts a remote object registry on the specified port on the current host.

serialver

serialver returns the serialVersionUID for one or more classes in a form suitable for copying into an evolving class.

servertool

servertool provides an ease-of-use interface for application programmers to register, unregister, startup and shutdown a server.

tnameserv

tnameserv starts the Java IDL name server.

Ruby-1.8.1

Introduction to Ruby

The Ruby package contains the Ruby development environment. This is useful for object-oriented scripting.

Package information

- Download (HTTP): <http://rubyforge.org/download.php/262/ruby-1.8.1.tar.gz>
- Download (FTP): <ftp://ftp.ruby-lang.org/pub/ruby/1.8/ruby-1.8.1.tar.gz>
- Download size: 2.6 MB
- Estimated Disk space required: 31 MB
- Estimated build time: 0.71 SBU

Installation of Ruby

Install Ruby by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The Ruby package contains **ruby**, **irb**, **erb**, **rdoc**, **ri** and **testrb**.

Description

ruby

ruby is an interpreted scripting language for quick and easy object-oriented programming.

irb

irb is the interactive interface for ruby.

GCC-3.3.3

Introduction to GCC

The GCC package contains GNU compilers. This is useful for compiling programs written in Ada, C, C++, Fortran, Java and Objective C.

Package information

- Download (HTTP): <http://mirrors.rcn.net/pub/sourceware/gcc/releases/gcc-3.3.3/gcc-3.3.3.tar.bz2>
- Download (FTP): <ftp://mirrors.rcn.net/pub/sourceware/gcc/releases/gcc-3.3.3/gcc-3.3.3.tar.bz2>
- Download size: 23 MB
- Estimated Disk space required: 889 MB
- Estimated build time: 29.3 SBU

Additional Downloads

- Required patch: http://www.linuxfromscratch.org/patches/blfs/5.1/gcc-3.3.3-no_fixincludes-1.patch

Installation of GCC

If you plan to compile Ada, you will need to install GNAT temporarily to satisfy the circular dependency when you recompile GCC to include Ada.

Package information

- Download (HTTP):
- Download (FTP): <ftp://cs.nyu.edu/pub/gnat/3.15p/gnat-3.15p-i686-pc-redhat71-gnu-bin.tar.gz>
- Download size: 13.2 MB
- Estimated Disk space required: 48.9 MB
- Estimated build time: 0.01 SBU

GNAT dependencies

Required

Tcsh-6.12.00[p.112]

Installation of GNAT

Install GNAT by running the following commands:

```
./doconfig
```

The above script will ask you how and where you would like to install GNAT. To avoid conflicts with the system **gcc**, the package will be installed in a separate directory, that can later be removed from the system.

In response to the questions asked by the **doconfig** script, enter **3** in response to the first question and **/opt/gnat** in response to the second question.

To finish the install, run

```
./doinstall
```

The GNAT compiler can be invoked by executing the **gcc** binary installed by the above script.

Return to Installation of GCC

Patch the source files with the following command:

```
patch -Np1 -i ../gcc-3.3.3-no_fixincludes-1.patch &&
sed -i 's/install_to_$(INSTALL_DEST) //' libiberty/Makefile.in
```

Install GCC by running the following commands:

```
PATH_HOLD=$PATH &&
export PATH=/opt/gnat/bin:$PATH &&
cd gcc/ada &&
touch treeprs.ads [es]info.h nmake.ad[bs] &&
cd ../.. &&
mkdir ../gcc-build &&
cd ../gcc-build &&
CC=/usr/bin/gcc ../gcc-3.3.3/configure --prefix=/usr --enable-shared \
  --enable-languages=c,c++,objc,f77,ada,java --enable-threads=posix \
  --enable-__cxa_atexit --enable-clocale=gnu &&
make bootstrap &&
make -C gcc gnatlib_and_tools &&
make -k check &&
make install &&
ln -sf ../usr/bin/cpp /lib &&
ln -sf gcc /usr/bin/cc &&
ln -sf g77 /usr/bin/f77 &&
export PATH=$PATH_HOLD
```

You may remove the GNAT installation:

```
rm -rf /opt/gnat
```

Command explanations

PATH_HOLD=\$PATH: This command stores your current path before it's modified so that it can be restored after installation.

export PATH=/opt/gnat/bin:\$PATH: This command allows the build to find GNAT's Ada compiler to build Ada.

touch treeprs.ads [es]info.h nmake.ad[bs]: This command creates necessary files for the Ada build. This step may be skipped if you don't want to compile the Ada front end.

CC=/usr/bin/gcc: This command works around the new PATH which puts GNAT's **gcc** as the primary compiler.

--enable-languages=c,c++,objc,f77,ada,java: This command builds all available languages in the GCC package. You may modify this command to remove unwanted languages.

--enable-shared --enable-threads=posix --enable-__cxa_atexit: These commands are required to build the C++ libraries to published standards.

--enable-clocale=gnu: This command is a failsafe for incomplete locale data.

make gnatlib_and_tools: This command completes the Ada build process. Skip this step if you have not enabled Ada as one of the languages.

Contents

The GCC package contains **c++**, **c++filt**, **cpp**, **g++**, **g77**, **gcc**, **gccbug**, **gcov**, **glob**, **gnat**, **gnatbind**, **gnatbl**, **gnatchop**, **gnatfind**, **gnatkr**, **gnatlink**, **gnatls**, **gnatmake**, **gnatprep**, **gnatpsta**, **gnatpsys**, **gnatxref** and GCC libraries.

Description

The programs and libraries whose descriptions are missing here have been described in the LFS GCC-3.3.3 page.

g77

g77 is the Fortran compiler invoked by **gcc**.

add2line

add2line converts the ASCII form of the 2-line orbital elements in a file to binary form and appends them to the orbddata files.

gcov

gcov is a test coverage program.

gdb

gdb is the GNAT debugger.

gnatbind

gnatbind is used to bind compiled objects.

gnatbl

gnatbl is the Ada linker.

gnatchop

gnatchop is useful for renaming files to meet the standard Ada default file naming conventions.

gnatelim

gnatelim is used to detect and eliminate unused subprograms in an Ada partition.

gnatfind

gnatfind is the GNAT definition/use finder.

gnatgcc

gnatgcc is the compiler.

gnathtml.pl

gnathtml.pl converts Ada source files to HTML for viewing in Web browsers.

gnatkr

gnatkr is used to determine the crunched name for a given file, when crunched to a specified maximum length.

gnatlink

gnatlink is used to link programs and build an executable file.

gnatls

gnatls is the compiled unit browser.

gnatmake

gnatmake is an automatic make facility.

gnatmem

gnatmem is the GNAT utility that monitors dynamic allocation and deallocation activity in a program.

gnatprep

gnatprep is the GNAT external preprocessor.

gnatpsta

gnatpsta determines the values of all the relevant parameters in Standard and outputs to stdout.

gnatpsys

gnatpsys determines the values of all the relevant parameters in System and outputs to stdout.

gnatstub

gnatstub is a generator of body stubs.

gnatxref

gnatxref is the GNAT cross-referencer.

gvd

gvd is the GNU Visual Debugger.

Tcl-8.4.6

Introduction to Tcl

The Tcl package contains Tool Command Language.

Package information

- Download (HTTP): <http://aleron.dl.sourceforge.net/sourceforge/tcl/tcl8.4.6-src.tar.gz>
- Download (FTP): ftp://ftp.us.xemacs.org/pub/tcl/tcl8_4/tcl8.4.6-src.tar.gz
- Download size: 3.3 MB
- Estimated Disk space required: 17.1 MB
- Estimated build time: 0.27 SBU

Installation of Tcl

Note

This package is also installed in LFS during the bootstrap phase. The significant difference between the two installations (other than installing to `/usr`) is to install the package in such a way that there is no need to keep the build directory around after installation.

Install Tcl by running the following commands:

```
VERSION=8.4.6 &&
V=`echo $VERSION | cut -d "." -f 1,2` &&
DIR=$PWD &&
cd unix &&
./configure --prefix=/usr &&
make &&
sed -i "s:${DIR}/unix:/usr/lib:" tclConfig.sh &&
sed -i "s:${DIR}:/usr/include/tcl${V}:" tclConfig.sh &&
sed -i "s,^TCL_LIB_FILE='libtcl${V}..TCL_DBGX..so',TCL_LIB_FILE=\"libtcl${V}\\$\\{TCL_DBGX\\}." &&
mv ../doc/{,Tcl_}Thread.3 &&
sed -i 's/ Thread.3/ Tcl_Thread.3/' mkLinks &&
make install &&
install -d /usr/include/tcl${V}/unix &&
install -m644 *.h /usr/include/tcl${V}/unix/ &&
install -d /usr/include/tcl${V}/generic &&
install -c -m644 ../generic/*.h /usr/include/tcl${V}/generic/ &&
rm -f /usr/include/tcl${V}/generic/{tcl,tclDecls,tclPlatDecls}.h &&
ln -nsf /usr/include/tcl${V} /usr/lib/tcl${V}/include &&
ln -sf libtcl${V}.so /usr/lib/libtcl.so &&
ln -sf tclsh${V} /usr/bin/tclsh
```

Command explanations

sed -i ...: The Tcl package assumes that the source that is used to build Tcl is always kept around for compiling packages that depend on Tcl. These **sed**'s remove the reference to the build directory and replace them by saner system wide locations.

install ...: These commands install the internal headers into a system-wide location.

ln -sf ...: These commands create compatibility symbolic links.

Tk-8.4.6

Introduction to Tk

The Tk package contains TCL GUI Toolkit.

Package information

- Download (HTTP): <http://aleron.dl.sourceforge.net/sourceforge/tcl/tk8.4.6-src.tar.gz>
- Download (FTP): ftp://ftp.us.xemacs.org/pub/tcl/tcl8_4/tk8.4.6-src.tar.gz
- Download size: 3.1 MB
- Estimated Disk space required: 17.4 MB
- Estimated build time: 0.41 SBU

Tk dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]) and Tcl-8.4.6[p.198]

Installation of Tk

Install Tk by running the following commands:

```
VERSION=8.4.6 &&
V=`echo $VERSION | cut -d "." -f 1,2` &&
DIR=$PWD &&
cd unix &&
./configure --prefix=/usr &&
make &&
sed -i "s:${DIR}/unix:/usr/lib:" tkConfig.sh &&
sed -i "s:${DIR}:/usr/include/tk${V}:" tkConfig.sh &&
make install &&
install -d /usr/include/tk${V}/unix &&
install -m644 *.h /usr/include/tk${V}/unix/ &&
install -d /usr/include/tk${V}/generic &&
install -m644 ../generic/*.h /usr/include/tk${V}/generic/ &&
rm -f /usr/include/tk${V}/generic/{tk,tkDecls,tkPlatDecls}.h &&
ln -nsf /usr/include/tk${V} /usr/lib/tk${V}/include &&
ln -sf libtk${V}.so /usr/lib/libtk.so &&
ln -sf wish${V} /usr/bin/wish
```

Command explanations

sed -i ...: The Tk package assumes that the source that is used to build Tk is always kept around for compiling packages that depend on Tk. These **sed**'s remove the reference to the build directory and replace them by saner system wide locations.

install ...: These commands install the internal headers into a system-wide location.

ln -sf ...: These commands create compatibility symbolic links.

GCC-2.95.3

Introduction to GCC-2.95.3

There are two reasons for installing GCC-2.95.3. The first is that the kernel developers have certified GCC-2.95.3 as the preferred compiler for compiling the kernel. The other (and more compelling reason) is that some commercial closed-source packages (such as Netscape Navigator, Yahoo Pager) and precompiled packages (such as Mozilla) are linked against GCC-2.95.3 libs.

Package information

- Download (HTTP): <http://ftp.gnu.org/gnu/gcc/gcc-2.95.3.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/gcc/gcc-2.95.3.tar.gz>
- Download size: 9.4 MB
- Estimated Disk space required: 150 MB
- Estimated build time: 2.60 SBU

Additional downloads

- <http://www.linuxfromscratch.org/patches/blfs/5.1/gcc-2.95.3-2.patch>
- <http://www.linuxfromscratch.org/patches/blfs/5.1/gcc-2.95.3-no-fixinc.patch>
- <http://www.linuxfromscratch.org/patches/blfs/5.1/gcc-2.95.3-returntype-fix.patch>

Installation of GCC

Apply the patches:

```
patch -Np1 -i ../gcc-2.95.3-2.patch &&
patch -Np1 -i ../gcc-2.95.3-no-fixinc.patch &&
patch -Np1 -i ../gcc-2.95.3-returntype-fix.patch
```

The GCC development team recommends building in a separate directory.

```
mkdir ../gcc-build &&
cd ../gcc-build
```

Configure GCC to build the C and C++ compilers and enable the related C++ options.

```
../gcc-2.95.3/configure \
--prefix=/opt/gcc-2.95.3 \
--enable-shared --enable-languages=c,c++ \
--enable-threads=posix
```

Compile and install GCC:

```
make bootstrap &&
make install
```

Make note of the library that is installed.

```
L=`find /opt/gcc-2.95.3/lib -name "libstdc++.so" -type f` &&
IL=`basename $L`
```

Move the C++ libraries to the standard lib directory to avoid having to add `/opt/gcc-2.95.3/lib` to `/etc/ld.so.conf`.

```
for i in /opt/gcc-2.95.3/lib/*.so*; do mv -f $i /usr/lib;
ln -sf /usr/lib/`basename $i` /opt/gcc-2.95.3/lib; done
```

Create symlinks required by commercial and precompiled packages.

```
ln -sf $IL /usr/lib/libstdc++-libc6.1-1.so.2 &&
ln -sf $IL /usr/lib/libstdc++-libc6.2-2.so.3 &&
ln -sf $IL /usr/lib/libstdc++-libc6.3-2.so.3
```

Configuring GCC

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, **/sbin/ldconfig** should be run while logged in as root.

The instructions given above make compatibility symlinks that pre-compiled packages in BLFS require. You may create additional compatibility links based on your requirements.

If you only need the GCC-2.95.3 libraries, you may delete `/opt/gcc-2.95.3`.

Whenever you need to use GCC-2.95.3 instead of your system installed compiler, add `/opt/gcc-2.95.3/bin` to the front of your `PATH` or (preferably) set the `CC` environment variable before compiling the concerned package.

Contents

The GCC-2.95.3 package contains the **gcc-2.95.3** C and C++ compilers and GCC-2.95.3 `libstdc++.so` that is required by some commercial and pre-compiled packages.

NASM-0.98.38

Introduction to NASM

NASM (Netwide Assembler) is an 80x86 assembler designed for portability and modularity. It includes a disassembler as well.

Package information

- Download (HTTP): <http://unc.dl.sourceforge.net/sourceforge/nasm/nasm-0.98.38.tar.bz2>
- Download (FTP): <ftp://ftp.iasi.roedu.net/pub/mirrors/download.sourceforge.net/nasm/nasm-0.98.38.tar.bz2>
- Download size: 536 KB
- Estimated Disk space required: 6.3 MB
- Estimated build time: 0.14 SBU

Installation of NASM

Install NASM by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The NASM package contains **nasm** and **ndisasm** programs.

Description

nasm

nasm is a portable 80x86 assembler.

ndisasm

ndisasm is an 80x86 binary file disassembler.

Part IV. Connecting to a Network

The LFS book covers setting up networking by connecting to a LAN with a static IP. There are other methods used to connect to LAN's and other networks (such as the Internet). We cover the most popular methods in this chapter.

Chapter 13. Dial-up networking

PPP-2.4.2

Introduction to PPP

The PPP package contains the **pppd** daemon and the **chat** program. This is used for connecting to other machines; often for connecting to the Internet via a dial-up or PPPoE connection to an ISP.

Package information

- Download (HTTP): <http://ccache.samba.org/ftp/ppp/ppp-2.4.2.tar.gz>
- Download (FTP): <ftp://ftp.samba.org/pub/ppp/ppp-2.4.2.tar.gz>
- Download size: 757 KB
- Estimated Disk space required: 7.4 MB
- Estimated build time: 0.13 SBU

Additional downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/ppp-2.4.2-nobpf-3.patch>

ppp dependencies

Required

libpcap-0.8.3[p.138]

Installation of PPP

Note

PPP support must be compiled into the kernel or available as a kernel module.

Install PPP by running the following commands:

```
patch -Np1 -i ../ppp-2.4.2-nobpf-3.patch &&
./configure &&
make ETCDIR=/etc/ppp &&
make ETCDIR=/etc/ppp install
```

Configuring PPP

Config files

/etc/ppp/*

Configuration Information

The PPP daemon itself requires very little configuration. The main trick is scripting the connection. This can be done either using the **chat** program which comes with this package or by using **Wvdial-1.53**[p.206].

Contents

The PPP package contains the **chat**, **pppd**, **pppdump** and **pppstats** programs.

Description

chat

The **chat** program defines a conversational exchange between the computer and the modem. Its primary purpose is to establish the connection between the Point-to-Point Protocol Daemon (PPPD) and the remote's **pppd** process.

pppd

pppd is the Point to Point Protocol daemon.

pppdump

pppdump is used to convert PPP record files to a readable format.

pppstats

pppstats is used to print PPP statistics.

WvDial-1.53

Introduction to WvDial

The WvDial package contains a no nonsense, quick and easy to use alternative to **chat** and **pppd** scripts. If you simply want to dial a modem without the fuss and hassle of **chat** issues, then you'll want this.

Package information

- Download (HTTP): <http://open.nit.ca/download/wvdial-1.53.tar.gz>
- Download (FTP): <ftp://ftp.ing-steen.se/pub/unix/unsort/wvdial-1.53.tar.gz>
- Download size: 66 KB
- Estimated Disk space required: 2.3 MB
- Estimated build time: 0.06 SBU

WvDial dependencies

Required

WvStreams-3.70[p.217] and PPP-2.4.2[p.204]

Installation of WvDial

Install WvDial by running the following commands:

```
make PREFIX=/usr &&
make PREFIX=/usr install
```

Configuring WvDial

Config files

/etc/wvdial.conf, /etc/ppp/peers/*

Configuration Information

```
touch /etc/wvdial.conf &&
wvdialconf /etc/wvdial.conf
```

wvdialconf will test that you have a working modem and try to determine it's exact setup. You will then need to enter your ISP's phone number, login name and password into the `/etc/wvdial.conf` file.

You then start wvdial with:

```
wvdial
```

For more information examine the `wvdialconf`, `wvdial.conf` and `wvdial` man pages.

Contents

The WvDial package contains the **wvdial** and **wvdialconf** programs.

Description

wvdial

Starts a PPP connection.

wvdialconf

Automates the configuration of **wvdial**.

Chapter 14. DHCP Clients

DHCP stands for Dynamic Host Configuration Protocol. It is a protocol which is used by many sites to automatically provide information such as IP addresses, subnet masks and routing information to computers. If your network uses DHCP, you will need a DHCP client in order to connect to it. DHCP is also used by some cable modems.

We currently provide installation instructions for two DHCP clients, **dhclient** (from the **dhcp** package) and **dhcpcd**. We present both sets of installation instructions which also discuss how to create an appropriate service script to work with the **network** bootscript and the DHCP client of your choice.

DHCP-3.0pl2

The DHCP package comes with both a client (called **dhclient**) and a server program for using DHCP. If you want to install this package, the instructions can be found at DHCP-3.0pl2[p.293]. Note that if you only want to use the client, you do *not* need to run the server and so do not need the startup script and links provided for the server daemon. You only need to run the DHCP server if you're providing this service to a network, and it's likely that you'll know if that's the case; if it isn't, don't run the server! Once you have installed the package, return here for information on how to configure the client (**dhclient**).

To configure **dhclient**, we need to first install the network service script, `/etc/sysconfig/network-devices/services/dhclient` included in the blfs-bootscripts-5.1[p.31] package.

```
make install-service-dhclient
```

Next, create the `ifconfig.eth0` file with the following commands. Adjust as necessary for additional interfaces.

Note: this will overwrite any existing file.

```
cat > /etc/sysconfig/network-devices/ifconfig.eth0 << "EOF"
ONBOOT=yes
DHCP_START="[place appropriate start parameters here]"
DHCP_STOP="-r [add additional stop parameters here]"
SERVICE=dhclient
EOF
```

For more information on the appropriate DHCP_START and DHCP_STOP values, examine the man page for **dhclient**.

You should then create the `/etc/dhclient.conf` using the following commands. Append to the file if you have more than one interface:

```
cat > /etc/dhclient.conf << "EOF"
# dhclient.conf

interface "eth0"{
prepend domain-name-servers 127.0.0.1;
request subnet-mask, broadcast-address, time-offset, routers,
        domain-name, domain-name-servers, host-name;
require subnet-mask, domain-name-servers;
}
# end dhclient.conf
EOF
```

Finally, if the DHCP configured interface is used as your default gateway, you should remove the GATEWAY and GATEWAY_IF variables from `/etc/sysconfig/network`:

```
sed -i "s/GATEWAY/#GATEWAY/" /etc/sysconfig/network
```

dhcpcd-1.3.22-pl4

Introduction to dhcpcd

The **dhcpcd** package contains the **dhcpcd** client. This is useful for connecting your computer to a network which uses DHCP to assign network addresses.

Package information

- Download (HTTP): <http://www.phystech.com/ftp/dhcpcd-1.3.22-pl4.tar.gz>
- Download (FTP): <ftp://ftp.phystech.com/pub/dhcpcd-1.3.22-pl4.tar.gz>
- Download size: 145 KB
- Estimated Disk space required: 868 KB
- Estimated build time: 0.04 SBU

Additional downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/dhcpcd-1.3.22-pl4-fhs.patch>

Installation of dhcpcd

Install **dhcpcd** by running the following commands:

```
patch -Np1 -i ../dhcpcd-1.3.22-pl4-fhs.patch &&
./configure --prefix="" --sysconfdir=/var/lib \
--mandir=/usr/share/man &&
make &&
make install
```

Command explanations

patch -Np1 -i ../dhcpcd-1.3.22-pl4-fhs.patch : Dhcpcd unpatched puts all configuration and temporary files in `/etc/dhcpc`. This becomes very annoying when **dhcpcd** tells you it's running and it's not. You look in `/var/run` for the PID file, but it's not there, the PID file that needs deleting is in `/etc/dhcpc`. This patch brings this program into FHS compliance, but more importantly, puts files where you expect them to be.

--prefix="": There may be a good reason for abandoning the normal BLFS convention of using **--prefix=/usr** here. If you are installing DHCP, it is likely that it is required during the boot process and `/usr` may be network mounted in which case, **dhcpcd** wouldn't be available due to being on the network! Therefore, depending on your situation, you may want it to be installed in `/sbin` or `/usr/sbin`. This command installs to `/sbin`.

--sysconfdir=/var/lib: This command install configuration files in the `/var/lib` directory.

--mandir=/usr/share/man: This command install the man pages to the `/usr/share/man` directory.

Configuring dhcpcd

Config files

`/var/lib/dhcpc/*`

Configuration Information

To configure **dhcpcd**, we need to first install the network service script, `/etc/sysconfig/network-devices/services/dhcpcd` included in the `blfs-bootscripts-5.1[p.31]` package.

```
make install-service-dhcpcd
```


Now create the `ifconfig.eth0` configuration file using the following commands. Adjust appropriately for additional interfaces.

Note: This will overwrite any existing file.

```
cat > /etc/sysconfig/network-devices/ifconfig.eth0 << "EOF"
ONBOOT=yes
DHCP_START="[insert appropriate start options here]"
DHCP_STOP="-k [insert other stop options here]"
SERVICE=dhcpd
EOF
```

For more information on the appropriate `DHCP_START` and `DHCP_STOP` values, examine the man page for **dhcpcd**.

Finally, if the DHCP configured interface is used as your default gateway, you should remove the `GATEWAY` and `GATEWAY_IF` variables from `/etc/sysconfig/network`:

```
sed -i "s/GATEWAY/#&/" /etc/sysconfig/network
```

Contents

The `dhcpcd` package contains **dhcpcd**.

Description

dhcpcd

dhcpcd is an implementation of the DHCP client specified in RFC2131 and RFC1541 (depending on which options are specified).

Chapter 15. Other Connections

Other methods to connect to large networks are through ISDN and PPPoE interfaces, among others. PPPoE is discussed here. Pages written for ISDN (or others as the need arises) are always welcome and will be included in future books, if available.

RP-PPPoE-3.5

Introduction to RP-PPPoE

The Roaring Penguin PPPoE package contains both a client and a server component that works with the client. The client allows you to connect to large networks that use the PPPoE protocol, common among ADSL providers. The server component runs alongside the client, allowing you to configure other clients that send out a configuration request.

Package information

- Download (HTTP): <http://www.roaringpenguin.com/products/rp-pppoe/rp-pppoe-3.5.tar.gz>
- Download (FTP): ftp://ftp.rutgers.edu/pub/slackware/slackware_source/n/rp-pppoe/rp-pppoe-3.5.tar.gz
- Download size: 185 KB
- Estimated Disk space required: 2.2 MB
- Estimated build time: 0.05 SBU

RP-PPPoE dependencies

Required

PPP-2.4.2[p.204]

Installation of RP-PPPoE

Note: If you plan on using kernel-mode PPPoE, this package is no longer explicitly needed. However, it is recommended for ease of configuration. Additional information about kernel mode PPPoE can be found in `rp-pppoe-3.5/doc/KERNEL-MODE-PPPOE`.

Install RP-PPPoE by running the following commands:

```
cd src &&
./configure &&
make &&
make install
```

Command explanations

These are the standard installation commands that will install into the `/usr` prefix. You can optionally use the `go` script in the root of the source tree, to run the same commands, which are then immediately followed by the `adsl-setup` script.

Configuring RP-PPPoE

Config files

`/etc/ppp/pppoe.conf`, `/etc/ppp/firewall-standalone`, `/etc/ppp/firewall-masq`,
`/etc/ppp/pppoe-server-options`, `/etc/resolv.conf`, `/etc/ppp/pap-secrets`,
`/etc/ppp/chap-secrets`

Configuration Information

To configure RP-PPPoE after installation, you should run the **adsl-setup** script.

When configuring your connection, you will need to have your ISP's nameserver information available, as well as your username and password. You will also be asked whether to configure a dial-on-demand or a constant connection. If your service provider does not charge by the minute, it is usually good to have a bootscript handle the connection for you. You can, of course, choose not to install the following script, and start your connection manually with the **adsl-start** script.

Optionally install the `/etc/sysconfig/network-devices/services/pppoe` service script included with the `blfs-bootscripts-5.1[p.31]` package.

```
make install-service-pppoe
```

Now create the config file for use with the `pppoe` service script:

```
cat > /etc/sysconfig/network-devices/ifconfig.pppoe << "EOF"  
ONBOOT=yes  
SERVICE=pppoe  
EOF
```

Also, If you had previously configured the network interface that will now use PPPoE, you should remove the interface configuration files for that interface: `/etc/sysconfig/network-devices/ifconfig.eth<X> .`

Contents

The RP-PPPoE package contains **adsl-setup**, **adsl-start**, **adsl-status**, **adsl-stop**, **pppoe**, **pppoe-relay**, **pppoe-server** and **pppoe-sniff**.

Description

adsl-setup

A script for configuring the client. Configuration is then stored in `/etc/ppp/pppoe.conf`.

adsl-start

adsl-start starts the client using the options specified in `/etc/ppp/pppoe.conf`.

adsl-status

adsl-status displays the status of the ADSL connection.

adsl-stop

adsl-stop stops the client.

pppoe

This is the client itself. Generally it should not be started on its own.

pppoe-relay

pppoe-relay starts the server relay agent.

pppoe-server

pppoe-server starts the server component.

pppoe-sniff

A small network sniffer designed to assist in setting PPPOE_EXTRA settings.

Part V. Basic Networking

Chapter 16. Networking Libraries

These applications are support libraries for other applications in the book. It is unlikely that you would just install these libraries, you will generally find that you will be referred to this chapter to satisfy a dependency of other applications.

cURL-7.11.2

Introduction to cURL

The cURL package contains **curl** and its support library. This is useful for transferring files with URL syntax. This ability to both download and redirect files can be incorporated into other programs to support functions like streaming media.

Package information

- Download (HTTP): <http://curl.haxx.se/download/curl-7.11.2.tar.bz2>
- Download (FTP):
- Download size: 1.4 MB
- Estimated Disk space required: 26.6 MB
- Estimated build time: 0.43 SBU

cURL dependencies

Optional

OpenSSL-0.9.7d[p.115], OpenLDAP-2.1.30[p.302] and MIT krb5-1.3.3[p.91] or Heimdal-0.6.2[p.84]

Installation of cURL

Install cURL by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Command explanations

`--with-gssapi=/usr`: This parameter adds kerberos 5 support to libcurl.

Contents

The cURL package contains **curl**, **curl-config** and the **libcurl** libraries.

Description

curl

curl is a client that can get documents from or send documents to any of the following protocols: HTTP, HTTPS (needs OpenSSL-0.9.7d[p.115]), FTP, GOPHER, DICT, TELNET, LDAP (needs OpenLDAP-2.1.30[p.302]) or FILE.

curl-config

curl-config prints information about the last compile, like libraries linked to and prefix setting.

libcurl

`libcurl` provides the functionality of **`curl`** to other programs.

WvStreams-3.70

Introduction to WvStreams

The WvStreams package contains the network programming libraries. These are needed to compile wvdial.

Package information

- Download (HTTP): <http://open.nit.ca/download/wvstreams-3.70.tar.gz>
- Download (FTP): <ftp://ftp.ing-steen.se/pub/unix/unsort/wvstreams-3.70.tar.gz>
- Download size: 178 KB
- Estimated Disk space required: 11.5 MB
- Estimated build time: 0.17 SBU

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/wvstreams-3.70-wvcrypto.patch>
- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/wvstreams-3.70-wvresolver.patch>

WvStreams dependencies

Required

OpenSSL-0.9.7d[p.115]

Installation of WvStreams

Install WvStreams by running the following commands:

```
patch -Np1 -i ../wvstreams-3.70-wvcrypto.patch &&
patch -Np1 -i ../wvstreams-3.70-wvresolver.patch &&
make PREFIX=/usr LDFLAGS="-lcrypt" &&
make PREFIX=/usr install
```

Command explanations

`make PREFIX=/usr LDFLAGS="-lcrypt"`: This fixes libwvstreams' issues with OpenSSL's crypto library.

Configuring WvStreams

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, **/sbin/ldconfig** should be run while logged in as root.

Contents

The WvStreams package contains the `libwvcrypto`, `libwvstreams` and `libwvutils` libraries.

Description

libwvcrypto

`libwvcrypto` defines streams with built-in cryptography.

libwvstreams

`libwvstreams` defines the basic properties of a stream.

libwvutils

`libwvutils` contains fundamental support utilities.

GNet-2.0.5

Introduction to GNet

The GNet package contains a simple network library. This is useful for supporting TCP sockets, UDP and IP multicast, asynchronous DNS lookup, and more.

Package information

- Download (HTTP): <http://gnetlibrary.org/src/gnet-2.0.5.tar.gz>
- Download (FTP):
- Download size: 412 KB
- Estimated Disk space required: 9.6 MB
- Estimated build time: 0.18 SBU

GNet dependencies

Required

GLib-2.4.1[p.129]

Installation of GNet

Install GNet by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The GNet package contains libgnet libraries.

libsoup-1.99.28

Introduction to libsoup

The libsoup package contains an HTTP library implementation in C. This is useful for accessing HTTP servers in a completely asynchronous mode.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libsoup/1.99/libsoup-1.99.28.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libsoup/1.99/libsoup-1.99.28.tar.bz2>
- Download size: 365 KB
- Estimated Disk space required: 13 MB
- Estimated build time: 0.41 SBU

libsoup dependencies

Required

GLib-2.4.1[p.129] and libxml2-2.6.9[p.123]

Optional

GTK-Doc-1.2[p.407] and GnuTLS (which needs libgpg-error, libgcrypt and openssl, in that order.)

Installation of libsoup

Install libsoup by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/sbin &&  
make &&  
make install
```

Contents

The libsoup package contains `libsoup` libraries.

Description

libsoup libraries

`libsoup` libraries provide functions for asynchronous HTTP connections.

Chapter 17. Text Web Browsers

People who are new to Unix-based systems tend to ask the question "Why on earth would I want a text-mode browser? I'm going to compile X and use Konqueror/Mozilla/Whatever!". Those who have been around systems for a while know that when (not if) you manage to mess up your graphical browser install and you need to look up some information on the web, a console based browser will save you. Also, there are quite a few people who prefer to use one of these browsers as their principle method of browsing; either to avoid the clutter and bandwidth which accompanies images or because they may use a text-to-speech synthesizer which can read the page to them (of use for instance to partially sighted or blind users). We currently have installation instructions for three console web browsers:

Links-2.1pre14

Introduction to Links

Links is a text and graphics mode WWW browser. It includes support for rendering tables and frames, features background downloads, can display colors and has many other features.

Package information

- Download (HTTP): <http://atrey.karlin.mff.cuni.cz/~clock/twibright/links/download/links-2.1pre14.tar.bz2>
- Download (FTP): <ftp://atrey.karlin.mff.cuni.cz/pub/local/clock/links/links-2.1pre14.tar.bz2>
- Download size: 3.6 MB
- Estimated Disk space required: 26 MB
- Estimated build time: 0.33 SBU

Links dependencies

Optional

GPM-1.20.1[p.171], OpenSSL-0.9.7d[p.115], libpng-1.2.5[p.143], libjpeg-6b[p.141], libtiff-3.6.1[p.145], SVGAlib-1.4.3[p.160] and X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]).

Installation of Links

Install Links by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Command explanations

`--enable-graphics`: Add this switch if you want to use Links in graphics mode. You will also need to enable frame buffer support in your kernel and install GPM-1.20.1[p.171] or install one of the supported graphics libraries.

Configuring Links

Config files

`~/.links/*`

Configuration Information

Links stores its configuration in per-user files in the `~/.links` directory. These files are created automatically when **links** is run for the first time.

Contents

The Links package contains **links**.

Description

links

links is a text and graphics mode WWW browser.

Lynx-2.8.5

Introduction to Lynx

Lynx is a text based web browser.

Package information

- Download (HTTP): <http://lynx.isc.org/release/lynx2.8.5.tar.bz2>
- Download (FTP): <ftp://lynx.isc.org/lynx/lynx2.8.5/lynx2.8.5.tar.bz2>
- Download size: 2.1 MB
- Estimated Disk space required: 18 MB
- Estimated build time: 0.45 SBU

Lynx dependencies

Optional

OpenSSL-0.9.7d[p.115], GnuTLS (which needs libgpg-error, libgcrypt and opencdk, in that order.), MTA and Zip-2.3[p.179]

Installation of Lynx

Install Lynx by running the following commands.

```
./configure --prefix=/usr --libdir=/etc --with-zlib &&
make &&
make install &&
make docdir=/usr/share/doc/lynx-2.8.5/lynx_doc \
    helpdir=/usr/share/doc/lynx-2.8.5/lynx_help install-doc &&
make docdir=/usr/share/doc/lynx-2.8.5/lynx_doc \
    helpdir=/usr/share/doc/lynx-2.8.5/lynx_help install-help
```

Command explanations

`--libdir=/etc`: For some reason, the configure and make routine for lynx uses libdir as the prefix for the configuration file. We set this to /etc so that the system wide configuration file is /etc/lynx.cfg.

`--with-zlib`: This enables support for linking zlib into Lynx.

`docdir=...` `helpdir=...`: We set these variables to avoid getting the help and documentation files installed under /etc.

`--with-ssl`: This enables support for linking SSL into Lynx.

`--with-gnutls`: This enables support for linking GnuTLS into Lynx.

Configuring Lynx

Config files

/etc/lynx.cfg

Configuration Information

Various settings such as proxies can be set in the system-wide lynx.cfg file found in /etc.

Contents

The Lynx package contains **lynx** .

Description

lynx

lynx is a general purpose, text-based, distributed information browser for the World Wide Web.

w3m-0.4.2

Introduction to w3m

w3m is primarily a pager but it can also be used as a text-mode WWW browser.

Package information

- Download (HTTP): <http://unc.dl.sourceforge.net/sourceforge/w3m/w3m-0.4.2.tar.gz>
- Download (FTP): <ftp://sunsite.ccu.edu.tw/pub15/sourceforge/w/w3m/w3m-0.4.2.tar.gz>
- Download size: 646 KB
- Estimated Disk space required: 11 MB
- Estimated build time: 0.28 SBU

w3m dependencies

Required

GC

Optional

GPM-1.20.1[p.171], OpenSSL-0.9.7d[p.115], Imlib-1.9.14[p.157], Imlib2-1.1.0[p.164], GDK Pixel Buffer-0.22.0[p.491] and Compface-1.4[p.167]

Installation of w3m

Install w3m by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/lib --sysconfdir=/etc &&
make &&
make install &&
cp doc/keymap.default /etc/w3m/keymap &&
cp doc/menu.default /etc/w3m/menu
```

Configuring w3m

Config files

/etc/w3m/*, ~/.w3m/*

Contents

The w3m package contains **w3m** and **w3mman**.

Description

w3m

w3m is a text based web browser and pager.

w3mman

w3mman is an interface to the on-line reference manuals in w3m.

Chapter 18. Basic Networking Programs

These applications are generally client applications used to access the appropriate server across the building or across the world. Tcpwrappers and portmap are support programs for daemons that you may have running on your machine.

NcFTP-3.1.7

Introduction to NcFTP

The NcFTP package contains a powerful and flexible interface to the Internet standard File Transfer Protocol. It is intended to replace or supplement the stock **ftp** program.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/infosys/clients/ftp/ncftp/ncftp-3.1.7-src.tar.bz2>
- Download (FTP): <ftp://ftp.ncftp.com/ncftp/ncftp-3.1.7-src.tar.bz2>
- Download size: 389 KB
- Estimated Disk space required: 5.2 MB
- Estimated build time: 0.38 SBU

Installation of NcFTP

There are two ways to build NcFTP. The first (and optimal) way builds most of the functionality as a shared library and then builds and installs the program linked against this library. The second method simply links all of the functionality into the binary statically. This doesn't make the dynamic library available for linking by other applications. You need to choose which method best suits you. Note that the second method does *not* create an entirely statically linked binary; only the `libncftp` parts are statically linked in, in this case. Be aware that building and using the shared library is covered by the Clarified Artistic License; however, developing applications that utilize the shared library is subject to a different license.

To install NcFTP using the first (and optimal) method, run the following commands:

```
./configure --prefix=/usr &&
make -C libncftp shared &&
make -C libncftp soinstall &&
make &&
make install
```

To install NcFTP using the second method (with the `libncftp` functionality linked in statically) run the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Command explanations

```
make -C libncftp shared &&
make -C libncftp soinstall
```

These commands make and install the dynamic library `libncftp` which is then used to link against when compiling the main program.

Configuring NcFTP

Config files

`~/ .ncftp/*`; especially `~/ .ncftp/prefs_v3`

Configuration Information

Most NcFTP configuration is done while in the program and the configuration files are dealt with automatically. One exception to this is `~/ .ncftp/prefs_v3`. There are various options to alter in there, including:

```
yes-i-know-about-NcFTPd=yes
```

This disables the splash screen advertising the NcFTPd server.

There are other options in the `prefs_v3` file. Most of these are self-explanatory.

Contents

The NcFTP package contains `libncftp`, **`ncftp`**, **`ncftpbatch`**, **`ncftpbookmarks`**, **`ncftpget`**, **`ncftpls`**, **`ncftpput`** and **`ncftpspooler`**.

Description

ncftp

A browser program for File Transfer Protocol.

ncftpbatch

Individual batch FTP job processor.

ncftpbookmarks

NcFTP Bookmark Editor (NCurses-based).

ncftpget

Internet file transfer program for scripts.

ncftpls

Internet file transfer program for scripts.

ncftpput

Internet file transfer program for scripts.

ncftpspooler

Global batch FTP job processor daemon.

OpenSSH-3.8.1p1 client

The ssh client is a secure replacement for telnet. If you want to install it, the instructions can be found in Chapter 22 - OpenSSH-3.8.1p1[p.298]. Note that if you only want to use the client, you *do not* need to run the server and so do not need the startup script and links. In accordance with good practice, only run the server if you actually need it (and if you don't know whether you need it or not, it's likely that you don't!).

rsync-2.6.0 client

rsync is a utility for fast incremental file transfers. If you want to install it, the instructions can be found in Chapter 22 - rsync-2.6.0[p.300]. Note that if you only want to use the client, you *do not* need to run the server and so do not need the startup script and links. In accordance with good practice, only run the server if you actually need it (and if you don't know whether you need it or not, it's likely that you don't!).

CVS-1.11.16

Introduction to CVS

CVS is the Concurrent Versioning System. This is a version control system useful for projects using a central repository to hold files and then track all changes made to those files. These instructions install the client used to manipulate the repository, creation of a repository is covered at [cvsserver\[p.290\]](#).

Package information

- Download (HTTP): <http://www.cvshome.org/downloads/cvs-1.11.16.tar.bz2>
- Download (FTP):
- Download size: 2.7 MB
- Estimated Disk space required: 25.4 MB
- Estimated build time: 0.31 SBU

Installation of CVS

Install cvs by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Configuring CVS

Config files

`~/.cvsrc`, `~/.cvswrappers`

Configuration Information

`~/.cvsrc` is the main CVS configuration file. This file is used by users to specify defaults for different **cvs** commands, for example to make all **cvs diff** commands run with **-u**, a user would add **diff -u** to their `.cvsrc` file.

`~/.cvswrappers` specifies wrappers to be used in addition to those specified in the `CVSROOT/cvswrappers` file in the repository.

Contents

The CVS package contains **cvs**, **cvsgen** and **rcs2log**.

Description

cvs

This is the main program file for the concurrent versioning system.

cvsgen

This is used to send problem reports about CVS to a central support site.

rcs2log

RCS to Change Log generator.

Wget-1.9.1

Introduction to Wget

The Wget package contains a utility useful for non-interactive downloading of files from the Web.

Package information

- Download (HTTP): <http://ftp.gnu.org/gnu/wget/wget-1.9.1.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/wget/wget-1.9.1.tar.gz>
- Download size: 1.3 MB
- Estimated Disk space required: 6.2 MB
- Estimated build time: 0.11 SBU

Wget dependencies

Optional

OpenSSL-0.9.7d[p.115] and Dante

Installation of Wget

Install Wget by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install
```

Command explanations

`--prefix=/usr`: This compiles and installs **wget** into the `/usr` hierarchy instead of `/usr/local`.

`--sysconfdir=/etc`: This relocates the configuration file from `/usr/etc` to `/etc`.

Configuring Wget

Config files

`/etc/wgetrc`, `~/.wgetrc`

There are no required changes in these files.

Contents

The Wget package contains **wget**.

Description

wget

wget retrieves files from the Web using the HTTP, HTTPS and FTP protocols. It is designed to be non-interactive, for background or unattended operations.

tcpwrappers-7.6

Introduction to tcpwrappers

The tcpwrappers package provides daemon wrapper programs that report the name of the client requesting network services and the requested service.

Package information

- Download (HTTP): http://files.ichilton.co.uk/nfs/tcp_wrappers_7.6.tar.gz
- Download (FTP): ftp://ftp.porcupine.org/pub/security/tcp_wrappers_7.6.tar.gz
- Download size: 100 KB
- Estimated Disk space required: 720 KB
- Estimated build time: 0.16 SBU

Additional downloads

- Required patch (Fixes some build issues and adds building of a shared library):
http://www.linuxfromscratch.org/patches/blfs/5.1/tcp_wrappers-7.6-shared-lib-plus-plus.patch

Installation of tcpwrappers

Install tcpwrappers with the following commands:

```
patch -Np1 -i ../tcp_wrappers-7.6-shared-lib-plus-plus.patch &&
make REAL_DAEMON_DIR=/usr/sbin STYLE=-DPROCESS_OPTIONS linux &&
make install
```

Configuring tcpwrappers

Config files

`/etc/hosts.allow`, `/etc/hosts.deny`

File protections: the wrapper, all files used by the wrapper, and all directories in the path leading to those files, should be accessible but not writable for unprivileged users (mode 755 or mode 555). Do not install the wrapper set-uid.

Then perform the following edits on the `/etc/inetd.conf` configuration file:

```
finger stream tcp nowait nobody /usr/sbin/in.fingerd in.fingerd
```

becomes:

```
finger stream tcp nowait nobody /usr/sbin/tcpd in.fingerd
```

Note

The finger server is used as an example here.

Similar changes must be made if xinetd is used, with the emphasis being on calling `/usr/sbin/tcpd` instead of calling the service daemon directly, and passing the name of the service daemon to tcpd.

Contents

The tcpwrappers package contains `tcpd`, `tcpdchk`, `tcpdmatch`, `try-from` and `safe_finger`.

Description

tcpd

tcpd is the main access control daemon for all Internet services, which **inetd** or **xinetd** will run instead of running the requested service daemon.

tcpdchk

tcpdchk is a tool to examine a tcpd wrapper configuration and report problems with it.

tcpdmatch

tcpdmatch is used to predict how the tcp wrapper would handle a specific request for a service.

try-from

try-from can be called via a remote shell command to find out if the host name and address are properly recognized.

safe_finger

safe_finger is a wrapper for the **finger** utility, to provide automatic reverse name lookups.

portmap-5beta

Introduction to portmap

The portmap package is a more secure replacement for the original SUN portmap package. Portmap is used to forward RPC requests to RPC daemons such as NFS and NIS.

Package information

- Download (HTTP):
- Download (FTP): ftp://ftp.porcupine.org/pub/security/portmap_5beta.tar.gz
- Download size: 20 KB
- Estimated Disk space required: 250 KB
- Estimated build time: 0.03 SBU

Additional downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/portmap-5beta-compilation-fixes-2.patch>
- Required patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/portmap-5beta-glibc-errno-fix.patch>

portmap dependencies

Required

tcpwrappers-7.6[p.232]

Installation of portmap

Install portmap with the following commands:

```
patch -Np1 -i ../portmap-5beta-compilation-fixes-2.patch &&
patch -Np1 -i ../portmap-5beta-glibc-errno-fix.patch &&
make &&
make install
```

Note

The above installation places executable portmap in /sbin. You may choose to move the file to /usr/sbin. If you do, remember to modify the bootscript.

Configuring portmap

Config files

/etc/rc.d/init.d/portmap

Boot script

Install the /etc/rc.d/init.d/portmap init script included in the blfs-bootscripts-5.1[p.31] package.

```
make install-portmap
```

Contents

The portmap package contains **portmap**, **pmap_dump** and **pmap_set**.

Description

portmap

portmap is the RPC port mapper.

pmap_dump

pmap_dump saves the port mapping table to an ASCII file.

pmap_set

pmap_set restores the port mapping table from an ASCII file.

Inetutils-1.4.2

Introduction to Inetutils

The Inetutils package contains network clients and servers.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/gnu/gnusr/inetutils/inetutils-1.4.2.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/inetutils/inetutils-1.4.2.tar.gz>
- Download size: 1019 KB
- Estimated Disk space required: 13 MB
- Estimated build time: 0.30 SBU

Inetutils dependencies

Optional

Linux-PAM-0.77[p.66], and tcpwrappers-7.6[p.232]

Installation of Inetutils

Install Inetutils by running the following commands:

```
./configure --prefix=/usr --disable-syslogd \
  --libexecdir=/usr/sbin --infodir=/usr/share/info \
  --sysconfdir=/etc --localstatedir=/var \
  --mandir=/usr/share/man &&
make &&
make install &&
mv /usr/bin/ping /bin
```

Command explanations

`--disable-syslogd`: This switch prevents Inetutils installing a System Log Daemon, which is installed in the LFS Book.

`--with-wrap`: This switch makes Inetutils compile against tcp-wrappers. Add this option if you want to utilize tcp-wrappers.

`--disable-whois`: This switch will prevent Inetutils installing a WhoIs client, since the included whois client is out of date. Add this option if you plan on installing Whois-4.6.14[p.250].

`--with-pam`: This switch makes Inetutils compile against for Linux-PAM. Add this option if you want to utilize PAM.

`--disable-servers`: Some of the servers included with Inetutils are insecure in nature and in some cases better alternative exist. You can choose this switch and enable only the servers you want to avoid installing unneeded servers.

Contents

The Inetutils package contains network clients and servers.

Description

ftp

ftp is a ARPANET file transfer client.

logger

logger make entries in the system log.

ping

ping sends ICMP ECHO_REQUEST packets to network hosts.

rcp

rcp is a remote file copy client.

rlogin

rlogin is a remote login client.

rsh

rsh is a remote shell client.

syslogd

syslogd logs systems messages.

talk

talk allows communication between users.

telnet

telnet is a user interface to the TELNET protocol.

tftp

tftp is a trivial file transfer program.

whois

whois is a client for the whois directory service.

ftpd

ftpd is a DARPA Internet File Transfer Protocol server.

inetd

inetd is a Internet super-server.

rexecd

rexcd is a remote execution server.

rlogind

rlogind is a remote login server.

rshd

rshd is a remote shell server.

talkd

talkd is a remote user communication server.

telnetd

telnetd is a DARPA TELNET protocol server.

tftpd

tftpd is a Internet Trivial File Transfer Protocol server.

uucpd

No description available.

NFS Utilities-1.0.6

Introduction to nfs-utils

The nfs-utils package contains the userspace server and client tools necessary to use the kernel's nfs-abilities. NFS is a protocol that allows sharing disk partitions over the network.

Package information

- Download (HTTP): <http://ftp.kernel.org/pub/linux/utils/nfs/nfs-utils-1.0.6.tar.gz>
- Download (FTP): <ftp://ftp.kernel.org/pub/linux/utils/nfs/nfs-utils-1.0.6.tar.gz>
- Download size: 336 KB
- Estimated Disk space required: 8 MB
- Estimated build time:

nfs-utils dependencies

Required

portmap-5beta[p.234]

Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
File systems:
Network File Systems:
  NFS File System Support: M or Y
  NFS Server Support: M or Y
```

Select the appropriate sub-options that appear when the above options are selected.

Installation of nfs-utils

Before you compile the program, you need to be sure the "nobody" user and "nogroup" group are available. You can add these with the following commands:

```
groupadd -g 65534 nogroup &&
useradd -c nobody -d /home -g nogroup -s /bin/bash -u 65534 nobody
```

Install nfs-utils by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install
```

Note

If your /usr directory is NFS mounted, you should install the executables in /sbin by passing an additional parameter **--sbindir=/sbin** to the above **./configure** command.

Configuring nfs-utils

Server Configuration

`/etc/exports` contains the exported directories on NFS servers. Refer to the exports manual page for the syntax of this file. Also refer to the NFS HowTo available at <http://nfs.sourceforge.net/nfs-howto/> on how to configure the servers and clients in a secure manner. For example, for sharing the `/home` directory over the local network, the following line may be added:

```
/home 192.168.0.0/255.255.0.0(rw)
```

Install the `/etc/rc.d/init.d/nfs-server` init script included in the `blfs-bootscripts-5.1`[p.31] package to start the server at boot.

```
make install-nfs-server
```

Client Configuration

`/etc/fstab` contains the directories that are to be mounted on the client. Alternately the partitions can be mounted by using the **mount** command with the proper options. To mount the `/home` partition, add the following to the `/etc/fstab`:

```
<server-name>:/home /home nfs rw 0 0
```

Install the `/etc/rc.d/init.d/nfs-client` init script included in the `blfs-bootscripts-5.1`[p.31] package to start the client services at boot.

```
make install-nfs-client
```

Contents

The `nfs-utils` package contains **getversion**, **getkversion**, **locktest**, **nlmtest**, **rpcdebug**, **rpcgen**, **exportfs**, **lockd**, **mountd**, **nfsd**, **nfsstat**, **nhfsstone**, **rquotad**, **showmount**, **statd**

Description

getversion

No description available.

getkversion

No description available.

locktest

No description available.

nlmtest

No description available.

rpcdebug

No description available.

rpcgen

No description available.

exportfs

exportfs maintains a list of NFS exported directories.

lockd

lockd is the NFS lock manager.

mountd

mountd is the NFS mount daemon which checks client-permissions.

nfsd

nfsd is the user-space daemon of the NFS service.

nfsstat

nfsstat prints NFS statistics.

nhfsstone

nhfsstone is the NFS benchmark program.

rquotad

rquotad is the remote quota server communicating with the **quota** client.

showmount

showmount shows mount information for an NFS server.

statd

statd is the NFS status monitor which implements the NSM (Network Status Monitor) RPC protocol.

NCPFS-2.2.4

Introduction to NCPFS

The NCPFS package contains client and administration tools for use with Novell networks.

Package information

- Download (HTTP): <http://platan.vc.cvut.cz/ftp/pub/linux/ncpfs/ncpfs-2.2.4.tar.gz>
- Download (FTP): <ftp://platan.vc.cvut.cz/pub/linux/ncpfs/ncpfs-2.2.4.tar.gz>
- Download size: 1.6 MB
- Estimated Disk space required: 30 MB
- Estimated build time: 0.52 SBU

NCPFS dependencies

Optional

Linux-PAM-0.77[p.66] and PHP-4.3.6[p.325]

Installation of NCPFS

Install NCPFS by running the following commands:

```
./configure --prefix="" --includedir=/usr/include \
--mandir=/usr/share/man --datadir=/usr/share &&
make &&
make install &&
make install-dev
```

Command explanations

`--prefix=""`: installs binaries on the root partition so that they are available at boot time. This may not be ideal for all systems. If `/usr` is mounted locally, `--prefix=/usr` may be a better option.

`--includedir=/usr/include`: Tells configure to look in `/usr/include` for header files. It also tells make to install NCPFS's headers here.

`--mandir=/usr/share/man`: installs the man pages in the correct location.

`--datadir=/usr/share`: correctly installs the locale files to `/usr/share`.

Note

If you do not need to use the IPX protocol, or you use a different IPX package, you can optionally pass `--disable-ipx` and/or `--disable-ipx-tools` to the configure script to disable these options.

Configuring NCPFS

Config files

`~/ .nwclient`

Configuration Information

A config file `~/ .nwclient` should be placed in the home directory of each user that intends to use `ncpfs`. The permissions on this file should be set to 600, for obvious security reasons. The configuration file should contain a single

line per server that the user will use. Each line should contain the server name, the user name, and optionally the password. Below is a sample `.nwclient` file.

```
# Begin example ~/.nwclient config file

Server1/User1 Password
Server2/User1
Server2/Guest1 -

# End example .nwclient config file
```

The syntax for the `.nwclient` file is simple, **server_name/user_name password**. Be extremely careful when creating or editing this file as the client utilities are very picky about syntax. There should always be a space immediately after the username. If this space is substituted by a tab or multiple spaces, you will not get the expected results when attempting to use the NCPFS tools. If no password is supplied, the client utilities will ask for a password when it is needed. If no password is needed, for instance when using a guest account, a single '-' should be put in place of a password.

It should be noted that the `ncpmount` is not intended to mount individual volumes because each mount point creates a separate client connection to the Novell server. Mounting each individual volume separately would be unwise, as mounting all volumes on a server under one mount point uses only one client connection.

If you need to set up the IPX protocol at boot, you can install the `/etc/sysconfig/network-devices/services/ipx` network service script included with the `blfs-bootscrips-5.1[p.31]` package.

```
make install-service-ipx
```

Next install the configurations script, `ifconfig.ipx0`. The configuration assumes IPX will be set up on `eth0` and the network frame type is 802.2. You should confirm that these are the correct settings and adjust as necessary.

Note: This will overwrite any existing file.

```
cat > /etc/sysconfig/network-devices/ifconfig.ipx0 << "EOF"
ONBOOT=yes
SERVICE=ipx
IPXDEV=eth0
FRAME=802.2
EOF
```

Contents

- *Client Utilities:* `ncpmount`, `ncpumountt`, `nprintt`, `nsendt`, `nwpasswdt`, `nwsfindt`, `pqlistt`, `pqrmt`, `pqstatt` and `slist`.
- *Server Admin Utilities:* `ncopyt`, `nwbocreatet`, `nwbolst`, `nwbopropst`, `nwbormt`, `nwbpaddt`, `nwbpcreatet`, `nwbprmt`, `nwbpsett`, `nwbpvaluest`, `nwdirt`, `nwdpvaluest`, `nwfsetrlt`, `nwfsinfort`, `nwfstimet`, `nwgrantt`, `nwpurget`, `nwrevoket`, `nwrightst`, `nwtrustet`, `nwtrustee2t`, `nwuserlistt`, and `nwvolinfo`.
- *IPX Interface Utilities:* `ipx_cmdt`, `ipx_configuret`, `ipx_interfacet`, `ipx_internal_net` and `ipx_route`.
- *Other Utilities:* `ncpmap` and `nwauth`.

NTP-4.2.0

Introduction to NTP

The NTP package contains a client and server to keep the time synchronized between various computers over a network. This package is the official reference implementation of the NTP protocol.

Package information

- Download (HTTP): http://www.eecis.udel.edu/~ntp/ntp_spool/ntp4/ntp-4.2.0.tar.gz
- Download (FTP): <ftp://ftp.udel.edu/pub/ntp/ntp4/ntp-4.2.0.tar.gz>
- Download size: 2.4 MB
- Estimated Disk space required: 27 MB
- Estimated build time: 0.53 SBU

NTP dependencies

Optional

readline-4.3[p.125] and OpenSSL-0.9.7d[p.115]

Installation of NTP

Install NTP by running the following commands:

```
./configure --prefix=/usr --bindir=/usr/sbin \
    --sysconfdir=/etc &&
make &&
make install
```

Configuring NTP

Config files

/etc/ntp.conf

Configuration Information

The following configuration file defines various NTP stratum 2 servers with open access from different continents. It also creates a drift file where **ntpd** stores the frequency offset. Since the documentation included with the package is sparse, visit the NTP website at <http://www.ntp.org/> for more information.

```
cat > /etc/ntp.conf << "EOF"
# Africa
server tock.nml.csir.co.za

# Asia
server ntp.shim.org

# Australia
server ntp.saard.net

# Europe
server ntp.tuxfamily.net

# North America
server clock.psu.edu
```

```
driftfile /var/cache/ntp.drift
EOF
```

Synchronizing the time

There are two options. Option one is to use run **ntpd** continuously and allow it to synchronize the time in a gradual manner. The other option is to run **ntpd** periodically (using cron) and update the time each time **ntpd** is scheduled.

If you choose Option one, then install `/etc/rc.d/init.d/ntp` init script included in the `blfs-bootscripts-5.1`[p.31] package.

```
make install-ntp
```

If you prefer to start `ntpd` periodically, add the following command to the root's `crontab`:

```
ntpd -q
```

Contents

The NTP package contains **ntp-wait**, **ntptrace**, **ntpd**, **ntpdate**, **ntpdcc**, **ntpqq**, **ntptime**, **tickadj** and **ntp-keygen**.

Description

ntp-wait

ntp-wait is useful at boot time, to delay the boot sequence until **ntpd** has set the time.

ntptrace

ntptrace traces a chain of NTP servers back to the primary source.

ntpd

ntpd is a NTP daemon that runs in the background and keeps the date and time synchronized based on response from configured NTP servers. It also functions as a NTP server.

ntpdate

ntpdate is a client program that sets the date and time based on the response from an NTP server. This command is deprecated.

ntpdcc

ntpdcc is used to query the NTP daemon about its current state and to request changes in that state.

ntpqq

ntpqq is an utility program used to monitor **ntpd** operations and determine performance.

ntptime

ntptime reads and displays time-related kernel variables.

tickadj

tickadj reads, and optionally modifies, several timekeeping-related variables in older kernels that do not have support for precision timekeeping.

ntp-keygen

ntp-keygen generates cryptographic data files used by the NTPv4 authentication and identification schemes.

Chapter 19. Basic Networking Utilities

This chapter contains some tools that come in handy when the network need some investigating.

Traceroute-1.4a12

Introduction to Traceroute

The Traceroute package contains a program which is used to display the network route that packets take to reach a specified host. This is a standard network troubleshooting tool. If you find yourself unable to connect to another system, traceroute can help pinpoint the problem.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/platform/sun/packages/solaris/freeware/SOURCES/traceroute-1.4a12.tar.gz>
- Download (FTP): <ftp://ftp.ee.lbl.gov/traceroute-1.4a12.tar.gz>
- Download size: 73 KB
- Estimated Disk space required: 464 KB
- Estimated build time: 0.02 SBU

Installation of Traceroute

Install Traceroute by running the following commands:

```
mv Makefile.in Makefile.in.bak &&
sed 's/-o bin/-o root/' Makefile.in.bak > Makefile.in &&
./configure --prefix=/usr &&
make &&
make install &&
make install-man
```

Command explanations

```
sed 's/-o bin/-o root/'...
```

Adjusts the `Makefile` so that the program is installed with user `root` instead of user `bin` (which doesn't exist on a default LFS system).

make install: Installs **traceroute** with UID set to `root` in the `/usr/sbin` directory. This makes it possible for all users to execute **traceroute**. For absolute security, turn off the SUID bit in **traceroute**'s file permissions with the command:

```
chmod 0755 /usr/sbin/traceroute
```

The risk is that if a security problem such as a buffer overflow were ever found in the Traceroute code, a regular user on your system could gain root access if the program is SUID root. Removing the SUID permission of course also makes it impossible for users other than root to utilize **traceroute**, so decide what's right for your individual situation.

Now, to be completely FHS compliant, as is our aim, if you do leave the **traceroute** binary SUID root, then you should move **traceroute** to `/usr/bin` with the following command:

```
mv /usr/sbin/traceroute /usr/bin
```

This ensures that the binary is in the path for non-root users.

Contents

The Traceroute package contains **traceroute**.

Description

traceroute

traceroute does basically what it says: it traces the route your packets take from the host you are working on to another host on a network, showing all the intermediate steps (routers) along the way.

Nmap-3.50

Introduction to Nmap

Nmap is a utility for network exploration and security auditing. It supports ping scanning, port scanning and TCP/IP fingerprinting.

Package information

- Download (HTTP): <http://download.insecure.org/nmap/dist/nmap-3.50.tar.bz2>
- Download (FTP):
- Download size: 1.2 MB
- Estimated Disk space required: 11 MB
- Estimated build time: 0.36 SBU

Nmap dependencies

Optional

OpenSSL-0.9.7d[p.115], PCRE-4.5[p.117], GTK+-1.2.10[p.351] (for building the front-end) and libpcap-0.8.3[p.138]

Installation of Nmap

Install Nmap by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The Nmap package contains **nmap**.

Description

nmap

nmap is a utility for network exploration and security auditing. It supports ping scanning, port scanning and TCP/IP fingerprinting.

Whois-4.6.14

Introduction to Whois

Whois is a client-side application which queries the whois directory service for information pertaining to a particular domain name.

Package information

- Download (HTTP): http://www.linux.it/~md/software/whois_4.6.14.tar.gz
- Download (FTP):
- Download size: 34 KB
- Estimated Disk space required: 328 KB
- Estimated build time: 0.01 SBU

Installation of Whois

Install Whois by running the following commands:

```
make &&  
make prefix=/usr install
```

Contents

The Whois package contains **whois** .

Description

whois

whois is a client-side application which queries the whois directory service for information pertaining to a particular domain name.

BIND Utilities-9.2.3

Introduction to BIND Utilities

BIND Utilities is not a separate package, it is a collection of the client side programs that are included with BIND-9.2.3[p.?]. The BIND package includes client side programs such as **nslookup**, **dig** and **host**. If you install BIND server, these programs will be installed automatically. This section is for those users who don't need the complete BIND server, but need these client side applications.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/infosys/servers/isc/bind9/9.2.3/bind-9.2.3.tar.gz>
- Download (FTP): <ftp://ftp.isc.org/isc/bind9/9.2.3/bind-9.2.3.tar.gz>
- Download size: 4.4 MB
- Estimated Disk space required: 47 MB
- Estimated build time: 0.54 SBU

Installation of BIND Utilities

Install BIND Utilities by running the following commands:

```
./configure --prefix=/usr &&  
make -C lib/dns &&  
make -C lib/isc &&  
make -C bin/dig &&  
make -C bin/dig install
```

Command explanations

```
make -C lib/...
```

Build the libs that are needed for the client programs.

```
make -C bin/dig
```

Build the client programs.

Contents

The BIND Utilities package contains **dig**, **host** and **nslookup**.

Chapter 20. Mail/News Clients

Mail Clients help us retrieve (Fetchmail), sort (Procmail), read and compose responses (Nail, Mutt, Pine, Kmail, Balsa, Evolution, Mozilla) to email.

News clients also help us retrieve, sort, read and compose responses, but these messages travel through USENET (a worldwide bulletin board system) using the Network News Transfer Protocol (NNTP).

Nail-10.7

Introduction to Nail

The Nail package contains a command-line Mail User Agent that is compatible with the **mail** command available in commercial Unix versions. The **mail** command is useful for writing scripts.

Package information

- Download (HTTP): <http://nail.berlios.de/archive/nail-10.7.tar.bz2>
- Download (FTP):
- Download size: 152 KB
- Estimated Disk space required: 3.8 MB
- Estimated build time: 0.10 SBU

Nail dependencies

Optional

OpenSSL-0.9.7d[p.115] and MTA

Installation of Nail

Install Nail by running the following commands. (Note: If you would like Nail to be linked against OpenSSL, add `--with-openssl` to the configure command mentioned below.)

```
./configure --prefix=/usr &&
make &&
make install &&
ln -sf nail /usr/bin/mail
```

Configuring Nail

Config files

/etc/nail.rc

Contents

The Nail package contains **nail**, a program compatible with **mail** found on commercial Unix versions.

Description

nail

nail is a command-line mail user agent.

Procmail-3.22

Introduction to Procmail

The Procmail package contains an autonomous mail processor. This is useful for filtering and sorting incoming mail.

Package information

- Download (HTTP): <http://www.procmail.org/procmail-3.22.tar.gz>
- Download (FTP): <ftp://ftp.procmail.net/pub/procmail/procmail-3.22.tar.gz>
- Download size: 338 KB
- Estimated Disk space required: 1.5 MB
- Estimated build time: 0.38 SBU

Installation of Procmail

Install Procmail by running the following commands:

```
make BASENAME=/usr install &&
make install-suid
```

Command explanations

BASENAME=/usr: The equivalent of *./configure --prefix=/usr* on other package installations.

make install-suid: Modifies permissions of the installed files.

Configuring Procmail

Config files

/etc/procmailrc, ~/.procmailrc

Configuration Information

Recipes have to be written and placed in your *~/.procmailrc* for execution. The *procmailex* man page is the starting place to learn how to write recipes.

Contents

The Procmail package contains **procmail**, **formail**, **lockfile** and **mailstat**.

Description

procmail

procmail is an autonomous mail processor. It performs all the functions of a MDA (Mail Delivery Agent).

formail

formail is a filter that can be used to format mail into mailbox format.

lockfile

lockfile is a utility that can lock a file for single use interactively or in a script.

mailstat

mailstat prints a summary report of mail that has been filtered by **procmail** since the last time **mailstat** was ran.

Fetchmail-6.2.5

Introduction to Fetchmail

The Fetchmail package contains the a mail retrieval program. "It retrieves mail from remote mail servers and forwards it to your local (client) machine's delivery system, so it can then be read by normal mail user agents."

Package information

- Download (HTTP): <http://www.catb.org/~esr/fetchmail/fetchmail-6.2.5.tar.gz>
- Download (FTP): <ftp://gnome.dti.ad.jp/1/unix/net/mail/fetchmail/fetchmail-6.2.5.tar.gz>
- Download size: 1.2 MB
- Estimated Disk space required: 5.8 MB
- Estimated build time: 0.14 SBU

Fetchmail dependencies

Required

OpenSSL-0.9.7d[p.115] and a local MDA (Procmail-3.22[p.253])

Optional

Python-2.3.3[p.185]

Installation of Fetchmail

Install Fetchmail by running the following commands:

```
./configure --prefix=/usr --with-ssl --enable-fallback=procmail &&
make &&
make install
```

Command explanations

`--with-ssl`: This enables SSL if found, so that you can handle connections to secure POP3 and IMAP servers.

`--enable-fallback=procmail`: This tells Fetchmail to hand incoming mail to Procmail for delivery if your port 25 mail server is not present or not responding.

Configuring Fetchmail

Config files

`~/.fetchmailrc`

Configuration Information

```
set logfile /var/log/fetchmail.log
set no bouncemail
set postmaster root

poll SERVERNAME :
    user "username" pass "password";
    mda "/usr/bin/procmail -f %F -d %T";
```

Is an example configuration that should suffice for most people. You can add as many users and servers as you need using

the same syntax.

man fetchmail: Look for the section near the bottom named *CONFIGURATION EXAMPLES* it gives some quick examples too. There are countless other config options once you get used to it.

Contents

The Fetchmail package contains **fetchmail** and **fetchmailconf**.

Description

fetchmail

When executed as a user, this will source that users `~/ .fetchmailrc` and download the appropriate mail.

fetchmailconf

This program provides a Tk GUI interface to your `~/ .fetchmailrc` making it much easier to configure. However you will require, Python, and it must have the Tkinter module available.

Mutt-1.4.2.1i

Introduction to Mutt

The Mutt package contains a Mail User Agent. This is useful for reading, writing, replying, saving, and deleting your email.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/infosys/mail/mutt/mutt-1.4.2.1i.tar.gz>
- Download (FTP): <ftp://ftp.mutt.org/mutt/mutt-1.4.2.1i.tar.gz>
- Download size: 2.6 MB
- Estimated Disk space required: 16.9 MB
- Estimated build time: 0.35 SBU

Mutt dependencies

Optional

GnuPG-1.2.4[p.80]

Installation of Mutt

Mutt requires a group named 'mail'. You can add this group, if it does not exist, with this command:

```
groupadd mail
```

If you did not install a MTA, such as Postfix-2.1.0[p.265] or Sendmail-8.12.10[p.268], you need to modify the ownership of `/var/mail` with this command:

```
chgrp mail /var/mail
```

Install Mutt by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc`: This installs the configuration files into `/etc` instead of `/usr/etc`.

Configuring Mutt

Config files

`/etc/Muttrc`, `~/.muttrc`, `/etc/mime.types`, `~/.mime.types`

Configuration Information

No changes in these files are necessary to begin using Mutt. When you are ready to make changes, the man page for `muttrc` is a good starting place.

In order to utilize GnuPG, use the following command:

```
cat /usr/share/doc/mutt/samples/gpg.rc >> ~/.muttrc
```


Contents

The Mutt package contains **mutt**, **flea**, **muttbug**, **mutt_dotlock**, **pgpwrap** and **pgpring**.

Description

mutt

mutt is a Mail User Agent (MUA) which enables you to read, write and delete your email.

flea

flea is a bug submitter for Mutt.

muttbug

muttbug is a script that executes **flea**.

mutt_dotlock

mutt_dotlock implements the mail spool file lock.

Pine-4.58

Introduction to Pine

The Pine package contains the Pine Mail User Agent and several server daemons for various mail protocols, in addition to some nice file and directory editing/browsing programs.

Package information

- Download (HTTP): <http://mirror.sit.wisc.edu/pub/net/mail/pine/pine4.58.tar.bz2>
- Download (FTP): <ftp://ftp.cac.washington.edu/pine/pine4.58.tar.bz2>
- Download size: 2.7 MB
- Estimated Disk space required: 60 MB
- Estimated build time: 0.73 SBU

Additional downloads

- Recommended patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/pine-4.58-fhs-2.patch>

Pine dependencies

Required

OpenSSL-0.9.7d[p.115]

Optional

OpenLDAP-2.1.30[p.302] and MIT krb5-1.3.3[p.91]

Installation of Pine

Install Pine by running the following commands:

```
patch -Np1 -i ../pine-4.58-fhs-2.patch &&
./build DEBUG=-O MAILSPOOL=/var/mail \
    SSLDIR=/usr SSLCERTS=/etc/ssl/certs slx &&
cp doc/{pine,pico,rpdump,rpload}.1 /usr/share/man/man1 &&
cd bin &&
install pine imapd ipop2d ipop3d mailutil mtest pico \
    pilot rpdump rpload /usr/bin
```

Command explanations

patch -Np1 -i ../pine-4.58-fhs.patch: This patch will make Pine use `/etc` for configuration files.

The build procedure for Pine is somewhat unusual, in that options usually passed as `./configure` options or housed in `$CFLAGS` must all be passed on the command line to the `./build` script.

./build slx: Pine offers quite a few target platforms, `slx` specifies Linux using `-lcrypt` to get the crypt function. See the `doc/pine-ports` file for more information and other authentication options.

DEBUG=-O: This flag compiles an optimized version of **pine** and **pico** that produces no debug files.

MAILSPOOL=/var/mail: Location of mail spool files, `/var/mail`.

SSLDIR=/usr SSLCERTS=/etc/ssl/certs: Location of OpenSSL files.

```
cd bin &&
install pine imapd ipop2d ipop3d mailutil mtest pico \
    pilot rpdump rpload /usr/bin
```

This installs Pine.

Configuring Pine

Config files

`~/.pinerc`

Configuration Information

The **pine** executable needs no global configuration to use. Users set Pine options in `~/.pinerc` using an internal configuration menu.

Contents

The Pine package contains **pine**, **pico**, **pilot**, **imapd**, **ipop2d**, **ipop3d**, **mtest**, **rpload** and **rpdump**.

Description

pine

pine is the Pine mail user agent.

pico

pico is a stand-alone editor, similar to the Pine internal message composer.

pilot

pilot is a file and directory navigator and browser.

imapd

imapd is the IMAP server daemon.

ipop2d

ipop2d is an IMAP to POP2 conversion server.

ipop3d

ipop3d is an IMAP to POP3 conversion server.

mtest

mtest is a minimal IMAP mail user agent, used for debugging.

rpload

rpload is the Pine remote data utility, used to convert local Pine configuration files or address books into remote configurations or address books.

rpdump

rpdump is used to copy data from remote Pine configuration files or address books into a local file.

slrn-0.9.8.0

Introduction to slrn

slrn is a slang-based news reader, capable of reading local news spools as well as groups from an NNTP server. Small local news spools can also be created with the use of the slrnpull program included in the slrn distribution.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/slrn/slrn-0.9.8.0.tar.bz2>
- Download (FTP): <ftp://ftp.fh-heilbronn.de/pub/mirrors/slrn/slrn-0.9.8.0.tar.bz2>
- Download size: 972 KB
- Estimated Disk space required: 9.3 MB
- Estimated build time: 0.19 SBU

slrn dependencies

Required

slang-1.4.9[p.119] and MTA (See Chapter 21, *Mail Server Software*[p.265])

Optional

OpenSSL-0.9.7d[p.115]

Installation of slrn

Install slrn by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
    --with-slrnpull &&
make LDFLAGS="-ldl" &&
make install
```

Command explanations

`./configure --prefix=/usr`: Specify `/usr` to install to instead of `/usr/local`.

`./configure --with-slrnpull`: Build the slrnpull executable.

Configuring slrn

Config files

`/etc/slrn.rc`, `~/.slrnrc`

Configuration Information

The first time **slrn** is run, the `~/.jnewsrsrc` file must be created. For this configuration to work, you must have an environmental variable, `NNTPSERVER`, set. In normal operation it would be exported into the environment by a startup file, like `/etc/profile` or `~/.bashrc`. Here we will just put it into the environment of the configuration step. We will use the LFS news server in this example, but you should use whatever server you prefer.

Create the `~/.jnewsrsrc` file with the following command:

```
NNTPSERVER=news.linuxfromscratch.org \
slrn -f ~/.jnewsrsrc --create
```

You will also have to edit one of the configuration files. There is a sample startup `/usr/share/doc/slrn/slrn.rc` file that comes with slrn. It is extensively documented but if you need more information, look at the slrn website.

Contents

The slrn package contains **slrn** and **slrnpull**.

Description

slrn

slrn is the slang-based news reader.

slrnpull

slrnpull is used to pull a small news feed from an NNTP server for offline reading.

Other Mail and News programs

Pan-0.14.2[p.528] is an GTK2 based newsreader program.

KNode is a Qt based newsreader program from the section called “kdepim-3.2.2”[p.383].

KMail is a Qt based mail client from the section called “kdepim-3.2.2”[p.383].

Balsa-2.0.15[p.529] is an GTK2 based mail client.

Mozilla-1.6[p.517] includes both a mail client and newsreader in its installation.

MozillaThunderbird-0.5[p.526] is a mail/news client based on the Mozilla code base.

Evolution-1.4.5[p.510] includes an GTK2 based mail client.

Part VI. Server Networking

Chapter 21. Mail Server Software

MTAs are the programs which transport mail from one machine to the other. The traditional MTA is **sendmail** however there are several other choices.

As well as SMTP servers there is a POP server (qpopper) and an IMAP server (Courier-IMAP).

Postfix-2.1.0

Introduction to Postfix

The Postfix package contains a Mail Transport Agent (MTA). This is useful for sending email to other users of your host machine. It can also be configured to be a central mail server for your domain, a mail relay agent or simply a mail delivery agent to your local Internet Service Provider (ISP).

Package information

- Download (HTTP): <http://ftp.uni-koeln.de/mail/postfix-2.1.0.tar.gz>
- Download (FTP): <ftp://ftp.porcupine.org/mirrors/postfix-release/official/postfix-2.1.0.tar.gz>
- Download size: 2.0 MB
- Estimated Disk space required: 82.1 MB
- Estimated build time: 0.29 SBU

Postfix dependencies

Required

Berkeley DB-4.2.52.2[p.312]

Optional

Cyrus SASL

Installation of Postfix

Before you compile the program, you need to create users and groups that will be expected to be in place when the install script executes. Add the users and groups with the following commands:

```
groupadd postfix &&
groupadd postdrop &&
groupadd -g 65534 nogroup &&
useradd -c postfix -d /dev/null -g postfix -s /bin/false postfix &&
useradd -c nobody -d /home -g nogroup -s /bin/bash -u 65534 nobody &&
chown postfix:postfix /var/mail
```

Install postfix by running the following commands:

```
make &&
sh postfix-install daemon_directory=/usr/sbin \
manpage_directory=/usr/share/man \
sample_directory=/usr/share/doc/postfix \
-non-interactive
```

The final installation step is to install the program's documentation with this command:

```
install -d /usr/share/doc/postfix &&
cp -rf html/* /usr/share/doc/postfix
```


Command explanations

sh postfix-install ... -non-interactive : We don't want the install script to ask any questions so we call it with a non-interactive switch and accept default destination directories in all but three cases.

Configuring Postfix

Config files

/etc/aliases, /etc/postfix/main.cf and /etc/postfix/master.cf

Configuration Information

```
cat > /etc/aliases << "EOF"
# Begin /etc/aliases

MAILER-DAEMON:    postmaster
postmaster:       root

root:             LOGIN
# End /etc/aliases
EOF
```

The /etc/aliases file that was just created, the main.cf and the master.cf must be personalized for your system. The aliases file needs your non-root login identity so mail addressed to root can be forwarded to you at the user level. The main.cf file needs your fully qualified hostname. All of these edits can be done with sed commands entered into the console with appropriate substitutions of your non-root login name for *[user]* and your fully qualified hostname for *[localhost.localdomain]*. You will find the main.cf file is self documenting, so load it into your editor to make the changes you need for your situation.

```
cp /etc/aliases /etc/aliases.bak &&
cp /etc/postfix/main.cf /etc/postfix/main.cf.bak &&
sed "s/LOGIN/[user]/" /etc/aliases.bak > /etc/aliases &&
sed "s/#myhostname = host.domain.tld/myhostname = \
    [localhost.localdomain]/" \
    /etc/postfix/main.cf.bak > /etc/postfix/main.cf &&
/usr/bin/newaliases &&
/usr/sbin/postfix start
```

Postfix init.d script

To automate the running of Postfix at startup, install /etc/rc.d/init.d/postfix init script included in the blfs-bootscrips-5.1[p.31] package.

```
make install-postfix
```

Contents

The Postfix package contains bounce, cleanup, error, flush, lmtp, local, mailq, master, newaliases, nqmgr, pickup, pipe, postalias, postcat, postconf, postdrop, postfix, postkick, postlock, postlog, postmap, postqueue, postsuper, qmgr, qmqpd, sendmail, showq, smtp, smtpd, spawn, trivial-rewrite, and virtual.

Description

postfix

postfix is the program that starts and stops the mail delivery system.

master

master is the resident process that runs `bounce`, `cleanup`, `error`, `flush`, `lmtp`, `local`, `nqmgr`, `pickup`, `pipe`, `qmgr`, `qmqpd`, `showq`, `smtp`, `smtpd`, `spawn`, `trivial-rewrite` and `virtual` on demand. These programs are not designed to work as user commands.

postqueue

postqueue implements the Postfix user interface for queue management. It implements all the operations that are traditionally available via the **sendmail** command.

sendmail

sendmail implements the Postfix to Sendmail compatibility interface. `mailq` and `newaliases` are symlinks to **sendmail**.

showq

showq will emulate the `mailq` command when the Postfix mail system is not running.

postsuper

postsuper does maintenance jobs on the Postfix queue.

postalias

postalias creates, queries or updates Postfix alias databases.

postcat

postcat prints the contents of a Postfix queue file in human-readable form.

postconf

postconf prints or changes the value of configuration parameters.

postdrop

postdrop creates a file in the `maildrop` directory and copies its standard input to the file.

postkick

postkick makes the mail system private IPC accessible for use in shell scripts.

postlock

postlock locks a file for exclusive access and executes a command on that file.

postlog

postlog implements a logging interface for use in shell scripts.

postmap

postmap creates, queries or updates Postfix lookup tables.

Sendmail-8.12.10

Introduction to Sendmail

The Sendmail package contains a Mail Transport Agent (MTA).

Package information

- Download (HTTP): <http://www.sendmail.org/ftp/sendmail.8.12.10.tar.gz>
- Download (FTP): <ftp://ftp.sendmail.org/pub/sendmail/sendmail.8.12.10.tar.gz>
- Download size: 1.8 MB
- Estimated Disk space required: 13 MB
- Estimated build time: 0.43 SBU

Sendmail dependencies

Required

Berkeley DB-4.2.52.2[p.312] and Procmail-3.22[p.253]

Installation of Sendmail

Before building Sendmail, we need to create users, groups and directories that sendmail uses with the following commands:

```
groupadd smmsp &&
groupadd mail &&
useradd -g smmsp -G mail smmsp &&
chmod 1777 /tmp &&
chmod 1777 /var/mail &&
mkdir /var/spool/mqueue
```

Install Sendmail with the following commands:

```
cat > devtools/Site/site.config.m4 << "EOF"
define(`confMANGRP',`root')
define(`confMANOWN',`root')
define(`confSBINGRP',`root')
define(`confUBINGRP',`root')
define(`confUBINOWN',`root')
EOF
cd sendmail &&
sh Build &&
cd ../cf/cf &&
cp generic-linux.mc sendmail.mc &&
mkdir /etc/mail &&
sh Build sendmail.mc &&
sh Build install-cf &&
cd ../../ &&
sh Build install
```

Configuring Sendmail

Config files

/etc/mail/*

Configuration Information

```
echo `hostname` > /etc/mail/local-host-names
cat > /etc/mail/aliases << "EOF"
postmaster: root
MAILER-DAEMON: root
EOF
cp -R cf/* /etc/mail &&
cp cf/cf/{submit,sendmail}.mc /etc/mail &&
newaliases -v
```

To automate the running of Sendmail at startup, install `/etc/rc.d/init.d/sendmail` init script included in the `blfs-bootscripts-5.1[p.31]` package.

```
make install-sendmail
```

Note

The `-qNm` option to **sendmail**, where `N` is number of minutes, controls how often Sendmail will process the mail queue. A default of 5 minutes is used in the init script. Individual workstation users may want to set this as low as 1 minute, large installations handling more mail will want to set it higher.

Contents

The Sendmail package contains **mail.local**, **rmail**, **smrsh**, **editmap**, **makemap**, **mailq**, **newaliases**, **sendmail**, **vacation**, **praliases** and **mailstats**.

Description

mail.local

mail.local appends its standard input to a user's mail file.

rmail

rmail interprets incoming mail received via UUCP.

smrsh

smrsh is a restricted shell for Sendmail.

editmap

editmap queries and edits Sendmail map files.

makemap

makemap creates Sendmail map files.

mailq

mailq prints a summary of waiting mail messages.

newaliases

newaliases rebuilds `/etc/mail/aliases.db`.

sendmail

sendmail is the Sendmail mail transport agent.

vacation

vacation is an email auto responder.

praliases

praliases displays current Sendmail aliases.

mailstats

mailstats displays Sendmail statistics.

Exim-4.24

Introduction to Exim

The Exim package contains a Mail Transport Agent written by the University of Cambridge, released under the GNU Public License.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/infosys/mail/exim/exim4/exim-4.24.tar.bz2>
- Download (FTP): <ftp://ftp.exim.org/pub/exim/exim4/exim-4.24.tar.bz2>
- Download size: 1.2 MB
- Estimated Disk space required: 11 MB
- Estimated build time: 0.27 SBU

Exim dependencies

Required

Berkeley DB-4.2.52.2[p.312]

Optional

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), OpenLDAP-2.1.30[p.302], MySQL-4.0.20[p.316], tcpwrappers-7.6[p.232] and Linux-PAM-0.77[p.66]

Installation of Exim

Before building Exim, we need to create the group and user `exim` which will run the `exim` daemon:

```
groupadd exim &&
useradd -d /dev/null -g exim -s /bin/false exim
```

Install Exim with the following commands:

```
sed -e 's/^BIN_DIR.*$/BIN_DIRECTORY=\/usr\/sbin/' src/EDITME | \
sed -e 's/^CONF.*$/CONFIGURE_FILE=\/etc\/exim.conf/' | \
sed -e 's/^EXIM_USER.*$/EXIM_USER=exim/' | \
sed -e 's/^EXIM_MONITOR/#EXIM_MONITOR/' > Local/Makefile &&
make &&
make install &&
cp doc/exim.8 /usr/share/man/man8 &&
ln -s exim-4.24-1 /usr/sbin/exim &&
ln -s exim /usr/sbin/sendmail
```

Command explanations

sed -e ... > Local/Makefile: Many of Exim's configuration options are compiled in. Here, we specify the minimum set of options, `BIN_DIRECTORY`, `CONFIGURE_FILE` and `EXIM_USER`. We also defer building the Exim monitor program, which requires the X Window System support, by commenting out the `EXIM_MONITOR` line in the `Makefile`.

ln -s exim /usr/sbin/sendmail: Create a link to `sendmail` for applications which need it. Exim will accept most Sendmail command-line options.

Configuring Exim

Config files

```
/etc/exim.conf, /etc/aliases
```

Configuration Information

Create the Exim configuration files with the following commands:

```
cat >> /etc/aliases << "EOF"
postmaster: root
MAILER-DAEMON: root
EOF
exim -v -bi &&
/usr/sbin/exim -bd -qlm
```

Note

To protect an existing `/etc/aliases` file, we will append these aliases to it if it exists. This file should be checked and duplicate aliases removed, if present.

To automate the running of exim at startup, install `/etc/rc.d/init.d/exim` init script included in the `blfs-bootscripts-5.1[p.31]` package.

```
make install-exim
```

Contents

The Exim package contains `exim`, `exim_dumpdb`, `exim_fixdb`, `exim_tidydb`, `exinext`, `exiwhat`, `exim_dbmbuild`, `exicyclog`, `exigrep`, `eximstats`, `exiqsumm`, `exiqgrep`, `exim_lock` and `exim_checkaccess`.

Description

exim

`exim` is the Mail Transport Agent daemon.

exim_dumpdb

`exim_dumpdb` writes the contents of exim databases to the standard output.

exim_fixdb

`exim_fixdb` modifies data in exim databases.

exim_tidydb

`exim_tidydb` removes old records from exim databases.

exinext

`exinext` queries remote host retry times.

exiwhat

`exiwhat` queries running exim processes.

exim_dbmbuild

`exim_dbmbuild` creates and rebuilds exim databases.

exicyclog

exicyclog cycles exim log files.

exigrep

exigrep searches exim log files.

eximstats

eximstats generates mail statistics from exim log files.

exiqsumm

exiqsumm produces a summary of the messages on the mail queue.

exiqgrep

exiqgrep is an utility for selective queue listing.

exim_lock

exim_lock locks a mailbox file.

exim_checkaccess

exim_checkaccess states whether a given recipient address from a given host is acceptable or not.

Qpopper-4.0.5

Introduction to Qpopper

The Qpopper package contains a POP3 mail server.

Package information

- Download (HTTP): <http://ftp.uni-koeln.de/mail/qpopper4.0.5.tar.gz>
- Download (FTP): <ftp://ftp.qualcomm.com/eudora/servers/unix/popper/qpopper4.0.5.tar.gz>
- Download size: 2.2 MB
- Estimated Disk space required: 9.0 MB
- Estimated build time: 0.13 SBU

Qpopper dependencies

Required

MTA

Optional

OpenSSL-0.9.7d[p.115], GDBM-1.8.3[p.127], Linux-PAM-0.77[p.66] and MIT krb5-1.3.3[p.91]

Installation of Qpopper

Install Qpopper with the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Configuring Qpopper

Configuration Information

If you use **inetd**, the following command will add the qpopper entry to `/etc/inetd.conf`:

```
echo "pop3 stream tcp nowait root /usr/sbin/popper popper" >> \
/etc/inetd.conf &&
killall inetd || inetd &&
echo "local0.notice;local0.debug /var/log/POP.log" >> \
/etc/syslog.conf &&
killall -HUP syslogd
```

Issue a **killall -HUP inetd** to reread the changed `inetd.conf` file.

If you use **xinetd**, the following command will add the qpopper entry to `/etc/xinetd.conf`:

```
cat >> /etc/xinetd.conf << "EOF"
service pop3
{
    port                = 110
    socket_type         = stream
    protocol            = tcp
    wait               = no
    user               = root
    server             = /usr/sbin/popper
    EOF
```

```
}  
EOF
```

Issue a **killall -HUP xinetd** to reread the changed `xinetd.conf` file.

Contents

The Qpopper package contains **popper**.

Description

popper

popper is the POP3 server daemon.

Courier-0.45.5

Introduction to Courier

The Courier package contains a Mail Transport Agent (MTA). This is useful for sending email to other users of your host machine. It can also be configured to be a central mail server for your domain or a mail relay agent. The Courier packages also includes a web-based email interface, IMAP, IMAP-SSL, POP3, and POP3-SSL.

Package information

- Download (HTTP): <http://osdn.dl.sourceforge.net/sourceforge/courier/courier-0.45.5.tar.bz2>
- Download (FTP):
- Download size: 4.2 MB
- Estimated Disk space required: 114 MB
- Estimated build time: 3.00 SBU

Courier dependencies

Required

GDBM-1.8.3[p.127]

Optional

MySQL-4.0.20[p.316] or PostgreSQL-7.4.2[p.318], Linux-PAM-0.77[p.66], OpenSSL-0.9.7d[p.115], FAM-2.7.0[p.120], OpenLDAP-2.1.30[p.302], Apache-2.0.49[p.322], ispell-3.2.06.epa7[p.133] or aspell-0.50.5[p.132], GnuPG-1.2.4[p.80], Expect, Netpbm and Mgetty+Sendfax

Installation of Courier

Before you compile the program, you need to create users and groups that will be expected to be in place when the install script executes. Add the users and groups with the following commands:

```
groupadd courier &&
useradd -c 'Courier Mail Server' -d /dev/null -g courier -s /bin/false courier
```

You also need to create a bin user. If you already have a user named bin this step can be safely ignored.

```
useradd -c 'bin' -d /dev/null -g bin -u 1 bin
```

This creates a `/var/run/courier` directory where all the Courier MTA pid files will exist. This will allow `courierfilter.pid` to be created. Without the **courierfilter** running the Courier MTA will not work. Issue the following commands to create `/var/run/courier`:

```
mkdir /var/run/courier &&
chown courier:courier /var/run/courier
```

Install courier by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/lib/courier \
  --datadir=/usr/share/courier --sysconfdir=/etc/courier \
  --localstatedir=/var/lib/courier --with-piddir=/var/run/courier \
  --disable-root-check --with-mailuser=courier --with-mailgroup=courier \
  --with-paranoid-smtpext --disable-autorenamesent \
  --enable-workarounds-for-imap-client-bugs --with-db=gdbm &&
make &&
make install &&
make install-configure
```

Command explanations

`--libexecdir=/usr/lib/courier`: Specifies the directory which contains programs and libraries that cannot be directly executed from the command-line.

`--datadir=/usr/share/courier`: Specifies the directory where miscellaneous shell scripts, Perl scripts, and data files will be installed.

`--localstatedir=/var/spool/courier`: Specifies the directory that will hold the mail queue, and other temporary data.

`--with-piddir=/var/run/courier`: Specifies the directory where Courier's PID files are stored when Courier is active.

`--disable-root-check`: Allows Courier to be built as the root user.

`--with-mailuser=courier`: All except two Courier daemons run as a non-privileged user. This option specifies the userid that Courier will install and run as.

`--with-mailgroup=courier`: like `--with-mailuser`, but specifies the group ID.

`--with-paranoid-smtpext`: Be paranoid when negotiating Courier-specific ESMTP extensions with remote servers. The Courier mail server defines and implements certain experimental ESMTP extensions: XVERP and XEXDATA. Problems may result in the event that someone else uses the same name to implement some other extension. If this option is specified, Courier's ESMTP server will also advertise a dummy ESMTP capability called XCOURIEREXTENSIONS, and will not recognize any Courier-specific extensions unless the remote mail server also advertises this dummy ESMTP capability.

`--disable-autorenamesent`: Do not rename the Sent folder every month. This option can also be controlled by the `SQWEBMAIL_AUTORENAMESENT` environment variable.

`--enable-workarounds-for-imap-client-bugs`: There are several confirmed bugs in some IMAP clients that do not properly implement the IMAP4rev1 protocol. This option enables some workarounds for those buggy IMAP clients. NOTE: **make check** will fail if this option is used. You should first configure without this option, and if all post-configuration tests succeed, rerun configure with this option and recompile.

`--with-db=gdbm`: Courier requires either the GDBM or the DB database library. GDBM is used if both are present. This option forces the selection of the GDBM database library since support for DB is broken at the current state.

`--with-ispell=/usr/bin/aspell`: Courier's webmail server can use spell checking, if **configure** finds ispell or if you explicitly set the location of aspell.

`--enable-mimetypes=[location of mime.types file]`: Use this switch if you receive an error saying that the `mime.types` file could not be found.

Configuring Courier

Config files

`/etc/courier/*`

Configuration Information

Make the following changes in `/etc/courier/authmysqlrc` file if you are utilizing MySQL:

<code>MYSQL_SERVER</code>	<code>localhost</code>
<code>MYSQL_USERNAME</code>	<code>courier</code>
<code>MYSQL_PASSWORD</code>	<code>[your choice]</code>
<code>MYSQL_SOCKET</code>	<code>/tmp/mysql.sock</code>
<code>MYSQL_PORT</code>	<code>3306</code>
<code>MYSQL_DATABASE</code>	<code>courier_mail</code>

```

MYSQL_USER_TABLE      users
MYSQL_CLEAR_PWFIELD    clear
DEFAULT_DOMAIN         [your domain]
MYSQL_QUOTA_FIELD      quota

```

If you utilize PAM:

```

cat > /etc/pam.d/esmtp << "EOF
# Begin /etc/pam.d/esmtp

auth            required                    pam_unix.so try_first_pass
account         required                    pam_unix.so
session         required                    pam_unix.so

# End /etc/pam.d/esmtp
EOF
cat > /etc/pam.d/pop3 << "EOF
# Begin /etc/pam.d/pop3

auth            required                    pam_unix.so try_first_pass
account         required                    pam_unix.so
session         required                    pam_unix.so

# End /etc/pam.d/pop3
EOF
cat > /etc/pam.d/imap << "EOF
# Begin /etc/pam.d/imap

auth            required                    pam_unix.so try_first_pass
account         required                    pam_unix.so
session         required                    pam_unix.so

# End /etc/pam.d/imap
EOF
cat > /etc/pam.d/webmail << "EOF
# Begin /etc/pam.d/webmail

auth            required                    pam_unix.so try_first_pass
account         required                    pam_unix.so
session         required                    pam_unix.so

# End /etc/pam.d/webmail
EOF

```

Connect to the MySQL database:

```
mysql -p
```

This command will create the database for authentication:

```

CREATE DATABASE courier_mail;
USE courier_mail

```

This command will setup the table users for the courier_mail database:

```

CREATE TABLE users (
  id          char(128) DEFAULT '' NOT NULL,
  crypt       char(128) DEFAULT '' NOT NULL,
  clear       char(128) DEFAULT '' NOT NULL,
  name        char(128) DEFAULT '' NOT NULL,
  uid         int(10) unsigned DEFAULT '65534' NOT NULL,
  gid         int(10) unsigned DEFAULT '65534' NOT NULL,

```

```
home          char(255) DEFAULT '' NOT NULL,
quota         char(255) DEFAULT '' NOT NULL,
KEY id (id(128))
);
```

This will add the courier user that we specified earlier in the `/etc/courier/authmysqlrc` file:

```
GRANT ALL PRIVILEGES ON *.* TO courier@localhost IDENTIFIED BY '[password]' WITH GRANT OPTION;
QUIT
```

General Settings for Mail

You will need to create the following files with the contents specified.

`/etc/courier/defaultdomain`

```
cat > /etc/courier/defaultdomain << "EOF"
[yourdomain]
EOF
```

`/etc/courier/me`

```
cat > /etc/courier/me << "EOF"
[servername.yourdomain]
EOF
```

`/etc/courier/locals`

```
cat > /etc/courier/locals << "EOF"
localhost
[yourdomain]
EOF
```

`/etc/courier/esmtpacceptmailfor.dir/system`

```
cat > /etc/courier/esmtpacceptmailfor.dir/system << "EOF"
localhost
[yourdomain]
EOF
```

You will also need to edit the aliases file and change the following entry.

`/etc/courier/aliases/system`

```
postmaster: [your administrator email]
```

If you want to deny access from some hosts from sending mail you will need to edit the `/etc/courier/smtpaccess/default`.

After the above steps are completed you will need to run the following commands:

```
makesmtpaccess &&
makehosteddomains &&
makealiases
```

SMTP/SMTMP-SSL Configuration

This section will enable the SMTP Server from Courier

`/etc/courier/esmtpd`

```
ESMTPDSTART=YES
```

```
/etc/courier/esmtpd-ssl
```

```
ESMTPDSSLSTART=YES
```

POP3/POP3-SSL Configuration

This section will enable the POP3 Server from Courier

```
/etc/courier/pop3d
```

```
POP3DSTART=YES
```

```
/etc/courier/pop3d-ssl
```

```
POP3DSSLSTART=YES
```

IMAP/IMAP-SSL Configuration

This section will enable the IMAP Server from Courier

```
/etc/courier/imapd
```

```
IMAPDSTART=YES
```

```
/etc/courierd/imapd-ssl
```

```
IMAPDSSLSTART=YES
```

Creating Mail directories for System Users

This section will explain on how to create MailDirs for your system users.

```
cd /home/[username] &&  
maildirmake Maildir &&  
chown [username].[username] Maildir -R
```

Setup for Virtual users

This section will explain how to setup Maildir for your virtual users.

```
groupadd -g 9000 vmailman &&  
useradd -c 'Virtual Mailman' -g vmailman -m -k /dev/null -u 9000 vmailman
```

Now to setup the Maildir for these virtual users.

```
cd /home/vmailman &&  
mkdir [virtual_user] &&  
cd [virtual_user] &&  
maildirmake Maildir &&  
chown vmailman.vmailman Maildir -R
```

Connect to the MySQL database.

```
mysql -u courier -p
```

To add the virtual user you need to enter at least one version of the password either clear text or encrypted.

```
USE courier_mail
INSERT INTO users VALUES (
'[virtual_users]@[domain.com]',
'[encrypted password or blank]',
'[clear text password or blank]',
'[User's Name]',
9000,
9000,
'[location of Maildir]',
'[Quota in Bytes]'
);
QUIT
```

For example:

```
INSERT INTO users VALUES (
'blfsuser@linuxfromscratch.org',
'',
'password',
'BLFS User',
9000,
9000,
'/home/vmailman/blfsuser',
''
);
```

Setup for Web-based Email

This section will explain how to setup Courier Web-based email system.

You will need to copy the webmail file from `/usr/lib/courier/courier/webmail` to your `cgi-bin` directory of your Apache server.

```
cp -a /usr/lib/courier/courier/webmail/webmail /var/www/cgi-bin
```

You will then need to copy the images to a directory under your `htdocs` directory of your Apache server. The directory needs to be named `webmail` or you need to specify it during the configure phase with `--enable-imageurl=[URL]`.

```
cp -a /usr/share/courier/sqwebmail/images /var/www/htdocs/webmail
```

Setup for Web-based Email

This section will explain how to setup Courier Web-based administration system.

You will need to copy the webadmin file from `/usr/lib/courier/courier/webmail` to your `cgi-bin` directory of your Apache server.

```
cp -a /usr/lib/courier/courier/webmail/webadmin /var/www/cgi-bin
```

```
/etc/courier/webadmin/password
```

```
cat > /etc/courier/webadmin/password << "EOF"
[password]
EOF
```

If you are not using SSL on your Apache server, you will need to add `/etc/courier/webadmin/unsecureok`, so you will be able to use your web based administration tool.

```
touch /etc/courier/webadmin/unsecureok
```


Courier init.d script

The startup script from the Courier package is the easiest to use. It will automatically create missing data files, and SSL certificates if they are missing. To install the init.d file for Courier you will need to use the follow commands:

```
cp /usr/src/courier-0.45.5/courier.sysvinit /etc/rc.d/init.d/courier &&
chmod 755 /etc/rc.d/init.d/courier
```

Create the symbolic links to this file in the relevant `rc.d` directory with the following commands:

```
cd /etc/rc.d/init.d &&
ln -sf ../init.d/courier ../rc0.d/K25courier &&
ln -sf ../init.d/courier ../rc1.d/K25courier &&
ln -sf ../init.d/courier ../rc2.d/K25courier &&
ln -sf ../init.d/courier ../rc3.d/S35courier &&
ln -sf ../init.d/courier ../rc4.d/S35courier &&
ln -sf ../init.d/courier ../rc5.d/S35courier &&
ln -sf ../init.d/courier ../rc6.d/K25courier
```

Contents

The Courier package contains **addcer**, **authenurate**, **cancelmsg**, **courier**, **courier-config**, **courieresmtpd**, **courierfilter**, **courierldaliasd**, **courierlogger**, **courierlm**, **couriertcpd**, **couriertls**, **deliverquota**, **dotforward**, **esmtpd**, **esmtpd-msa**, **esmtpd-ssl**, **filterctl**, **imapd**, **imapd**, **imapd-ssl**, **lockmail**, **mailbot**, **maildiracl**, **maildirkw**, **maildirmake**, **maildrop**, **makeacceptmailfor**, **makealiases**, **makedat**, **makehosteddomains**, **makemime**, **makepercentrelay**, **makesmtpaccess**, **makesmtpaccess-msa**, **makeuserdb**, **makeuucpneighbors**, **mimepgg**, **mkesmtpdcert**, **mkimapdcert**, **mkpop3dcert**, **pop3d**, **pop3d-ssl**, **preline**, **pw2userdb**, **reformail**, **reformime**, **rmail**, **sendmail**, **sharedindexinstall**, **sharedindexsplit**, **showconfig**, **showmodules**, **testmxlookup**, **userdb**, **userdbpw**, **vchkpw2userdb** and **webpgg**.

Description

cancelmsg

cancelmsg removes a message from the mail queue.

courier

courier is a modular multi-protocol E-mail transport agent. The **courier** command is an administrative command, and most of its options are only available to the superuser.

courierfilter

courierfilter command installs or uninstalls global mail filters. Global mail filters are used to selectively block unwanted mail.

courierlm

courierlm is the Courier mailing list manager.

filterctl

filterctl command installs or uninstalls global mail filters. Global mail filters are used to selectively block unwanted mail.

lockmail

lockmail is a helper utility for working with mailbox files..

mailbot

mailbot reads an E-mail message on standard input and creates an E-mail message replying to the original message's sender..

maildirkw

maildirkw modifies Courier-IMAP compatible maildir message keywords.

maildrop

maildrop is a replacement local mail delivery agent that includes a mail filtering language.

makeacceptmailfor

makeacceptmailfor Build a list of domains to accept mail for from the `/etc/courier/esmtpacceptmailfor.dir` directory.

makealiases

makealiases Build a list of aliases from `/etc/courier/aliases` or `/etc/courier/aliasdir` directories.

makehosteddomains

makehosteddomains Build a database of hosted domains from `hosteddomains` .

makepercentrelay

makepercentrelay Build a list of %-relayed domains from `percentrelay.dir` directory.

makesmtpaccess

makesmtpaccess Build ESMTP server access file from `/etc/courier/smtpaccess` directory.

makesmtpaccess-msa

makesmtpaccess-msa Build ESMTP server access file from `/etc/courier/smtpaccess` directory. This esmtp list is for the MSA protocol.

makeuucpneighbors

makeuucpneighbors Builds a list of UUCP recipient's using `/etc/courier/uucpneighbors` .

reformail

reformail program reads a message on standard input, reformats it in some way, and writes the message to standard output.

reformime

reformime is a utility for reformatting MIME messages.

sendmail

sendmail command reads an E-mail message and delivers the message to its recipients. This sendmail command is part of the Courier mail server, although it attempts to emulate the behavior of the original sendmail MTA.

showconfig

showconfig Shows the current Courier configuration.

showmodules

showmodules Shows the current Courier modules.

testmxlookup

testmxlookup lists the names and IP addresses of mail relays that receive mail for the domain. This is useful in diagnosing mail delivery problems.

Chapter 22. Other Server Software

Here you will find many ways to share your machine with the rest of the world or your local network. Before installing any packages in this chapter, you need to be sure you understand what the package does and how to set it up correctly. It might also be helpful to learn about the consequences of an improper setup so that you can analyze the risks.

BIND-9.2.3

Introduction to BIND

The BIND package provides a DNS server and client utilities. If you are only interested in the utilities, refer to the BIND Utilities-9.2.3[p.251].

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/infosys/servers/isc/bind9/9.2.3/bind-9.2.3.tar.gz>
- Download (FTP): <ftp://ftp.isc.org/isc/bind9/9.2.3/bind-9.2.3.tar.gz>
- Download size: 4.4 MB
- Estimated Disk space required: 88 MB
- Estimated build time: 0.89 SBU

BIND dependencies

Optional

OpenSSL-0.9.7d[p.115] and OpenJade-1.3.2[p.614]

Installation of BIND

Install BIND by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install
```

Configuring BIND

Config files

named.conf, root.hints, 127.0.0, rndc.conf

Configuration Information

We will configure BIND to run in a chroot jail as an unprivileged user (named). This configuration is more secure in that a DNS compromise can only affect a few files in the named user's HOME directory.

First we create the unprivileged user and group named:

```
groupadd named &&
useradd -m -g named -s /bin/false named
```

Then we set up some files, directories and devices needed by BIND:

```
cd /home/named &&
mkdir -p dev etc/namedb/slave var/run &&
mknod /home/named/dev/null c 1 3 &&
```

```

mknod /home/named/dev/random c 1 8 &&
chmod 666 /home/named/dev/{null,random} &&
mkdir /home/named/etc/namedb/pz &&
cp /etc/localtime /home/named/etc

```

Create the `named.conf` file from which `named` will read the location of zone files, root name servers and secure DNS keys:

```

cat > /home/named/etc/named.conf << "EOF"
options {
    directory "/etc/namedb";
    pid-file "/var/run/named.pid";
    statistics-file "/var/run/named.stats";
};
controls {
    inet 127.0.0.1 allow { localhost; } keys { rndc_key; };
};
key "rndc_key" {
    algorithm hmac-md5;
    secret "[c3Ryb25nIGVub3VnaCBmb3IyYSBtYW4gYnV0IG1hZGUgZm9yIGEgd29tYW4K]";
};
zone "." {
    type hint;
    file "root.hints";
};
zone "0.0.127.in-addr.arpa" {
    type master;
    file "pz/127.0.0";
};
EOF

```

Create a zone file with the following contents:

```

cat > /home/named/etc/namedb/pz/127.0.0 << "EOF"
$TTL 3D
@      IN      SOA      ns.local.domain. hostmaster.local.domain. (
                                1          ; Serial
                                8H         ; Refresh
                                2H         ; Retry
                                4W         ; Expire
                                1D)        ; Minimum TTL
                                NS          ns.local.domain.
1      PTR     localhost.
EOF

```

Create the `root.hints` file with the following commands:

Note

Caution must be used to insure no leading spaces in this file.

```

cat > /home/named/etc/namedb/root.hints << "EOF"
.      6D      IN      NS      A.ROOT-SERVERS.NET.
.      6D      IN      NS      B.ROOT-SERVERS.NET.
.      6D      IN      NS      C.ROOT-SERVERS.NET.
.      6D      IN      NS      D.ROOT-SERVERS.NET.
.      6D      IN      NS      E.ROOT-SERVERS.NET.
.      6D      IN      NS      F.ROOT-SERVERS.NET.
.      6D      IN      NS      G.ROOT-SERVERS.NET.
.      6D      IN      NS      H.ROOT-SERVERS.NET.

```

```

.          6D  IN      NS      I.ROOT-SERVERS.NET.
.          6D  IN      NS      J.ROOT-SERVERS.NET.
.          6D  IN      NS      K.ROOT-SERVERS.NET.
.          6D  IN      NS      L.ROOT-SERVERS.NET.
.          6D  IN      NS      M.ROOT-SERVERS.NET.
A.ROOT-SERVERS.NET. 6D  IN      A      198.41.0.4
B.ROOT-SERVERS.NET. 6D  IN      A      128.9.0.107
C.ROOT-SERVERS.NET. 6D  IN      A      192.33.4.12
D.ROOT-SERVERS.NET. 6D  IN      A      128.8.10.90
E.ROOT-SERVERS.NET. 6D  IN      A      192.203.230.10
F.ROOT-SERVERS.NET. 6D  IN      A      192.5.5.241
G.ROOT-SERVERS.NET. 6D  IN      A      192.112.36.4
H.ROOT-SERVERS.NET. 6D  IN      A      128.63.2.53
I.ROOT-SERVERS.NET. 6D  IN      A      192.36.148.17
J.ROOT-SERVERS.NET. 6D  IN      A      192.58.128.30
K.ROOT-SERVERS.NET. 6D  IN      A      193.0.14.129
L.ROOT-SERVERS.NET. 6D  IN      A      198.32.64.12
M.ROOT-SERVERS.NET. 6D  IN      A      202.12.27.33
EOF

```

The `root.hints` file is a list of root name servers. This file must be updated periodically with the **dig** utility. Consult the BIND 9 Administrator Reference Manual for details.

Create the `rndc.conf` with the following commands:

```

cat > /etc/rndc.conf << "EOF"
key rndc_key {
algorithm "hmac-md5";
    secret
        "[c3Ryb25nIGVub3VnaCBmb3IgYSBtYW4gYnV0IG1hZGUGZm9yIGEd29tYW4K]";
};
options {
    default-server localhost;
    default-key    rndc_key;
};
EOF

```

The `rndc.conf` file contains information for controlling named operations with the **rndc** utility.

Create or modify `resolv.conf` to use the new name server with the following commands:

Note

Replace `yourdomain.com` with your own valid domain name.

```

cp /etc/resolv.conf /etc/resolv.conf.bak &&
cat > /etc/resolv.conf << "EOF"
search yourdomain.com
nameserver 127.0.0.1
EOF

```

Set permissions on the chroot jail with the following command:

```
chown -R named.named /home/named
```

To start the DNS server at boot, install `/etc/rc.d/init.d/bind` init script included in the `blfs-bootscripts-5.1`[p.31] package.

```
make install-bind
```

Now start BIND with the new boot script:

```
/etc/rc.d/init.d/bind start
```

Testing BIND

Test out the new BIND 9 installation. First query the local host address with **dig**:

```
dig -x 127.0.0.1
```

Now try an external name lookup, taking note of the speed difference in repeated lookups due to the caching. Run the **dig** command twice on the same address:

```
dig beyond.linuxfromscratch.org &&  
dig beyond.linuxfromscratch.org
```

You can see almost instantaneous results with the named caching lookups. Consult `bind-9.2.3/doc/arm/Bv9ARM.html`, the BIND Administrator Reference Manual for further configuration options.

Contents

The BIND package contains **dig**, **host**, **isc-config.sh**, **nslookup**, **rndc**, **rndc-confgen**, **named-checkconf**, **named-checkzone**, **lwresd**, **named**, **dnssec-signzone**, **dnssec-signkey**, **dnssec-keygen**, **dnssec-makekeyset** and **nsupdate**.

Description

dig

dig interrogates DNS servers.

host

host is a utility for DNS lookups.

nslookup

nslookup is a program used to query Internet domain nameservers.

rndc

rndc controls the operation of BIND.

rndc-confgen

rndc-confgen generates `rndc.conf` files.

named-checkconf

named-checkconf checks the syntax of `named.conf` files.

named-checkzone

named-checkzone checks zone file validity.

lwresd

lwresd is a caching-only name server for local process use.

named

named is the name server daemon.

dnssec-signzone

dnssec-signzone generates signed versions of zone files.

dnssec-signkey

dnssec-signkey signs zone file key sets.

dnssec-keygen

dnssec-keygen is a key generator for secure DNS.

dnssec-makekeyset

dnssec-makekeyset generates a key set from one or more keys created by **dnssec-keygen**.

nsupdate

nsupdate is used to submit DNS update requests.

Running a CVS server

Running a CVS server

This section will describe how to set up, administer and secure a CVS server.

CVS server dependencies

Required

CVS-1.11.16[p.230] and OpenSSH-3.8.1p1[p.298]

Setting up a CVS server.

We will discuss setting up a CVS server using OpenSSH as the remote access method. Other access methods, including `:pserver:` and `:server:` will not be used for write access to the CVS repository. The `:pserver:` method sends clear text passwords over the network and the `:server:` method is not supported in all CVS ports. Instructions for anonymous, read only CVS access using `:pserver:` can be found at the end of this section.

Configuration of our CVS server consists of four steps:

1. Create a repository.

Create a new CVS repository with the following commands, logged in as root:

```
mkdir /cvsroot &&
chmod 1777 /cvsroot &&
export CVSROOT=/cvsroot &&
cvs init
```

2. Import source code into the repository.

Import a source module into the repository with the following commands, issued from a user account on the same machine as the CVS repository:

```
export CVSROOT=/cvsroot &&
cd sourcedir &&
cvs import -m "repository test" cvstest vendortag releasetag
```

3. Verify local repository access.

Test access to the CVS repository from the same user account with the following command:

```
cvs co cvstest
```

4. Verify remote repository access.

Test access to the CVS repository from a remote machine using a user account that has **ssh** access to the CVS server with the following commands:

Note

Replace `[servername]` with the IP address or host name of the CVS repository machine. You will be prompted for the user's shell account password before CVS checkout can continue.

```
export CVS_RSH=/usr/bin/ssh &&
cvs -d:ext:[servername]:/cvsroot co cvstest
```

Configuring CVS for anonymous read only access.

CVS can be set up to allow anonymous read only access using the `:pserver:` method by logging on as root and executing the following commands:

```
(grep anonymous /etc/passwd || useradd anonymous -s /bin/false) &&
echo anonymous: > /cvsroot/CVSROOT/passwd &&
echo anonymous > /cvsroot/CVSROOT/readers
```

If you use **inetd**, the following command will add the pserver entry to `/etc/inetd.conf`:

```
echo "2401 stream tcp nowait root /usr/bin/cvs cvs -f \
--allow-root=/cvsroot pserver" >> /etc/inetd.conf
```

Issue a **killall -HUP inetd** to reread the changed `inetd.conf` file.

If you use **xinetd**, the following command will add the pserver entry to `/etc/xinetd.conf`:

```
cat >> /etc/xinetd.conf << "EOF"
service cvspserver
{
    port          = 2401
    socket_type   = stream
    protocol      = tcp
    wait          = no
    user          = root
    passenv       = PATH
    server        = /usr/bin/cvs
    server_args   = -f --allow-root=/cvsroot pserver
}
EOF
```

Issue a `/etc/rc.d/init.d/xinetd reload` to reread the changed `xinetd.conf` file.

Testing anonymous access to the new repository requires an account on another machine that can reach the CVS server via network. No account on the CVS repository is needed. To test anonymous access to the CVS repository log in to another machine as an unprivileged user and execute the following command:

```
cvs -d:pserver:anonymous@[servername]:/cvsroot co cvstest
```

Note

Replace `[servername]` with the IP address or hostname of the CVS server

Command explanations

mkdir /cvsroot: Create the CVS repository directory.

chmod 1777 /cvsroot: Sticky bit permissions for CVSROOT.

export CVSROOT=/cvsroot: Specify new CVSROOT for all `cvs` commands.

cvs init: Initialize the new CVS repository.

cvs import -m "repository test" cvstest vendortag releasetag: All source code modules must be imported into the CVS repository before use, with the `cvs import` command. the `-m` flags specifies an initial descriptive entry for the new module. the "cvstest" parameter is the name used for the module in all subsequent `cvs` commands. the "vendortag" and "releasetag" parameters are used to further identify each CVS module and are mandatory whether used or not.

(grep anonymous /etc/passwd || useradd anonymous -s /bin/false): Check for an existing anonymous user and create

one if not found.

echo anonymous: > /cvsroot/CVSROOT/passwd : Add the anonymous user to the CVS passwd file, which is unused for anything else in this configuration.

echo anonymous > /cvsroot/CVSROOT/readers: Add the anonymous user to the CVS readers file, a list of users who have read only access to the repository.

DHCP-3.0pl2

Introduction to DHCP

The DHCP package contains both the client and server programs for DHCP. **dhclient** (the client) is useful for connecting your computer to a network which uses DHCP to assign network addresses. **dhcpd** (the server) is useful for assigning network addresses on your private network.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/infosys/servers/isc/dhcp/dhcp-3.0pl2.tar.gz>
- Download (FTP): <ftp://ftp.isc.org/isc/dhcp/dhcp-3.0pl2.tar.gz>
- Download size: 852 KB
- Estimated Disk space required: 29.6 MB
- Estimated build time: 0.23 SBU

Installation of DHCP

Note

You must have Packet Socket support compiled in the kernel and Socket Filtering either compiled in or as a kernel module.

Install DHCP by running the following commands:

```
./configure &&
make &&
make LIBDIR=/usr/lib INCDIR=/usr/include install
```

Command explanations

`LIBDIR=/usr/lib INCDIR=/usr/include`: This command installs the library and include files in `/usr` instead of `/usr/local`.

Configuring DHCP

Config files

`/etc/dhclient.conf`

Configuration Information

Information on configuring the DHCP client can be found in Chapter 14.

Note that you only need the DHCP server if you want to issue LAN addresses over your network. The DHCP client doesn't need this script to be used. Also note that this script is coded for the *eth1* interface, which may need to be modified for your hardware configuration.

Install `/etc/rc.d/init.d/dhcp` init script included in the `blfs-bootscripts-5.1[p.31]` package.

```
make install-dhcp
```

The lease file must exist on startup. The following command will satisfy that requirement:

```
touch /var/state/dhcp/dhcpd.leases
```

The follow commands will create a base configuration file for a DHCP server. There are several options that you may want to add (information that is passed back to the DHCP client) and those are covered in the man pages for `dhcp.conf`.

```
cat > /etc/dhcpd.conf << "EOF"
default-lease-time 72000;
max-lease-time 144000;
ddns-update-style ad-hoc;

subnet 192.168.5.0 netmask 255.255.255.0 {
    range 192.168.5.10 192.168.5.240;
    option broadcast-address 195.168.5.255;
    option routers 192.168.5.1;
}
EOF
```

All addresses should be changed to meet your circumstance.

Contents

The DHCP package contains **dhclient**, **dhcpd** and **dhcrelay** .

Description

dhclient

dhclient is the implementation of the DHCP client.

dhcpd

dhcpd implements Dynamic Host Configuration Protocol (DHCP) and Internet Bootstrap Protocol (BOOTP) requests for network addresses.

dhcrelay

dhcrelay provides a means to accept DHCP and BOOTP requests on a subnet without a DHCP server and relay them to a DHCP server on another subnet.

Leafnode-1.9.43

Introduction to Leafnode

Leafnode is an NNTP server designed for small sites to provide a local USENET spool.

Package information

- Download (HTTP): <http://unc.dl.sourceforge.net/sourceforge/leafnode/leafnode-1.9.43.rel.tar.bz2>
- Download (FTP): <ftp://unc.dl.sourceforge.net/pub/sourceforge/leafnode/leafnode-1.9.43.rel.tar.bz2>
- Download size: 614 KB
- Estimated Disk space required: 14 MB
- Estimated build time: 0.11 SBU

Leafnode dependencies

Required

PCRE-4.5[p.117]

Installation of Leafnode

Create the group and user news, if not present:

```
groupadd news &&
useradd -g news news
```

Install Leafnode by running the following commands:

```
./configure --prefix=/usr --localstatedir=/var \
    --sysconfdir=/etc/news --with-lockfile=/var/lock/fetchnews.lck &&
make &&
make install &&
ldconfig &&
make update
```

Installation command explanations

`--localstatedir=/var`: Change the default spool directory of `/usr/var`.

`--sysconfdir=/etc/news`: leafnode reads its configuration data from a file called `config` which will be created in `/etc/news` to avoid any potential conflict with other packages.

make update: Create an initial `/etc/news/config.example` file, which must be renamed to `/etc/news/config`.

Configuring Leafnode

Config files

`/etc/leafnode/config`, `/etc/inetd.conf` and `/etc/xinetd.conf`

Leafnode may be configured to use **inetd** by adding an entry to the `/etc/inetd.conf` file with the following command:

```
echo "nntp stream tcp nowait news /usr/sbin/tcpd /usr/sbin/leafnode" \
>> /etc/inetd.conf
```

Alternatively, Leafnode may be configured to use **xinetd** by adding an entry to the `/etc/xinetd.conf` file with the following command:

```
cat >> /etc/xinetd.conf << "EOF"
    service nntp
    {
        flags                = NAMEINARGS NOLIBWRAP
        socket_type           = stream
        protocol              = tcp
        wait                  = no
        user                  = news
        server                 = /usr/sbin/tcpd
        server_args           = /usr/sbin/leafnode
        instances             = 7
        per_source            = 3
    }
EOF
```

The `/etc/news/config` file must be edited to reflect the name of the upstream NNTP provider. Copy the example configuration file to `/etc/news/config` and save the original for reference:

```
cp /etc/news/config.example /etc/news/config
```

Change the

```
server =
```

entry to reflect your news provider.

The `NNTPSERVER` environment variable must be set to `127.0.0.1` to prevent news clients from reading news from the upstream feed, add the following to `/etc/profile` or `$HOME/.bash_profile`:

```
export NNTPSERVER=127.0.0.1
```

Contents

The Leafnode package contains **leafnode-version**, **leafnode**, **applyfilter**, **texpire**, **checkgroups**, **fetchnews** and **newsq**.

Description

leafnode-version

leafnode-version prints the leafnode version.

leafnode

leafnode is the NNTP server daemon.

applyfilter

applyfilter filters newsgroup articles according to regular expressions.

texpire

texpire expires old articles and unread groups.

checkgroups

checkgroups inserts newsgroup titles into the newsgroup database.

fetchnews

fetchnews sends posted articles to and retrieves new articles from an upstream news server.

newsq

newsq shows articles waiting to be sent upstream.

OpenSSH-3.8.1p1

Introduction to OpenSSH

The OpenSSH package contains **ssh** clients and the **sshd** daemon. This is useful for encrypting all traffic over a network.

Package information

- Download (HTTP): <http://sunsite.ualberta.ca/pub/OpenBSD/OpenSSH/portable/openssh-3.8.1p1.tar.gz>
- Download (FTP): <ftp://ftp.openbsd.org/pub/OpenBSD/OpenSSH/portable/openssh-3.8.1p1.tar.gz>
- Download size: 799 KB
- Estimated Disk space required: 37 MB
- Estimated build time: 0.49 SBU

OpenSSH dependencies

Required

OpenSSL-0.9.7d[p.115]

Optional

Linux-PAM-0.77[p.66], tcpwrappers-7.6[p.232], X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), MIT Kerberos and OpenSC

Installation of OpenSSH

OpenSSH runs as two processes when connecting to other computers. The first process is a privileged process and controls the issuance of privileges as necessary. The second process communicates with the network. Additional installation steps are necessary to set up the proper environment which are performed by the following commands:

```
mkdir /var/empty &&
chown root:sys /var/empty &&
groupadd sshd &&
useradd -c 'sshd privsep' -d /var/empty -g sshd -s /bin/false sshd
```

OpenSSH is very sensitive to changes in the linked OpenSSL libraries. If you recompile OpenSSL, OpenSSH may fail to startup. An alternative is to link against static OpenSSL library. To link against the static library, execute the following command:

```
sed -i "s:-lcrypto:/usr/lib/libcrypto.a:g" configure
```

Install OpenSSH by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc/ssh \
  --libexecdir=/usr/sbin --with-md5-passwords &&
make &&
make install
```

Command explanations

--sysconfdir=/etc/ssh: This prevents the configuration files from going to `/usr/etc`.

--with-md5-passwords: This is required if you made the changes recommended by the `shadowpasswd_plus LFS` hint on your SSH server when you installed the Shadow Password Suite or if you access a SSH server that authenticates by user passwords encrypted with md5.

--libexecdir=/usr/sbin: OpenSSH puts programs called by programs in `/usr/libexec`. **sftp-server** is a **sshd**

utility and **ssh-askpass** is a **ssh-add** utility that is installed as a link to **X11-ssh-askpass**. Both of these should go in `/usr/sbin` not `/usr/libexec`.

Configuring OpenSSH

Config files

`/etc/ssh/ssh_config`, `/etc/ssh/sshd_config`

There are no required changes in either of these files. However you may wish to view them to make changes for appropriate security to your system. Configuration information can be found in the man pages for **sshd**, **ssh** and **ssh-agent**

sshd init.d script

To start the SSH Server at boot, install `/etc/rc.d/init.d/sshd` init script included in the `blfs-bootscripts-5.1`[p.31] package.

```
make install-sshd
```

Contents

The OpenSSH package contains **ssh**, **sshd**, **ssh-agent**, **ssh-add**, **sftp**, **scp**, **ssh-keygen**, **sftp-server** and **ssh-keyscan**.

Description

ssh

The basic rlogin/rsh-like client program.

sshd

The daemon that permits you to login.

ssh-agent

An authentication agent that can store private keys.

ssh-add

Tool which adds keys to the **ssh-agent**.

sftp

FTP-like program that works over SSH1 and SSH2 protocol.

scp

File copy program that acts like `rcp`.

ssh-keygen

Key generation tool.

sftp-server

SFTP server subsystem.

ssh-keyscan

Utility for gathering public host keys from a number of hosts.

rsync-2.6.0

Introduction to rsync

The rsync package contains the **rsync** utility. This is useful for synchronizing large file archives over a network.

Package information

- Download (HTTP): <http://rsync.samba.org/ftp/rsync/rsync-2.6.0.tar.gz>
- Download (FTP): <ftp://gd.tuwien.ac.at/utis/admin-tools/rsync/rsync-2.6.0.tar.gz>
- Download size: 434 KB
- Estimated Disk space required: 2.6 MB
- Estimated build time: 0.65 SBU

rsync dependencies

Optional

popt-1.7[p.118]

Installation of rsync

For security reasons, running rsync server as an unprivileged user and group is encouraged.

```
groupadd rsyncd &&
useradd -c rsyncd -d /home/rsync -g rsyncd -s /bin/false rsyncd
```

Install rsync by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Command explanations

`--prefix=/usr`: This installs rsync in `/usr` instead of `/usr/local`.

Configuring rsync

Config files

`/etc/rsyncd.conf`

Configuration Information

This is a simple download-only configuration. See the rsyncd man-page for additional options (i.e. user authentication).

```
cat > /etc/rsyncd.conf << "EOF"
# This is a basic rsync configuration file
# It exports a single module without user authentication.

motd file = /home/rsync/welcome.msg
use chroot = yes

[localhost]
    path = /home/rsync
    comment = Default rsync module
    read only = yes
```

```
list = yes
uid = rsyncd
gid = rsyncd
```

```
EOF
```

rsyncd init.d script

Note that you only want to start the rsync server if you want to provide a rsync archive on your machine. The rsync client doesn't need this script to be used.

Install `/etc/rc.d/init.d/rsyncd` init script included in the `blfs-bootscripts-5.1[p.31]` package.

```
make install-rsyncd
```

Contents

The rsync package contains **rsync**.

Description

rsync

rsync is a replacement for **rcp** (and **scp**) that has many more features. It uses the "rsync algorithm" which provides a very fast method for remote files into sync. It does this by sending just the differences in the files across the link, without requiring that both sets of files are present at one of the ends of the link beforehand.

OpenLDAP-2.1.30

Introduction to OpenLDAP

The OpenLDAP package provides an open source implementation of the Lightweight Directory Access Protocol.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/infosys/network/OpenLDAP/openldap-release/openldap-2.1.30.tgz>
- Download (FTP): <ftp://ftp.openldap.org/pub/OpenLDAP/openldap-release/openldap-2.1.30.tgz>
- Download size: 2.0 MB
- Estimated Disk space required: 116 MB
- Estimated build time: 7.52 SBU

OpenLDAP dependencies

Required

Berkeley DB-4.2.52.2[p.312]

Optional

OpenSSL-0.9.7d[p.115], GDBM-1.8.3[p.127], tcpwrappers-7.6[p.232], readline-4.3[p.125], Heimdal-0.6.2[p.84] or MIT krb5-1.3.3[p.91], and Cyrus SASL

Installation of OpenLDAP

Install OpenLDAP by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/sbin \
  --sysconfdir=/etc --localstatedir=/var/lib \
  --disable-debug --enable-ldbm &&
make depend &&
make &&
make test &&
make install
```

Command explanations

`--sysconfdir=/etc`: Sets the configuration file directory to avoid the default of `/usr/etc`.

`--libexecdir=/usr/sbin`: Puts the server executables in `/usr/sbin` instead of `/usr/libexec`.

`--enable-ldbm`: Build **slapd** with primary database back end using either Berkeley DB or GNU Database Manager.

`--disable-debug`: Disable debugging code.

make test: Validate correct build of the package.

Configuring OpenLDAP

Config files

`/etc/openldap/*`

Configuration Information

The only configuration needed for OpenLDAP is to run **ldconfig**. The LDAP server can be started by `/usr/sbin/slapd` as

described in the man page `slapd(8)`. You can verify that LDAP is running with **ps aux** and you can verify access to the LDAP server with the following command:

```
ldapsearch -x -b '' -s base '(objectclass=*)' namingContexts
```

The correct result is:

```
# extended LDIF
#
# LDAPv3
# base <> with scope base
# filter: (objectclass=*)
# requesting: namingContexts
#
#
dn:
namingContexts: dc=my-domain,dc=com

# search result
search: 2
result: 0 Success

# numResponses: 2
# numEntries: 1
```

Kill the server with this command:

```
kill -INT `cat /var/lib/slapd.pid`
```

You are now ready to modify the `/etc/openldap/slapd.conf` to be specific to your installation.

Utilizing GDBM

To utilize GDBM as the database backend, the "database" entry in `/etc/openldap/slapd.conf` must be changed from "bdb" to "ldbm". You can use both by creating an additional database section in `/etc/openldap/slapd.conf`.

Securing your LDAP server

Significant configuration is needed for OpenLDAP to utilize security features. The OpenLDAP 2.1 Administrator's Guide is a good place to start for access control settings, running as a user other than root and setting a chroot environment.

User Tools

Data can be added to the LDAP database via **ldapadd**. There are other programs that can use the database. For more information see the appropriate man page.

Mozilla Address Directory

By default, LDAPv2 support is disabled in the `slapd.conf` file. Once the database is properly setup and Mozilla is configured to use the directory, you must add `allow bind_v2` to the `slapd.conf` file.

Contents

The OpenLDAP package contains **ldapadd**, **ldapcompare**, **ldapdelete**, **ldapmodify**, **ldapmodrdn**, **ldappasswd**, **ldapsearch**, **ldapwhoami**, **slapadd**, **slapcat**, **slapd**, **slapindex**, **slappasswd**, **slurpd**, **liblber** and **libldap**.

Description

ldapadd

ldapadd opens a connection to an LDAP server, binds and adds entries.

ldapcompare

ldapcompare opens a connection to an LDAP server, binds and performs a compare using specified parameters.

ldapdelete

ldapdelete opens a connection to an LDAP server, binds and deletes one or more entries.

ldapmodify

ldapmodify opens a connection to an LDAP server, binds and modifies entries.

ldapmodrdn

ldapmodrdn opens a connection to an LDAP server, binds and modifies the RDN of entries.

ldappasswd

ldappasswd is a tool to set the password of an LDAP user.

ldapsearch

ldapsearch opens a connection to an LDAP server, binds and performs a search using specified parameters.

ldapwhoami

ldapwhoami open a connection to an LDAP server, binds and performs a whoami operation.

slapadd

slapadd is used to add entries specified in LDAP Directory Interchange Format (LDIF) to a slapd database.

slapcat

slapcat is used to generate an LDAP LDIF output based upon the contents of a slapd database.

slapd

slapd is the stand-alone LDAP server.

slapindex

slapindex is used to regenerate slapd indices based upon the current contents of a database.

slappasswd

slappasswd is an OpenLDAP password utility.

slurpd

slurpd is the stand-alone LDAP replication server.

liblber and libldap

These libraries support the LDAP programs and provide functionality for other programs interacting with LDAP.

Samba-3.0.4

Introduction to Samba

The Samba package provides file and print services to SMB/CIFS clients and Windows networking to Linux clients.

Package information

- Download (HTTP): <http://us1.samba.org/samba/ftp/samba-3.0.4.tar.gz>
- Download (FTP): <ftp://ftp.samba.org/pub/samba/samba-3.0.4.tar.gz>
- Download size: 14.4 MB
- Estimated Disk space required: 123 MB
- Estimated build time: 10.5 SBU

Samba dependencies

Optional

Linux-PAM-0.77[p.66], readline-4.3[p.125], OpenLDAP-2.1.30[p.302], CUPS-1.1.20[p.592], Heimdal-0.6.2[p.84] or MIT krb5-1.3.3[p.91], libxml2-2.6.9[p.123], MySQL-4.0.20[p.316] or PostgreSQL-7.4.2[p.318], Python-2.3.3[p.185], and Valgrind

Installation of Samba

Install Samba by running the following commands:

```
cd source &&
install -d /var/cache/samba &&
./configure \
    --prefix=/usr \
    --sysconfdir=/etc \
    --localstatedir=/var \
    --with-piddir=/var/run \
    --with-fhs \
    --with-smbmount &&
make &&
make install &&
install -m755 nsswitch/libnss_win{s,bind}.so /lib &&
ln -sf libnss_winbind.so /lib/libnss_winbind.so.2 &&
ln -sf libnss_wins.so /lib/libnss_wins.so.2 &&
cp ../examples/smb.conf.default /etc/samba
```

Note

You may want to run **configure** with the `--help` parameter. There may be other parameters needed to take advantage of the optional dependencies.

Installation command explanations

install -d /var/cache/samba: This directory is needed for proper operation of the **smbd** and **nmbd** daemons.

--prefix=/usr: Sets the prefix for almost all the file paths to `/usr`.

--sysconfdir=/etc: Sets the configuration file directory to avoid the default of `/usr/etc`.

--localstatedir=/var: Sets the variable data directory to avoid the default of `/usr/var`.

--with-fhs: Assigns all other file paths in a manner compliant with the Filesystem Hierarchy Standard (FHS).

`--with-smbmount`: Orders the creation of an extra binary for use by the **mount** command so that mounting remote SMB (Windows) shares becomes no more complex than mounting remote NFS shares.

install -m755 nsswitch/libnss_win{s,bind}.so /lib: The nss libs are not installed by default. If you intend to use winbindd for domain auth, and/or WINS name resolution, you need these libraries.

ln -sf libnss_winbind.so /lib/libnss_winbind.so.2 and **ln -sf libnss_wins.so /lib/libnss_wins.so.2**: These symlinks are required by glibc to use the nss libs.

cp ../examples/smb.conf.default /etc/samba: This copies a default `smb.conf` into `/etc/samba`. This sample configuration will not work unless edited for your site, and renamed `smb.conf`.

Configuring Samba

Because of the various uses for Samba, complete configuration is well beyond the scope of the BLFS book. In fact, many complete books have been written on this topic alone. The included documentation, a popular book published by O'Reilly, can be viewed by pointing your web browser to `file:///usr/share/samba/swat/using_samba/toc.html`.

The built in SWAT (Samba Web Administration Tool) utility can be used for basic configuration, however, before using SWAT you must add an entry to `/etc/services` and make changes to your **inetd**/**xinetd** configuration.

Add the `swat` entry to `/etc/services` with the following command:

```
echo "swat          901/tcp" >> /etc/services
```

If **inetd** is used, the following command will add the `swat` entry to `/etc/inetd.conf`:

```
echo "swat stream tcp nowait.400 root /usr/sbin/swat swat" \
>> /etc/inetd.conf
```

If **xinetd** is used, the following command will add the `swat` entry to `/etc/xinetd.conf`:

```
cat >> /etc/xinetd.conf << "EOF"
service swat
{
    port                = 901
    socket_type         = stream
    wait                = no
    only_from           = 127.0.0.1
    user                = root
    server               = /usr/sbin/swat
    log_on_failure      += USERID
}
EOF
```

SWAT can be launched by pointing your web browser to `http://localhost:901`.

For your convenience, boot scripts have been provided for Samba. There are two included in the `blfs-bootscripts-5.1`[p.31] package. The first, `samba`, will start the **smbd** and **nmdb** daemons needed to provide SMB/CIFS services. The second script, `winbind`, starts the **winbindd** daemon, used for providing Windows domain services to Linux clients.

Install the `samba` script with the following command:

```
make install-samba
```

If you also need the `winbind` script:

```
make install-winbind
```

Contents

The Samba package contains **make_smbcodepage**, **make_unicodemap**, **mount.smbfs**, **net**, **nmbd**, **nmblookup**, **rpcclient**, **smbcacs**, **smbclient**, **smbcontrol**, **smbd**, **smbpasswd**, **smbspool**, **smbstatus**, **swat**, **testparm**, **testprns**, **wbinfo** and **winbindd**.

Description

make_smbcodepage

make_smbcodepage converts text descriptions of code pages to binary code page files and vice versa.

make_unicodemap

make_unicodemap converts text Unicode map files to binary, for use in mapping characters to 16 bit Unicode.

mount.smbfs

mount.smbfs provides **/bin/mount** with a way to mount remote windows (or samba) filesystems.

net

net is a tool for administration of Samba and remote CIFS servers, similar to the net utility for DOS/Windows.

nmbd

nmbd is the Samba NetBIOS name server.

nmblookup

nmblookup is used to query NetBIOS names and map them to IP addresses.

rpcclient

rpcclient is used to execute MS-RPC client side functions.

smbcacs

smbcacs is used to manipulate NT access control lists.

smbclient

smbclient is a SMB/CIFS access utility, similar to FTP.

smbcontrol

smbcontrol is used to control running **smbd**, **nmbd** and **winbindd** daemons.

smbd

smbd is the main Samba daemon.

smbpasswd

smbpasswd changes a user's Samba password.

smbspool

smbspool sends a print job to an SMB printer.

smbstatus

smbstatus reports current Samba connections.

swat

swat is the Samba Web Administration Tool.

testparm

testparm checks an `smb.conf` file for proper syntax.

testprns

testprns tests printer names.

wbinfo

wbinfo queries a running **winbindd** daemon.

winbindd

winbindd resolves names from NT servers.

xinetd-2.3.13

Introduction to xinetd

xinetd is the eXtended InterNET services Daemon, a secure replacement for **inetd**.

Package information

- Download (HTTP): <http://www.xinetd.org/xinetd-2.3.13.tar.gz>
- Download (FTP): <ftp://gd.tuwien.ac.at/infosys/servers/xinetd/xinetd-2.3.13.tar.gz>
- Download size: 291 KB
- Estimated Disk space required: 5.5 MB
- Estimated build time: 0.12 SBU

Installation of xinetd

Install xinetd by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Configuring xinetd

Config files

`/etc/xinetd.conf`

Configuration Information

Insure the path to all daemons are in `/usr/sbin`, rather than the default path of `/usr/etc`:

```
sed -e 's/etc/sbin/g' xinetd/sample.conf > /etc/xinetd.conf
```

The format of the `/etc/xinetd.conf` is documented in the `xinetd.conf` man page. Further information can be found at <http://www.xinetd.org>.

Install `/etc/rc.d/init.d/xinetd` init script included in the `blfs-bootscripts-5.1`[p.31] package.

```
make install-xinetd
```

Now, we'll use our new boot script to start **xinetd**:

```
/etc/rc.d/init.d/xinetd start
```

Checking the `/var/log/daemon.log` file should prove quite entertaining. This file may contain entries similar to the following:

```
Aug 22 21:40:21 dps10 xinetd[2696]: Server /usr/sbin/in.rlogind is not
executable [line=29]
Aug 22 21:40:21 dps10 xinetd[2696]: Error parsing attribute server -
DISABLING SERVICE [line=29]
Aug 22 21:40:21 dps10 xinetd[2696]: Server /usr/sbin/in.rshd is not
executable [line=42]
```

These errors are due to the fact that we don't have most of the servers that **xinetd** is trying to control installed yet.

Contents

The xinetd package contains **xinetd**, **itox** and **xconv.pl**.

Description

xinetd

xinetd is the Internet services daemon.

itox

itox is a utility used for converting `inetd.conf` files to `xinetd.conf` format.

xconv.pl

xconv.pl is a Perl script used for converting `inetd.conf` files to `xinetd.conf` format, similar to **itox**.

Part VII. Content Serving

Chapter 23. Databases

This chapter includes databases that range from single-user read/write to industrial database servers with transaction support. Generally, you will be sent here to satisfy dependencies to other applications although building a SQL server on a base LFS system is entirely possible.

Berkeley DB-4.2.52.2

Introduction to Berkeley DB

The Berkeley DB package contains programs and utilities used by many other applications for database related functions.

Package information

- Download (HTTP): <http://www.sleepycat.com/update/snapshot/db-4.2.52.tar.gz>
- Download (FTP):
- Download size: 4 MB
- Estimated Disk space required: 43 MB
- Estimated build time: 1.22 SBU

Additional downloads

- Required Patch: <http://www.sleepycat.com/update/4.2.52/patch.4.2.52.1>
- Required Patch: <http://www.sleepycat.com/update/4.2.52/patch.4.2.52.2>

Berkeley DB dependencies

Optional

Tcl-8.4.6[p.198] and J2SDK-1.4.2[p.188]

Installation of Berkeley DB

Install Berkeley DB by running the following commands:

```
patch -Np0 -i ../patch.4.2.52.1 &&
patch -Np0 -i ../patch.4.2.52.2 &&
cd build_unix &&
../dist/configure --prefix=/usr \
    --enable-compat185 \
    --enable-cxx &&
make &&
make docdir=/usr/share/doc/db-4.2.52.2 install
```

Note

If you wish to enable Java support in Berkeley DB-4.2.52.2, add `--enable-java` to the configure options. This requires a Java compiler. Java support is needed if you plan to use system installed Berkeley DB when compiling OpenOffice-1.1.1[p.514].

Command explanations

`cd build_unix && ../dist/configure --prefix=/usr --enable-compat185`: This replaces the normal `./configure` command as Berkeley DB comes with the various build directories for different platforms.

make docdir=/usr/share/doc/db-4.2.52.2 install: This installs the documentation in the correct place.

Contents

The Berkeley DB package contains **db_archive**, **db_checkpoint**, **db_deadlock**, **db_dump**, **db_load**, **db_printlog**, **db_recover**, **db_stat**, **db_upgrade** and **db_verify**.

Description

db_archive

db_archive prints the pathnames of log files that are no longer in use.

db_checkpoint

db_checkpoint is a daemon process used to monitor and checkpoint database logs.

db_deadlock

db_deadlock is used to abort lock requests when deadlocks are detected.

db_dump

db_dump converts database files to a flat file format readable by **db_load**.

db_load

db_load is used to create database files from flat files created with **db_dump**.

db_printlog

db_printlog converts database log files to human readable text.

db_recover

db_recover is used to restore a database to a consistent state after a failure.

db_stat

db_stat displays database environment statistics.

db_upgrade

db_upgrade is used to upgrade database files to a newer version of Berkeley DB.

db_verify

db_verify is used to run consistency checks on database files.

Berkeley DB-3.3.11

Introduction to Berkeley DB-3.3.11

The Berkeley DB package contains version 3.3.11 of the Berkeley Database.

Package information

- Download (HTTP): <http://www.sleepycat.com/update/snapshot/db-3.3.11.tar.gz>
- Download (FTP): <ftp://ftp.pu.edu.tw/Unix/Database/BerkeleyDB/db-3.3.11.tar.gz>
- Download size: 2.3 MB
- Estimated Disk space required: 20.3 MB
- Estimated build time: 0.80 SBU

Installation of Berkeley DB

Install Berkeley DB by running the following commands:

```
cd build_unix &&
../dist/configure --prefix=/opt/db-3.3 --enable-compat185 &&
make &&
make docdir=/opt/db-3.3/doc/Berkeley-DB install &&
cd /opt/db-3.3/lib/ &&
rm -f libdb.so &&
for i in $(ls); do mv $i /usr/lib; ln -sf /usr/lib/$i; done &&
cd /opt/db-3.3/include/ &&
sed -i 's/^DB185/DB/' db_185.h &&
ln -nsf /opt/db-3.3/include /usr/include/db3
```

Command explanations

`sed 's/^DB185/DB/' /usr/include/db_185.h > /usr/include/db_185.h.new`: Change the DB185 database pointer to DB.

Contents

The Berkeley DB package contains **db_archive**, **db_checkpoint**, **db_deadlock**, **db_dump**, **db_load**, **db_printlog**, **db_recover**, **db_stat**, **db_upgrade** and **db_verify**.

Description

db_archive

db_archive prints the pathnames of log files that are no longer in use.

db_checkpoint

db_checkpoint is a daemon process used to monitor and checkpoint database logs.

db_deadlock

db_deadlock is used to abort lock requests when deadlocks are detected.

db_dump

db_dump converts database files to a flat file format readable by **db_load**.

db_load

db_load is used to create database files from flat files created with **db_dump**.

db_printlog

db_printlog converts database log files to human readable text.

db_recover

db_recover is used to restore a database to a consistent state after a failure.

db_stat

db_stat displays database environment statistics.

db_upgrade

db_upgrade is used to upgrade database files to a newer version of Berkeley DB.

db_verify

db_verify is used to run consistency checks on database files.

MySQL-4.0.20

Introduction to MySQL

MySQL is a widely used and fast SQL database server. It is a client/server implementation that consists of a server daemon and many different client programs and libraries.

Package information

- Download (HTTP): <http://mysql.he.net/Downloads/MySQL-4.0/mysql-4.0.20.tar.gz>
- Download (FTP): <ftp://mirror.mcs.anl.gov/pub/mysql/Downloads/MySQL-4.0/mysql-4.0.20.tar.gz>
- Download size: 13.5 MB
- Estimated Disk space required: 98.7 MB
- Estimated build time: 3.43 SBU

MySQL dependencies

Optional

readline-4.3[p.125], OpenSSL-0.9.7d[p.115] and tcpwrappers-7.6[p.232]

Installation of MySQL

For security reasons, running the server as an unprivileged user and group is strongly encouraged:

```
groupadd mysql &&
useradd -c mysql -d /dev/null -g mysql -s /bin/false mysql
```

Build and install MySQL by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
  --libexecdir=/usr/sbin --localstatedir=/var/lib/mysql \
  --enable-thread-safe-client --enable-local-infile \
  --enable-asm --without-debug --without-bench &&
make testdir=/usr/lib/mysql/mysql-test &&
make testdir=/usr/lib/mysql/mysql-test install
```

Packages that depend on MySQL need the shared libraries available at run-time:

```
cd /usr/lib &&
ln -sf mysql/libmysqlclient{,_r}.so* .
```

Configuring MySQL

Config files

/etc/my.cnf, ~/.my.cnf

Configuration Information

There are several default configurations file available in /usr/share/mysql which you can use.

```
cp /usr/share/mysql/my-medium.cnf /etc/my.cnf
```

We can now install a database and change the ownership to the unprivileged user and group.

```
mysql_install_db &&
```

```
chown -R mysql:mysql /var/lib/mysql
```

Further configuration requires that the mysql server be running:

```
mysqld_safe --user=mysql 2>&1 >/dev/null &
```

A default installation does not setup a password for the administrator so here we will set one. Replace *[new-password]* with your own.

```
mysqladmin -u root password [new-password]
```

Now that we are done with the configuration of the server, we can shut it down.

```
mysqladmin -p shutdown
```

Install `/etc/rc.d/init.d/mysql` init script included in the `blfs-bootscripts-5.1`[p.31] package.

```
make install-mysql
```

Contents

The MySQL package contains `comp_err`, `isamchk`, `isamlog`, `make_win_src_distribution`, `mysql2mysql`, `my_print_defaults`, `myisamchk`, `myisamlog`, `myisampack`, `mysql`, `mysql_config`, `mysql_convert_table_format`, `mysql_explain_log`, `mysql_find_rows`, `mysql_fix_extensions`, `mysql_fix_privilege_tables`, `mysql_install`, `mysql_install_db`, `mysql_secure_installation`, `mysql_setpermission`, `mysql_tableinfo`, `mysql_waitpid`, `mysql_zap`, `mysqlaccess`, `mysqladmin`, `mysqlbinlog`, `mysqlbug`, `mysqlcheck`, `mysqld`, `mysqld_multi`, `mysqld_safe`, `mysqldump`, `mysqldumpslow`, `mysqlhotcopy`, `mysqlimport`, `mysqlmanager`, `mysqlmanager-pwgen`, `mysqlmanagerc`, `mysqlshow`, `mysqltest`, `pack_isam`, `perror`, `replace`, `resolve_stack_dump`, `resolveip`, `libdbug`, `libheap`, `libmerge`, `libmyisam`, `libmyisammrg`, `libmysqlclient`, `libmystrings`, `libmysys`, `libnisam` and `libvio`.

Description

A package listing would be several pages long, we suggest consulting the MySQL documentation for full details, instead.

Certain MySQL support programs may require the Perl DBI modules to be installed to function properly.

PostgreSQL-7.4.2

Introduction to PostgreSQL

PostgreSQL is an advanced object-relational database management system (ORDBMS), derived from the Berkeley Postgres database management system.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/db/postgresql/v7.4.2/postgresql-7.4.2.tar.bz2>
- Download (FTP): <ftp://ftp.fr.postgresql.org/v7.4.2/postgresql-7.4.2.tar.bz2>
- Download size: 9.7 MB
- Estimated Disk space required: 80 MB
- Estimated build time: 1.21 SBU

PostgreSQL dependencies

Optional

readline-4.3[p.125], Python-2.3.3[p.185], Tcl-8.4.6[p.198], Tk-8.4.6[p.199], OpenSSL-0.9.7d[p.115], Linux-PAM-0.77[p.66], krb4 or MIT Kerberos, Ant and Rendezvous

Installation of PostgreSQL

Install PostgreSQL with the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Note

If you are upgrading an existing system and are going to install the new files over the old ones, then you should back up your data, shut down the old server and follow the instructions in the official PostgreSQL documentation.

Initialize a database cluster with the following commands:

```
mkdir -p /var/pgsql/data &&
useradd -d /var/pgsql/data postgres &&
chown postgres /var/pgsql/data &&
su - postgres -c '/usr/bin/initdb -D /var/pgsql/data'
```

Start the database server with the following command:

```
su - postgres -c '/usr/bin/postmaster -D /var/pgsql/data > \
/var/pgsql/data/logfile 2>&1 &'
```

Now we can create a database and verify the installation:

```
su - postgres -c '/usr/bin/createdb test' &&
echo "create table t1 ( name varchar(20), state_province varchar(20) );" \
| (su - postgres -c '/usr/bin/psql test ') &&
echo "insert into t1 values ('Billy', 'NewYork');" \
| (su - postgres -c '/usr/bin/psql test ') &&
echo "insert into t1 values ('Evanidus', 'Quebec');" \
| (su - postgres -c '/usr/bin/psql test ') &&
```

```
echo "insert into t1 values ('Jesse', 'Ontario');" \
| (su - postgres -c '/usr/bin/psql test ') &&
echo "select * from t1;" | (su - postgres -c '/usr/bin/psql test')
```

Command explanations

useradd -d /var/pgsql/data postgres: Add an unprivileged user to run the database server. Running the server as root is dangerous, and moreover simply will not work.

su - postgres -c '/usr/bin/initdb -D /var/pgsql/data': Initialize the database tablespace. This command may not be executed by root.

su - postgres -c '/usr/bin/postmaster -D /var/pgsql/data > /var/pgsql/data/logfile 2>&1 &': Start the database server. User postgres must execute this command as well.

createdb test, create table t1 , insert into t1 values..., select * from t1: Create a database, add a table to it, insert some rows into the table and select them to verify that the installation is working properly.

Configuring PostgreSQL

Config files

\$PGDATA/pg_ident.con, \$PGDATA/pg_hba.conf, \$PGDATA/postgresql.conf

The PGDATA environment variable is used to distinguish database clusters from one another by setting it to the value of the directory which contains the cluster desired. The three configuration files exist in every PGDATA/ directory. Details on the format of the files and the options that can be set in each can be found in <file:///usr/share/doc/postgresql/html/index.html>.

Install /etc/rc.d/init.d/postgresql init script included in the blfs-bootscripts-5.1[p.31] package.

```
make install-postgresql
```

Contents

The PostgreSQL package contains **clusterdb**, **createdb**, **createlang**, **createuser**, **dropdb**, **droplang**, **dropuser**, **ecpg**, **initdb**, **initlocation**, **ipcclean**, **pg_config**, **pg_controldata**, **pg_ctl**, **pg_dump**, **pg_dumpall**, **pg_encoding**, **pg_id**, **pg_resetxlog**, **pg_restore**, **pgtclsh**, **pgtksh**, **pltcl_delmod**, **pltcl_listmod**, **pltcl_loadmod**, **postgres**, **postmaster**, **psql**, **vacuumdb**, **libecpg**, **libpgtcl**, **libpgtypes**, **libpq** and various charset modules.

Description

clusterdb

clusterdb is a utility for recluster tables in a PostgreSQL database.

createdb

createdb creates a new PostgreSQL database.

createlang

createlang defines a new PostgreSQL procedural language.

createuser

createuser defines a new PostgreSQL user account.

dropdb

dropdb removes a PostgreSQL database.

droplang

droplang removes a PostgreSQL procedural language.

dropuser

dropuser removes a PostgreSQL user account.

ecpg

ecpg is the embedded SQL preprocessor.

initdb

initdb create a new database cluster.

initlocation

initlocation creates a secondary database storage area.

ipcclean

ipcclean removes share memory and semaphores left over by an aborted database server.

pg_config

pg_config retrieves PostgreSQL version information.

pg_controldata

pg_controldata returns information initialized during **initdb**, such as the catalog version and server locale.

pg_ctl

pg_ctl controls stopping and starting the database server.

pg_dump

pg_dump dumps database data and metadata into scripts which are used to recreate the database.

pg_dumpall

pg_dumpall recursively calls **pg_dump** for each database in a cluster.

pg_resetxlog

pg_resetxlog clears the write-ahead log and optionally resets some fields in the `pg_control` file.

pg_restore

pg_restore creates databases from dump files created by **pg_dump**.

pgtclsh

pgtclsh is a Tcl shell interface extended with PostgreSQL database access functions.

pgtksh

pgtksh is a Tcl/Tk shell interface extended with PostgreSQL database access functions.

postgres

postgres is a single user database server, generally used for debugging.

postmaster

postmaster is the multi-user database daemon.

psql

psql is a console based database shell.

vacuumdb

vacuumdb compacts databases and generates statistics for the query analyzer.

Chapter 24. Web serving

This chapter includes applications that respond to requests originating from the Internet. Specifically covered are HTTP requests and FTP requests.

Apache-2.0.49

Introduction to Apache

The Apache package contains an open-source HTTP server. It is useful for creating local intranet web sites or running huge web serving operations.

Package information

- Download (HTTP): <http://www.apache.org/dist/httpd/httpd-2.0.49.tar.gz>
- Download (FTP): <ftp://ftp.tux.org/pub/net/apache/dist/httpd/httpd-2.0.49.tar.gz>
- Download size: 5.7 MB
- Estimated Disk space required: 75 MB
- Estimated build time: 1.32 SBU

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/httpd-2.0.49-config.patch>

Apache dependencies

Optional

Berkeley DB-4.2.52.2[p.312] or GDBM-1.8.3[p.127], OpenSSL-0.9.7d[p.115], OpenLDAP-2.1.30[p.302] and expat-1.95.7[p.130]

Installation of Apache

For security reasons, running the server as an unprivileged user and group is strongly encouraged.

```
groupadd apache &&
useradd -c apache -d /dev/null -g apache -s /bin/false apache
```

The following patch will define the layout of destination directories and, among them, the build directory at `/usr/lib/apache/build`. This will allow the modules added to Apache to be configured without errors. Apply the patch:

```
patch -Np1 -i ../httpd-2.0.49-config.patch
```

Build and install Apache by running the following commands:

```
./configure --enable-layout=LFS \
            --enable-mods-shared=all &&
make &&
make install
```

Command explanations

`--with-expat=/usr`: Uses system installed expat. *If you have installed expat and do not use this switch, the apache installation may overwrite some files from the expat installation.*

`--enable-mods-shared=all`: We want modules to be compiled and used as Dynamic Shared Objects (DSOs) so they can be included and excluded from the server using the run-time configuration directives.

`--enable-ssl`: Use this switch to create the `mod_ssl` module and enable SSL support.

Configuring Apache

Config files

`/etc/apache/*`

Configuration Information

The main configuration file is called `httpd.conf`. Modify it to run the server as a dedicated user:

```
sed -i -e "s%User nobody%User apache%" -e "s%^Group #-1%Group apache%" /etc/apache/httpd.conf
```

See <http://httpd.apache.org/docs-2.0/configuring.html> for detailed instructions on customizing your Apache HTTP server.

Install `/etc/rc.d/init.d/apache` init script included in the `blfs-bootscripts-5.1[p.31]` package.

```
make install-apache
```

Contents

The Apache package provides **ab**, **apachectl**, **apr-config**, **apu-config**, **apxs**, **checkgid**, **dbmmanage**, **htdbm**, **htdigest**, **htpasswd**, **httpd**, **instdso.sh**, **logresolve**, **rotatelogs**, **libapr**, **libaprutil** and various modules.

Description

ab

ab is a tool for benchmarking your Apache HTTP server.

apachectl

apachectl is a front end to the Apache HTTP server which is designed to help the administrator control the functioning of the Apache `httpd` daemon.

apxs

apxs is a tool for building and installing extension modules for the Apache HTTP server.

dbmmanage

dbmmanage is used to create and update the DBM format files used to store usernames and password for basic authentication of HTTP users.

htdigest

htdigest is used to create and update the flat-files used to store usernames, realm and password for digest authentication of HTTP users.

htpasswd

htpasswd is used to create and update the flat-files used to store usernames and password for basic authentication of HTTP users.

httpd

httpd is the Apache HTTP server program.

instdso.sh

instdso.sh is a script which installs Apache DSO modules.

logresolve

logresolve is a post-processing program to resolve IP-addresses in Apache's access log files.

rotatelogs

rotatelogs is a simple program for use in conjunction with Apache's piped log file feature.

PHP-4.3.6

Introduction to PHP

PHP is the PHP Hypertext Preprocessor. Primarily used in dynamic web sites, it allows for programming code to be directly embedded into the HTML markup.

Package information

- Download (HTTP): <http://us2.php.net/distributions/php-4.3.6.tar.bz2>
- Download (FTP): <ftp://ftp.isu.edu.tw/pub/Unix/Web/PHP/distributions/php-4.3.6.tar.bz2>
- Download size: 3.8 MB
- Estimated Disk space required: 57 MB
- Estimated build time: 0.90 SBU

PHP dependencies

Required

Apache-2.0.49[p.322] and MySQL-4.0.20[p.316]

Optional

OpenSSL-0.9.7d[p.115], bc-1.06[p.165], cURL-7.11.2[p.215], Berkeley DB-4.2.52.2[p.312], libjpeg-6b[p.141], libpng-1.2.5[p.143], FreeType-2.1.7[p.154], GDBM-1.8.3[p.127], MTA, PCRE-4.5[p.117], PostgreSQL-7.4.2[p.318], readline-4.3[p.125], libtiff-3.6.1[p.145], expat-1.95.7[p.130] and GMP-4.1.3[p.126]

Installation of PHP

Install PHP by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
  --with-apxs2 --with-config-file-path=/etc \
  --with-zlib --with-bz2 --enable-ftp --with-gettext \
  --with-iconv --with-mysql=/usr --with-ncurses &&
make &&
make install &&
cp php.ini-recommended /etc/php.ini
```

Note

PHP has many more configure options that will enable support for certain things. You can use **./configure --help** to see a full list of the available options. Also, use of the PHP web site is highly recommended, as their online docs are very good.

Configuring PHP

Config files

/etc/php.ini, /etc/pear.conf

Configuration Information

To enable PHP support in the Apache web server, a new AddType directive must be added to the httpd.conf file:

```
AddType application/x-httpd-php .php
```

Also, it can be useful to add an entry for `index.php` to the `DirectoryIndex` directive of the `httpd.conf` file.

Contents

The PHP package contains **pear**, **php**, **php-config**, **phpextdist** and **phpize**.

Description

php

php is a command line interface that enables you to parse and execute PHP code.

ProFTPD-1.2.9

Introduction to ProFTPD

The ProFTPD package contains a secure and highly configurable FTP daemon. This is useful for serving large file archives over a network.

Package information

- Download (HTTP): <http://ftp.proftpd.org/distrib/source/proftpd-1.2.9.tar.bz2>
- Download (FTP): <ftp://ftp.proftpd.org/distrib/source/proftpd-1.2.9.tar.bz2>
- Download size: 761 KB
- Estimated Disk space required: 6.4 MB
- Estimated build time: 0.27 SBU

ProFTPD dependencies

Optional

Linux-PAM-0.77[p.66]

Installation of ProFTPD

For security reasons, running ProFTPD as an unprivileged user and group is encouraged.

```
groupadd proftpd &&
useradd -c proftpd -d /home/ftp -g proftpd -s /bin/false proftpd
```

Install ProFTPD by running the following commands:

```
install_user=proftpd install_group=proftpd \
./configure --prefix=/usr --sysconfdir=/etc \
--localstatedir=/var/run &&
make &&
make install
```

Command explanations

install_user=proftpd install_group=proftpd: Specify the user and group identity for ProFTPD.

--prefix=/usr: This installs ProFTPD in /usr instead of /usr/local.

--sysconfdir=/etc: This prevents the configuration files from going to /usr/etc.

--localstatedir=/var/run: This uses /var/run instead of /usr/var for lock files.

Configuring ProFTPD

proftpd init.d script

Install /etc/rc.d/init.d/proftpd init script included in the blfs-bootscripts-5.1[p.31] package.

```
make install-proftpd
```

Config files

/etc/proftpd.conf

This is a simple, download-only sample configuration. See the ProFTPD documentation in `/usr/share/doc/proftpd` and consult the website at <http://www.proftpd.org/> for example configurations.

```
cat > /etc/proftpd.conf << "EOF"
# This is a basic ProFTPD configuration file
# It establishes a single server and a single anonymous login.

ServerName                "ProFTPD Default Installation"
ServerType                standalone
DefaultServer             on

# Port 21 is the standard FTP port.
Port                      21
# Umask 022 is a good standard umask to prevent new dirs and files
# from being group and world writable.
Umask                     022

# To prevent DoS attacks, set the maximum number of child processes
# to 30.  If you need to allow more than 30 concurrent connections
# at once, simply increase this value.  Note that this ONLY works
# in standalone mode, in inetd mode you should use an inetd server
# that allows you to limit maximum number of processes per service
# (such as xinetd)
MaxInstances              30

# Set the user and group that the server normally runs at.
User                      proftpd
Group                     proftpd

# Normally, we want files to be overwritable.
<Directory /*>
    AllowOverwrite        on
</Directory>

# A basic anonymous configuration, no upload directories.
<Anonymous ~proftpd>
    User                   proftpd
    Group                  proftpd
    # We want clients to be able to login with "anonymous" as well as "proftpd"
    UserAlias              anonymous proftpd

    # Limit the maximum number of anonymous logins
    MaxClients             10

    # We want 'welcome.msg' displayed at login, and '.message' displayed
    # in each newly chdired directory.
    DisplayLogin            welcome.msg
    DisplayFirstChdir       .message

    # Limit WRITE everywhere in the anonymous chroot
    <Limit WRITE>
        DenyAll
    </Limit>
</Anonymous>
EOF
```

Contents

The ProFTPD package contains `ftpcount`, `ftpshut`, `ftptop`, `ftpwho` and `proftpd`.

Description

ftpcount

ftpcount shows current number of connections.

ftpshut

ftpshut shuts down all proftpd servers at a given time.

ftptop

ftptop displays running status on connections.

ftpwho

ftpwho shows current process information for each session.

proftpd

proftpd is the daemon itself.

Part VIII. X + Window Managers

Chapter 25. X Window Environment

This chapter contains a graphical user environment.

Xorg-6.7.0

Introduction to Xorg

Note

There are two packages in BLFS that implement the X Window System: Xorg and XFree86. These packages are quite similar. In fact the base system of Xorg is XFree86-RC2. The primary difference as of this writing is the license provisions of the packages. For someone building a package for their own use, these issues are not significant. Most large commercial distributions have decided to use the Xorg package, but several still use XFree86.

A second reason for the forking of X packages is the stated goals of the developers. Some developers were unhappy with the administration and progress of XFree86. Xorg's future plans include significant improvements to the internals of the system and more frequent releases.

XFree86 continues to be a solid, conservative application with excellent driver support.

Both Xorg and XFree86 can be installed in the same way, but this section will provide a slightly different and more current variation for installation.

Xorg is a freely redistributable open-source implementation of the X Window System. This application provides a client/server interface between display hardware (the mouse, keyboard, and video displays) and the desktop environment while also providing both the windowing infrastructure and a standardized application interface (API).

Package information

- Download (HTTP): <http://freedesktop.org/~xorg/X11R6.7.0/src/>
- Download (FTP):
- Download size: 70.3 MB
- Estimated Disk space required: 645 MB
- Estimated build time: 17.1 SBU

Xorg Dependencies

Required

libpng-1.2.5[p.143], expat-1.95.7[p.130], FreeType-2.1.7[p.154] and Fontconfig-2.2.2[p.155].

Download Instructions

There are several files that need to be fetched from the download location:

- X11R6.7.0-src1.tar.gz
- X11R6.7.0-src2.tar.gz
- X11R6.7.0-src3.tar.gz
- X11R6.7.0-src4.tar.gz
- X11R6.7.0-src5.tar.gz
- X11R6.7.0-src6.tar.gz
- X11R6.7.0-src7.tar.gz

The first package contains the Xorg libraries and support programs, the second contains standard X programs, the third

contains the X server, the fourth and fifth are fonts, the sixth is normal documentation, and the seventh is hardcopy documentation.

To check your downloads for integrity, download the md5sums file. Then:

```
md5sum -c md5sums
```

All seven packages should give an OK status.

Installation of Xorg

Kernel Compilation Settings

If you have an Intel P6 (Pentium Pro, Pentium II and later) it is recommended that you compile MTRR (Memory Type Range Registers) support into the kernel. The kernel can map Cyrix and AMD CPUs to the MTRR interface so selecting this option is useful for those processors also. This option is found in the "Processor type and features" menu. It can increase performance of image write operations 2.5 times or more on PCI or AGP video cards.

In the "Character Devices" section, enable AGP Support and select the chipset support on your motherboard. If you do not know the chipset, you may select all the chip types at the expense of extra kernel size. You can usually determine your motherboard's chipset by doing:

```
cat /proc/pci
```

In the "Character Devices" section, *disable* Direct Rendering Manager unless you have a Direct Rendering Infrastructure (DRI) supported video card. A complete list of DRI supported video cards can be found at <http://dri.sourceforge.net> in the Status section. Currently, supported cards include those from 3dfx (Voodoo, Banshee), 3Dlabs, ATI (Rage Pro, Rage 128, Radeon 7X00, Radeon 2), Intel (i810, i815), and Matrox (G200, G400, G450). If you do enable DRI here, make sure you select the video card(s) you want to support as a *module*.

Additionally NVidia provides their own closed source binary drivers, which do not make use of DRI. If you intend to use these drivers, do not enable DRI.

If you made any changes to the kernel configuration, recompile the kernel.

Copy the `arch/i386/boot/bzImage` and `System.map` from the kernel build directory to `/boot`. Edit `/boot/grub/grub.conf` and add the new kernel to the boot menu. (If you use lilo, edit `/etc/lilo.conf` and run `lilo`.)

Note

If you build Xorg in a chroot environment, make sure the kernel version of the base system and the target system are the same. This is especially important if you enabled DRI support as a module as instructed above.

Setting Up a Shadow Directory

When building Xorg you should create a shadow directory of symbolic links for the compiled code. To do that, we first make the `lndir`. Starting from the `xc` directory:

```
pushd config/util &&
make -f Makefile.ini lndir &&
cp lndir /usr/bin/ &&
popd
```

Now create the shadow tree:

```
mkdir ../xcbuild &&
cd ../xcbuild &&
```

```
ln -s ../xc
```

Creating host.def

The next step is to create the `config/cf/host.def` file. The documentation for Xorg indicates that the application will build without a `host.def` file, but the included libraries for `fontconfig` and `freetype2` do not build properly on a base LFS system so we must specify that we have those and some other libraries too.

Note

`config/cf/host.def` is a C file, not a shell script. Be sure to make sure the comments delimited by `/*` ... `*/` are balanced when modifying the file.

```
cat > config/cf/host.def << "EOF"
/* Begin Xorg host.def file */

/* System Related Information.  If you read and configure only one
 * section then it should be this one.  The Intel architecture defaults are
 * set for a i686 and higher.  Axp is for the Alpha architecture and Ppc is
 * for the Power PC.  AMD64 is for the Opteron processor. Note that there have
 * been reports that the Ppc optimization line causes segmentation faults during
 * build.  If that happens, try building without the DefaultGcc2PpcOpt line.  *****/

/* #define DefaultGcc2i386Opt -O2 -fno-strength-reduce -fno-strict-aliasing -march=i686 */
/* #define DefaultGccAMD64Opt -O2 -fno-strength-reduce -fno-strict-aliasing */
/* #define DefaultGcc2AxpOpt -O2 -mcpu=ev6 */
/* #define DefaultGcc2PpcOpt -O2 -mcpu=750 */

#define HasFreetype2          YES
#define HasFontconfig        YES
#define HasExpat              YES
#define HasLibpng             YES
#define HasZlib               YES

/*
 * Which drivers to build.  When building a static server, each of these
 * will be included in it.  When building the loadable server each of these
 * modules will be built.
 */
#define XF86CardDrivers      mga glint nv tga s3virge sis rendition \
                             neomagic i740 tdfx savage \
                             cirrus vmware tseng trident chips apm \
                             GlideDriver fbdev i128 \
                             ati AgpGartDrivers DevelDrivers ark cyrix \
                             siliconmotion \
                             vesa vga XF86OSCardDrivers XF86ExtraCardDrivers

/*
 *
 * Select the XInput devices you want by uncommenting this.
 */
#define XInputDrivers        mouse keyboard acecad calcomp citron \
                             digitaledge dmc dynapro elographics \
                             microtouch mutouch penmount spaceorb summa \
                             wacom void magictouch aiptek

/*
 * Most installs will only need this */
#define XInputDrivers        mouse keyboard
```

```
/* End Xorg host.def file */
EOF
```

There are several other options that you may want to consider. A well documented example file is `config/cf/xorgsite.cf`.

Build Commands

Install Xorg by running the following commands:

```
( make World 2>&1 | tee xorg-compile.log && exit $PIPESTATUS ) &&
make install &&
make install.man &&
ln -sf ../X11R6/bin /usr/bin/X11 &&
ln -sf ../X11R6/lib/X11 /usr/lib/X11 &&
ln -sf ../X11R6/include/X11 /usr/include/X11
```

Updating Direct Rendering Infrastructure (DRI)

If you have one of the supported DRI cards and have enabled DRI kernel modules as explained above, you now need to update the kernel modules to ensure they are compatible with the current version of Xorg. To do this, perform the following:

```
cd programs/Xserver/hw/xfree86/os-support/linux/drm/kernel &&
make CC=/opt/gcc-2.95.3/bin/gcc -f Makefile.linux &&
mkdir -p /lib/modules/`uname -r`/kernel/drivers/char/drm/ &&
cp gamma.o radeon.o sis.o r128.o i810.o i830.o mga.o tdfx.o \
  /lib/modules/`uname -r`/kernel/drivers/char/drm/ &&
depmod -a
```

Warning

If you recompile or upgrade your kernel, you will need to re-copy the appropriate driver module(s) to the kernel module library and rerun the **depmod -a** command.

Note

If you created AGP support as a module when compiling the kernel, you may have to add a line to `/etc/modules.conf` to ensure the `agpgart` module is loaded. For instance, the AGP version of the Radeon video card will use the `radeon.o` driver. It will need to have the line

```
below radeon agpgart
```

in `/etc/modules.conf` to enable DRI support.

Command explanations

(**make World 2>&1 | tee xorg-compile.log && exit \$PIPESTATUS**): This command runs multiple makefiles to completely rebuild the system. `2>&1` redirects error messages to the same location as normal output. The **tee** command allows viewing of the output while logging the results to a file. The parentheses around the command run the entire command in a subshell and finally the **exit \$PIPESTATUS** ensures the result of the **make** is returned as the result and not the result of the **tee** command.

Note

When rebuilding Xorg, a separate command that may be used if only minor changes are made to the sources is **make Everything**. This does not automatically remove generated files and only rebuilds those files or programs that are out of date.

```
ln -sf ../X11R6/bin /usr/bin/X11
ln -sf ../X11R6/lib/X11 /usr/lib/X11
ln -sf ../X11R6/include/X11 /usr/include/X11
```

These commands are present to enable other (broken) packages to build against Xorg. We do this even though the i Filesystem Hierarchy Standard says: "In general, software must not be installed or managed via the above symbolic links. They are intended for utilization by users only."

make CC=/opt/gcc-2.95.3/bin/gcc -f Makefile.linux: This builds the Xorg compatible kernel modules using the same compiler used to compile the kernel.

cp gamma.o radeon.o sis.o r128.o i810.o i830.o mga.o tdfx.o /lib/modules/`uname -r`/kernel/drivers/char/drm/: Put the kernel module(s) where the kernel can find them. You only need to copy the driver you need to support your video card.

depmod -a: Update the modules.dep file for module management.

Configuring Xorg

Edit `/etc/ld.so.conf` and add `/usr/X11R6/lib`. Run

```
ldconfig
```

Add `/usr/X11R6/bin` to your `PATH` environment variable in `.bash_profile` or `/etc/profile`. The statement should look something like `PATH=$PATH:/usr/X11R6/bin` and be placed before the **export PATH** statement.

Expand the `PKG_CONFIG_PATH` so that other packages can find Xorg libraries. Add the following line to `.bash_profile` for root user:

```
export PKG_CONFIG_PATH=/usr/X11R6/lib/pkgconfig
```

Run

```
source ~/.bash_profile
```

Set up your mouse:

```
ln -s psaux /dev/mouse
```

Adjust the symbolic link as necessary for other types of mice. For instance, a serial mouse on the first serial port would be linked to `ttyS1`.

Create the `xorg.conf` file with

```
cd ~
Xorg -configure
```

The screen will go black and you may hear some clicking of the monitor. This command will create a file, `xorg.conf.new` in your home directory.

Edit `xorg.conf.new` to suit your system. The details of the file are located in the man page **man xorg.conf**. Some things you may want to do are:

- Section "Files". Change the order of the font paths searched. You may want to put 100dpi fonts ahead of 75dpi fonts if your system normally comes up closer to 100 dots per inch. You may want to remove some font directories completely.
- Section "Monitor". Specify the *VertRefresh* and *HorizSync* values if the system does not automatically detect the monitor and its values.
- Section "InputDevice". You may want to change the keyboard autorepeat rate by adding *Option "Autorepeat"*

"250 30".

- Section "Device". You may want to set some of the options available for your selected video driver. A description of the driver parameters is in the man page for your driver.
- Section "Screen". Add a `DefaultDepth` statement such as: `DefaultDepth 16`. In the SubSection for your default depth, add a modes line such as: `Modes "1280x1024" "1024x768"`. The first mode listed will normally be the starting resolution.

Test the system with

```
X -xf86config ~/xorg.conf.new
```

You will only get a gray background with an X-shaped mouse cursor, but it confirms the system is working. Exit with Control-Alt-Backspace. If the system does not work, take a look at `/var/log/Xorg.0.log` to see what went wrong.

Move the configuration file to its final location

```
mv ~/xorg.conf.new /etc/X11/xorg.conf
```

Create `.xinitrc`

```
cat > ~/.xinitrc << "EOF"
# Begin .xinitrc file
xterm -g 80x40+0+0 &
xclock -g 100x100-0+0 &
twm
EOF
```

This provides an initial screen with an xterm and a clock that is managed by a simple window manager, Tab Window Manager. For details of twm, see the man page.

Note

When needed, Xorg creates the directory `/tmp/.ICE-unix` if it does not exist. If this directory is not owned by root, Xorg delays startup by a few seconds and also appends a warning to the logfile. This also affects startup of other applications. To improve performance, it is advisable to manually create the directory before Xorg uses it. Add the file creation to `/etc/sysconfig/createfiles` that is sourced by the `/etc/rc.d/init.d/cleanfs` startup script.

```
cat >> /etc/sysconfig/createfiles << "EOF"
/tmp/.ICE-unix dir 1777 root root
EOF
```

Start X with

```
startx
```

to get basic functional X Window System.

At this point, you should check out the X Window Components at the section called “X Window Components”[p.345].

XFree86-4.4.0

Introduction to XFree86

XFree86 is a freely redistributable open-source implementation of the X Window System. XFree86 provides a client/server interface between display hardware (the mouse, keyboard, and video displays) and the desktop environment while also providing both the windowing infrastructure and a standardized application interface (API).

Package information

- Download (HTTP): <http://gnu.kookel.org/ftp/XFree86/4.4.0/source/>
- Download (FTP): <ftp://ftp.xfree86.org/pub/XFree86/4.4.0/source/>
- Download size: 52 MB
- Estimated Disk space required: 636 MB
- Estimated build time: 14.3 SBU

XFree86 dependencies

Required

libpng-1.2.5[p.143]

Optional

The following packages are included in the XFree86 package, however they are updated more often than the XFree86 package and are highly recommended: expat-1.95.7[p.130], FreeType-2.1.7[p.154] and Fontconfig-2.2.2[p.155]

Note

If you choose not to install these separate packages, the `host.def` file below will have to be modified to instruct XFree86 to build them.

Download Instructions

There are several files that need to be fetched from the download location:

- XFree86-4.4.0-src-1.tgz
- XFree86-4.4.0-src-2.tgz
- XFree86-4.4.0-src-3.tgz
- XFree86-4.4.0-src-4.tgz
- XFree86-4.4.0-src-5.tgz
- XFree86-4.4.0-src-6.tgz
- XFree86-4.4.0-src-7.tgz

The first three packages are the XFree86 programs, the fourth and fifth are fonts, the sixth is normal documentation, and the seventh is hardcopy documentation. There are also two packages `doctools-1.3.1.tgz`, which contain programs to regenerate hardcopy documentation, and `utils-1.1.0.tgz`, which contain GNU TAR and zlib which are already installed on an LFS system.

To check your downloads for integrity, download the `SUMS.md5sum` file. Then:

```
md5sum -c SUMS.md5sum
```

The only errors you should see are for `README`, `doctools-1.3.1.tgz`, and `utils-1.1.0.tgz` files if you did not download them.

Installation of XFree86

Kernel Compilation Settings

If you have an Intel P6 (Pentium Pro, Pentium II and later) it is recommended that you compile MTRR (Memory Type Range Registers) support into the kernel. The kernel can map Cyrix and AMD CPUs to the MTRR interface so selecting this option is useful for those processors also. This option is found in the "Processor type and features" menu. It can increase performance of image write operations 2.5 times or more on PCI or AGP video cards.

In the "Character Devices" section, enable AGP Support and select the chipset support on your motherboard. If you do not know the chipset, you may select all the chip types at the expense of extra kernel size. You can usually determine your motherboard's chipset by doing:

```
cat /proc/pci
```

In the "Character Devices" section, *disable* Direct Rendering Manager unless you have a Direct Rendering Infrastructure (DRI) supported video card. A complete list of DRI supported video cards can be found at <http://dri.sourceforge.net> in the Status section. Currently, supported cards include those from 3dfx (Voodoo, Banshee), 3Dlabs, ATI (Rage Pro, Rage 128, Radeon 7X00, Radeon 2), Intel (i810, i815), and Matrox (G200, G400, G450). If you do enable DRI here, make sure you select the video card(s) you want to support as a *module*.

Additionally NVidia provides their own closed source binary drivers, which do not make use of DRI. If you intend to use these drivers, do not enable DRI.

If you made any changes to the kernel configuration, recompile the kernel.

Copy `/usr/src/linux/arch/i386/boot/bzImage` and `/usr/src/linux/System.map` to `/boot`, edit `/etc/lilo.conf` appropriately and run `lilo`. If you use `grub`, edit `/boot/grub/grub.conf` and add the new kernel to the boot menu.

Note

If you build XFree86 in a chroot environment, make sure the kernel version of the base system and the target system are the same. This is especially important if you enabled DRI support as a module as instructed above.

Creating `host.def`

Although XFree86 will compile without a `host.def` file, the following file is recommended for customizing the installation. Start from the `xc` directory.

Note

The `host.def` file is a C file, not the usual configuration file. If you make any changes, be sure the comment characters (`/*` and `*/`) are balanced. Most of the entries in the file below are commented out with the default settings shown.

```
cat > config/cf/host.def << "EOF"
/* Begin XFree86 host.def file */

/* System Related Information.  If you read and configure only one
 * section then it should be this one.  The Intel architecture defaults are
 * set for a i686 and higher.  Axp is for the Alpha architecture and Ppc is
 * for the Power PC.  Note that there have been reports that the Ppc
 * optimization line causes segmentation faults during build.  If that
 * happens, try building without the DefaultGcc2PpcOpt line.  *****/

/* #define DefaultGcc2i386Opt    -O2 -fomit-frame-pointer -march=i686 */
/* #define DefaultGcc2AxpOpt     -O2 -mcpu=ev6 */
```

```

/* #define DefaultGcc2PpcOpt    -O2 -mcpu=750 */

/* The following definitions are normally set properly by XFree86's scripts.
 * You can uncomment them if you want to make sure. *****/

/* #define HasMTRRSupport      YES  */ /* Enabled in kernel see kernel docs*/
/* #define HasMMXSupport       NO   */ /* Any i586 or above */
/* #define HasKatmaiSupport    NO   */ /* PIII SSE instructions */
/* #define Has3DNowSupport     NO   */ /* AMD instructions */

/* This setting reduces compile time a little by omitting rarely used input
 * devices. You can find the complete list in config/cf/xfree86.cf *****/

#define XInputDrivers          mouse void

/* VIDEO DRIVERS *****/

/* If you are sure you only want the drivers for one or a few video cards,
 * you can delete the drivers you do not want. *****/

#define XF86CardDrivers      mga glint nv tga s3 s3virge sis rendition \
                             neomagic i740 tdfx savage \
                             cirrus vmware tseng trident chips apm \
                             GlideDriver fbdev i128 nsc \
                             ati i810 AgpGartDrivers DevelDrivers ark \
                             cyrix siliconmotion \
                             vesa vga \
                             dummy XF86OSCardDrivers XF86ExtraCardDrivers

/* USER AND SYSTEM DEFAULT PATHS *****/

/* These settings set the PATH variables used by xdm. See README for *****/
/* detailed description and modify the following as per your need. *****/

/* #define DefaultSystemPath /usr/bin:/bin:/usr/sbin:/sbin:/usr/X11R6/bin */
/* #define DefaultUserPath  /usr/bin:/bin:/usr/X11R6/bin */

/* FONT SERVER AND LIBRARY SETTINGS *****/

/* These settings are the defaults *****/

/* #define BuildFontServer    YES  */ /* For Ghostscript Print Server*/
/* #define SharedLibFont      YES  */
/* #define CompressAllFonts   YES  */
/* #define GzipFontCompression YES  */

/* These settings ensure we use our libraries *****/
#define HasFreetype2         YES
#define HasFontconfig        YES
#define HasExpat              YES
#define HasLibpng             YES
#define HasZlib               YES

/* The font path can be redefined in the XF86Config file *****/

/*
#define DefaultFontPath      $(FONTDIR)/misc/, $(FONTDIR)/75dpi/, \
$(FONTDIR)/100dpi/, $(FONTDIR)/Type1, $(FONTDIR)/local, \
$(FONTDIR)/TrueType, $(FONTDIR)/CID, $(FONTDIR)/Speedo
*/

```

```

/* INTERNATIONAL FONTS.  Change to YES if you need any of them.  These are
 * the defaults. *****/

/* #define BuildCyrillicFonts          NO */
/* #define BuildArabicFonts            NO */
/* #define BuildISO8859_6Fonts         NO */
/* #define BuildGreekFonts             NO */
/* #define BuildISO8859_7Fonts         NO */
/* #define BuildHebrewFonts            NO */
/* #define BuildISO8859_8Fonts         NO */
/* #define BuildKOI8_RFonts            NO */
/* #define BuildJapaneseFonts          NO */
/* #define BuildJISX0201Fonts          NO */
/* #define BuildKoreanFonts            NO */
/* #define BuildChineseFonts           NO */

/* DOCUMENTATION SETTINGS *****/

/* These setting are the defaults. *****/

/* #define BuildLinuxDocHtml           NO */ /* X Docs in Html format */
/* #define BuildLinuxDocPS             NO */ /* PostScript format */
/* #define BuildAllSpecsDocs           NO */ /* Various docs */
/* #define BuildHtmlManPages           NO */

/* GENERAL SETTINGS: You generally want to leave these alone when
 * building X on an LFS system *****/

#define GccWarningOptions              -pipe /* Speed up compiles */
#define TermcapLibrary                 -lnurses
#define XprtServer                     YES /* Needed by realplayer */
#define XnestServer                    YES
#define XAppLoadDir                    EtcX11Directory/app-defaults
#define VarLibDir                      /var/lib
#define XFree86Devel                   NO
#define FSUseSyslog                     YES
#define ThreadedX                      YES
#define HasPam                         NO
#define SystemManDirectory              /usr/share/man /* Instead of /usr/man */
#define HasLibCrypt                    YES
#define InstallXinitConfig              YES
#define InstallXdmConfig                YES
#define ForceNormalLib                 YES
#define BuildSpecsDocs                 NO

/* End XFree86 host.def file */
EOF

```

Edit the file for your hardware and desires.

Build Commands

Install XFree86 by running the following commands:

```

( make WORLDOPTS="" World 2>&1 | tee xfree-compile.log && exit $PIPESTATUS ) &&
make install &&
make install.man &&
ln -sf ../X11R6/bin /usr/bin/X11 &&
ln -sf ../X11R6/lib/{X11,libGL.so{,.1}} /usr/lib &&
ln -sf ../X11R6/include/{X11,GL} /usr/include

```

Updating Direct Rendering Infrastructure (DRI)

If you have one of the supported DRI cards and have enabled DRI kernel modules as explained above, you now need to update the kernel modules to ensure they are compatible with the current version of XFree86. To do this, perform the following:

```
cd programs/Xserver/hw/xfree86/os-support/linux/drm/kernel &&
make CC=/opt/gcc-2.95.3/bin/gcc -f Makefile.linux &&
mkdir -p /lib/modules/`uname -r`/kernel/drivers/char/drm/ &&
cp gamma.o radeon.o sis.o r128.o i810.o i830.o mga.o tdfx.o \
/lib/modules/`uname -r`/kernel/drivers/char/drm/ &&
depmod -a
```

Warning

If you recompile or upgrade your kernel, you will need to re-copy the appropriate driver module(s) to the kernel module library and rerun **depmod**.

Note

If you created AGP support as a module when compiling the kernel, you may have to add a line to `/etc/modules.conf` to ensure the `agpgart` module is loaded. For instance, the AGP version of the Radeon video card will use the `radeon.o` driver. It will need to have the line

```
below radeon agpgart
```

in `/etc/modules.conf` to enable DRI support.

Command explanations

(**make** `WORLDOPTS="" World 2>&1 | tee xfree-compile.log && exit $PIPESTATUS`): This command runs multiple makefiles to completely rebuild the system. `WORLDOPTS=""` disables the default setting to continue after encountering an error. `2>&1` redirects error messages to the same location as normal output. The **tee** command allows viewing of the output while logging the results to a file. The parentheses around the command run the entire command in a subshell and finally the **exit \$PIPESTATUS** ensures the result of the **make** is returned as the result and not the result of the **tee** command.

Note

When rebuilding XFree86, a separate command that may be used if only minor changes are made to the sources is **make Everything**. This does not automatically remove generated files and only rebuilds those files or programs that are out of date.

```
ln -sf ../X11R6/bin /usr/bin/X11
ln -sf ../X11R6/lib/{X11,libGL.so{,.1}} /usr/lib
ln -sf ../X11R6/include/{X11,GL} /usr/include
```

These commands are present to enable other (broken) packages to build against XFree86. We do this even though the Filesystem Hierarchy Standard says: "In general, software must not be installed or managed via the above symbolic links. They are intended for utilization by users only."

make `CC=/opt/gcc-2.95.3/bin/gcc -f Makefile.linux`: This builds the XFree86 compatible kernel modules using the same compiler used to compile the kernel.

cp `gamma.o radeon.o sis.o r128.o i810.o i830.o mga.o tdfx.o /lib/modules/`uname -r`/kernel/drivers/char/drm/`: Put the kernel module(s) where the kernel can find them. You only need to copy the driver you need to support your video card.

depmod -a: Update the modules.dep file for module management.

Configuring XFree86

Edit `/etc/ld.so.conf` and add `/usr/X11R6/lib`. Run

```
ldconfig
```

Add `/usr/X11R6/bin` to your PATH environment variable in `.bash_profile`. The statement should look something like `PATH=$PATH:/usr/X11R6/bin` and be placed before the **export PATH** statement.

Expand the `PKG_CONFIG_PATH` so that other packages can find XFree86 libraries. Add the following line to `.bash_profile` for root user:

```
export PKG_CONFIG_PATH=/usr/X11R6/lib/pkgconfig
```

Run

```
source ~/.bash_profile
```

Set up your mouse:

```
ln -s psaux /dev/mouse
```

Adjust the symbolic link as necessary for other types of mice. For instance, a serial mouse on the first serial port would be linked to `ttyS1`.

Create the `XF86Config` file with

```
cd ~
XFree86 -configure
```

The screen will go black and you may hear some clicking of the monitor. This command will create a file, `XF86Config.new` in your home directory.

Edit `XF86Config.new` to suit your system. The details of the file are located in the man page **man XF86Config**. Some things you may want to do are:

- Section "Files". Change the order of the font paths searched. You may want to put 100dpi fonts ahead of 75dpi fonts if your system normally comes up closer to 100 dots per inch. You may want to remove some font directories completely.
- Section "Monitor". Specify the *VertRefresh* and *HorizSync* values if the system does not automatically detect the monitor and its values.
- Section "InputDevice". You may want to change the keyboard autorepeat rate by adding *Option "Autorepeat" "250 30"*.
- Section "Device". You may want to set some of the options available for your selected video driver. A description of the driver parameters is in the man page for your driver.
- Section "Screen". Add a *DefaultDepth* statement such as: *DefaultDepth 16*. In the SubSection for your default depth, add a modes line such as: *Modes "1280x1024" "1024x768"*. The first mode listed will normally be the starting resolution.

Test the system with

```
XFree86 -xf86config ~/XF86Config.new
```

You will only get a gray background with an X-shaped mouse cursor, but it confirms the system is working. Exit with Control-Alt-Backspace. If the system does not work, take a look at `/var/log/XFree86.0.log` to see what went

wrong.

Move the configuration file to its final location

```
mv ~/XF86Config.new /etc/X11/XF86Config
```

Create `.xinitrc`

```
cat > ~/.xinitrc << "EOF"
# Begin .xinitrc file
xterm -g 80x40+0+0 &
xclock -g 100x100-0+0 &
twm
EOF
```

This provides an initial screen with an xterm and a clock that is managed by a simple window manager, Tab Window Manager. For details of twm, see the man page.

Note

When needed, XFree86 creates the directory `/tmp/.ICE-unix` if it does not exist. If this directory is not owned by root, XFree86 delays startup by a few seconds and also appends a warning to the logfile. This also affects startup of other applications. To improve performance, it is advisable to manually create the directory before XFree86 uses it. Add the file creation to `/etc/sysconfig/createfiles` that is sourced by the `/etc/rc.d/init.d/cleanfs` startup script.

```
cat >> /etc/sysconfig/createfiles << "EOF"
/tmp/.ICE-unix dir 1777 root root
EOF
```

Start X with

```
startx
```

to get basic functional X Window System.

Contents

The XFree86 package contains the X Window System for Linux (and other operating systems). It includes the X server, fonts, xterm, a simple window manager (twm), various utilities, video output drivers, and various input drivers including the mouse and keyboard.

XFree86 also contains libraries and header files for development of the X Window System programs.

Description

Note

The following list of programs is not comprehensive. The full list is in `/usr/X11R6/bin`. For additional information about these programs, see the respective man page.

XFree86

XFree86 is the X11R6 implementation of the X Window System server.

xf86config

xf86config is an interactive program for generating an `XF86Config` file for use with XFree86 X servers.

xf86cfg

xf86cfg is a tool to configure XFree86 that can be used to either write the initial configuration file or make customizations to the current configuration.

startx

startx is a script to initialize the X session. It runs **xinit**.

xinit

xinit is used to start the X Window System server.

twm

twm is a Tab Window Manager for the X Window System.

xterm

xterm is a terminal emulator for X.

xwininfo

xwininfo is a window information utility for X.

x11perf

x11perf is an X11 server performance test program.

xlsfonts

xlsfonts is a program to list fonts available to the X server.

xvidtune

xvidtune is a video mode tuner for XFree86.

xload

xload is a system load average display for X.

xcalc

xcalc is a scientific calculator for X.

xclock and o'clock

Clock programs for X.

xmodmap

xmodmap is a utility for modifying keymaps and pointer button mappings in X.

X Window Components

Checking Direct Rendering Infrastructure (DRI) Installation

DRI is a framework for allowing software to access graphics hardware in a safe and efficient manner. It is installed in X by default if you have a supported video card. To check if DRI is installed properly, check the log file `/var/log/XFree86.0.log` or `/var/log/Xorg.0.log` for statements like:

```
(II) R128(0): Direct rendering enabled
```

From an **xterm**, run **glxinfo** and look for the phrase:

```
direct rendering: Yes
```

You can also run the test program **glxgears**. This program brings up a window with three gears turning. The **xterm** will display how many frames were drawn every five seconds so this is a reasonable benchmark. The window is scalable, and the frames drawn per second is highly dependent on the size of the window.

For troubleshooting problems, check the DRI Users Guide at <http://dri.sourceforge.net/doc/DRIuserguide.html>.

Adding TrueType fonts to X

TrueType font support is built into X. The following items need to be completed to make the fonts available.

- Establish a directory for the fonts and move any TrueType fonts you want into that directory.
- Create the `fonts.scale` and `fonts.dir` files in the TrueType font directory.
- Ensure the TrueType module is loaded in the `XF86Config` or `xorg.conf`.
- Ensure the `FontPath` in `XF86Config` or `Xorg.conf` contains the TrueType font directory.

Establish a TrueType font directory

The build of X as given above automatically creates a TrueType font directory: `/usr/X11R6/lib/X11/fonts/TTF`. This directory already has some TrueType fonts and is set up correctly. If this directory is satisfactory, copy any other TrueType fonts you want into that directory. If not, create a new directory, preferably in the `/usr/X11R6/lib/X11/fonts/` directory and put your TrueType fonts there.

Create `fonts.scale` and `fonts.dir`

Now change to the directory where you have your TrueType fonts and run

```
mkfontscale &&
mkfontdir
```

Ensure TrueType is loaded in `XF86Config` or `xorg.conf`

The "Module" section should look like:

```
Section "Module"
    ...
    Load  "freetype"
    ...
EndSection
```


Ensure the *FontPath* in *XF86Config* points to the TrueType font directory

The "Files" section should look like

```
Section "Files"
    ...
    FontPath "/usr/X11R6/lib/X11/fonts/[TrueTypeDir]/"
    ...
EndSection
```

Update the font cache files

Finally, to update all the font cache files specified in */etc/fonts/fonts.conf*, run

```
fc-cache
```

X will now be able to use TrueType fonts when it is restarted. You can check to see if the new fonts are available with the **xlsfonts** or **xfontsel** program.

Note

You should re-run **mkfontscale** and **mkfontdir** any time you add or delete TrueType fonts. You should also rerun **fc-cache** each time you add or remove any fonts.

Setting up keyboards

In this version of X, it has been reported that non-Latin keyboard layouts do not include Latin configurations as was previous practice. To set up a keyboard for Latin and non-Latin input, change the *XkbLayout* keyboard driver option in the *InputDevice* section of the *XF86Config* or *xorg.conf* file. For example:

```
Section "InputDevice"
    Identifier      "Keyboard0"
    Driver          "Keyboard"
    Option "XkbModel"      "pc105"
    Option "XkbLayout"     "en_US,ru"
    Option "XkbOptions"    "grp:switch,grp:alt_shift_toggle,grp_led:scroll"
EndSection
```

In this example, you can use the Alt-Shift combination to switch between keyboard layouts and use the Scroll Lock LED to indicate when the second layout is active.

Setting up XDM

xdm provides a graphical logon capability and is normally set up in */etc/inittab*. Most of the information you need to customize **xdm** is found in its man page. To execute **xdm** during bootup, change the *initdefault* level to 5 and add the following lines to */etc/inittab*:

```
# Run xdm as a separate service
x:5:respawn:/usr/X11R6/bin/xdm -nodaemon
```

Using X Resources

There are many options that can be set in X and X clients via resources. Typically resources are set in the *~/.Xresources* file.

The layout of the *~/.Xresources* file consists if a list of specifications in the form of

```
object.subobject[.subobject...].attribute: value
```

Components of a resource specification are linked together by either *tight*, represented by a dot (.), or *loose*, represented by an asterisk (*), bindings. A tight binding indicates that the components on either side of the dot must be directly next to each other as defined in a specific implementation. An asterisk is a wildcard character that means that any number of levels in a defined hierarchy can be between the components. For example, X offers two special cursors: redglass and whiteglass. To use one of these resources, you need to add the following line:

```
Xcursor.theme: whiteglass
```

However, you can specify the background for all clients with:

```
*background: blue
```

More specific resource variables will override less specific names.

Resource definitions can be found in the man pages for each respective client.

In order to load your resources, the **xrdb** program must be called with the appropriate parameters. Typically, the first time resources are loaded, you use:

```
xrdb -load <filename>
```

To add resources to X's database in memory use:

```
xrdb -merge <filename>
```

The **xrdb** instruction is usually placed in `~/.xinitrc` or `~/.xsession`. To get more information, see the **xrdb** man page.

Chapter 26. X Libraries

This chapter does not contain libraries that are required to run X. It does contain libraries that enhance X. The enhancement is as simple as font support or as complex as libraries that sit between X and applications that run on X whose purpose is to standardize the look and feel and inter-process communications so that applications written by different programmers end up looking and acting similarly. They also assist programmers by supplying common elements.

Qt-3.3.2

Introduction to Qt

The Qt package contains a C++ GUI library. This is useful for creating graphical applications or executing graphical applications that are dynamically linked to the Qt library. One of the major users of Qt is KDE.

Package information

- Download (HTTP): <http://sunsite.rediris.es/mirror/Qt/source/qt-x11-free-3.3.2.tar.bz2>
- Download (FTP): <ftp://ftp.trolltech.com/qt/source/qt-x11-free-3.3.2.tar.bz2>
- MD5 Sum: 903cad618274ad84d7d13fd0027a6c3c
- Download size: 14 MB
- Estimated Disk space required: 165 MB
- Estimated build time: 21.2 SBU (full), 13.4 SBU (sub-tools)

Qt dependencies

Required

Chapter 25, *X Window Environment*[p.331]

Recommended

libjpeg-6b[p.141] and libmng-1.0.7[p.151].

Optional

NAS-1.6[p.550], CUPS-1.1.20[p.592], MySQL-4.0.20[p.316], PostgreSQL-7.4.2[p.318], Firebird, and unixODBC.

Installation of Qt

There are several ways to install a complicated package such as Qt. The files are not completely position independent. Installation procedures execute the program `pkg-config` to determine the location of package executables, libraries, headers, and other files. For Qt, `pkg-config` will look for the file `lib/pkgconfig/qt-mt.pc` which must be modified if relocating the package. This file is set up correctly by the build process.

The default installation places the files in `/usr/local/qt/`. Many commercial distributions place the files in the system's `/usr` hierarchy. The package can also be installed in an arbitrary directory.

This section will demonstrate two different methods.

Note

The build time for Qt is quite long. If you want to save some time and don't want the tutorials and examples, change the first make line to:

```
make sub-tools
```

Method 1 - Installing in the /usr hierarchy

The advantage of this method is that no updates to the `/etc/ld.so.conf` or `/etc/man.conf` files are required. The package files are distributed within several subdirectories of the `/usr` hierarchy. This is the method that most commercial distributions use.

```
sed -i "s:cp -f:install:" mkspecs/linux-g++/qmake.conf &&
bash
export PATH=$PWD/bin:$PATH &&
export LD_LIBRARY_PATH=$PWD/lib:$LD_LIBRARY_PATH &&
./configure -prefix /usr -docdir /usr/share/doc/qt \
    -headerdir /usr/include/qt -plugindir /usr/lib/qt/plugins \
    -datadir /usr/share/qt -translationdir /usr/share/qt/translations \
    -sysconfdir /etc/qt -qt-gif -system-zlib \
    -no-exceptions -thread -plugin-imgfmt-png -system-libpng &&
find -type f -name Makefile | xargs sed -i "s@-Wl,-rpath,/usr/lib@g" &&
make &&
make install &&
ln -sf libqt-mt.so /usr/lib/libqt.so &&
cp -r doc/man /usr/share &&
cp -r examples /usr/share/doc/qt &&
exit
```

Method 2 - Installing in /opt

This is the method recommended by the Qt developers. It has the advantage of keeping all the package files consolidated in a dedicated directory hierarchy. By using this method, an update can be made without overwriting a previous installation and users can easily back up to a previous version by changing one symbolic link.

The Qt developers use a default location of `/usr/local/qt/`, however this procedure puts the files in `/opt/qt-3.3.2/` and then creates a symbolic link to `/opt/qt/`.

```
bash
export QTDIR=$PWD &&
export LD_LIBRARY_PATH=$PWD/lib:$LD_LIBRARY_PATH &&
export PATH=$PWD/bin:$PATH &&
./configure -prefix /opt/qt-3.3.2 -qt-gif -system-libpng \
    -system-libmng -system-zlib -system-libjpeg -no-exceptions \
    -thread -plugin-imgfmt-png &&
make &&
make install &&
ln -sf qt-3.3.2 /opt/qt &&
ln -s libqt-mt.so /opt/qt/lib/libqt.so &&
cp -r doc/man /opt/qt/doc &&
cp -r examples /opt/qt/doc
exit
```

Configuration

For Method 2 only, update the `/etc/ld.so.conf` and `/etc/man.conf` files.

```
cat >> /etc/ld.so.conf << "EOF"
# Begin qt addition to /etc/ld.so.conf

/opt/qt/lib

# End qt addition
EOF
ldconfig

cat >> /etc/man.conf << "EOF"
# Begin qt addition to man.conf
```

```
MANPATH /opt/qt/doc/man
# End qt addition to man.conf
EOF
```

Also, `QTDIR` needs to be set when compiling packages that depend on Qt. Add the following so that it is available when compiling packages.

```
export QTDIR=/opt/qt
```

Command explanations

sed -i "s:cp -f:install:" mkspecs/linux-g++/qmake.conf: `install` is safer than `cp` when libraries are in use.

bash: This command enters a sub-shell to isolate environment changes.

export QTDIR=\$PWD: This command defines where the root of the Qt directory is located.

export LD_LIBRARY_PATH=\$PWD/lib:\$LD_LIBRARY_PATH: This command allows the not yet installed qt libraries to be used by the not yet installed qt programs.

export PATH=\$PWD/bin:\$PATH: This command allows the build process to find supporting executables.

-qt-gif: This switch adds support for gif files to the libraries.

-system-zlib -system-libpng: This switch forces the library to use the shared libraries that are on your system instead of recreating its own set of support libraries for these functions.

-no-exceptions: This switch disables the exceptions coding generated by the C++ compiler.

-thread: This switch adds support for multi-threading.

find -type f -name Makefile | xargs sed -i "s@-Wl,-rpath,/usr/lib@@g": This command removes hardcoded run-time path, else `uic` tries to run with system installed Qt libraries.

ln -s libqt-mt.so /usr/lib/libqt.so: This command allows configure scripts to find a working Qt installation.

cp -r doc/man /usr/share (or /opt/qt/doc): This command installs the man pages which are missed by `make install`.

cp -r examples /usr/share/doc/qt (or /opt/qt/doc): This command installs the examples which are missed by `make install`.

exit: This command returns to the parent shell and eliminates environment variables set earlier.

Configuring Qt

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that `ldd` can find the shared libraries. After checking that this is the case, `/sbin/ldconfig` should be run while logged in as root.

Contents

The Qt/X11 library contains API's necessary to use programs based on Qt GUI toolkit.

The Qt package contains `assistant`, `designer`, `linguist`, `lrelease`, `lupdate`, `moc`, `qm2ts`, `qmake`, `qtconfig`, `uic`, and the `libqt-mt` and `libqui` libraries.

GTK+-1.2.10

Introduction to GTK+

The GTK+ package contains GTK+ Libraries. This is useful for creating graphical user interfaces for applications.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/graphics/gimp/gtk/v1.2/gtk+-1.2.10.tar.gz>
- Download (FTP): <ftp://ftp.gtk.org/pub/gtk/v1.2/gtk+-1.2.10.tar.gz>
- Download size: 2.7 MB
- Estimated Disk space required: 54 MB
- Estimated build time: 1.96 SBU

GTK+ dependencies

Required

GLib-1.2.10[p.128], libtiff-3.6.1[p.145], libjpeg-6b[p.141] and X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331])

Installation of GTK+

Install GTK+ by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc`: This installs the configuration files into `/etc` instead of `/usr/etc`.

`--with-xinput=xfree`: This configuration flag is necessary to utilize alternative input devices.

Contents

The GTK+ package contains `libgtk-1.2` libraries.

Description

GTK+ Libraries

GTK+ Libraries provide the API to implement graphical user interfaces.

Pango-1.4.0

Introduction to Pango

The Pango package contains the `libpango` library. This is useful for the layout and rendering of text.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/graphics/gimp/gtk/v2.4/pango-1.4.0.tar.gz>
- Download (FTP): <ftp://ftp.gtk.org/pub/gtk/v2.4/pango-1.4.0.tar.gz>
- Download size: 1.4 MB
- Estimated Disk space required: 22.8 MB
- Estimated build time: 0.49 SBU

Pango dependencies

Required

GLib-2.4.1[p.129]

Optional

Xft (included in XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), FreeType-2.1.7[p.154], Fontconfig-2.2.2[p.155] and GTK-Doc-1.2[p.407]

Installation of Pango

In order for Pango to find Xft, the `PKG_CONFIG_PATH` must include `/usr/X11R6/lib/pkgconfig`. This is a good place to add it if you haven't already. Specific instructions for modifying this variable can be found in the configuration section of `pkgconfig-0.15.0`[p.181].

Install Pango by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&  
make &&  
make install
```

Command explanations

`--sysconfdir=/etc`: This switch installs the configuration files into `/etc` instead of `/usr/etc`.

`--enable-gtk-doc`: This switch will rebuild the API documentation during the **make** command.

Contents

The Pango package contains `libpango` libraries.

Description

Pango libraries

Pango libraries contain low level layout rendering routines, a high level driver for laying out entire blocks of text, and routines to assist in editing internationalized text.

ATK-1.6.1

Introduction to ATK

The ATK package contains the ATK libraries. They are useful for allowing accessibility solutions to be available for all GTK2 applications.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/atk/1.6/atk-1.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/atk/1.6/atk-1.6.1.tar.bz2>
- Download size: 482 KB
- Estimated Disk space required: 7.9 MB
- Estimated build time: 0.13 SBU

ATK dependencies

Required

GLib-2.4.1[p.129]

Optional

GTK-Doc-1.2[p.407]

Installation of ATK

Install ATK by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Command explanations

`--enable-gtk-doc`: This switch will rebuild the API documentation during the **make** command.

Contents

The ATK package contains `libatk` libraries.

Description

ATK Libraries

ATK libraries contain the API used by assistive technologies in order to interact with the desktop and applications.

GTK+-2.4.1

Introduction to GTK+

The GTK+ package contains GTK+ Libraries. This is useful for creating graphical user interfaces for applications.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/graphics/gimp/gtk/v2.4/gtk+-2.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.gtk.org/pub/gtk/v2.4/gtk+-2.4.1.tar.bz2>
- Download size: 8.5 MB
- Estimated Disk space required: 193 MB
- Estimated build time: 2.88 SBU

GTK+ dependencies

Required

X (X.org-6.7.0[p.331] or XFree86-4.4.0[p.337]), Pango-1.4.0[p.352] and ATK-1.6.1[p.353]

Optional

libtiff-3.6.1[p.145], libjpeg-6b[p.141], GTK-Doc-1.2[p.407] and docbook-utils

Installation of GTK+

Install GTK+ by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&  
make &&  
make install
```

Command explanations

`--sysconfdir=/etc`: This switch installs the configuration files into `/etc` instead of `/usr/etc`.

`--enable-gtk-doc`: This switch will rebuild the API documentation during the **make** command.

Contents

The GTK+ package contains `libgdk_pixbuf-2.0`, `libgdk-x11-2.0`, `libgtk-x11-2.0` and `libgdk_pixbuf_xlib-2.0` libraries.

Description

GTK+ Libraries

GTK+ Libraries provide the API to implement graphical user interfaces.

LessTif-0.93.94

Introduction to LessTif

The LessTif package contains an Open Source version of OSF/Motif(R).

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/lesstif/lesstif-0.93.94.tar.bz2>
- Download size: 3.4 MB
- Estimated Disk space required: 40 MB
- Estimated build time: 2.73 SBU

LessTif dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331])

Installation of LessTif

Install LessTif by running the following commands:

```
find -name Makefile.in | \
    xargs sed -i 's@$(prefix)/LessTif@$(prefix)/share/LessTif@g' &&
./configure --prefix=/usr \
    --enable-build-20 \
    --enable-build-21 \
    --disable-debug \
    --enable-production \
    --disable-build-tests \
    --with-xdnd &&
make &&
make install
```

Command explanations

`sed -i 's@$(prefix)/LessTif@$(prefix)/share/LessTif@g'`: This moves the location of non-FHS compliant `/usr/LessTif` directory to `/usr/share/LessTif`.

`--enable-build-20`: Build the Motif 2.0 compatible version of the LessTif libraries.

`--enable-build-21`: Also build the Motif 2.1 compatible versions.

`--disable-debug`: Do not generate debugging information.

`--enable-production`: Build the release version of the LessTif libraries.

`--disable-build-tests`: Do not build the `test/` tree (see Testing LessTif).

`--with-xdnd`: Enable XDND GNOME compatibility support.

Configuring LessTif

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, `/sbin/ldconfig` should be run while logged in as root.

Testing LessTif

It is advisable to test the installation of LessTif with the test suite located in `lesstif-0.93.94/test`. It is not required to install any of the resulting binaries to validate the installation, the following commands, executed from the source directory, will suffice:

```
cd test &&  
./configure &&  
make
```

Contents

The LessTif package contains LessTif libraries.

Description

lesstif libraries

LessTif libraries are an OSF/Motif(R) source code compatible library for X Window System.

startup-notification-0.6

Introduction to startup-notification

The startup-notification package contains `startup-notification` libraries. These are useful for building a consistent manner to notify the user through the cursor that the application is loading.

Package information

- Download (HTTP): <http://www.freedesktop.org/software/startup-notification/releases/startup-notification-0.6.tar.gz>
- Download (FTP):
<ftp://ftp.linux.org.uk/pub/linux/GNOME/sources/startup-notification/0.6/startup-notification-0.6.tar.bz2>
- Download size: 303 KB
- Estimated Disk space required: 3.9 MB
- Estimated build time: 0.09 SBU

startup-notification dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331])

Installation of startup-notification

Install startup-notification by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The startup-notification package contains `libstartup-notification` libraries.

Description

startup-notification libraries

`startup-notification` libraries provide the functions to assist applications in communicating with the cursor system to provide feedback to the user that the application is loading.

shared-mime-info-0.14

Introduction to shared-mime-info

The shared-mime-info package contains a MIME database. This allows central updates of MIME information for all supporting applications.

Package information

- Download (HTTP): <http://freedesktop.org/Software/shared-mime-info/shared-mime-info-0.14.tar.gz>
- Download (FTP):
- Download size: 348 KB
- Estimated Disk space required: 2.2 MB
- Estimated build time: 0.01 SBU

shared-mime-info dependencies

Required

GLib-2.4.1[p.129], libxml2-2.6.9[p.123] and Perl modules[p.186]: XML-Parser

Installation of shared-mime-info

Install shared-mime-info by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The shared-mime-info package contains **update-mime-database** and `/usr/share/mime/*`.

Description

update-mime-database

update-mime-database assists in adding MIME data to the database.

MIME Database

`/usr/share/mime/*` contains the centralized MIME database.

hicolor-icon-theme-0.5

Introduction to hicolor-icon-theme

The hicolor-icon-theme package contains a default fallback theme for implementations of the icon theme specification.

Package information

- Download (HTTP): <http://freedesktop.org/Software/icon-theme/releases/hicolor-icon-theme-0.5.tar.gz>
- Download (FTP):
- Download size: 32 KB
- Estimated Disk space required: 157 KB
- Estimated build time: 0.01 SBU

Installation of hicolor-icon-theme

Install hicolor-icon-theme by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The hicolor-icon-theme package contains `/usr/share/icons/hicolor/*`.

Description

HiColor Icons

`/usr/share/icons/hicolor/*` contains icon definitions used as defaults.

libxklavier-1.02

Introduction to libxklavier

The libxklavier package contains a utility library for X keyboard.

Package information

- Download (HTTP): <http://heanet.dl.sourceforge.net/sourceforge/gswitchit/libxklavier-1.02.tar.gz>
- Download (FTP):
- Download size: 400 KB
- Estimated Disk space required: 6.3 MB
- Estimated build time: 0.01 SBU

libxklavier dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), pkgconfig-0.15.0[p.181] and libxml2-2.6.9[p.123]

Installation of libxklavier

Install libxklavier by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The libxklavier package contains libxklavier libraries.

Chapter 27. Window Managers

Introduction

Window Mangers and Desktop Environments are the primary user interfaces into the X Window System. A window manager is a program that controls the appearance of windows and provides the means by which the user can interact with them. A Desktop Environment provides a more complete interface to the operating system, and provides a range of integrated utilities and applications.

There are many Window Mangers available. Some of the more well known ones include fvwm2, Window Maker, AfterStep, Enlightenment, Sawfish, and Blackbox.

The Desktop Environments available for Linux are GNOME, KDE, and XFce.

Choosing a Window Manager or Desktop Environment is highly subjective. The choice depends on the look and feel of the packages, the resources (RAM, disk space) required, and the utilities included. One web site that provides a very good summary of what is available, screenshots, and their respective features is [Window Managers for X](#).

In this chapter, the installation instructions of several Window Managers and one lightweight Desktop Environment are presented. Later in the book, both KDE and GNOME have their own Parts.

sawfish-1.3

Introduction to sawfish

The sawfish package contains a window manager. This is useful for organizing and displaying windows where all window decorations are configurable and all user-interface policy is controlled through the extension language.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sawmill/sawfish-1.3.tar.gz>
- Download (FTP): <ftp://sunsite.ccu.edu.tw/pub10/sourceforge/s/sawmill/sawfish-1.3.tar.gz>
- Download size: 1.5 MB
- Estimated Disk space required: 17.5 MB
- Estimated build time: 0.26 SBU

sawfish dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), librep-0.17[p.187], rep-gtk-0.18[p.166], EsounD-0.2.34[p.544] and GTK+-2.4.1[p.354]

Optional

libglade-2.3.6[p.418]

Installation of sawfish

Install sawfish by running the following commands:

```
./configure --prefix=/usr --libexec=/usr/sbin --infodir=/usr/share/info \
--with-gnome-prefix=/opt/gnome-2.6 &&
make &&
make install
```

Command explanations

- with-audiofile: This command directs sawfish to use libaudiofile for sound manipulation.
- with-esd: This command directs sawfish to use the Enlightened Sound Daemon.
- with-gnome-prefix=/opt/gnome-2.6: This command directs sawfish to GNOME's directory.

Configuring sawfish

Configuration Information

Be sure to backup your current `.xinitrc` before proceeding.

```
cat >> ~/.xinitrc << "EOF"
exec sawfish
EOF
```

Contents

The sawfish package contains **sawfish**.

Description

sawfish

sawfish is the extensible window manager using a Lisp-based scripting language.

Fluxbox-0.1.14

Introduction to Fluxbox

The Fluxbox package contains a windows manager.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/fluxbox/fluxbox-0.1.14.tar.bz2>
- Download (FTP):
- Download size: 372 KB
- Estimated Disk space required: 53.9 MB
- Estimated build time: 1.28 SBU

Additional downloads

- Required patch (HTTP): <http://www.linuxfromscratch.org/patches/blfs/5.1/fluxbox-0.1.14-gcc33.patch>

Fluxbox dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331])

Installation of Fluxbox

Install Fluxbox by running the following commands:

```
patch -Np1 -i ../fluxbox-0.1.14-gcc33.patch &&
./configure --prefix=/usr --enable-kde --enable-gnome &&
make &&
make install
```

Command explanations

`--enable-kde`: This command activates Fluxbox's ability to allow KDE tray icons to be placed in the slit.

`--disable-nls`: This command disables Fluxbox's ability to support international languages. This is an optional switch to work around a compile problem if you did not install all locales.

Configuring Fluxbox

Config files

`~/.fluxbox/init`, `~/.fluxbox/keys`, `~/.fluxbox/menu`

Configuration Information

Be sure to backup your current `.xinitrc` before proceeding.

```
cat >> ~/.xinitrc << "EOF"
exec fluxbox
EOF
```

```
mkdir ~/.fluxbox &&
cp /usr/share/fluxbox/init ~/.fluxbox/init &&
```

```
cp /usr/share/fluxbox/keys ~/.fluxbox/keys &&  
cp /usr/share/fluxbox/menu ~/.fluxbox/menu
```

Menu Items are added by editing `~/.fluxbox/menu`. The syntax is explained on the `fluxbox` man page.

Contents

The Fluxbox package contains **fluxbox**, **bsetbg** and **bsetroot**.

Description

fluxbox

fluxbox is a window manager for X11 based on Blackbox 0.61.0.

bsetbg

bsetbg is a utility that sets the background image. It needs **display**, **Esetroot**, **wmsetbg**, **xv**, **qiv** or **xsri** to be used.

bsetroot

bsetroot is a Blackbox utility to change root window appearance.

Metacity-2.8.0

Introduction to Metacity

The Metacity package contains a window manager. This is useful for organizing and displaying windows.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/metacity/2.8/metacity-2.8.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/metacity/2.8/metacity-2.8.0.tar.bz2>
- Download size: 1.9 MB
- Estimated Disk space required: 39.8 MB
- Estimated build time: 0.49 SBU

Metacity dependencies

Required

intltool-0.30[p.410] and GTK+-2.4.1[p.354]

Optional

startup-notification-0.6[p.357], GConf-2.6.1[p.413], libXcomposite, xrender and libXdamage

Installation of Metacity

Install Metacity by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/sbin --sysconfdir=/etc &&
make &&
make install
```

Configuring Metacity

Configuration Information

Be sure to backup your current `.xinitrc` before proceeding.

```
cat >> ~/.xinitrc << "EOF"
xterm &
exec metacity
EOF
```

Contents

The Metacity package contains **metacity**.

Description

metacity

metacity is a window manager used mainly by GNOME.

XFce-4.0.4

Introduction to XFce

The XFce package contains a lightweight desktop environment.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/xfce/xfce-4.0.4-src.tar.bz2>
- Download (FTP): <ftp://ftp.iasi.roedu.net/pub/mirrors/download.sourceforge.net/xfce/xfce-4.0.4-src.tar.bz2>
- Download size: 18 MB
- Estimated Disk space required: 224 MB
- Estimated build time: 3.35 SBU

XFce dependencies

Required

GTK+-2.4.1[p.354] and libxml2-2.6.9[p.123]

Optional

libgtkhtml-2.6.1[p.453] and startup-notification-0.6[p.357]

Installation of XFce

XFce now distributes as a TAR ball of base packages and module packages. These instructions will only cover the bare minimum to run the application. The remaining modules would all follow the same pattern which will soon become obvious.

Install XFce by running the following commands:

```
cd src &&
tar xzvf libxfce4util-4.0.4.tar.gz &&
cd libxfce4util-4.0.4 &&
./configure --prefix=/usr &&
make &&
make install &&
cd .. &&
tar xzvf libxfcegui4-4.0.4.tar.gz &&
cd libxfcegui4-4.0.4 &&
./configure --prefix=/usr &&
make &&
make install &&
cd .. &&
tar xzvf libxfce4mcs-4.0.4.tar.gz &&
cd libxfce4mcs-4.0.4 &&
./configure --prefix=/usr &&
make &&
make install &&
cd .. &&
tar xzvf xfce-mcs-manager-4.0.4.tar.gz &&
cd xfce-mcs-manager-4.0.4 &&
./configure --prefix=/usr &&
make &&
make install &&
cd .. &&
tar xzvf xfwm4-4.0.4.tar.gz &&
cd xfwm4-4.0.4 &&
./configure --prefix=/usr &&
```

```

make &&
make install &&
cd .. &&
tar xzvf xfdesktop-4.0.4.tar.gz &&
cd xfdesktop-4.0.4 &&
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install &&
cd .. &&
tar xzvf xfce4-panel-4.0.4.tar.gz &&
cd xfce4-panel-4.0.4 &&
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install &&
cd .. &&
tar xzvf xfce-utils-4.0.4.tar.gz &&
cd xfce-utils-4.0.4 &&
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install

```

Modules not installed above are: dbh-1.0.15 (required for xffm), gtk-xfce-engine-2.1.9, xfcalendar-0.1.6, xfce-mcs-plugins, xfce4-iconbox, xfce4-mixer, xfce4-systray, xfce4-themes, xfce4-toys, xfce4-trigger-launcher, xffm, xffm-icons, xfprint and xfwm4-themes.

Configuring XFce

Config files

~/`.xinitrc`

Configuration Information

Be sure to backup your current `.xinitrc` before proceeding.

```

cat >> ~/.xinitrc << "EOF"
xfce-mcs-manager
xfwm4 --daemon
xftaskbar4 &
xfdesktop &
exec xfce4-panel
EOF

```

Contents

The XFce package contains **fgr**, **scramble**, **startxfce4**, **xfapps**, **xfapps4**, **xfbook**, **xfbook4**, **xfcalendar**, **xfce-mcs-manager**, **xfce-setting-show**, **xfce4-about**, **xfce4-iconbox**, **xfce4-panel**, **xfce4-tips**, **xfdesktop**, **xfdiff4**, **xffm**, **xffstab**, **xffstab4**, **xfglob4**, **xfhelp4**, **xflock4**, **xfmountdev4**, **xfprint-manager**, **xfprint4**, **xfrun4**, **xfstampa4**, **xftaskbar4**, **xfterm4**, **xftrash4**, **xfree4**, **xfwm4** and **libdbh**, **libxfce4mcs**, **libxfce4util**, **libxfcegui4**, **libxffm** and **libxfprint** libraries.

Description

fgr

fgr is a file content search engine for **xffm**.

xfce-mce-manager

xfce-mce-manager is the settings manager for XFce.

xfce4-about

xfce4-about displays the about box.

xfce-setting-show

xfce_setting-show displays the settings for XFce.

xfce4-panel

xfce4-panel is the panel manager for XFce. It contains the launcher, clock, mail check, desktop switcher and separator programs.

xfdesktop

xfdesktop is the desktop manager for XFce.

xfhelp4

xfhelp4 is script that launches a HTML browser to display online documentation.

xflock4

xflock4 is a script used to lock the current screen during drag and drop actions.

xfmountdev4

xfmountdev4 mounts a device on the specified mount point and launches **xfree4**, then unmounts the device when **xfree4** finishes.

xfrun4

xfrun4 is the program launcher for XFce.

xfsamba4

xfsamba4 is Samba front end for XFce.

xftaskbar4

xftaskbar4 is the taskbar manager for XFce.

xfterm4

xfterm4 is a small terminal wrapper to be used as a drag and drop action for the XFce front panel.

xftrash4

xftrash4 is a small script to be used as a drag and drop action for the XFce front panel.

xfree4

xfree4 is the file manager for XFce.

xfwm4

xfwm4 is a window manager for X11.

Part IX. KDE

Introduction to KDE

KDE is a comprehensive desktop environment that builds on XFree86 and Qt to provide a window manager and many user tools, including a browser, word processor, spreadsheet, presentation package, games, and numerous other utilities. It provides extensive capabilities for customization.

We divide the KDE instructions into two parts. The first part, the core packages, are needed for the rest of KDE to work. The second part presents additional packages which provide functionality in various areas (multimedia, graphics etc).

There are two alternatives for installing KDE. Option one, that is used by most of the commercial distributions, is to install KDE in the standard system prefix: `/usr`. This option allows the use of KDE without the need for any additional configuration such as modification of various environment variables or configuration files. Option two is to install it in a unique prefix such as `/opt/kde` or `/opt/kde-3.2.2`. This option allows for easy removal of the package.

Tip

All the KDE packages are comprised of various components. The default is to install most of the components. If specific components are to be eliminated, the official way is to set the variable `DO_NOT_COMPILE`. This comes in handy when there are problems compiling a particular component.

```
DO_NOT_COMPILE="component1 component2" \
./configure --prefix=$KDE_PREFIX ...
```

The core KDE packages also honor this variable, but omitting components from the core packages is not advisable since it may result in an incomplete KDE installation.

Note

In each of the packages, one other option to **configure** can be added: `--enable-final`. This option can speed up the build process, but requires a lot of memory. If you have less than 256MB of RAM, this option may cause swapping and significantly slow compilation.

Chapter 28. KDE Core Packages

Pre-installation configuration

Based on your preference, set `KDE_PREFIX`.

If KDE is your desktop of choice:

```
export KDE_PREFIX=/usr
```

If you want to try-out KDE:

```
export KDE_PREFIX=/opt/kde-3.2.2
```

Remember to execute **ldconfig** after installation of libraries to update the library cache.

If you are not installing KDE in `/usr` you will need to make some configuration changes:

Add to your system or personal profile:

```
export PATH=$PATH:/opt/kde-3.2.2/bin
export PKG_CONFIG_PATH=$PKG_CONFIG_PATH:/opt/kde-3.2.2/lib/pkgconfig
```

Add to your `/etc/ld.so.conf`:

```
cat >> /etc/ld.so.conf << "EOF"
# Begin kde addition to /etc/ld.so.conf

/opt/kde-3.2.2/lib

# End kde addition
EOF
```

Add to your `/etc/man.conf`:

```
cat >> /etc/man.conf << "EOF"
# Begin kde addition to man.conf

MANPATH /opt/kde-3.2.2/man

# End kde addition to man.conf
EOF
```

Tip

If you prefer installing KDE in `/opt` one trick to avoid the above configuration changes every time you install the new version is to replace `/opt/kde-3.2.2` with `/opt/kde` and to create a symlink from `/opt/kde-3.2.2` to `/opt/kde`.

```
ln -sf kde-3.2.2 /opt/kde
```

aRts-1.2.2

Introduction to aRts

The Analog Real-time Synthesizer (aRts) provides sound support for KDE. It provides necessary libraries for kdelibs.

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/arts-1.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/arts-1.2.2.tar.bz2>
- Download size: 949 KB
- Estimated Disk space required: 25 MB
- Estimated build time: 1.69 SBU

aRts dependencies

Required

Qt-3.3.2[p.348] and GLib-2.4.1[p.129]

Optional

libogg-1.1[p.548], libvorbis-1.0.1[p.549], ALSA-1.0.4[p.532], Audio File-0.2.6[p.543], pkgconfig-0.15.0[p.181], libmad-0.15.1b[p.552], Esound-0.2.34[p.544] and MAS

Installation of aRts

Install aRts by running the following commands:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make &&
make install
```

Command explanations

--prefix=\$KDE_PREFIX : This option tells the process to install the package in \$KDE_PREFIX. We put aRts here because this package is required before installing KDE.

--disable-debug : This option causes the system to be compiled without debugging code.

--disable-dependency-tracking : This option speeds up one time builds.

kdelibs-3.2.2

Introduction to kdelibs

This package includes libraries that are central to the development and execution of a KDE program, as well as internationalization files for these libraries, misc HTML documentation, theme modules and regression tests.

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdelibs-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdelibs-3.2.2.tar.bz2>
- Download size: 13 MB
- Estimated Disk space required: 160 MB
- Estimated build time: 12.6 SBU

Additional downloads

- Required patch: ftp://ftp.kde.org/pub/kde/security_patches/post-3.2.2-kdelibs-kapplication.patch
- Required patch: ftp://ftp.kde.org/pub/kde/security_patches/post-3.2.2-kdelibs-ktelnetSERVICE.patch

kdelibs dependencies

Required

aRts-1.2.2[p.372]

Optional

libxml2-2.6.9[p.123], libxslt-1.1.6[p.124], CUPS-1.1.20[p.592], OpenLDAP-2.1.30[p.302], FAM-2.7.0[p.120], PCRE-4.5[p.117], OpenSSL-0.9.7d[p.115], libart_lgpl-2.3.16[p.417], ALSA-1.0.4[p.532], libtiff-3.6.1[p.145], Libidn, JasPer, graphviz and doxygen

Installation of kdelibs

Install kdelibs with:

```
patch -Np1 -i ../post-3.2.2-kdelibs-kapplication.patch &&
patch -Np0 -i ../post-3.2.2-kdelibs-ktelnetSERVICE.patch &&
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking --enable-fast-malloc=full --disable-pcre &&
make &&
make install
```

Note

If you wish to create the API documentation and you have doxygen and graphviz installed, **make apidox** must be done before **make install**. This applies to all packages which can utilize doxygen.

Command explanations

`--prefix=$KDE_PREFIX`: This option tells the process to install the package in \$KDE_PREFIX.

`--disable-debug`: This option causes the system to be compiled without debugging code.

`--disable-dependency-tracking`: This option speeds up one time builds.

`--enable-fast-malloc=full`: This option tells KDE programs to use an internal memory allocation scheme

optimized for KDE.

--disable-pcre : Omit this switch if you have PCRE installed and you want improved regular expression support in the KDE JavaScript engine.

Contents

kdelibs provides numerous libraries needed by KDE programs.

kdebase-3.2.2

Introduction to kdebase

kdebase is the second mandatory package (besides kdelibs) for the K Desktop Environment. It provides various applications and infrastructure files and libraries.

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdebase-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdebase-3.2.2.tar.bz2>
- Download size: 17 MB
- Estimated Disk space required: 174 MB
- Estimated build time: 17.1 SBU

kdebase dependencies

Required

kdelibs-3.2.2[p.373]

Optional

libxml2-2.6.9[p.123], J2SDK-1.4.2[p.188], LessTif-0.93.94[p.355], OpenSSL-0.9.7d[p.115], Linux-PAM-0.77[p.66], libtiff-3.6.1[p.145], OpenLDAP-2.1.30[p.302], pkgconfig-0.15.0[p.181], libart_lgpl-2.3.16[p.417], Samba-3.0.4[p.305], Mtools, krb4, JasPer, graphviz and doxygen

Installation of kdebase

Install kdebase with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make &&
make install
```

Contents

Major programs in kdebase include **kate**, **kcontrol**, **kdebugdialog**, **kdeprint**, **kdesu**, **kdm**, **kfind**, **khelpcenter**, **kicker**, **kinfocenter**, **kioslave**, **klipper**, **kmenuedit**, **konqueror**, **konsole**, **kpager**, **ksplashml**, **ksysguard**, **kwrite** and **kxkb**.

Description

kate

kate is a programmer's text editor for KDE.

kcontrol

kcontrol is KDE Control Center.

kdebugdialog

kdebugdialog is a dialog box for managing diagnostic messages at runtime.

kdeprint

kdeprint provides Print job administration.

kdesu

kdesu is a graphical front end for the Unix **su** command.

kdm

kdm is the KDE display manager (a replacement for **xdm**).

kfind

kfind is an utility to find files.

khelpcenter

khelpcenter is the KDE help tool.

kicker

kicker is the KDE control panel.

kinfocenter

kinfocenter provides a centralized and convenient overview of your KDE and system settings.

klipper

klipper is a clipboard utility.

kmenuedit

kmenuedit is an utility to rearrange or add items to the K-menu.

konqueror

konqueror is a filesystem and Web browser.

konsole

konsole is a highly configurable X terminal emulator.

kpager

kpager provides a thumbnail view of all virtual desktops.

ksplashml

ksplashml is a splash screen that shows the progress of an application that is loading.

ksysguard

ksysguard is a network enabled task manager and system monitor application, with the additional functionality of **top**.

kwrite

kwrite is a text editor for KDE.

kxkb

xxkb is a keyboard layout switching utility based on X11 xkb extension.

Configuring the core KDE packages

Create an `.xinitrc` file to start KDE:

```
echo "exec startkde" > ~/.xinitrc
```

Ensure all libraries can be found with:

```
ldconfig
```

At this point you can bring up KDE with:

```
startx
```

Chapter 29. KDE Additional Packages

kdeadmin-3.2.2

Introduction to kdeadmin

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdeadmin-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdeadmin-3.2.2.tar.bz2>
- Download size: 1.5 MB
- Estimated Disk space required: 16 MB
- Estimated build time: 1.09 SBU

kdeadmin dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123] and Linux-PAM-0.77[p.66]

Installation of kdeadmin

Install kdeadmin with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make &&
make install
```

Contents

Major programs in kdeadmin include **kcron**, **kdat**, **kpackage**, **ksysv** and **kuser**.

Description

kcron

kcron is a task scheduler.

kdat

kdat is a tar-based tape archiver.

kpackage

kpackage is a package manager.

ksysv

ksysv is a Sys V-Init editor.

kuser

kuser is a graphical user manager.

kdenetwork-3.2.2

Introduction to kdenetwork

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdenetwork-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdenetwork-3.2.2.tar.bz2>
- Download size: 5.9 MB
- Estimated Disk space required: 94 MB
- Estimated build time: 7.65 SBU

kdenetwork dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123], libxslt-1.1.6[p.124], PPP-2.4.2[p.204], OpenSSL-0.9.7d[p.115], libtiff-3.6.1[p.145], XMMS-1.2.10[p.569], OpenSLP, Wireless Tools, libgadu and JasPer

Installation of kdenetwork

Install kdenetwork with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make &&
make install
```

Configuring kdenetwork

Install `/etc/rc.d/init.d/lisa` init script included in the `blfs-bootscripts-5.1[p.31]` package.

```
make install-lisa
```

There is no explicit configuration for the rest of the kdenetwork package, however individual packages need to be set up with user information.

Contents

Major programs in kdenetwork include **kdict**, **kget**, **knewsticker**, **kopete**, **kpf**, **kppp**, **krdc**, **krfb**, **ksirc**, **ktalkd**, **kwifimanager** and **lisa**.

Description

kdict

kdict is a graphical client for the Dictionary Server Protocol (DICT).

kget

kget allows you to group downloads.

knewsticker

knewsticker is a news applet for the KDE Application Launcher Panel.

kopete

kopete is KDE's multi-protocol instant messenger client.

kpf

kpf allows you to share files over a network.

kppp

kppp is a dial-up utility.

krdc

krdc is a client application that allows you to view or even control the desktop session on another machine that is running a compatible (VNC) server.

krfb

krfb is a server application that allows you to share your current session with a user on another machine, who can use a VNC client to view or even control the desktop.

ksirc

ksirc is a chat client.

ktalkd

ktalkd is an enhanced **talk** daemon - a program to handle incoming **talk** requests, announce them and allow you to respond to them using a talk client.

kwifimanager

The **kwifimanager** suite can be used to configure and monitor wireless LAN cards.

lisa

lisa is intended to provide a kind of network neighborhood, but only relying on the TCP/IP protocol stack, no SMB or anything else required.

kdepim-3.2.2

Introduction to kdepim

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdepim-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdepim-3.2.2.tar.bz2>
- Download size: 7.4 MB
- Estimated Disk space required: 110 MB
- Estimated build time: 12.2 SBU

kdepim dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123], libmal, gnokii, pilot-link, graphviz and doxygen

Installation of kdepim

Install kdepim with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make &&
make install
```

Contents

Major programs in kdepim include **kaddressbook**, **kalarm**, **kandy**, **karm**, **kgpgcertmanager**, **kmail**, **knode**, **knotes**, **konsolekalendar**, **kontakt** **korganizer**, **korn** and **kpilot**.

Description

kaddressbook

kaddressbook is the KDE address book.

kalarm

kalarm is a system to provide reminder messages.

kandy

kandy is a program to synchronize mobile phone numbers.

karm

karm is a personal time tracker.

kgpgcertmanager

kgpgcertmanager is a tool for managing X509 certificates.

kmail

kmail is KDE's email client.

knode

knode is the KDE newsreader.

knotes

knotes is a popup notes utility.

konsolekalendar

konsolekalendar is a command line interface to KDE calendars.

kontact

kontact is the integrated solution to personal information management (PIM) needs.

korganizer

korganizer is a personal calendar/todo system.

korn

korn is a KDE mail checker that has the capabilities to dock itself to **kicker**.

kpilot

kpilot is a program to synchronize a Palm-Pilot.

kdemultimedia-3.2.2

Introduction to kdemultimedia

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdemultimedia-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdemultimedia-3.2.2.tar.bz2>
- Download size: 4.7 MB
- Estimated Disk space required: 78 MB
- Estimated build time: 8.93 SBU

kdemultimedia dependencies

Required

kdebase-3.2.2[p.375]

Optional

ALSA-1.0.4[p.532], CDPParanoia-III-9.8[p.572], LAME-3.95.1[p.571], Audio File-0.2.6[p.543], libogg-1.1[p.548], libvorbis-1.0.1[p.549], xine Libraries-1-rc3a[p.564], libtiff-3.6.1[p.145], libxml2-2.6.9[p.123], FLAC-1.1.0[p.558], JasPer, TagLib and libmusicbrainz

Installation of kdemultimedia

Install kdemultimedia with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make &&
make install
```

Configuring kdemultimedia

There is no explicit configuration for the kdemultimedia package, however **kscd** needs to find the CD drive. The default is `/dev/cdrom` which may not exist on your system. The easiest way to do this is to create a symbolic link to this from your CD drive (e.g. `/dev/hdc`, `/dev/scd0`, etc):

```
cd /dev &&
ln -s [CD Drive]
/dev/cdrom
```

Contents

Major programs in kdemultimedia include **artsbuilder**, **juk**, **kaboodle**, **kmid**, **kmix**, **krec**, **kscd** and **noatun**.

Description

juk

juk is a jukebox, tagger and music collection manager.

kaboodle

kaboodle is a multimedia player.

kmid

kmid is a midi/karaoke player.

kmix

kmix is a sound mixer.

krec

krec is a recording frontend for aRts.

kscd

kscd is a CD player.

noatun

noatun is another multimedia player.

kdegraphics-3.2.2

Introduction to kdegraphics

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdegraphics-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdegraphics-3.2.2.tar.bz2>
- Download size: 5.5 MB
- Estimated Disk space required: 93 MB
- Estimated build time: 11.1 SBU

kdegraphics dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123], SANE-1.0.13[p.602], libtiff-3.6.1[p.145], Xpdf-3.00[p.630], Imlib-1.9.14[p.157], libart_lgpl-2.3.16[p.?], pkgconfig-0.15.0[p.181], JasPer, FriBidi and gPhoto2

Installation of kdegraphics

Install kdegraphics with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make &&
make install
```

Contents

Major programs in kdegraphics include **kamera**, **kcoloredit**, **kdvi**, **kfax**, **kgamma**, **kghostview**, **kiconedit**, **kooka**, **kpaint**, **kpdf**, **kpovmodeler**, **kruler**, **ksnapshot**, **kuickshow** and **kview**.

Description

kamera

kamera allows you to view and download images on a digital camera.

kcoloredit

kcoloredit is a color palette editor.

kdvi

kdvi is a DVI viewer.

kfax

kfax is a FAX viewer.

kgamma

kgamma is a simple tool for monitor gamma correction.

kghostview

kghostview is a PS/PDF viewer.

kiconedit

kiconedit is an icon editor.

kooka

kooka is a raster image scan program.

kpaint

kpaint is a paint program.

kpovmodeler

kpovmodeler is a graphical 3D modeler, which can generate scenes for POV-Ray.

kruler

kruler is a screen ruler.

ksnapshot

ksnapshot is a screen capture program.

kuickshow

kuickshow is an image viewer.

kview

kview is another image viewer.

kdeutils-3.2.2

Introduction to kdeutils

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdeutils-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdeutils-3.2.2.tar.bz2>
- Download size: 2.5 MB
- Estimated Disk space required: 44 MB
- Estimated build time: 3.97 SBU

kdeutils dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123] and tpctl

Installation of kdeutils

Install kdeutils with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make &&
make install
```

Contents

Major programs in kdeutils include **ark**, **irkick**, **kcalc**, **kcharselect**, **kcmlirc**, **kdepasswd**, **kdf**, **kedit**, **kfloppy**, **kgpg**, **khexedit**, **kjots**, **ksim**, **kregexpeditor**, **ktimer** and **kwallet**.

Description

ark

ark is an archiving tool.

irkick

irkick is the infrastructure for the KDE's Infrared Remote Control functionality; **irkick** is the server component of that infrastructure.

kcalc

kcalc is a scientific calculator.

kcharselect

kcharselect is a character selector applet.

kdepasswd

kdepasswd is a password managing utility.

kdf

kdf is a disk usage viewer.

kedit

kedit is a text editor.

kfloppy

kfloppy is a floppy formatter.

kgpg

kgpg is a simple graphical interface for GnuPG-1.2.4[p.80].

khexedit

khexedit is a binary editor.

kjots

kjots is a note taker.

kregexpeditor

kregexpeditor is an editor for editing regular expressions in a graphical style (in contrast to the ASCII syntax).

ktimer

ktimer is a task scheduler.

kdeedu-3.2.2

Introduction to kdeedu

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdeedu-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdeedu-3.2.2.tar.bz2>
- Download size: 22 MB
- Estimated Disk space required: 91 MB
- Estimated build time: 4.40 SBU

kdeedu dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123] and Boost.Python

Installation of kdeedu

Install kdeedu with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make &&
make install
```

Contents

Major programs in kdeedu include **flashkard**, **kalzium**, **kbruch**, **keduca**, **khangman**, **kig**, **kiten**, **klettres**, **kmathtool**, **kmessedwords**, **kmplot**, **kpercentage**, **kstars**, **ktouch**, **kverbos** and **kvoctrain**.

Description

kalzium

kalzium is a program which shows you the Periodic System of Elements.

kbruch

kbruch is a small program to generate tasks with fractions.

keduca

keduca - tests and exams.

khangman

khangman is the classical hangman game for children, adapted for KDE.

kig

kig is a KDE application for Interactive Geometry.

kiten

kiten is a Japanese reference/study tool for KDE.

klettres

klettres is an alphabet tutor (French).

kmessedwords

kmessedwords is a simple mind-training word game.

kmplot

kmplot is a mathematical function plotter for KDE.

kpercentage

kpercentage is a small math application that will help pupils to improve their skills in calculating percentages.

kstars

kstars is a desktop planetarium.

ktouch

ktouch is a touch typing tutor.

kverbos

kverbos is an application specially designed to study Spanish verbforms.

kvoctrain

kvoctrain is a vocabulary trainer.

kdesdk-3.2.2

Introduction to kdesdk

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdesdk-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdesdk-3.2.2.tar.bz2>
- Download size: 3.8 MB
- Estimated Disk space required: 65 MB
- Estimated build time: 5.03 SBU

kdesdk dependencies

Required

kdebase-3.2.2[p.375]

Optional

libjpeg-6b[p.141], libxml2-2.6.9[p.123] and Berkeley DB-4.2.52.2[p.312]

Installation of kdesdk

Install kdesdk with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make
```

The **make** command will error out two times. On the first occurrence enter the following sed command and continue with the compilation:

```
sed -i 's/class istream;/#include <istream.h>/' \
klabel/common/libgettext/pofiles.cc &&
make
```

Repeat the previous procedure:

```
sed -i 's/class istream;/#include <istream.h>/' \
umbrello/umbrello/classparser/tokenizer.cc &&
make &&
make install
```

Contents

Major programs in kdesdk include **cervisia**, **klabel**, **kcachegrind**, **kcompare** and **umbrello**.

Description

cervisia

cervisia provides a graphical view of CVS.

klabel

klabel is a suite of an advanced PO file editor comprising **klabel**, a multi functional **catalogmanager** and a dictionary

for translators **kbabeldict**.

kcachegrind

kcachegrind is a KDE frontend for **cachegrind**, part of Valgrind.

kompare

kompare is a program to view the differences between files.

umbrello

umbrello is a UML modelling diagram tool.

kdevelop-3.0.3

Introduction to kdevelop

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdevelop-3.0.3.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdevelop-3.0.3.tar.bz2>
- Download size: 5.7 MB
- Estimated Disk space required: 99 MB
- Estimated build time: 9.99 SBU

kdevelop dependencies

Required

kdebase-3.2.2[p.375]

Optional

libjpeg-6b[p.141], libxml2-2.6.9[p.123], Python-2.3.3[p.185], Berkeley DB-4.2.52.2[p.312], doxygen and graphviz

Installation of kdevelop

Install kdevelop with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make &&
make install
```

Contents

kdevelop package provides **kdevelop**.

Description

kdevelop

kdevelop is an Integrated Development Environment to be used for a wide variety of programming tasks.

quanta-3.2.2

Introduction to quanta

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/quanta-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/quanta-3.2.2.tar.bz2>
- Download size: 3.4 MB
- Estimated Disk space required: 51 MB
- Estimated build time: 3.35 SBU

quanta dependencies

Required

kdebase-3.2.2[p.375]

Optional

libjpeg-6b[p.141], libtiff-3.6.1[p.145], libxml2-2.6.9[p.123], libxslt-1.1.6[p.124] and Jasper

Installation of quanta

Install quanta with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make &&
make install
```

Contents

Major programs in quanta include **kxsldb** and **quanta**.

Description

kxsldb

kxsldb is a GUI front-end to **xsldb**, the XSLT debugger.

quanta

quanta is a Web IDE that strives to be neutral and transparent to all markup languages, while supporting popular web-based scripting languages, CSS, and other emerging W3C recommendations.

kdebindings-3.2.2

Introduction to kdebindings

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdebindings-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdebindings-3.2.2.tar.bz2>
- Download size: 11 MB
- Estimated Disk space required: 147 MB
- Estimated build time: 3.34 SBU

kdebindings dependencies

Required

kdebase-3.2.2[p.375]

Optional

libjpeg-6b[p.141], libxml2-2.6.9[p.123], libxslt-1.1.6[p.124], GLib-1.2.10[p.128], GTK+-1.2.10[p.351], Python-2.3.3[p.185], Ruby-1.8.1[p.193], J2SDK-1.4.2[p.188], Mono and DotGNU Portable.NET

Installation of kdebindings

Install kdebindings with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \  
--disable-dependency-tracking &&  
make &&  
make install
```

Contents

kdebindings package provides KDE bindings for various programming languages.

kdeaccessibility-3.2.2

Introduction to kdeaccessibility

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdeaccessibility-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdeaccessibility-3.2.2.tar.bz2>
- Download size: 1.3 MB
- Estimated Disk space required: 8.7 MB
- Estimated build time: 0.51 SBU

kdeaccessibility dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123] and libjpeg-6b[p.141]

Installation of kdeaccessibility

Install kdeaccessibility with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make &&
make install
```

Contents

Major programs in kdeaccessibility include **kmag**, **kmousetool** and **kmouth**.

Description

kmag

kmag is a screen magnifier for KDE.

kmousetool

kmousetool is a utility which clicks the mouse whenever the mouse cursor pauses briefly.

kmouth

kmouth is an application that enables persons that cannot speak to let their computers speak.

kdetoys-3.2.2

Introduction to kdetoys

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdetoys-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdetoys-3.2.2.tar.bz2>
- Download size: 2.3 MB
- Estimated Disk space required: 14 MB
- Estimated build time: 0.98 SBU

kdetoys dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123], libtiff-3.6.1[p.145] and JasPer,

Installation of kdetoys

Install kdetoys with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
    --disable-dependency-tracking &&
make &&
make install
```

Contents

Major programs in kdetoys include **amor**, **kmoon**, **kodo**, **kteatime**, **ktux**, **kweather** and **kworldclock**.

Description

amor

amor - Amusing Misuse of Resources.

kmoon

kmoon is a Moon phase indicator.

kodo

kodo measures your desktop mileage.

kteatime

kteatime times your tea brewing.

ktux

ktux - small Tux crossing stars.

kdegames-3.2.2

Introduction to kdegames

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdegames-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdegames-3.2.2.tar.bz2>
- Download size: 8.7 MB
- Estimated Disk space required: 69 MB
- Estimated build time: 4.57 SBU

kdegames dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123], graphviz and doxygen

Installation of kdegames

Install kdegames with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \  
--disable-dependency-tracking &&  
make &&  
make install
```

Contents

kdegames package provides a compilation of various games.

kdeartwork-3.2.2

Introduction to kdeartwork

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdeartwork-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdeartwork-3.2.2.tar.bz2>
- Download size: 17 MB
- Estimated Disk space required: 57 MB
- Estimated build time: 1.98 SBU

kdeartwork dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123], libart_lgpl-2.3.16[p.417] and XScreenSaver

Installation of kdeartwork

Install kdeartwork with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \  
--disable-dependency-tracking &&  
make &&  
make install
```

Contents

kdeartwork package contains additional themes, screensaver, sounds, wallpapers and widget styles for KDE.

kdeaddons-3.2.2

Introduction to kdeaddons

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kdeaddons-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kdeaddons-3.2.2.tar.bz2>
- Download size: 1.3 MB
- Estimated Disk space required: 32 MB
- Estimated build time: 4.55 SBU

kdeaddons dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123], Berkeley DB-4.2.52.2[p.312], XMMS-1.2.10[p.569] and SDL-1.2.7[p.546]

Installation of kdeaddons

Install kdeaddons with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \  
--disable-dependency-tracking &&  
make &&  
make install
```

Contents

kdeaddons package contains additional plugins and scripts for KDE applications.

kde-i18n-3.2.2

Introduction to kde-i18n

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.2.2/src/kde-i18n-3.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.2.2/src/kde-i18n-3.2.2.tar.bz2>
- Download size: 141 MB
- Estimated Disk space required: 1.1 GB
- Estimated build time: 13.2 SBU

Alternative downloads

KDE has separate internationalization packages in the form of:

```
kde-i18n-[xx]-1.3.tar.bz2
```

where the `[xx]` is a two to five letter code for the country covered.

kde-i18n dependencies

Required

kdebase-3.2.2[p.375]

Optional

libxml2-2.6.9[p.123]

Installation of kde-i18n

Install kde-i18n with:

```
./configure --prefix=$KDE_PREFIX &&  
make &&  
make install
```

Configuring kde-i18n

Configuration Information

To use translated programs, select Control Center -> Personalization -> Country & Language -> Language in your K Desktop Environment.

Contents

kde-i18n package provides internationalization support for KDE.

Part X. GNOME

Introduction to GNOME

This chapter attempts to install a complete GNOME-2.6 desktop environment and a limited GNOME 1.4 library environment that is sufficient to run GNOME 1.4 applications included in this book. The order of the pages are meant to follow the build order defined by the GNOME development team as published in the release notes.

The installation of GNOME-2.6 is a large undertaking and one we would like to see you complete with the least amount of stress. One of our first goals in this installation is to protect your previously installed software, especially if you are testing GNOME on your machine. GNOME-2.6 packages utilize the `--prefix=option` for **configure**, so we will use that and an Environment variable (GNOME_PREFIX) to add flexibility to the install.

To install GNOME as a desktop alternative, it is recommended that you install with `--prefix=/usr`. If you are not sure that you are going to keep GNOME on your installation, you may install with `--prefix=/opt/gnome-2.6`. Setting the Environment variable and the additional edits required by the second option are covered on the pre-installation page. Since GNOME has matured, installing with `--prefix=/usr` is the preferable approach.

If you choose the second option, removal of GNOME-2.6 is as easy as removing the edits from the pre-installation page and issuing the following command:

```
rm /opt/gnome-2.6 -r
```

If your system was completely built per LFS and BLFS instructions, you have a very good chance of using GNOME-2.6 after your first install. If you are a typical LFS user, you have made modifications to the instructions along the way knowing that you have to take those modifications into account on future installations. You should have no problems integrating GNOME-2.6 into your unique setup, but you will have 28 to 33 packages installed before you can run GNOME through any testing (assuming your window manager is preinstalled and tested). We would anticipate that you will be rebuilding GNOME at least once to make adjustments for your setup.

If you are building a GNOME 1.4 desktop environment, you would install only those libraries in the GNOME 1.4 chapter and any dependencies listed on those pages, whether labeled or not. GNOME packages without pages are simply installed with:

```
./configure --prefix=/opt/gnome &&  
make &&  
make install
```

These instructions are simplistic to facilitate removal of GNOME 1.4 from BLFS systems when it is no longer necessary. These instructions may be refined later to comply with BLFS standards for file locations, specifically `/opt/gnome/etc` to `/etc` and `/opt/gnome/var` to `/var`. You should consider using the GNOME 1.4 hint located at <http://www.linuxfromscratch.org/hints/> if you have no interest in GNOME-2.6.

Chapter 30. GNOME Core Packages

This section contains required elements of the GNOME environment to display a functional desktop.

Pre-installation configuration

Set an Environment variable to resolve the prefix destination.

If GNOME is your desktop of choice:

```
export GNOME_PREFIX=/usr
```

If you want to try-out GNOME:

```
export GNOME_PREFIX=/opt/gnome-2.6
```

Remember to execute **ldconfig** after installation of libraries to update the library cache.

The try-out group will also need to make all the following configuration changes:

Add to your system or personal profile:

```
export PATH=$PATH:/opt/gnome-2.6/bin
export PKG_CONFIG_PATH=$PKG_CONFIG_PATH:/opt/gnome-2.6/lib/pkgconfig
export GNOME_LIBCONFIG_PATH=/usr/lib
```

Add to your `/etc/ld.so.conf`:

```
cat >> /etc/ld.so.conf << "EOF"
# Begin gnome addition to /etc/ld.so.conf

/opt/gnome-2.6/lib

# End gnome addition
EOF
```

Add to your `/etc/man.conf`:

```
cat >> /etc/man.conf << "EOF"
# Begin gnome addition to man.conf

MANPATH /opt/gnome-2.6/man

# End gnome addition to man.conf
EOF
```

GTK-Doc-1.2

Introduction to GTK-Doc

The GTK-Doc package contains a code documentor. This is useful for extracting specially formatted comments from the code to create API documentation. This package is *optional*, if it is not installed, packages will not build the documentation. This does not mean that you will not have any documentation, if GTK-Doc is not available, the install process will copy pre-built documentation to your system.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gtk-doc/1.2/gtk-doc-1.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gtk-doc/1.2/gtk-doc-1.2.tar.bz2>
- Download size: 132 KB
- Estimated Disk space required: 1092 KB
- Estimated build time: 0.01 SBU

GTK-Doc dependencies

Required

OpenJade-1.3.2[p.614], libxslt-1.1.6[p.124], DocBook XML DTD-4.3[p.618] and DocBook XSL Stylesheets-1.65.1[p.621]

Installation of GTK-Doc

Install GTK-Doc by running the following commands:

```
./configure --prefix=/usr &&  
make install
```

Contents

The GTK-Doc package contains **gtkdoc-fixxref**, **gtkdoc-mkdb**, **gtkdoc-mkhtml**, **gtkdoc-mkman**, **gtkdoc-mktml**, **gtkdoc-scan**, **gtkdoc-scangobj**, **gtkdoc-scanobj** and **gtkdocize**.

Description

These are all Perl scripts used by `Makefile` scripts to generate documentation for the package.

libIDL-0.8.3

Introduction to libIDL

The libIDL package contains libraries for Interface Definition Language files. This is a specification for defining portable interfaces.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libIDL/0.8/libIDL-0.8.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libIDL/0.8/libIDL-0.8.3.tar.bz2>
- Download size: 304 KB
- Estimated Disk space required: 4.5 MB
- Estimated build time: 0.12 SBU

libIDL dependencies

Required

GLib-2.4.1[p.129]

Installation of libIDL

Install libIDL by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The libIDL package contains `libIDL-2` libraries.

Description

libIDL libraries

`libIDL-2` libraries provide the functions to create and maintain trees of CORBA Interface Definition Language (IDL) files.

ORBit2-2.10.1

Introduction to ORBit2

The ORBit2 package contains a high-performance CORBA Object Request Broker. This allows programs to send requests and receive replies from other programs.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/ORBit2/2.10/ORBit2-2.10.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/ORBit2/2.10/ORBit2-2.10.1.tar.bz2>
- Download size: 632 KB
- Estimated Disk space required: 52.0 MB
- Estimated build time: 0.96 SBU

ORBit2 dependencies

Required

libIDL-0.8.3[p.408] and popt-1.7[p.118]

Optional

GTK-Doc-1.2[p.407] and OpenSSL-0.9.7d[p.115]

Installation of ORBit2

Install ORBit2 by running the following commands:

```
./configure --prefix=$GNOME_PREFIX --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--prefix=$GNOME_PREFIX`: This is the Base installation for GNOME from which all future installations will receive their prefix parameter. Be sure that `GNOME_PREFIX` is set for this install or globally to your install directory as described in the introduction of this Section.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The ORBit2 package contains `libORBit-2`, `libORBitCosNaming-2` and `libORBit-imodule-2` libraries.

Description

libORBit-2

`libORBit-2` is the CORBA API.

intltool-0.30

Introduction to intltool

The intltool package contains an internationalization tool. This is useful for extracting translatable strings from source files, collecting the extracted strings with messages from traditional source files (<source directory>/<package>/po) and merging the translations into XML, .desktop and OAF files.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/intltool/0.30/intltool-0.30.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/intltool/0.30/intltool-0.30.tar.bz2>
- Download size: 112 KB
- Estimated Disk space required: 1010 KB
- Estimated build time: 0.00 SBU

Installation of intltool

Install intltool by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The intltool package contains **intltoolize**, **intltool-update**, **intltool-extract**, **intltool-merge**, **intltool-prepare** and **xml-i18n-toolize**.

Description

intltoolize

intltoolize prepares a package to use intltool.

intltool-update

intltool-update updates the po template files and merges them with the translations.

intltool-extract

intltool-extract generates header files that can be read by **gettext**.

intltool-merge

intltool-merge merges translated strings into various file types.

intltool-prepare

intltool-prepare updates pot files and merges them with translation files.

libbonobo-2.6.0

Introduction to libbonobo

The libbonobo package contains libbonobo libraries. This is a component and compound document system for GNOME.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libbonobo/2.6/libbonobo-2.6.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libbonobo/2.6/libbonobo-2.6.0.tar.bz2>
- Download size: 1.1 MB
- Estimated Disk space required: 59 MB
- Estimated build time: 1.01 SBU

libbonobo dependencies

Required

ORBit2-2.10.1[p.409] and Perl modules[p.186]: XML Parser

Optional

GTK-Doc-1.2[p.407]

Installation of libbonobo

Install libbonobo by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--prefix=`pkg-config --variable=prefix ORBit-2.0``: Setting the prefix with this command instead of with `GNOME_PREFIX` will insure that the prefix is consistent with the installation environment.

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--enable-gtk-doc`: This switch rebuilds the documentation during the **make** command.

Contents

The libbonobo package contains libbonobo-2 and libbonobo-activation libraries.

Description

libbonobo libraries

libbonobo libraries are a set of language and system independent CORBA interfaces for creating reusable components

and compound documents.

GConf-2.6.1

Introduction to GConf

The GConf package contains a configuration database system.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/GConf/2.6/GConf-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/GConf/2.6/GConf-2.6.1.tar.bz2>
- Download size: 1.4 MB
- Estimated Disk space required: 27.3 MB
- Estimated build time: 0.56 SBU

GConf dependencies

Required

ORBit2-2.10.1[p.409], GTK+-2.4.1[p.354] and libxml2-2.6.9[p.123]

Optional

GTK-Doc-1.2[p.407] and docbook-utils

Installation of GConf

Install GConf by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome --disable-gtk-doc &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`. This installation controls all future installations of schemas, changes in location, including eliminating this command *must* be consistent.

`--disable-gtk-doc`: This switch prevents the rebuilding of the documentation during the **make** command.

Contents

The GConf package contains `libgconf` libraries.

Description

libgconf libraries

`libgconf` libraries provide the functions necessary to maintain the configuration database.

GNOME MIME Data-2.4.1

Introduction to GNOME MIME Data

The GNOME MIME Data package contains the base set of file types and applications for GNOME.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-mime-data/2.4/gnome-mime-data-2.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-mime-data/2.4/gnome-mime-data-2.4.1.tar.bz2>
- Download size: 608 KB
- Estimated Disk space required: 6.2 MB
- Estimated build time: 0.01 SBU

Installation of GNOME MIME Data

Install GNOME MIME Data by running the following commands:

```
./configure --prefix=$GNOME_PREFIX --sysconfdir=/etc/gnome &&  
make &&  
make install
```

Command explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The GNOME MIME Data package contains `$GNOME_PREFIX/share/icons`, `$GNOME_PREFIX/share/application-registry` and `$GNOME_PREFIX/share/mime-info`.

Description

icons

`icons` contains all the default document type icons.

application-registry

`application-registry` contains the application mime database.

mime-info

`mime-info` contains the mime description database.

GNOME Virtual File System-2.6.1.1

Introduction to GNOME Virtual File System

The GNOME Virtual File System package contains virtual file system libraries. This is used as one of the foundations of the Nautilus file manager.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-vfs/2.6/gnome-vfs-2.6.1.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-vfs/2.6/gnome-vfs-2.6.1.1.tar.bz2>
- Download size: 1.4 MB
- Estimated Disk space required: 64.3 MB
- Estimated build time: 1.36 SBU

GNOME Virtual File System dependencies

Required

intltool-0.30[p.410], GConf-2.6.1[p.413], libbonobo-2.6.0[p.411], GNOME MIME Data-2.4.1[p.414] and shared-mime-info-0.14[p.358]

Optional

Samba-3.0.4[p.305], CDPParanoia-III-9.8[p.572], FAM-2.7.0[p.120], GTK-Doc-1.2[p.407], OpenSSL-0.9.7d[p.115] or GnuTLS, and OpenAFS

Installation of GNOME Virtual File System

Install GNOME Virtual File System by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
--sysconfdir=/etc/gnome --disable-gtk-doc &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin` : This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--disable-gtk-doc`: This switch will prevent the rebuilding of documentation during the **make** command.

Contents

The GNOME Virtual File System package contains `libgnomevfs` libraries.

libgnome-2.6.1.1

Introduction to libgnome

The libgnome package contains the libgnome library.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgnome/2.6/libgnome-2.6.1.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgnome/2.6/libgnome-2.6.1.1.tar.bz2>
- Download size: 1.0 MB
- Estimated Disk space required: 15.3 MB
- Estimated build time: 0.32 SBU

libgnome dependencies

Required

GNOME Virtual File System-2.6.1.1[p.415]

Optional

EsounD-0.2.34[p.544] and GTK-Doc-1.2[p.407]

Installation of libgnome

Install libgnome by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome --disable-gtk-doc &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--disable-gtk-doc`: This switch prevents the rebuilding of documentation during the **make** command.

Contents

The libgnome package contains libgnome libraries.

Description

libgnome libraries

libgnome libraries are the non-GUI portion of the GNOME libraries.

libart_lgpl-2.3.16

Introduction to libart_lgpl

The `libart_lgpl` package contains the `libart` libraries. This is useful for high-performance 2D graphics.

Package information

- Download (HTTP): http://ftp.gnome.org/pub/GNOME/sources/libart_lgpl/2.3/libart_lgpl-2.3.16.tar.bz2
- Download (FTP): ftp://ftp.gnome.org/pub/GNOME/sources/libart_lgpl/2.3/libart_lgpl-2.3.16.tar.bz2
- Download size: 260 KB
- Estimated Disk space required: 4.7 MB
- Estimated build time: 0.18 SBU

Installation of libart_lgpl

Install `libart_lgpl` by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The `libart_lgpl` package contains `libart_lgpl` libraries.

Description

libart_lgpl libraries

`libart_lgpl` library is used as the anti-aliased render engine for `libgnomecanvas`.

libglade-2.3.6

Introduction to libglade

The libglade package contains `libglade` libraries. This is useful for loading Glade interface files in a program at runtime.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libglade/2.3/libglade-2.3.6.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libglade/2.3/libglade-2.3.6.tar.bz2>
- Download size: 336 KB
- Estimated Disk space required: 7.5 MB
- Estimated build time: 0.16 SBU

libglade dependencies

Required

`libxml2-2.6.9`[p.123] and `GTK+-2.4.1`[p.354]

Optional

`Python-2.3.3`[p.185] (if compiled utilizing `expat-1.95.7`[p.130]) and `GTK-Doc-1.2`[p.407]

Installation of libglade

Install libglade by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Command explanations

`--enable-gtk-doc`: This switch can be added to rebuild the HTML documentation.

Contents

The libglade package contains `libglade` libraries.

Description

libglade libraries

`libglade` libraries contain the functions necessary to load Glade interface files.

libgnomecanvas-2.6.1.1

Introduction to libgnomecanvas

The libgnomecanvas package contains the GNOME canvas library. It is an engine for structured graphics and one of the essential GNOME libraries.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgnomecanvas/2.6/libgnomecanvas-2.6.1.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgnomecanvas/2.6/libgnomecanvas-2.6.1.1.tar.bz2>
- Download size: 504 KB
- Estimated Disk space required: 15.4 MB
- Estimated build time: 0.36 SBU

libgnomecanvas dependencies

Required

libglade-2.3.6[p.418] and libart_lgpl-2.3.16[p.417]

Optional

GTK-Doc-1.2[p.407]

Installation of libgnomecanvas

Install libgnomecanvas by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--disable-gtk-doc &&
make &&
make install
```

Command explanations

`--disable-gtk-doc`: This switch will prevent the rebuilding of the API documentation during the **make** command.

Contents

The libgnomecanvas package contains libgnomecanvas libraries.

libbonoboui-2.6.0

Introduction to libbonoboui

The libbonoboui package contains libbonoboui libraries.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libbonoboui/2.6/libbonoboui-2.6.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libbonoboui/2.6/libbonoboui-2.6.0.tar.bz2>
- Download size: 900 KB
- Estimated Disk space required: 73.0 MB
- Estimated build time: 1.71 SBU

libbonoboui dependencies

Required

libgnome-2.6.1.1[p.416] and libgnomecanvas-2.6.1.1[p.419]

Optional

GTK-Doc-1.2[p.407]

Installation of libbonoboui

Install libbonoboui by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&
make &&
make install
```

Contents

The libbonoboui package contains libbonoboui libraries.

Description

libbonoboui libraries

libbonoboui libraries are the GUI portion of the Bonobo libraries.

GNOME Icon Theme-1.2.1

Introduction to GNOME Icon Theme

The GNOME Icon Theme package contains an assortment of scalable and non-scalable icons of different sizes and themes.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-icon-theme/1.2/gnome-icon-theme-1.2.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-icon-theme/1.2/gnome-icon-theme-1.2.1.tar.bz2>
- Download size: 2.7 MB
- Estimated Disk space required: 13.7 MB
- Estimated build time: 0.01 SBU

GNOME Icon Theme dependencies

Required

hicolor-icon-theme-0.5[p.359]

Installation of GNOME Icon Theme

Install GNOME Icon Theme by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The GNOME Icon Theme package contains icons.

gnome-keyring-0.2.1

Introduction to gnome-keyring

The gnome-keyring package contains a daemon that keeps password and other secrets for users.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-keyring/0.2/gnome-keyring-0.2.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-keyring/0.2/gnome-keyring-0.2.1.tar.bz2>
- Download size: 320 KB
- Estimated Disk space required: 5.0 MB
- Estimated build time: 0.01 SBU

gnome-keyring dependencies

Required

GTK+-2.4.1[p.354]

Installation of gnome-keyring

Install gnome-keyring by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
    --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in \$GNOME_PREFIX/sbin instead of \$GNOME_PREFIX/libexec.

Contents

The gnome-keyring package contains libgnome-keyring libraries and **gnome-keyring-daemon**.

Description

gnome-keyring libraries

gnome-keyring libraries let other applications utilize the **gnome-keyring-daemon**.

gnome-keyring-daemon

gnome-keyring-daemon is a session daemon that keeps passwords for users.

libgnomeui-2.6.1.1

Introduction to libgnomeui

The libgnomeui package contains libgnomeui libraries.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgnomeui/2.6/libgnomeui-2.6.1.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgnomeui/2.6/libgnomeui-2.6.1.1.tar.bz2>
- Download size: 1.5 MB
- Estimated Disk space required: 62 MB
- Estimated build time: 1.10 SBU

libgnomeui dependencies

Required

libbonoboui-2.6.0[p.420] and gnome-keyring-0.2.1[p.422]

Optional

EsounD-0.2.34[p.544], libjpeg-6b[p.141] and GTK-Doc-1.2[p.407]

Installation of libgnomeui

Install libgnomeui by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --disable-gtk-doc &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--disable-gtk-doc`: This switch prevents rebuilding the documentation during the **make** command.

Contents

The libgnomeui package contains libgnomeui libraries.

Description

libgnomeui libraries

libgnomeui libraries is the GUI portion of the GNOME libraries.

GTK Engines-2.2.0

Introduction to GTK Engines

The GTK Engines package contains three themes for GTK2.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gtk-engines/2.2/gtk-engines-2.2.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gtk-engines/2.2/gtk-engines-2.2.0.tar.bz2>
- Download size: 400 KB
- Estimated Disk space required: 5.1 MB
- Estimated build time: 0.10 SBU

GTK Engines dependencies

Required

GTK+-2.4.1[p.354]

Installation of GTK Engines

Install GTK Engines by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The GTK Engines package contains `engines` libraries and theme files.

Description

engines libraries

`engines` libraries are manager systems for specific themes.

theme files

Theme files included are Pixmap, Metal and Redmond95.

GNOME Themes-2.6.1

Introduction to GNOME Themes

The GNOME Themes package contains several more theme sets.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-themes/2.6/gnome-themes-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-themes/2.6/gnome-themes-2.6.1.tar.bz2>
- Download size: 2.7 MB
- Estimated Disk space required: 30.4 MB
- Estimated build time: 0.37 SBU

GNOME Themes dependencies

Required

intltool-0.30[p.410] and GTK Engines-2.2.0[p.424]

Installation of GNOME Themes

Install GNOME Themes by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The GNOME Themes package contains themes.

ScrollKeeper-0.3.14

Introduction to ScrollKeeper

The ScrollKeeper package contains a cataloging system for documentation. This is useful for managing documentation metadata and providing an API to help browsers find, sort and search the document catalog.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/scrollkeeper/0.3/scrollkeeper-0.3.14.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/scrollkeeper/0.3/scrollkeeper-0.3.14.tar.bz2>
- Download size: 534 KB
- Estimated Disk space required: 9.2 MB
- Estimated build time: 0.20 SBU

ScrollKeeper dependencies

Required

intltool-0.30[p.410], libxslt-1.1.6[p.124], DocBook XML DTD-4.3[p.618] and Perl modules[p.186]: XML-Parser-2.34

Installation of ScrollKeeper

Install ScrollKeeper by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
    --localstatedir=/var --disable-static \
    --with-omfdirs=/usr/share/omf:/opt/gnome/share/omf:\
/opt/kde-3.2.2/share/omf:/opt/gnome-2.6/share/omf &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc`: This switch puts the configuration files in `/etc/scrollkeeper`.

`--localstatedir=/var`: This switch puts ScrollKeeper's database directory in `/var/lib/scrollkeeper`.

`--disable-static`: This switch prevents the static library from being built.

`--omfdirs=/usr/share/omf:/opt/kde-3.2.2/share/omf:/opt/gnome-2.6/share/omf`: This switch sets all the locations for OMF files for scrollkeeper.

Configuring ScrollKeeper

Config files

`/etc/scrollkeeper.conf`

Configuration Information

The configuration files sets the `OMF_DIR` variable to the location of all of the `omf` directories in the system. This was set in the **configure** command so no further action is needed until another OMF file is created.

Contents

The ScrollKeeper package contains `libscrollkeeper` libraries and utility scripts.

Description

scrollkeeper libraries

`libscrollkeeper` libraries provide the API necessary for help browsers to interact with documentation written to utilize ScrollKeeper.

utility scripts

utility scripts for performing installation, building, getting and updating of table of contents files.

GNOME Desktop-2.6.1

Introduction to GNOME Desktop

The GNOME Desktop package contains GNOME's `.desktop` files, the `gnome-about` program, man pages and GNOME's core graphics files and icons.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-desktop/2.6/gnome-desktop-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-desktop/2.6/gnome-desktop-2.6.1.tar.bz2>
- Download size: 1.1 MB
- Estimated Disk space required: 12.5 MB
- Estimated build time: 0.19 SBU

GNOME Desktop dependencies

Required

`libgnomeui-2.6.1.1`[p.423] and `ScrollKeeper-0.3.14`[p.426]

Optional

`startup-notification-0.6`[p.357]

Installation of GNOME Desktop

Install GNOME Desktop by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The GNOME Desktop package contains `libgnome-desktop-2` libraries and **`gnome-about`**.

Description

`libgnome-desktop` libraries

`libgnome-desktop` libraries contain API's being tested for inclusion in `libgnome` or `libgnomeui`.

`gnome-about`

`gnome-about` produces the about screen.

libwnck-2.6.1

Introduction to libwnck

The libwnck package contains a Window Navigator Construction Kit.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libwnck/2.6/libwnck-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libwnck/2.6/libwnck-2.6.1.tar.bz2>
- Download size: 324 KB
- Estimated Disk space required: 21.5 MB
- Estimated build time: 0.29 SBU

libwnck dependencies

Required

GTK+-2.4.1[p.354]

Optional

startup-notification-0.6[p.357]

Installation of libwnck

Install libwnck by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make &&  
make install
```

Contents

The libwnck package contains libwnck libraries.

Description

libwnck libraries

libwnck libraries contain functions for writing pagers and task lists.

GNOME Panel-2.6.1

Introduction to GNOME Panel

The GNOME Panel package contains the menu and applet systems.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-panel/2.6/gnome-panel-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-panel/2.6/gnome-panel-2.6.1.tar.bz2>
- Download size: 2.8 MB
- Estimated Disk space required: 70.2 MB
- Estimated build time: 1.14 SBU

GNOME Panel dependencies

Required

GNOME Desktop-2.6.1[p.428] and libwnck-2.6.1[p.429]

Optional

startup-notification-0.6[p.357], GTK-Doc-1.2[p.407] and evolution-data-server

Installation of GNOME Panel

Install GNOME Panel by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome --disable-gtk-doc &&
make &&
make install
```

Command explanations

`--libexecdir=$GNOME_PREFIX/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--disable-gtk-doc`: This switch prevents the rebuilding of documentation during the **make** command.

Contents

The GNOME Panel package contains `libpanel-applet-2` libraries and applets.

Description

libpanel-applet libraries

`libpanel-applet` libraries allow development of small applications which may be embedded in the panel called applets.

Applets

Applets included are Workspace Switcher, Window List, Inbox Monitor, Clock and 'Wanda the Fish'.

GNOME Session-2.6.1

Introduction to GNOME Session

The GNOME Session package contains the GNOME session manager.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-session/2.6/gnome-session-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-session/2.6/gnome-session-2.6.1.tar.bz2>
- Download size: 820 KB
- Estimated Disk space required: 19 MB
- Estimated build time: 0.22 SBU

GNOME Session dependencies

Required

libgnomeui-2.6.1.1[p.423]

Optional

EsounD-0.2.34[p.544]

Installation of GNOME Session

Install GNOME Session by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The GNOME Session package contains **gnome-session**, session utilities and **manager proxy**.

Description

gnome-session

gnome-session starts up the GNOME desktop.

session utilities

session utilities includes a configuration program and other session management related utilities.

manager proxy

manager proxy handles basic session management for applications that do not support XSM.

VTE-0.11.10

Introduction to VTE

The VTE package contains a termcap file implementation for terminal emulators.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/vte/0.11/vte-0.11.10.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/vte/0.11/vte-0.11.10.tar.bz2>
- Download size: 836 KB
- Estimated Disk space required: 34.8 MB
- Estimated build time: 0.57 SBU

VTE dependencies

Required

GTK+-2.4.1[p.354] and Python-2.3.3[p.185]

Optional

GTK-Doc-1.2[p.407] (with DocBook SGML DTD-3.1[p.608] installed) and PyGTK

Installation of VTE

Install VTE by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/sbin --disable-gtk-doc &&
make &&
make install
```

Command explanations

`--libexecdir=/usr/sbin`: This switch puts libexec files in `/usr/sbin` instead of `/usr/libexec`.

`--disable-gtk-doc`: This switch prevents the building of documentation.

Contents

The VTE package contains `libvte` libraries, `vte` and `gnome-pty-helper`

Description

vte libraries

`libvte` libraries provide the functions necessary to implement a "termcap file" for terminal emulators.

vte

`vte` is a test application for the `vte` libraries.

GNOME Terminal-2.6.1

Introduction to GNOME Terminal

The GNOME Terminal package contains the console. This is useful for executing programs from a command prompt.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-terminal/2.6/gnome-terminal-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-terminal/2.6/gnome-terminal-2.6.1.tar.bz2>
- Download size: 2.0 MB
- Estimated Disk space required: 26 MB
- Estimated build time: 0.28 SBU

GNOME Terminal dependencies

Required

libgnomeui-2.6.1.1[p.423], ScrollKeeper-0.3.14[p.426] and VTE-0.11.10[p.434]

Optional

startup-notification-0.6[p.357]

Installation of GNOME Terminal

Install GNOME Terminal by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The GNOME Terminal package contains **gnome-terminal**.

Description

gnome-terminal

gnome-terminal provides the command prompt in the GNOME environment.

libgtop-2.6.0

Introduction to libgtop

The libgtop package contains the GNOME top libraries.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgtop/2.6/libgtop-2.6.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgtop/2.6/libgtop-2.6.0.tar.bz2>
- Download size: 925 KB
- Estimated Disk space required: 35 MB
- Estimated build time: 0.45 SBU

libgtop dependencies

Required

GLib-2.4.1[p.129]

Optional

popt-1.7[p.118] and X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331])

Installation of libgtop

Install libgtop by running the following commands:

```
./configure --prefix=$GNOME_PREFIX &&  
make &&  
make install
```

Contents

The libgtop package contains libgtop libraries.

Description

libgtop libraries

libgtop libraries contain the functions that allow access to System performance data.

GAIL-1.6.3

Introduction to GAIL

The GAIL package contains the GNOME Accessibility Implementation Libraries.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gail/1.6/gail-1.6.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gail/1.6/gail-1.6.3.tar.bz2>
- Download size: 501 KB
- Estimated Disk space required: 52 MB
- Estimated build time: 0.83 SBU

GAIL dependencies

Required

libgnomecanvas-2.6.1.1[p.419]

Optional

GTK-Doc-1.2[p.407]

Installation of GAIL

Install GAIL by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--disable-gtk-doc &&
make &&
make install
```

Contents

The GAIL package contains libgailutil libraries.

Description

libgailutil libraries

libgailutil libraries provide the functions that solve accessibility problems in a consistent manner across GNOME.

GStreamer-0.8.1

Introduction to GStreamer

The GStreamer package contains a framework for streaming media. This is useful for interfacing with binary CODECs.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gstreamer/0.8/gstreamer-0.8.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gstreamer/0.8/gstreamer-0.8.1.tar.bz2>
- Download size: 1.2 MB
- Estimated Disk space required: 86 MB
- Estimated build time: 1.31 SBU

GStreamer dependencies

Required

libgnomeui-2.6.1.1[p.423]

Optional

Python-2.3.3[p.185], GTK-Doc-1.2[p.407], TeX-2.0.2[p.633], AFPL Ghostscript-8.14[p.597] or ESP Ghostscript-7.07.1[p.598], docbook-utils, TransFig, Netpbm and Valgrind

Installation of GStreamer

Install GStreamer by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome \
  --disable-docs-build &&
make &&
make install &&
gst-register
```

Command explanations

`--localstatedir=/var/lib`: This switch puts `gst-register`'s cache in `/var/lib/cache` instead of `$GNOME_PREFIX/var/cache`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--disable-docs-build`: This switch prevents the rebuilding of documentation during the **make** command.

Contents

The GStreamer package contains `libgstreamer` libraries and `libgst` libraries.

gst-plugins-0.8.1

Introduction to gst-plugins

The gst-plugins package contains CODEC interfaces.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gst-plugins/0.8/gst-plugins-0.8.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gst-plugins/0.8/gst-plugins-0.8.1.tar.bz2>
- Download size: 1.8 MB
- Estimated Disk space required: 110 MB
- Estimated build time: 2.16 SBU

gst-plugins dependencies

Required

GStreamer-0.8.1[p.438]

Optional

NASM-0.98.38[p.202], liba52-0.7.4[p.562], AALib-1.4rc5[p.158], ALSA-1.0.4[p.532], aRts-1.2.2[p.542], Audio File-0.2.6[p.543], CDParanoia-III-9.8[p.572], libdvdrread-0.9.4[p.560], Esound-0.2.34[p.544], FLAC-1.1.0[p.558], LAME-3.95.1[p.571], libdv-0.101[p.561], libFAME-0.9.1[p.555], libmad-0.15.1b[p.552], libmikmod-3.1.10[p.565], NAS-1.6[p.550], SDL-1.2.7[p.546], Speex-1.0.3[p.556], libogg-1.1[p.548], libvorbis-1.0.1[p.549], XviD-1.0.0-rc4[p.563], liboil, EM8300, V4L2, DivX4Linux, libdvnav, FAAC, FAAD1 or FAAD2, GSM, Hermes, JACK, LADSPA, libcaca, libmpeg2, MJPEG Tools, libmusicbrainz, libraw1394, libshout, libsidplay, libsndfile, swfdec and Theora

Installation of gst-plugins

Install gst-plugins by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--sysconfdir=/etc/gnome &&
make &&
make install &&
gst-register
```

Contents

The gst-plugins package contains `libgst*` libraries.

GNOME Applets-2.6.0

Introduction to GNOME Applets

The GNOME Applets package contains small applications which generally run in the background and display their output to the gnome panel.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-applets/2.6/gnome-applets-2.6.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-applets/2.6/gnome-applets-2.6.0.tar.bz2>
- Download size: 4.5 MB
- Estimated Disk space required: 110.1 MB
- Estimated build time: 0.85 SBU

GNOME Applets dependencies

Required

GAIL-1.6.3[p.437], GNOME Panel-2.6.1[p.430] and libxklavier-1.02[p.360]

Optional

libgtop-2.6.0[p.436] and gst-plugins-0.8.1[p.439]

Installation of GNOME Applets

Install GNOME Applets by running the following commands:

```
PRE=`pkg-config --variable=prefix ORBit-2.0` &&
./configure --prefix=$PRE --libexecdir=$PRE/sbin \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make tooldir=$PRE/lib/gnome-applets &&
make tooldir=$PRE/lib/gnome-applets install &&
unset PRE
```

Command explanations

`--libexecdir=$PRE/sbin`: This switch puts libexec files in \$GNOME_PREFIX/sbin instead of \$GNOME_PREFIX/libexec.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in /var/lib/scrollkeeper instead of \$GNOME_PREFIX/var/scrollkeeper.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in /etc/gnome instead of \$GNOME_PREFIX/etc.

`tooldir=$PRE/lib/gnome-applets`: This puts the gnome-applet internal files in \$PRE/lib/gnome-applets instead of \$PRE/sbin/gnome-applets.

Contents

The GNOME Applets package contains **battstat**, **cdplayer**, **charpick**, **drivemount**, **geyes**, **gkb**, **gtik2**, **gweather**, **mini-commander**, **mixer**, **modemlights** and **multiload** applets.

Description

applets

These are small programs designed to run inside the Panel display.

libgsf-1.8.2

Introduction to libgsf

The libgsf package contains `libgsf` libraries. This is useful for providing an extensible input/output abstraction layer for structured file formats.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgsf/1.8/libgsf-1.8.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgsf/1.8/libgsf-1.8.2.tar.bz2>
- Download size: 328 KB
- Estimated Disk space required: 11.6 MB
- Estimated build time: 0.24 SBU

libgsf dependencies

Required

GLib-2.4.1[p.129] and libxml2-2.6.9[p.123]

Optional

GNOME Virtual File System-2.6.1.1[p.415], GTK-Doc-1.2[p.407] (with DocBook SGML DTD-3.1[p.608] installed) and docbook-utils

Installation of libgsf

Install libgsf by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
    --disable-gtk-doc &&
make &&
make install
```

Command explanations

`--disable-gtk-doc`: This switch will prevent the rebuilding of the API documentation (which is broken at the current state) during the **make** command.

Contents

The libgsf package contains `libgsf` and `libgsf-gnome` libraries.

libcroco-0.5.1

Introduction to libcroco

The libcroco package contains `libcroco` libraries. This is useful for providing a CSS API.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libcroco/0.5/libcroco-0.5.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libcroco/0.5/libcroco-0.5.1.tar.bz2>
- Download size: 281 KB
- Estimated Disk space required: 9.5 MB
- Estimated build time: 0.01 SBU

libcroco dependencies

Required

GLib-2.4.1[p.129] and libxml2-2.6.9[p.123]

Installation of libcroco

Install libcroco by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make &&  
make install
```

Contents

The libcroco package contains `libcroco` libraries.

librsvg-2.6.5

Introduction to librsvg

The librsvg package contains librsvg libraries.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/librsvg/2.6/librsvg-2.6.5.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/librsvg/2.6/librsvg-2.6.5.tar.bz2>
- Download size: 288 KB
- Estimated Disk space required: 10.1 MB
- Estimated build time: 0.25 SBU

librsvg dependencies

Required

GTK+-2.4.1[p.354], libxml2-2.6.9[p.123], libart_lgpl-2.3.16[p.417] and popt-1.7[p.118]

Optional

libgsf-1.8.2[p.442], libcroco-0.5.1[p.443], GTK-Doc-1.2[p.407] and docbook-utils

Installation of librsvg

Install librsvg by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--sysconfdir=/etc/gnome --disable-gtk-doc &&
make &&
make install
```

Contents

The librsvg package contains librsvg libraries.

Description

librsvg libraries

librsvg libraries provide the functions to render Scalable Vector Graphics (SVG).

EEL-2.6.1

Introduction to EEL

The EEL package contains the Eazel Extensions Library. This is a collection of widgets and extensions to the GNOME platform.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/eel/2.6/eel-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/eel/2.6/eel-2.6.1.tar.bz2>
- Download size: 542 KB
- Estimated Disk space required: 22 MB
- Estimated build time: 0.76 SBU

EEL dependencies

Required

libgnomeui-2.6.1.1[p.423] and GAIL-1.6.3[p.437]

Installation of EEL

Install EEL by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&
make &&
make install
```

Contents

The EEL package contains `libeel` libraries.

Description

libeel libraries

`libeel` libraries are a collection of widgets developed by the Nautilus project.

Nautilus-2.6.1

Introduction to Nautilus

The Nautilus package contains the GNOME shell and file manager.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/nautilus/2.6/nautilus-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/nautilus/2.6/nautilus-2.6.1.tar.bz2>
- Download size: 5.4 MB
- Estimated Disk space required: 125.5 MB
- Estimated build time: 1.33 SBU

Nautilus dependencies

Required

EEL-2.6.1[p.445], libsvg-2.6.5[p.444] and GNOME Desktop-2.6.1[p.428]

Optional

startup-notification-0.6[p.357], EsounD-0.2.34[p.544], libgsf-1.8.2[p.442], libcroco-0.5.1[p.443], CDParanoia-III-9.8[p.572], libjpeg-6b[p.141], libexif, medusa and docbook-utils

Installation of Nautilus

Install Nautilus by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The Nautilus package contains **nautilus** and **libnautilus** libraries.

Description

nautilus

nautilus is the GNOME file manager.

nautilus libraries

libnautilus libraries supply the functions needed by the file manager.

Control Center-2.6.1

Introduction to Control Center

The Control Center package contains the GNOME settings managers.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/control-center/2.6/control-center-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/control-center/2.6/control-center-2.6.1.tar.bz2>
- Download size: 3.9 MB
- Estimated Disk space required: 115.1 MB
- Estimated build time: 1.02 SBU

Control Center dependencies

Required

libxklavier-1.02[p.360], Metacity-2.8.0[p.366] and Nautilus-2.6.1[p.446]

Optional

EsounD-0.2.34[p.544], ALSA-1.0.4[p.532], gst-plugins-0.8.1[p.439] and XScreenSaver

Installation of Control Center

Install Control Center by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--localstatedir=/var/lib`: This switch puts scrollkeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The Control Center package contains **gnome-control-center**, **gnome-settings-daemon**, **gnome-background-properties**, **gnome-default-applications-properties**, **gnome-file-types-properties**, **gnome-font-properties**, **gnome-keybinding-properties**, **gnome-keyboard-properties**, **gnome-mouse-properties**, **gnome-network-preferences**, **gnome-sound-properties**, **gnome-theme-properties** and **gnome-ui-properties**.

Configuring the core GNOME packages

Create an `.xinitrc` file to start GNOME:

```
echo "exec gnome-session" >> ~/.xinitrc
```

and ensure all libraries can be found with:

```
ldconfig
```

At this point you can bring up GNOME with **startx**.

Chapter 31. GNOME Additional Packages

These packages are modular and add desktop applications to the GNOME environment. Feel free to install them on an as needed or as wanted basis.

libgnomeprint-2.6.1

Introduction to libgnomeprint

The libgnomeprint package contains libgnomeprint libraries.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgnomeprint/2.6/libgnomeprint-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgnomeprint/2.6/libgnomeprint-2.6.1.tar.bz2>
- Download size: 684 KB
- Estimated Disk space required: 27 MB
- Estimated build time: 0.64 SBU

libgnomeprint dependencies

Required

Pango-1.4.0[p.352], libart_lgpl-2.3.16[p.417], Fontconfig-2.2.2[p.155] and libxml2-2.6.9[p.123]

Optional

CUPS-1.1.20[p.592], GTK-Doc-1.2[p.407] and docbook-utils

Installation of libgnomeprint

Install libgnomeprint by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--sysconfdir=/etc/gnome --disable-gtk-doc &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--disable-gtk-doc`: This switch prevents rebuilding the documentation during the **make** command.

Contents

The libgnomeprint package contains libgnomeprint libraries.

Description

libgnomeprint libraries

libgnomeprint libraries implement the GNOME Printing Architecture.

libgnomeprintui-2.6.1

Introduction to libgnomeprintui

The libgnomeprintui package contains the libgnomeprintui libraries.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgnomeprintui/2.6/libgnomeprintui-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgnomeprintui/2.6/libgnomeprintui-2.6.1.tar.bz2>
- Download size: 550 KB
- Estimated Disk space required: 31 MB
- Estimated build time: 0.29 SBU

libgnomeprintui dependencies

Required

libgnomeui-2.6.1.1[p.423], GNOME Icon Theme-1.2.1[p.421] and libgnomeprint-2.6.1[p.449]

Optional

GTK-Doc-1.2[p.407]

Installation of libgnomeprintui

Install libgnomeprintui by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--disable-gtk-doc &&
make &&
make install
```

Command explanations

`--disable-gtk-doc`: This switch prevents rebuilding the documentation during the **make** command.

Contents

The libgnomeprintui package contains libgnomeprintui libraries.

Description

libgnomeprintui libraries

libgnomeprintui libraries are the GUI portion of the implementation of the GNOME Printing Architecture.

GAL-1.99.11

Introduction to GAL

The GAL package contains library functions that came from Evolution and Gnumeric. GAL is short for GNOME Application Libs.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gal/1.99/gal-1.99.11.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gal/1.99/gal-1.99.11.tar.bz2>
- Download size: 1.1 KB
- Estimated Disk space required: 142 MB
- Estimated build time: 1.70 SBU

GAL dependencies

Required

libgnomeprintui-2.6.1[p.450]

Optional

GTK-Doc-1.2[p.407]

Installation of GAL

Install GAL by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make &&  
make install
```

Contents

The GAL package contains library routines refactored from Evolution and Gnumeric.

GtkHTML-3.0.10

Introduction to GtkHTML

The GtkHTML package contains a lightweight HTML rendering/printing/editing engine. This is an evolution specific application at this time.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtkhtml/3.0/gtkhtml-3.0.10.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gtkhtml/3.0/gtkhtml-3.0.10.tar.bz2>
- Download size: 1.2 MB
- Estimated Disk space required: 133 MB
- Estimated build time: 1.84 SBU

GtkHTML dependencies

Required

GAL-1.99.11[p.451] and libgnomeprintui-2.6.1[p.450]

Optional

libsoup-1.99.28[p.220]

Installation of GtkHTML

Install GtkHTML by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin &&
make &&
make install
```

Contents

The GtkHTML package contains libgtkhtml-3.0 libraries.

Description

libgtkhtml-3.0 libraries

libgtkhtml-3.0 libraries provide the functions to render HTML within applications.

libgtkhtml-2.6.1

Introduction to libgtkhtml

The libgtkhtml package contains libgtkhtml-2 libraries.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgtkhtml/2.6/libgtkhtml-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgtkhtml/2.6/libgtkhtml-2.6.1.tar.bz2>
- Download size: 417 KB
- Estimated Disk space required: 147 MB
- Estimated build time: 1.40 SBU

libgtkhtml dependencies

Required

GAIL-1.6.3[p.437] and GNOME Virtual File System-2.6.1.1[p.415]

Installation of libgtkhtml

Install libgtkhtml by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make &&  
make install
```

Contents

The libgtkhtml package contains libgtkhtml-2 libraries.

Description

libgtkhtml-2 libraries

libgtkhtml-2 libraries provide the functions necessary to render and/or edit HTML.

Yelp-2.6.1

Introduction to Yelp

The Yelp package contains the help browser. This is useful for viewing help files.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/yelp/2.6/yelp-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/yelp/2.6/yelp-2.6.1.tar.bz2>
- Download size: 504 KB
- Estimated Disk space required: 12 MB
- Estimated build time: 0.16 SBU

Yelp dependencies

Required

libgnomeui-2.6.1.1[p.423] and libgtkhtml-2.6.1[p.453]

Installation of Yelp

Install Yelp by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
    --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

Contents

The Yelp package contains **yelp**.

Description

yelp

yelp is the GNOME help browser.

bug-buddy-2.6.1

Introduction to bug-buddy

The bug-buddy package contains a graphical bug reporting tool. This can extract debugging information from a core file or crashed application.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/bug-buddy/2.6/bug-buddy-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/bug-buddy/2.6/bug-buddy-2.6.1.tar.bz2>
- Download size: 839 KB
- Estimated Disk space required: 12 MB
- Estimated build time: 0.07 SBU

bug-buddy dependencies

Required

GNOME Desktop-2.6.1[p.428]

Installation of bug-buddy

Install bug-buddy by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The bug-buddy package contains **bug-buddy**.

Description

bug-buddy

bug-buddy is a graphical bug reporting system.

gtksourceview-1.0.1

Introduction to gtksourceview

The gtksourceview package contains `libgtksourceview` libraries. This is useful for extended the `gtk` text functions to include syntax highlighting.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gtksourceview/1.0/gtksourceview-1.0.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gtksourceview/1.0/gtksourceview-1.0.1.tar.bz2>
- Download size: 642 KB
- Estimated Disk space required: 13 MB
- Estimated build time: 0.10 SBU

gtksourceview dependencies

Required

`libgnomeprintui-2.6.1`[p.450]

Optional

`GTK-Doc-1.2`[p.407]

Installation of gtksourceview

Install `gtksourceview` by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&
make &&
make install
```

Contents

The `gtksourceview` package contains `libgtksourceview` libraries.

Description

`libgtksourceview` libraries

`libgtksourceview` libraries contain function extensions for the `GtkTextView` widget.

gedit-2.6.1

Introduction to gedit

The gedit package contains a lightweight UTF-8 text editor for the GNOME desktop.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gedit/2.6/gedit-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gedit/2.6/gedit-2.6.1.tar.bz2>
- Download size: 2.1 MB
- Estimated Disk space required: 59 MB
- Estimated build time: 0.59 SBU

gedit dependencies

Required

EEL-2.6.1[p.445] and gtksourceview-1.0.1[p.456]

Installation of gedit

Install gedit by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
    --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The gedit package contains **gedit**.

Description

gedit

gedit is a lightweight text editor.

EOG-2.6.1

Introduction to EOG

The EOG package contains Eye of GNOME. This is useful for viewing and cataloging image files.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/eog/2.6/eog-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/eog/2.6/eog-2.6.1.tar.bz2>
- Download size: 843 KB
- Estimated Disk space required: 29 MB
- Estimated build time: 0.19 SBU

EOG dependencies

Required

libgnomeprintui-2.6.1[p.450]

Optional

libjpeg-6b[p.141] and libexif

Installation of EOG

Install EOG by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The EOG package contains **eog**.

Description

eog

eog is a fast and functional image viewer as well as an image cataloging program.

ggv-2.6.1

Introduction to ggv

The ggv package contains a PostScript file viewer.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/ggv/2.6/ggv-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/ggv/2.6/ggv-2.6.1.tar.bz2>
- Download size: 1.2 MB
- Estimated Disk space required: 31 MB
- Estimated build time: 0.10 SBU

ggv dependencies

Required

libgnomeui-2.6.1.1[p.423] and ESP Ghostscript-7.07.1[p.598] or AFPL Ghostscript-8.14[p.597]

Optional

CUPS-1.1.20[p.592]

Installation of ggv

Install ggv by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The ggv package contains **ggv**.

Description

ggv

ggv is a GNOME 2 based PostScript viewer.

File Roller-2.6.1

Introduction to File Roller

File Roller is an archive manager for GNOME with support for tar, bzip2, gzip, zip, jar, compress and lzop archives.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/file-roller/2.6/file-roller-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/file-roller/2.6/file-roller-2.6.1.tar.bz2>
- Download size: 1.3 MB
- Estimated Disk space required: 33 MB
- Estimated build time: 0.40 SBU

File Roller dependencies

Required

libgnomeui-2.6.1.1[p.423] and ScrollKeeper-0.3.14[p.426]

Installation of File Roller

Install File Roller by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
    --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The File Roller package contains **file-roller**.

Description

file-roller

file-roller is an archiver for GNOME.

GConf Editor-2.6.1

Introduction to GConf Editor

The GConf Editor package contains a GUI editor for the GConf configuration database.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gconf-editor/2.6/gconf-editor-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gconf-editor/2.6/gconf-editor-2.6.1.tar.bz2>
- Download size: 368 KB
- Estimated Disk space required: 6.2 MB
- Estimated build time: 0.07 SBU

GConf Editor dependencies

Required

GConf-2.6.1[p.413]

Installation of GConf Editor

Install GConf Editor by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make &&  
make install
```

Contents

The GConf Editor package contains **gconf-editor**.

Description

gconf-editor

gconf-editor allows direct modification of the GConf configuration database.

GNOME Utilities-2.6.2

Introduction to GNOME Utilities

The GNOME Utilities package contains a collection of small applications designed to make your life a little easier.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-utils/2.6/gnome-utils-2.6.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-utils/2.6/gnome-utils-2.6.2.tar.bz2>
- Download size: 1.6 MB
- Estimated Disk space required: 30.3 MB
- Estimated build time: 0.40 SBU

GNOME Utilities dependencies

Required

GNOME Panel-2.6.1[p.430]

Optional

Linux-PAM-0.77[p.66]

Installation of GNOME Utilities

Install GNOME Utilities by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--with-pam-prefix=/etc/pam.d`: This switch puts PAM files in `/etc/pam.d` instead of `/etc/gnome`.

Contents

The GNOME Utilities package contains **gnome-system-log**, **gnome-search-tool**, **gnome-dictionary**, and **gfloppy**.

Description

gnome-system-log

gnome-system-log allows you to monitor and view system log files.

gnome-search-tool

gnome-search-tool allows you to search for files on your system using simple and advanced search options.

gnome-dictionary

gnome-dictionary allows you to look up definitions and spelling of words.

gfloppy

gfloppy formats floppy disks under Linux.

GNOME System Monitor-2.6.0

Introduction to GNOME System Monitor

The GNOME System Monitor package contains procman, GNOME's replacement to gtop.

Package information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome-system-monitor/2.6/gnome-system-monitor-2.6.0.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-system-monitor/2.6/gnome-system-monitor-2.6.0.tar.bz2>
- Download size: 584 KB
- Estimated Disk space required: 9.7 MB
- Estimated build time: 0.12 SBU

GNOME System Monitor dependencies

Required

libgnomeui-2.6.1.1[p.423], libwnck-2.6.1[p.429] and libgtop-2.6.0[p.436]

Installation of GNOME System Monitor

Install GNOME System Monitor by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make &&
make install
```

Note

make install will need path access to \$GNOME_PREFIX/bin. If your preinstallation changes were made only to the user account, you will need to adjust your path prior to running **make install**.

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The GNOME System Monitor package contains **gnome-system-monitor**.

Description

gnome-system-monitor

gnome-system-monitor displays the process tree and hardware meters.

GNOME Media-2.6.1

Introduction to GNOME Media

The GNOME Media package contains GNOME's media applications.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-media/2.6/gnome-media-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-media/2.6/gnome-media-2.6.1.tar.bz2>
- Download size: 2.9 MB
- Estimated Disk space required: 49 MB
- Estimated build time: 0.49 SBU

GNOME Media dependencies

Required

libgnomeui-2.6.1.1[p.423] and ScrollKeeper-0.3.14[p.426]

Optional

GStreamer-0.8.1[p.438], gst-plugins-0.8.1[p.439] and EsounD-0.2.34[p.544]

Installation of GNOME Media

Install GNOME Media by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The GNOME Media package contains **gnome-sound-recorder**, **gnome-cd**, **gnome-volume-control** and **vumeter**.

Description

gnome-sound-recorder

gnome-sound-recorder is GNOME's recorder.

gnome-cd

gnome-cd is GNOME's CD Player.

gnome-volume-control

gnome-volume-control is GNOME's mixer with volume applet.

vumeter

vumeter is a visual volume meter.

Nautilus Media-0.8.0

Introduction to Nautilus Media

The Nautilus Media package contains GNOME's media applications used by **nautilus**.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/nautilus-media/0.8/nautilus-media-0.8.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/nautilus-media/0.8/nautilus-media-0.8.0.tar.bz2>
- Download size: 404 KB
- Estimated Disk space required: 15 MB
- Estimated build time: 0.22 SBU

Nautilus Media dependencies

Required

GStreamer-0.8.1[p.438] and Nautilus-2.6.1[p.446]

Installation of Nautilus Media

Install Nautilus Media by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The Nautilus Media package contains **nautilus-audio-view** and support libraries.

Description

nautilus-audio-view

nautilus-audio-view displays the directory as audio tracks.

GNOME Netstatus-2.6.1

Introduction to GNOME Netstatus

The GNOME Netstatus package contains a panel applet that monitors network interfaces. It provides indicators for incoming and outgoing data, packets received and transmitted, and information about the network interface itself such as IP information and Ethernet address.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-netstatus/2.6/gnome-netstatus-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-netstatus/2.6/gnome-netstatus-2.6.1.tar.bz2>
- Download size: 418 KB
- Estimated Disk space required: 6.1 MB
- Estimated build time: 0.12 SBU

GNOME Netstatus dependencies

Required

GNOME Panel-2.6.1[p.430]

Installation of GNOME Netstatus

Install GNOME Netstatus by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The GNOME Netstatus package contains **gnome-netstatus-applet**.

Description

gnome-netstatus-applet

gnome-netstatus-applet provides information about a network interface on your panel.

gcalctool-4.3.51

Introduction to gcalctool

gcalctool is a powerful graphical calculator with financial, logical and scientific modes. It uses a multiple precision package to do its arithmetic to give a high degree of accuracy.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gcalctool/4.3/gcalctool-4.3.51.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gcalctool/4.3/gcalctool-4.3.51.tar.bz2>
- Download size: 823 KB
- Estimated Disk space required: 12 MB
- Estimated build time: 0.15 SBU

gcalctool dependencies

Required

libgnomeui-2.6.1.1[p.423] and ScrollKeeper-0.3.14[p.426]

Installation of gcalctool

Install gcalctool by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The gcalctool package contains **gcalctool** (a.k.a **gnome-calculator**).

Description

gcalctool

gcalctool is a desktop calculator for GNOME.

GPdf-0.131

Introduction to GPdf

GPdf is a PDF viewer for GNOME. It is based on the Xpdf and the GNOME Print Preview widget.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gpdf/0.131/gpdf-0.131.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gpdf/0.131/gpdf-0.131.tar.bz2>
- Download size: 1.1 MB
- Estimated Disk space required: 48 MB
- Estimated build time: 0.60 SBU

GPdf dependencies

Required

libgnomeprintui-2.6.1[p.450]

Optional

TeX-2.0.2[p.633] and libpaper

Installation of GPdf

Install GPdf by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The GPdf package contains **gpdf** and **gnome-pdf-viewer**.

Description

gpdf

gpdf is a PDF viewer for GNOME.

gucharmap-1.4.1

Introduction to gucharmap

gucharmap is a Unicode character map and font viewer. It allows you to browse through all the available Unicode characters and categories for the installed fonts, and to examine their detailed properties. It is an easy way to find the character you might only know by its Unicode name or code point.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gucharmap/1.4/gucharmap-1.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gucharmap/1.4/gucharmap-1.4.1.tar.bz2>
- Download size: 1.5 MB
- Estimated Disk space required: 23 MB
- Estimated build time: 0.24 SBU

gucharmap dependencies

Required

intltool-0.30[p.410], pop-1.7[p.118] and GTK+-2.4.1[p.354]

Optional

libgnomeui-2.6.1.1[p.423] and ScrollKeeper-0.3.14[p.426]

Installation of gucharmap

Install gucharmap by running the following commands:

```
./configure --prefix=$GNOME_PREFIX --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The gucharmap package contains **charmap**, **gnome-character-map**, **gucharmap** and **libgucharmap**.

Description

gucharmap

gucharmap is a Unicode character map and font viewer.

Nautilus CD Burner-2.6.1

Introduction to Nautilus CD Burner

The Nautilus CD Burner lets you write files to a CD burner easily with GNOME, by drag-and-dropping files in the GNOME file manager, Nautilus.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/nautilus-cd-burner/2.6/nautilus-cd-burner-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/nautilus-cd-burner/2.6/nautilus-cd-burner-2.6.1.tar.bz2>
- Download size: 446 KB
- Estimated Disk space required: 6.2 MB
- Estimated build time: 0.14 SBU

Nautilus CD Burner dependencies

Required

Nautilus-2.6.1[p,446]

Installation of Nautilus CD Burner

Install Nautilus CD Burner by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

The Nautilus CD Burner package contains **nautilus-cd-burner** and **mapping-daemon**.

Description

nautilus-cd-burner

nautilus-cd-burner is an extension to Nautilus that lets you burn CDs easily.

mapping-daemon

mapping-daemon is the central daemon which keeps track of file mappings.

Zenity-2.6.2

Introduction to Zenity

Zenity is a rewrite of **gdialog**, the GNOME port of **dialog** which allows you to display GTK+ dialog boxes from the commandline and shell scripts.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/zenity/2.6/zenity-2.6.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/zenity/2.6/zenity-2.6.2.tar.bz2>
- Download size: 610 KB
- Estimated Disk space required: 6.9 MB
- Estimated build time: 0.08 SBU

Zenity dependencies

Required

intltool-0.30[p.410], popt-1.7[p.118], libgnomecanvas-2.6.1.1[p.419] and ScrollKeeper-0.3.14[p.426]

Installation of Zenity

Install Zenity by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The Zenity package contains **gdialog** and **zenity**.

Description

gdialog

gdialog is a wrapper script which can be used with legacy scripts.

zenity

zenity is a program that will display GTK+ dialogs, and return the users input.

GNOME Speech-0.3.2

Introduction to GNOME Speech

The GNOME Speech gives a simple general API for producing text-to-speech output. Multiple backends are supported by the GNOME Speech library, but currently only the Festival backend is enabled in this package; the other backends require either Java or proprietary software.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-speech/0.3/gnome-speech-0.3.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-speech/0.3/gnome-speech-0.3.2.tar.bz2>
- Download size: 220 KB
- Estimated Disk space required: 4.5 MB
- Estimated build time: 0.10 SBU

GNOME Speech dependencies

Required

libbonobo-2.6.0[p.411]

Optional

GTK-Doc-1.2[p.407], J2SDK-1.4.2[p.188], Festival, FreeTTS, ViaVoice, Eloquence, DECTalk and Theta

Installation of GNOME Speech

Install GNOME Speech by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make &&  
make install
```

Contents

The GNOME Speech package contains **festival-synthesis-driver**, **test-speech** and **libgnomespeech**.

Description

libgnomespeech

libgnomespeech provides API for programs to convert text into speech.

AT SPI-1.4.2

Introduction to AT SPI

The AT SPI package contains Assistive Technology Service Provider Interface. This is useful for redirecting UI events to accessible applications and adaptive/assistive technologies.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/at-spi/1.4/at-spi-1.4.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/at-spi/1.4/at-spi-1.4.2.tar.bz2>
- Download size: 499 KB
- Estimated Disk space required: 29 MB
- Estimated build time: 0.68 SBU

AT SPI dependencies

Required

GAIL-1.6.3[p.437] and libbonobo-2.6.0[p.411]

Optional

GTK-Doc-1.2[p.407]

Installation of AT SPI

Install AT SPI by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --disable-gtk-doc &&
make &&
make install
```

Command explanations

`--libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin`: This switch puts libexec files in `$GNOME_PREFIX/sbin` instead of `$GNOME_PREFIX/libexec`.

`--disable-gtk-doc`: This switch prevent the rebuilding of the documentation during the **make** command.

Contents

The AT SPI package contains `libcsapi` libraries, `libspi` libraries and **at-spi-registryd**.

Description

at-spi-registryd

at-spi-registryd is the registry daemon that allows communication between the UI and assistance devices.

GNOME Magnifier-0.10.11

Introduction to GNOME Magnifier

The GNOME Magnifier includes a screen magnifier, which allows you to zoom in on portions of the desktop. It is expressly designed for users with low vision who wish to use the GNOME desktop.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-mag/0.10/gnome-mag-0.10.11.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-mag/0.10/gnome-mag-0.10.11.tar.bz2>
- Download size: 286 KB
- Estimated Disk space required: 3.9 MB
- Estimated build time: 0.14 SBU

GNOME Magnifier dependencies

Required

AT SPI-1.4.2[p.475]

Installation of GNOME Magnifier

Install GNOME Magnifier by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make &&  
make install
```

Contents

The GNOME Magnifier package contains **magnifier** and **libgnome-mag**.

Description

magnifier

magnifier is a screen zooming utility.

Gnopernicus-0.8.4

Introduction to Gnopernicus

Gnopernicus enables users with limited vision, or no vision, to use the GNOME desktop and applications effectively. It provides a number of features, including magnification, focus tracking, braille output, and more.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnopernicus/0.8/gnopernicus-0.8.4.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnopernicus/0.8/gnopernicus-0.8.4.tar.bz2>
- Download size: 1.5 MB
- Estimated Disk space required: 41 MB
- Estimated build time: 0.69 SBU

Gnopernicus dependencies

Required

libgnomeui-2.6.1.1[p.423], ScrollKeeper-0.3.14[p.426], GNOME Speech-0.3.2[p.474] and AT SPI-1.4.2[p.475]

Optional

GTK-Doc-1.2[p.407] and BRLTTY

Installation of Gnopernicus

Install Gnopernicus by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The Gnopernicus package contains **brlmonitor**, **gnopernicus** and **srcore**.

Description

brlmonitor

brlmonitor is a braille display simulator.

gnopernicus

gnopernicus provides various functionality for users with limited vision.

GOK-0.10.2

Introduction to GOK

GOK is a dynamic onscreen keyboard. It features Direct Selection, Dwell Selection, Automatic Scanning and Inverse Scanning access methods and includes word completion.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gok/0.10/gok-0.10.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gok/0.10/gok-0.10.2.tar.bz2>
- Download size: 1.1 MB
- Estimated Disk space required: 53 MB
- Estimated build time: 1.01 SBU

GOK dependencies

Required

libgnomeui-2.6.1.1[p.423], ScrollKeeper-0.3.14[p.426], libwnck-2.6.1[p.429], AT SPI-1.4.2[p.475] and Esound-0.2.34[p.?]

Optional

GTK-Doc-1.2[p.407]

Installation of GOK

Install GOK by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The GOK package contains **gok**.

Description

gok

gok is a dynamic onscreen keyboard utility.

Epiphany-1.2.5

Introduction to Epiphany

Epiphany is a simple yet powerful GNOME web browser targeted at non-technical users. Its principles are simplicity and standards compliance.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/epiphany/1.2/epiphany-1.2.5.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/epiphany/1.2/epiphany-1.2.5.tar.bz2>
- Download size: 2.5 MB
- Estimated Disk space required: 95 MB
- Estimated build time: 1.11 SBU

Epiphany dependencies

Required

libgnomeui-2.6.1.1[p.423], ScrollKeeper-0.3.14[p.426] and Mozilla-1.6[p.517]

Optional

Nautilus-2.6.1[p.446] and GTK-Doc-1.2[p.407]

Installation of Epiphany

Install Epiphany by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
--sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The Epiphany package contains **epiphany** and **epiphany-bin**.

Description

epiphany

epiphany is a GNOME web browser based on the Mozilla rendering engine.

GnomeMeeting-1.0.2

Introduction to GnomeMeeting

GnomeMeeting is an H.323 compatible videoconferencing and VOIP/IP-Telephony application that allows you to make audio and video calls to remote users with H.323 hardware or software (such as Microsoft Netmeeting). It supports all modern videoconferencing features, such as registering to an ILS directory, gatekeeper support, making multi-user conference calls using an external MCU, using modern Quicknet telephony cards, and making PC-To-Phone calls.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnomemeeting/1.0/gnomemeeting-1.0.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnomemeeting/1.0/gnomemeeting-1.0.2.tar.bz2>
- Download size: 2.9 MB
- Estimated Disk space required: 47 MB
- Estimated build time: 1.06 SBU

GnomeMeeting dependencies

Required

libgnomeui-2.6.1.1[p.423], ScrollKeeper-0.3.14[p.426], PWLib-1.6.5 (compiled with OpenLDAP support) and OpenH323-1.13.4

Optional

SDL-1.2.7[p.546]

Installation of GnomeMeeting

Install GnomeMeeting by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`. This installation controls all future installations of schemas, changes in location, including eliminating this command *must* be consistent.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The GnomeMeeting package contains **gnomemeeting** and **gnomemeeting-config-tool**.

Description

gnomemeeting

gnomemeeting is a H.323 Voip, Telephony and Video Conferencing application which uses the H.323 protocol.

GNOME Games-2.6.1

Introduction to GNOME Games

The GNOME Games package contains games.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-games/2.6/gnome-games-2.6.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-games/2.6/gnome-games-2.6.1.tar.bz2>
- Download size: 7.9 MB
- Estimated Disk space required: 92 MB
- Estimated build time: 0.99 SBU

GNOME Games dependencies

Required

libgnomeui-2.6.1.1[p.423], ScrollKeeper-0.3.14[p.426] and librsvg-2.6.5[p.444]

Optional

EsounD-0.2.34[p.544] and Guile-1.6.4[p.134]

Installation of GNOME Games

GNOME Games needs to be setgid to track high scores. Create a separate user and group for games. See the README file in the source directory for more information:

```
install -d /var/lib/games &&
groupadd games &&
useradd -c 'games' -d /var/lib/games -g games -s /bin/false games &&
chown games:games /var/lib/games
```

Install GNOME Games by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--disable-setgid`: This will not prevent the setgid bit on the executables from being set. Though it also means that the functionality to save high game scores will be disabled.

Contents

The GNOME Games package contains **aisleriot**, **freecell**, **gataxx**, **glines**, **gnect**, **gnibbles**, **gnobots2**, **gnome-stones**, **gnome-xbill**, **gnometris**, **gnomine**, **gnotravex**, **gnotski**, **gtali**, **iagno**, **mahjongg** and **same-gnome**.

GNOME2 User Docs-2.6.0.1

Introduction to GNOME2 User Docs

The GNOME2 User Docs package contains end user documents for GNOME.

Package information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome2-user-docs/2.6/gnome2-user-docs-2.6.0.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome2-user-docs/2.6/gnome2-user-docs-2.6.0.1.tar.bz2>
- Download size: 995 KB
- Estimated Disk space required: 3.1 MB
- Estimated build time: 0.01 SBU

GNOME2 User Docs dependencies

Required

ScrollKeeper-0.3.14[p,426]

Optional

docbook-utils

Installation of GNOME2 User Docs

Install GNOME2 User Docs by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

The GNOME2 User Docs package contains OMF files.

Description

OMF files

OMF files contain user documentation. These include introductions and help on the core packages.

GDM-2.6.0.2

Introduction to GDM

The GDM package contains GNOME's Display Manager daemon. This is useful for allowing configurable graphical logins.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gdm/2.6/gdm-2.6.0.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gdm/2.6/gdm-2.6.0.2.tar.bz2>
- Download size: 2.9 MB
- Estimated Disk space required: 54 MB
- Estimated build time: 0.65 SBU

GDM dependencies

Required

libgnomeui-2.6.1.1[p.423], ScrollKeeper-0.3.14[p.426] and libsvg-2.6.5[p.444]

Optional

Linux-PAM-0.77[p.66], tcpwrappers-7.6[p.232] and SELinux

Installation of GDM

Install GDM by running the following commands:

```
groupadd gdm &&
useradd -c gdm -d /dev/null -g gdm -s /bin/bash gdm &&
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib \
  --with-pam-prefix=/etc &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc/gnome`: This command puts configuration files in `/etc/gnome` instead of `/opt/gnome2/etc`.

`--localstatedir=/var/lib`: This command puts files in `/var/lib` instead of `/opt/gnome2/var`.

`--with-pam-prefix=/etc`: This command puts PAM configuration files in `/etc/pam.d` instead of `/etc/gnome`.

Configuring GDM

Config files

`gdm.conf`

Configuration Information

The GDM PAM config files contain modules not present in a BLFS installation. The following commands will replace those files:

```
cat > /etc/pam.d/gdm << "EOF"
auth      required    pam_unix.so
auth      required    pam_nologin.so
account   required    pam_unix.so
password  required    pam_unix.so
session   required    pam_unix.so
EOF
cat > /etc/pam.d/gdm-autologin << "EOF"
auth      required    pam_env.so
auth      required    pam_nologin.so
auth      required    pam_permit.so
account   required    pam_unix.so
password  required    pam_unix.so
session   required    pam_unix.so
EOF
```

gdm can be tested by executing it from a root console.

To start a graphical login at boot, install `/etc/rc.d/init.d/gdm` init script included in the `blfs-bootscripts-5.1`[p.31] package.

```
make install-gdm
```

To autostart with a graphical login, edit `/etc/inittab` so that the line reading

```
id:3:initdefault:
```

is changed to

```
id:5:initdefault:
```

Contents

The GDM package contains **gdm**, **gdm-binary**, **gdmXnest**, **gdmXnestchooser**, **gdmchooser**, **gdmflexiserver**, **gdmgreeter**, **gdmlogin**, **gdmphotosetup**, **gdmsetup**, **gdmthemetester**, **gdm-restart**, **gdm-safe-restart**, **gdm-stop**, **gdmconfig**, **gdmopen** and **gdmtranslate**.

Description

gdm

gdm is a wrapper script to execute the GDM binary, the configurable GNOME based login prompt.

gdmchooser

gdmchooser is an application for selecting XDMCP enabled hosts on the local network.

gdmsetup

gdmsetup is a graphical interface to edit the `gdm.conf`.

gdm-restart and gdm-safe-restart

gdm-restart sends the HUP signal and **gdm-safe-restart** sends the USR1 signal to the daemon so that it restarts. They are used after the config file is edited.

gdmconfig

gdmconfig is an application for managing the configuration of the entire GDM applications suite. It handles look and feel,

security, XDMCP, GDMchooser and more.

Chapter 32. GNOME 1.4 Libraries

This section contains additional GNOME 1.4 libraries, needed by some applications that have not yet been ported to GNOME 2.x. None of these libraries are needed for a GNOME desktop install.

Pre-installation configuration

Add to your system or personal profile:

```
export PATH=$PATH:/opt/gnome/bin
export PKG_CONFIG_PATH=$PKG_CONFIG_PATH:/opt/gnome/lib/pkgconfig
export GNOME_LIBCONFIG_PATH=/usr/lib
```

Add to your `/etc/ld.so.conf`:

```
cat >> /etc/ld.so.conf << "EOF"
# Begin gnome addition to /etc/ld.so.conf

/opt/gnome/lib

# End gnome addition
EOF
```

Remember to execute **ldconfig** after installation of libraries to update the library cache.

Add to your `/etc/man.conf`:

```
cat >> /etc/man.conf << "EOF"
# Begin gnome addition to man.conf

MANPATH /opt/gnome/man

# END gnome addition to man.conf
EOF
```

ORBit-0.5.17

Introduction to ORBit

The ORBit package contains a high-performance CORBA Object Request Broker. This allows programs to send requests and receive replies from other programs.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/ORBit/0.5/ORBit-0.5.17.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/ORBit/0.5/ORBit-0.5.17.tar.bz2>
- Download size: 1 MB
- Estimated Disk space required: 51.4 MB
- Estimated build time: 0.73 SBU

ORBit dependencies

Required

GLib-1.2.10[p.128]

Installation of ORBit

Install ORBit by running the following commands:

```
./configure --prefix=/opt/gnome &&
make &&
make install
```

Contents

The ORBit package contains `libIDL`, `libIIOP`, `libORBit`, `libORBitCosNaming` and `libORBitutil` libraries.

Description

libIDL

`libIDL` library is the Interface Definition Language mappings for CORBA.

libIIOP

`libIIOP` library is for low level CORBA communications.

libORBit

`libORBit` library is the CORBA API.

libORBitCosNaming

No description available.

libORBitutil

`libORBitutil` library contain the convenience routines for ORBit.

OAF-0.6.10

Introduction to OAF

The OAF package contains the Object Activation Framework for GNOME.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/oaf/0.6/oaf-0.6.10.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/oaf/0.6/oaf-0.6.10.tar.bz2>
- Download size: 432 KB
- Estimated Disk space required: 10.3 MB
- Estimated build time: 0.16

OAF dependencies

Required

ORBit-0.5.17[p.487] and libxml-1.8.17[p.122]

Optional

GTK-Doc-1.2[p.407]

Installation of OAF

Install OAF by running the following commands:

```
ldconfig &&  
./configure --prefix=/opt/gnome --disable-gtk-doc &&  
make &&  
make install
```

Contents

The OAF package contains `liboaf` libraries.

Description

liboaf libraries

No description available.

GNOME Libraries-1.4.2

Introduction to GNOME Libraries

The GNOME Libraries package contains the GNOME libraries. This is useful as a foundation for the GNOME Desktop and applications.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-libs/1.4/gnome-libs-1.4.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-libs/1.4/gnome-libs-1.4.2.tar.bz2>
- Download size: 2.8 MB
- Estimated Disk space required: 112.4 MB
- Estimated build time: 1.95 SBU

GNOME Libraries dependencies

Required

ORBit-0.5.17[p.487], GTK+-1.2.10[p.351], ImLib-1.9.14[p.157] and Berkeley DB-3.3.11[p.314] or Berkeley DB-4.2.52.2[p.312]

Optional

Audio File-0.2.6[p.543], EsounD-0.2.34[p.544] and GTK-Doc-1.2[p.407]

Installation of GNOME Libraries

Install GNOME Libraries by running the following commands:

```
./configure --prefix=/opt/gnome --disable-gtk-doc &&
make &&
make install
```

Configuring GNOME Libraries

Config files

/opt/gnome/etc/mime-magic, /opt/gnome/etc/paper.config,
/opt/gnome/etc/sound/events/gnome.soundlist and
/opt/gnome/etc/sound/events/gtk-events.soundlist

Contents

The GNOME Libraries package contains libgnome, libgnomeui, libgnomesupport, libart_lgpl, libgtk-xmhtml, libgnorbagtk and libzvt libraries.

Description

libgnome

libgnome library is the non-GUI part of the GNOME library.

libgnomeui

libgnomeui is the GUI part of the GNOME library.

libgnomesupport

No description available.

libart_lgpl

`libart_lgpl` library is the LGPL'd component of `libart`.

libgtk-xmhtml

No description available.

libgnorbagtk

`libgnorbagtk` is the GNOME CORBA GTK framework.

libzvt

`libzvt` library provides the functions necessary to emulate **xterm**.

GTK Pixel Buffer-0.22.0

Introduction to GDK Pixel Buffer

The GDK Pixel Buffer package is the GTK+ pixel buffer library

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gdk-pixbuf/0.22/gdk-pixbuf-0.22.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gdk-pixbuf/0.22/gdk-pixbuf-0.22.0.tar.bz2>
- Download size: 396 KB
- Estimated Disk space required: 13.3 MB
- Estimated build time: 0.34 SBU

GDK Pixel Buffer dependencies

Required

GTK+-1.2.10[p.351], libpng-1.2.5[p.143], libjpeg-6b[p.141] and libtiff-3.6.1[p.145]

Optional

GTK-Doc-1.2[p.407] and GNOME Libraries-1.4.2[p.489]

Installation of GDK Pixel Buffer

The **make** command attempts to open an X display during the compile, so an X server must be running during this process.

Install GDK Pixel Buffer by running the following commands:

```
./configure --prefix=/opt/gnome --disable-gtk-doc &&
make &&
make install
```

Contents

The GDK Pixel Buffer package contains `libgdk_pixbuf` libraries.

Description

`libgdk_pixbuf` libraries

`libgdk_pixbuf` libraries contain the GTK+ pixel buffer libraries for the GIMP Toolkit.

GNOME Print-0.37

Introduction to GNOME Print

The GNOME Print package contains the GNOME Printing Architecture, for GNOME 1.4.

Package information

- Download (HTTP): <http://ftp.linux.org.uk/mirrors/ftp.gnome.org/sources/gnome-print/0.37/gnome-print-0.37.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-print/0.37/gnome-print-0.37.tar.bz2>
- Download size: 756 KB
- Estimated Disk space required: 33.3 MB
- Estimated build time: 0.66

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/gnome-print-0.37-ft217-fixes.patch>

GNOME Print dependencies

Required

GDK Pixel Buffer-0.22.0[p.491]

Installation of GNOME Print

The **configure** script does not correctly interpret that libxml-1.8.17 is newer than libxml-1.8.8. This can be solved by building `xmlConf.sh` with this command:

```
cat > /opt/gnome/lib/xmlConf.sh << EOF
XML_LIBDIR="-L/usr/lib"
XML_LIBS="-lxml"
XML_INCLUDEDIR="-I/usr/include/gnome-xml"
MODULE_VERSION=xml-1.8.17
EOF
```

Install GNOME Print by running the following commands:

```
patch -Np1 -i ../gnome-print-0.37-ft217-fixes.patch &&
./configure --prefix=/opt/gnome --with-zlib=/usr &&
make &&
make install
```

Command explanations

`--with-zlib=/usr`: Configure GNOME Print to use the system installed zlib.

Contents

The GNOME Print package contains the GNOME 1.4 printing libraries.

Bonobo-1.0.22

Introduction to Bonobo

The Bonobo package contains a set of language and system independent CORBA interfaces for creating reusable components, controls and creating compound documents.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/bonobo/1.0/bonobo-1.0.22.tar.bz2>
- Download (FTP): <http://ftp.gnome.org/pub/GNOME/sources/bonobo/1.0/bonobo-1.0.22.tar.bz2>
- Download size: 1.2 MB
- Estimated Disk space required: 110.2 MB
- Estimated build time: 2.18 SBU

Bonobo dependencies

Required

GNOME Print-0.37[p.492]

Installation of Bonobo

Install Bonobo by running the following commands:

```
./configure --prefix=/opt/gnome &&  
make &&  
make install
```

Command explanations

`--prefix=/opt/gnome`: Install Bonobo in the GNOME 1.4 area.

Contents

The Bonobo package contains GNOME 1.4 compound document and component libraries.

GConf-1.0.9

Introduction to GConf

The GConf package contains a configuration database system.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/GConf/1.0/GConf-1.0.9.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/GConf/1.0/GConf-1.0.9.tar.bz2>
- Download size: 772 KB
- Estimated Disk space required: 20.0 MB
- Estimated build time: 0.44

GConf dependencies

Required

OAF-0.6.10[p.488], GTK+-1.2.10[p.351] and GDK Pixel Buffer-0.22.0[p.491]

Optional

Berkeley DB-3.3.11[p.314] and Guile-1.6.4[p.134]

Installation of GConf

Install GConf by running the following commands:

```
./configure --prefix=/opt/gnome &&  
make &&  
make install
```

Contents

The GConf package contains `libgconf` libraries.

Description

libgconf libraries

`libgconf` libraries provide the functions necessary to maintain the configuration database.

GNOME Virtual File System-1.0.5

Introduction to GNOME Virtual File System

The GNOME Virtual File System package contains file system libraries.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-vfs/1.0/gnome-vfs-1.0.5.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-vfs/1.0/gnome-vfs-1.0.5.tar.bz2>
- Download size: 768 KB
- Estimated Disk space required: 32.9 MB
- Estimated build time: 1.19 SBU

GNOME Virtual File System dependencies

Required

GNOME MIME Data-2.4.1[p.414], GConf-1.0.9[p.494] and GNOME Libraries-1.4.2[p.489]

Optional

OpenSSL-0.9.7d[p.115], GTK-Doc-1.2[p.407] and CDPParanoia-III-9.8[p.572]

Installation of GNOME Virtual File System

Install GNOME Virtual File System by running the following commands:

```
./configure --prefix=/opt/gnome --disable-gtk-doc &&  
make &&  
make install
```

Configuring GNOME Virtual File System

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, `/sbin/ldconfig` should be run while logged in as root.

Contents

The GNOME Virtual File System package contains `libgnomevfs` libraries.

Description

libgnomevfs libraries

No description available.

libglade-0.17

Introduction to libglade

The libglade package contains libraries which allow applications to load Glade interface files at runtime.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libglade/0.17/libglade-0.17.tar.gz>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libglade/0.17/libglade-0.17.tar.gz>
- Download size: 416 KB
- Estimated Disk space required: 8.5 MB
- Estimated build time: 0.22 SBU

libglade dependencies

Required

libxml-1.8.17[p.122] and GTK+-1.2.10[p.351]

Optional

GNOME Libraries-1.4.2[p.489] and Python-2.3.3[p.185] if compiled utilizing expat-1.95.7[p.130]

Installation of libglade

The **make** command attempts to open an X display during the compile, so an X server must be running during this process.

Install libglade by running the following commands:

```
./configure --prefix=/opt/gnome --enable-bonobo \
--disable-gtk-doc &&
make &&
make install
```

Command explanations

--enable-bonobo: Enable Bonobo support.

Contents

The libglade package contains Glade interface file loading libraries.

GAL-0.24

Introduction to GAL

The GAL package contains library functions that came from Gnumeric and Evolution . GAL is short for GNOME Application Libs.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gal/0.24/gal-0.24.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gal/0.24/gal-0.24.tar.bz2>
- Download size: 1.0 MB
- Estimated Disk space required: 100.8 MB
- Estimated build time: 1.51 SBU

GAL dependencies

Required

GNOME Print-0.37[p.492] and libglade-0.17[p.496]

Optional

GNOME Virtual File System-1.0.5[p.495]

Installation of GAL

Install GAL by running the following commands:

```
./configure --prefix=/opt/gnome --disable-gtk-doc &&
make &&
make install
```

Command explanations

`--prefix=/opt/gnome`: Install GAL in the GNOME 1.4 area.

Contents

The GAL package contains library routines refactored from Evolution and Gnumeric .

Guppi-0.40.3

Introduction to Guppi

The Guppi package contains a Guile scriptable plot program with integrated statistics capabilities.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/Guppi/0.40/Guppi-0.40.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/Guppi/0.40/Guppi-0.40.3.tar.bz2>
- Download size: 1.0 MB
- Estimated Disk space required: 89.2 MB
- Estimated build time: 1.83 SBU

Guppi dependencies

Required

Bonobo-1.0.22[p.493] and GAL-0.24[p.497]

Optional

libglade-0.17[p.496]

Installation of Guppi

Install Guppi by running the following commands:

```
./configure --prefix=/opt/gnome &&  
make &&  
make install
```

Command explanations

--prefix=/opt/gnome: Install Guppi in the GNOME 1.4 area.

Contents

The Guppi package contains plotting libraries and plugins for GNOME 1.4.

libcaplet-1.5.11

Introduction to libcaplet

The libcaplet package contains a control panel applet library.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libcaplet/1.5/libcaplet-1.5.11.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libcaplet/1.5/libcaplet-1.5.11.tar.bz2>
- Download size: 312 KB
- Estimated Disk space required: 2.4 MB
- Estimated build time: 0.01 SBU

libcaplet dependencies

Required

GNOME Libraries-1.4.2[p.489]

Installation of libcaplet

Install libcaplet by running the following commands:

```
./configure --prefix=/opt/gnome &&  
make &&  
make install
```

Command explanations

`--prefix=/opt/gnome`: Install libcaplet in the GNOME 1.4 area.

Contents

The libcaplet package contains a control panel applet library.

Soup-0.7.11

Introduction to Soup

The Soup package contains a SOAP (Simple Object Access Protocol) implementation in C.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/soup/0.7/soup-0.7.11.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/soup/0.7/soup-0.7.11.tar.bz2>
- Download size: 324 KB
- Estimated Disk space required: 11.1 MB
- Estimated build time: 0.33

Installation of Soup

Install Soup by running the following commands:

```
./configure --prefix=/opt/gnome &&  
make &&  
make install
```

Command explanations

--prefix=/opt/gnome: Install Soup in the GNOME 1.4 area.

--enable-apache=no: This command can be added to prevent building against Apache.

Contents

The Soup package contains SOAP libraries, used to implement XML remote procedure calls.

GtkHTML-1.1.7

Introduction to GtkHTML

The GtkHTML package contains a lightweight HTML rendering/printing/editing engine.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gtkhtml/1.1/gtkhtml-1.1.7.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gtkhtml/1.1/gtkhtml-1.1.7.tar.bz2>
- Download size: 1.1 MB
- Estimated Disk space required: 78.6 MB
- Estimated build time: 1.83 SBU

GtkHTML dependencies

Required

GConf-1.0.9[p.494], GAL-0.24[p.497], libglade-0.17[p.496] and libcapplet-1.5.11[p.499]

Optional

Soup-0.7.11[p.500]

Installation of GtkHTML

Install GtkHTML by running the following commands:

```
./configure --prefix=/opt/gnome --disable-gtk-doc &&  
make &&  
make install
```

Command explanations

--prefix=/opt/gnome: Install GTK HTML in the GNOME 1.4 area.

Contents

The GtkHTML package contains the GNOME 1.4 HTML rendering engine.

libghttp-1.0.9

Introduction to libghttp

The libghttp package contains a GNOME 1.4 HTTP client library.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libghttp/1.0/libghttp-1.0.9.tar.gz>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libghttp/1.0/libghttp-1.0.9.tar.gz>
- Download size: 148 KB
- Estimated Disk space required: 1.6 MB
- Estimated build time: 0.01 SBU

libghttp dependencies

Optional

- GtkHTML-1.1.7[p.501]

Installation of libghttp

Install libghttp by running the following commands:

```
./configure --prefix=/opt/gnome &&  
make &&  
make install
```

Command explanations

--prefix=/opt/gnome: Install libghttp in the GNOME 1.4 area.

Contents

The libghttp package contains a GNOME 1.4 HTTP client library.

Part XI. X Software

Chapter 33. Individual Office Programs

This chapter is a collection of independant projects that can be installed based on specific needs. Together, they create a respectable office suite. While they may be lacking in user interface consistency, they excel in doing one thing and doing it well.

AbiWord-2.0.6

Introduction to AbiWord

The AbiWord package contains a word processing application. This is useful for writing reports, letters and other formatted documents.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/abiword/abiword-2.0.6.tar.bz2>
- Download (FTP):
- Download size: 24.3 MB
- Estimated Disk space required: 185 MB
- Estimated build time: 1.64 SBU

AbiWord dependencies

Required

libglade-2.3.6[p.418] and FriBidi

Optional

popt-1.7[p.118], aspell-0.50.5[p.132], GNOME Libraries-1.4.2[p.489], gucharmap, Enchant and wv

Installation of AbiWord

Install AbiWord by running the following commands:

```
cd abi &&
./configure --prefix=/usr &&
make &&
make install &&
cp ../abiword-docs/man/abiword.8 /usr/share/man/man8 &&
cp -rf ../abiword-docs/help /usr/share/doc/abiword
```

Contents

The AbiWord package contains **abiword**, **ttfadmin.sh** and **ttftool**.

Description

abiword

abiword is a symlink to the main **AbiWord** executable.

ttfadmin.sh

ttfadmin.sh generates support files required by AbiWord for each TrueType font in a given directory.

ttftool

ttftool is an utility for processing TrueType fonts.

Gnumeric-1.2.10

Introduction to Gnumeric

The Gnumeric package contains a spreadsheet program. This is useful for financial analysis.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnumeric/1.2/gnumeric-1.2.10.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnumeric/1.2/gnumeric-1.2.10.tar.bz2>
- Download size: 13.9 MB
- Estimated Disk space required: 270.7 MB
- Estimated build time: 2.81 SBU

Gnumeric dependencies

Required

libgnomeprintui-2.6.1[p.450] and libgsf-1.8.2[p.442]

Optional

gda

Installation of Gnumeric

Install Gnumeric by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/sbin \
--localstatedir=/var/lib --sysconfdir=/etc &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `/usr/var/scrollkeeper`.

`--sysconfdir=/etc`: This switch puts configuration files in `/etc` instead of `/usr/etc`.

`--libexecdir=/usr/sbin`: This switch puts libexec files in `/usr/sbin` instead of `/usr/libexec`.

Contents

The Gnumeric package contains **gnumeric**.

Description

gnumeric

gnumeric is GNOME's spreadsheet application.

GnuCash-1.8.8

Introduction to GnuCash

GnuCash is a personal finance manager.

Package information

- Download (HTTP): <http://www.gnucash.org/pub/gnucash/sources/stable/gnucash-1.8.8.tar.gz>
- Download (FTP): <ftp://ftp.at.gnucash.org/pub/gnucash/gnucash/sources/stable/gnucash-1.8.8.tar.gz>
- Download size: 7.4 MB
- Estimated Disk space required: 150 MB
- Estimated build time: 3.18 SBU

GnuCash dependencies

Required

Berkeley DB-4.2.52.2[p.312], GAL-0.24[p.497], GtkHTML-1.1.7[p.501], libghttp-1.0.9[p.502], Guppi-0.40.3[p.498] and gwrap-1.3.4[p.136]

Installation of GnuCash

Install GnuCash by running the following commands:

```
./configure --prefix=/opt/gnome &&
make &&
make install
```

Command explanations

`--prefix=/opt/gnome`: Version 1.8.8 of GnuCash is a GNOME 1.4 application.

Configuring GnuCash

Configuration Information

Note

GnuCash must be run as root once before use. Simply executing **gnucash** from an X terminal and clicking on the cancel button is sufficient. This must be done prior to setting up accounts as an unprivileged user, due to the fact that GnuCash must create scheme catalogs for itself before it is used.

Contents

The GnuCash package contains **gnucash**.

Description

gnucash

gnucash is a personal finance manager.

GIMP-2.0.0

Introduction to GIMP

The GIMP package contains the GNU Image Manipulation Program. This is useful for photo retouching, image composition and image authoring.

Package information

- Download (HTTP):
- Download (FTP): <ftp://ftp.gimp.org/pub/gimp/v2.0/gimp-2.0.0.tar.bz2>
- Download size: 13 MB
- Estimated Disk space required: 507 MB
- Estimated build time: 6.22 SBU

GIMP dependencies

Required

GTK+-2.4.1[p.354] and libart_lgpl-2.3.16[p.417]

Optional

Gimp-Print-4.2.6[p.600], libmng-1.0.7[p.151], librsvg-2.6.5[p.444], AAlib-1.4rc5[p.158], Python-2.3.3[p.185], GTK-Doc-1.2[p.407], libgtkhtml-2.6.1[p.453], lcms-1.12[p.152], MTA, libexif and libwmf

Installation of GIMP

Install GIMP by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc --disable-print &&
make &&
make install
```

Command explanations

`--disable-print`: This option is necessary when gimp-print is not installed. If you have gimp-print installed, this option would be removed.

Configuring GIMP

Config files

`/etc/gimp/2.0/*`, `~/.gimp-2.0`

Configuration Information

GIMP executes a configuration wizard for each user upon their initial invocation of the program.

Contents

The GIMP package contains **gimp**, **gimp-remote** and **gimptool**.

Description

gimp

gimp is an image manipulation program. It works with a variety of image formats and provides a large selection of tools.

gimp-remote

gimp-remote is a small utility that tells a running GIMP to open a local or remote image file.

gimptool

gimptool is a tool that can build plug-ins or scripts and install them if they are distributed in one source file. **gimptool** can also be used by programs that need to know what libraries and include-paths GIMP was compiled with.

Evolution-1.4.5

Introduction to Evolution

The Evolution package contains an integrated mail, calendar and address book suite.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/evolution/1.4/evolution-1.4.5.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/evolution/1.4/evolution-1.4.5.tar.bz2>
- Download size: 12 MB
- Estimated Disk space required: 387 MB
- Estimated build time: 10.84 SBU

Additional downloads

- Required application: <http://ftp2.nchu.edu.tw/UNIX/Database/BerkeleyDB/db-3.1.17.tar.gz>

Evolution dependencies

Required

OpenSSL-0.9.7d[p.115], libsoup-1.99.28[p.220], GAL-1.99.11[p.451] and GtkHTML-3.0.10[p.452]

Optional

OpenLDAP-2.1.30[p.302] and GTK-Doc-1.2[p.407]

Installation of Evolution

Note

Evolution requires Berkeley DB-3.1.17. The details on "why" are in the README file distributed with the Evolution source code. Evolution links to the library statically, hence this book installs the Berkeley DB-3.1.17 in `/opt`, which can be removed once Evolution is installed.

Install Berkeley DB-3.1.17 by running the following commands:

```
cd build_unix &&
../dist/configure --prefix=/opt/db-3.1.17 --enable-compat185 &&
make &&
make install
```

Install Evolution by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --with-db3=/opt/db-3.1.17 --enable-openssl &&
make &&
make install
```

Optionally, you may remove Berkeley DB-3.1.17 installed above with this command:

```
rm -rf /opt/db-3.1.17
```

Command explanations

`--enable-compat185`: Build support for older database files.

`--prefix=/opt/db-3.1.17`: This version of the Berkeley Database should not be installed in `/usr`, as it is only needed for the building of Evolution.

`--with-db3=/opt/db-3.1.17`: Specify the location where db-3.1.17 is installed.

`--enable-openssl`: This flag will compile SSL support into Evolution.

`--with-openldap`: This flag will compile LDAP support into Evolution.

Contents

The Evolution package contains **evolution**.

Description

evolution

evolution contains an email, calendar and address book suite.

Chapter 34. Office Suites

This chapter contains applications that bundle all the essential needs of everyday office workers into one neat 'little' package. The benefits are a consistent user interface and cooperation between applications.

KOffice-1.3.1

Introduction to KOffice

KOffice is the integrated office suite for KDE.

Package information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/koffice-1.3.1/src/koffice-1.3.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/koffice-1.3.1/src/koffice-1.3.1.tar.bz2>
- Download size: 11 MB
- Estimated Disk space required: 155 MB
- Estimated build time: 20.7 SBU

Additional downloads

KOffice has many internationalization packages in the form of:

```
koffice-i18n-[xx]-1.3.1.tar.bz2
```

where the `[xx]` is a two to five letter code for the country covered. The sizes of these files range from about 0.5 MB to 4.0 MB.

KOffice dependencies

Required

kdebase-3.2.2[p.375]

Optional

libart_lgpl-2.3.16[p.417], Python-2.3.3[p.185], libxml2-2.6.9[p.123], libxslt-1.1.6[p.124], aspell-0.50.5[p.132], ImageMagick-5.5.7-16[p.168] and libwv2

Installation of KOffice

Install KOffice with the following commands:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make &&
make install
```

Contents

The KOffice package provides **karbon**, **kchart**, **kformula**, **kivio**, **koconverter**, **koscript**, **koshell**, **kprconverter.pl**, **kpresenter**, **kspread**, **kthesaurus**, **kudesigner**, **kugar** and **kword**.

kchart

kchart is a chart drawing application.

kformula

kformula is a formula editor.

kivio

kivio is a flowchart program.

kpresenter

kpresenter is a presentation builder/display program.

kspread

kspread is a scriptable spreadsheet program.

kugar

kugar is a tool for creating reports.

kword

kword is a framemaker-like word processing and desktop publishing program.

OpenOffice-1.1.1

Introduction to OpenOffice

The OpenOffice is a office suite, the Open Source sibling of StarOffice.

Package information

- Download (HTTP): <http://download.openoffice.org/1.1.1/source.html>
- Download (FTP):
- Download size: 189 MB
- Estimated Disk space required: 5.0 GB
- Estimated build time:

OpenOffice dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), Zip-2.3[p.179], UnZip-5.50[p.177], Tcsh-6.12.00[p.112], which-2.16[p.176]

Recommended

J2SDK-1.4.2[p.188]

Optional

Linux-PAM-0.77[p.66], libart_lgpl-2.3.16[p.417], startup-notification-0.6[p.357] and Apache Ant

Additional downloads

- General Polygon Clipper Library (Optional if libart_lgpl-2.3.16[p.417] is used): <ftp://ftp.cs.man.ac.uk/pub/toby/gpc/gpc231.tar.Z>
- Required patch (Executable **test** is in `/bin`, not in `/usr/bin`): <http://www.linuxfromscratch.org/patches/blfs/5.1/openoffice-1.1.1-test-bin-loc.patch>
- Required patch if Linux-PAM-0.77[p.66] is not installed: <http://www.linuxfromscratch.org/patches/blfs/5.1/openoffice-1.1.1-no-pam.patch>
- Required patch if compiling with JDK 1.4.2: <http://www.linuxfromscratch.org/patches/blfs/5.1/openoffice-1.1.1-jdk-1.4.2-fix.patch>
- Recommended patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/openoffice-1.1.1-domainname.patch>
- The source TAR ball only contains English language help. A localized help content file may be available at <http://ftp.services.openoffice.org/pub/OpenOffice.org/contrib/helpcontent/>.

Installation of OpenOffice

Apply the downloaded patches and optionally copy the gpc files.

```
mv ../gpc231/* external/gpc &&
for p in ../openoffice-1.1.1-*.patch
do patch -Np1 -i $p
done
```

If you want to optimize the build, edit `solenv/inc/unxlngi4.mk` and add the desired optimization flags to `CFLAGSOPT` variable. Some users have reported problems with `-fomit-frame-pointer`. The best option is to not use any custom optimizations. The following command removes an incorrect `-mcpu` option in the above file.

```
sed -i "s:\-mcpu=pentiumpro::" \
```

```
solenv/inc/unxlngi4.mk
```

Configure openoffice using the following commands. You may build install sets for only specific languages based on your preferences. If a particular component is not available in the language of your choice, the default will be English. The following option compiles all available languages. BTW, if you restrict the languages, be sure to add ENUS to the list, without it the build fails. Also, the build fails when the environment variable LANG is set, unset it before compiling.

```
cd config_office/ &&
./configure --with-lang=ALL \
--with-dict=ALL --without-fonts \
--enable-libsns --with-system-zlib &&
cd ..
```

Compile OpenOffice using the following commands.

Note

Openoffice fails to compile if the umask is set to something exotic. Set umask to 022 if you normally set it to something else.

```
./bootstrap &&
bash -c "source LinuxIntelEnv.Set.sh; dmake"
```

If you have downloaded localized help content zip files, you will need to unzip them to the appropriate directory as mentioned below and then recreate the installation set.

```
cd solver/645/unxlngi4.pro/pck &&
for i in $(ls ../../../../helpcontent_*_unix.tgz)
do
tar -xvzf $i
done &&
cd ../../../../instsetoo &&
rm -rf unxlngi4.pro &&
cd .. &&
bash -c "source LinuxIntelEnv.Set.sh ; dmake"
```

Install OpenOffice using the following commands. The following commands install the English language set. To install a localized version, replace the 01 by the international telephone country code for your country. Note that when installing, it needs a X Display, even though there is no visible X window. You can use Xvfb if you are compiling on a console.

```
cd instsetoo/unxlngi4.pro/01/normal &&
sed -i "s:^oo_home=.*:oo_home=openoffice:" install &&
./install --prefix=/opt &&
for appl in swriter scalc sdraw simpres smath soffice spadmin
do ln -sf /opt/openoffice/program/$appl /usr/bin/$appl
done
```

Command explanations

mv ../gpc231/gpc.* external/gpc: Copy the gpc files to the appropriate location.

--with-lang=ALL: Make install sets for all available languages.

--with-dict=ALL: Install dictionaries for all available languages..

--with-libart: Use libart instead of gpc for polygon clipping.

--with-libsns: Use startup-notification.

`--disable-java`: Do not build components that need java.

`--without-gpc`: Do not use gpc. Removes polygon clipping capability.

`--without-fonts`: Do not install Bitstream Vera fonts since they are already bundled with X.

`./bootstrap`: Create packages required to bootstrap the build.

`dmake`: Compile the package.

`sed -i "s:^oo_home=...: Remove version specific installation directory`

`for appl in swriter scalc sdraw simpress smath soffice; do ...: Create links so that the package can be started from the command-line without changes to the existing path.`

Contents

The OpenOffice package contains **swriter**, **simpress**, **scalc**, **sdraw**, **smath**, and **spadmin**.

Description

swriter

Word processing application.

simpress

Presentation application.

scalc

Spreadsheet application.

sdraw

Drawing application.

smath

Mathematical formula editor.

spadmin

OpenOffice Printer Configuration. You may need to run this if you are having any printing problems.

Chapter 35. Graphical Web Browsers

This chapter contains a wonderful selection of browsers. We hope you can find one you enjoy using or give them each a trial run.

Mozilla-1.6

Introduction to Mozilla

Mozilla is a browser suite, the Open Source sibling of Netscape. It includes the browser, composer, mail client, a calendar client and an IRC client.

The Mozilla project also hosts two subprojects that aim to cater to the needs of users who don't need the complete browser suite or like to have separate applications for browsing and e-mail. These subprojects are Mozilla Firefox, (a stand-alone browser based on the Mozilla source code) and Mozilla Thunderbird, (a stand-alone mail client based on the Mozilla source code). The build instructions for these two applications are discussed in separate sections:

- MozillaFirefox-0.8[p.521]
- MozillaThunderbird-0.5[p.526]

Package information

- Download (HTTP): <http://ftp.mozilla.org/pub/mozilla/releases/mozilla1.6/src/mozilla-source-1.6.tar.bz2>
- Download (FTP): <ftp://ftp.mozilla.org/pub/mozilla.org/mozilla/releases/mozilla1.6/src/mozilla-source-1.6.tar.bz2>
- Download size: 39 MB
- Estimated Disk space required: 550 MB
- Estimated build time: 22.64 SBU

Mozilla dependencies

Required

Zip-2.3[p.179], GTK+-2.4.1[p.354], libIDL-0.8.3[p.408], libmng-1.0.7[p.151] and which-2.16[p.176]

Recommended

GnuPG-1.2.4[p.80] (for Enigmail extension)

Additional downloads

- Enigmail Extension (Version 0.83.0) (Useful only if Mozilla Mail is built)
- Inter Process Communicaton Extension (Version 1.0.5) (Needed for Enigmail)

Installation of Mozilla

Warning

Do not install Mozilla, Mozilla Firefox and Mozilla Thunderbird with a single prefix since they install identically named files. The BLFS Book installs Mozilla in `/usr` while Mozilla Firefox and Mozilla Thunderbird are installed in `/opt`.

If you plan to install Enigmail, extract the ipc and enigmail tarballs in the `extensions` directory.

Compile Mozilla by running the following commands:

```
export MOZILLA_OFFICIAL="1" &&
export BUILD_OFFICIAL="1" &&
./configure --prefix=/usr \
    --with-default-mozilla-five-home=/usr/lib/mozilla \
    --enable-default-toolkit=gtk2 \
    --with-x --with-system-zlib \
    --with-system-jpeg --with-system-png --with-system-mng \
    --enable-xft --enable-crypto \
    --disable-accessibility \
    --disable-tests --disable-debug \
    --disable-logging --enable-reorder \
    --enable-strip --disable-pedantic \
    --enable-cpp-rtti --enable-extensions=all &&
make
```

If installing Enigmail, execute the following steps:

```
build/autoconf/make-makefile extensions/ipc extensions/enigmail &&
make -C extensions/ipc &&
make -C extensions/enigmail
```

Install Mozilla as follows:

```
make install &&
install -d /usr/include/mozilla-1.6/nss &&
cp -Lf dist/private/nss/*.h dist/public/nss/*.h \
    /usr/include/mozilla-1.6/nss &&
ln -nsf mozilla-1.6 /usr/include/mozilla &&
ln -nsf mozilla-1.6 /usr/lib/mozilla
```

Some libraries installed by mozilla are also needed by other packages. These libraries should be in `/usr/lib` so that other packages can link against these. Move them as follows:

```
for i in lib{nspr4,plc4,plds4,nss3,smime3,softokn3,ssl3}.so libsoftokn3.chk
do
    mv /usr/lib/mozilla-1.6/$i /usr/lib/
    ln -sf ../$i /usr/lib/mozilla-1.6/
done
```

Install Enigmail as follows:

```
make -C extensions/ipc install &&
make -C extensions/enigmail install
```

To enable multi-user operation, execute the following:

```
cd /usr/lib/mozilla-1.6 &&
export LD_LIBRARY_PATH="/usr/lib/mozilla-1.6" &&
export MOZILLA_FIVE_HOME="/usr/lib/mozilla-1.6" &&
./regxpcom &&
./regchrome &&
touch `find /usr/lib/mozilla-1.6 -name *.rdf`
```

Optional Extra Switches

Each of these switches can be added to the configure line in order to have the described effect on the Mozilla compile.

`--enable-elf-dynstr-gc`: Removes un-referenced strings from ELF shared objects generated during the build. Note that this option breaks build on alpha.

--disable-mailnews: Disable the mail and news clients.

--disable-ldap: Disable LDAP Support, recommended if mail is disabled.

--enable-calendar: Build the calendar client.

--enable-xterm-updates: This option is for enabling the **xterm** title with the current command when compiling.

--enable-plaintext-editor-only: Disable support for HTML editing. Do not use this switch if you are building the mail-news component.

Command explanations

```
export MOZILLA_OFFICIAL="1" &&
export BUILD_OFFICIAL="1"
```

Set some variables that affect what and how it is built. The first two exports specify that we are building a distribution.

--prefix=/usr: Previously mozilla did not support the make install option. Hence the package was installed in /opt. The package now supports "make install" and follows the FHS guidelines for installation. Hence the book now recommends installation in a system wide prefix such as /usr .

```
--enable-toolkit-gtk2
```

Use gtk2 toolkit

```
--with-system-zlib --with-system-jpeg \
--with-system-png --with-system-mng
```

Use the system versions for these packages.

--enable-xft: Enable the Xft support. You need fontconfig or the latest XFree86 version to enable xft.

--enable-crypto: Enable the Personal Security Manager to enable SSL connections.

```
--disable-jsd --disable-accessibility \
--disable-tests --disable-debug \
--disable-dtd-debug \
--disable-logging --enable-reorder \
--enable-strip \
--enable-cpp-rtti
```

Various options that affect what components are built and some optimization options. You can pick and choose from these options. More information on them can be found in the Mozilla **configure** script help. Not all options are used in the instructions given above.

--enable-extensions=...: Enables extensions. If you want, you can disable all extensions other than the browser by changing this switch to --enable-extensions="default,-venkman,-inspector,-irc". For a short description of the various extensions available with the mozilla source, see <http://linuxfromscratch.org/~tushar/downloads/mozilla-extensions.txt>.

```
install -d /usr/include/mozilla-1.6/nss
cp -Lf dist/private/nss/*.h dist/public/nss/*.h \
  /usr/include/mozilla-1.6/nss
```

Copy the nss headers that are not copied by make install.

ln -nsf mozilla-1.6 ...: Mozilla installs headers and libraries in version specific directories. This link makes symbolic links so that applications that depend on Mozilla (such as OpenOffice , Galeon, etc.) don't need to know which version of Mozilla is installed.

```
export LD_LIBRARY_PATH="/usr/lib/mozilla-1.6" &&
export MOZILLA_FIVE_HOME="/usr/lib/mozilla-1.6" &&
./regxpcom &&
./regchrome &&
touch `find /usr/lib/mozilla-${VERSION} -name *.rdf`
```

Create the required component registries to enable multi-user installs. These steps should be repeated each time a mozilla add-on is installed as root to allow normal users to run mozilla.

Configuring Mozilla

No specific configuration is required as long as the **mozilla** binary is in the path for the user. If Mozilla is installed in a non-standard location, then make a sym-link to the **mozilla** binary from `/usr/bin`. Same thing applies for Mozilla Firefox and Mozilla Thunderbird.

Many applications look for **netscape** when they need to open a browser. You may make the following symlink for convenience.

```
ln -sf mozilla /usr/bin/netscape
```

For installing various Mozilla plugins, refer to Mozdev's PluginDoc Project

Contents

The Mozilla package contains **mozilla**. The various components such as composer, mail-news can be accessed from the menu after **mozilla** starts or via command-line switches to the **mozilla** binary.

MozillaFirefox-0.8

Introduction to Mozilla Firefox

Mozilla Firefox is a stand-alone browser based on the Mozilla codebase.

Package information

- Download (HTTP): <http://ftp.mozilla.org/pub/mozilla.org/firefox/releases/0.8/firefox-source-0.8.tar.bz2>
- Download (FTP): <ftp://ftp.mozilla.org/pub/mozilla.org/firefox/releases/0.8/firefox-source-0.8.tar.bz2>
- Download size: 30 MB
- Estimated Disk space required: 550 MB
- Estimated build time: 10.14 SBU

Mozilla Firefox dependencies

Required

Zip-2.3[p.179], GTK+-2.4.1[p.354], libIDL-0.8.3[p.408], libmng-1.0.7[p.151] and which-2.16[p.176]

Installation of Mozilla Firefox

The configuration of Mozilla Firefox is very similar to Mozilla-1.6[p.517] and hence the options will not be discussed. Refer to the Mozilla-1.6[p.517] for explanations and additional configuration information.

Compile and install Mozilla Firefox by running the following commands:

```
export MOZILLA_OFFICIAL="1" &&
export BUILD_OFFICIAL="1" &&
export MOZ_PHOENIX="1" &&
./configure --prefix=/opt/firefox-0.8 \
    --enable-default-toolkit=gtk2 \
    --with-x --with-system-zlib \
    --with-system-jpeg --with-system-png --with-system-mng \
    --enable-xft --enable-crypto \
    --disable-accessibility \
    --disable-tests --disable-debug \
    --disable-logging --enable-reorder \
    --enable-strip --disable-pedantic \
    --enable-cpp-rtti --enable-extensions=all \
    --disable-calendar --disable-mailnews &&
make &&
make install &&
ln -sf /opt/firefox-0.8/bin/firefox /usr/bin/MozillaFirefox
```

To enable multi-user operation, execute the following:

```
cd /opt/firefox-0.8/lib/mozilla-* &&
export LD_LIBRARY_PATH="$PWD" &&
export MOZILLA_FIVE_HOME="$PWD" &&
./regxpcom &&
./regchrome &&
touch `find $PWD -name *.rdf`
```


Galeon-1.3.14a

Introduction to Galeon

The Galeon package contains a GNOME browser that utilizes the Mozilla gecko rendering engine and presents the simplest interface possible for a browser.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/galeon/galeon-1.3.14a.tar.bz2>
- Download (FTP):
- Download size: 3.6 MB
- Estimated Disk space required: 149.1 MB
- Estimated build time: 1.95 SBU

Galeon dependencies

Required

libgnomeui-2.6.1.1[p.423], ScrollKeeper-0.3.14[p.426] and Mozilla-1.6[p.517]

Installation of Galeon

Compiling must be done with the same compiler version and the same optimization settings that were used on Mozilla.

Install Galeon by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make &&
make install
```

Contents

The Galeon package contains **galeon** and **galeon-config-tool**.

Description

galeon

galeon sets LD_LIBRARY_PATH and MOZILLA_FIVE_HOME before executing galeon-bin.

galeon-config-tool

galeon-config-tool clears settings, installs schemas, removes schemas and fixes permissions in the GConf database.

Konqueror-3.2.2

Konqueror is the default graphical web browser for the KDE desktop environment. It is packaged and installed with `kdebase-3.2.2`[p.375].

Dillo-0.8.0

Introduction to Dillo

Dillo is a fast, small footprint graphical browser. Although version 0.8.0 is alpha code, it is stable. Dillo does not support Java or JavaScript, and the current version does not support FTP, HTTPS or frames. It is, however, very fast and so is useful on older, slower machines. It supports downloads and can support cookies.

Package information

- Download (HTTP): <http://www.dillo.org/download/dillo-0.8.0.tar.bz2>
- Download (FTP): <ftp://distro.ibiblio.org/pub/Linux/distributions/sorcerer/sources/dillo/0.8.0/dillo-0.8.0.tar.bz2>
- Download size: 387 KB
- Estimated Disk space required: 16 MB
- Estimated build time: 0.26 SBU

Dillo dependencies

Required

GTK+-1.2.10[p.351]

Installation of Dillo

Note

Dillo has no mechanism of character set selection and always uses iso8859-1. If this character set is not appropriate, replace all occurrences of iso8859-1 to the desired character set in `src/dw_style.c`.

Install Dillo by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install
```

Configuring Dillo

Config files

`/etc/dillorc`, `/etc/dpidrc`, `~/.dillo/*`

Configuration Information

Dillo stores its configuration in the system wide `/etc/dillorc` file and the `~/.dillo` directory which is created automatically when **dillo** is run for the first time. Note that cookies are turned off by default. To enable cookies, edit the `~/.dillo/cookiesrc` file.

Contents

The Dillo package contains **dillo** **dpid** and **dpidc**.

Description

dillo

dillo is a GTK+ graphical WWW browser with limited facilities, but a small footprint and runs fast on slower machines.

dpid

dpid is a Dillo plugin daemon.

dpidc

dpidc is a control program for **dpid**.

Chapter 36. Other X-based Internet Programs

The Internet isn't just about browsing. Here are more graphical applications that utilize other areas of the Internet.

MozillaThunderbird-0.5

Introduction to Mozilla Thunderbird

Mozilla Thunderbird is a stand-alone mail/news client based on the Mozilla codebase.

Package information

- Download (HTTP): <http://ftp.mozilla.org/pub/mozilla.org/thunderbird/releases/0.5/thunderbird-0.5-source.tar.gz>
- Download (FTP): <ftp://ftp.mozilla.org/pub/mozilla.org/thunderbird/releases/0.5/thunderbird-0.5-source.tar.gz>
- Download size: 31 MB
- Estimated Disk space required: 599 MB
- Estimated build time: 11.9 SBU

Mozilla Thunderbird dependencies

Required

Zip-2.3[p.179], GTK+-2.4.1[p.354], libIDL-0.8.3[p.408], libmng-1.0.7[p.151] and which-2.16[p.176]

Installation of Mozilla Thunderbird

Warning

The current source tarball uses CRLF line-ending (DOS Format). This causes problems during the compilation. Once you extract the tarball, convert the files to UNIX style line endings using `hd2u-0.9.0[p.170]`.

```
find -type f -print0 | xargs -0 dos2unix --d2u
```

The configuration of Mozilla Thunderbird is very similar to Mozilla-1.6[p.517] and hence the options will not be discussed. Refer to the Mozilla-1.6[p.517] for explanations and additional configuration information.

Compile and install Mozilla Thunderbird by running the following commands:

```
export MOZILLA_OFFICIAL="1" &&
export BUILD_OFFICIAL="1" &&
export MOZ_THUNDERBIRD="1" &&
./configure --prefix=/opt/thunderbird-0.5 \
  --enable-default-toolkit=gtk2 \
  --with-x --with-system-zlib \
  --with-system-jpeg --with-system-png --with-system-mng \
  --enable-xft --enable-crypto \
  --disable-accessibility \
  --disable-tests --disable-debug \
  --disable-logging --enable-reorder \
  --enable-strip --disable-pedantic \
  --enable-cpp-rtti --enable-extensions=all \
  --disable-calendar &&
make &&
```

```
make install &&  
ln -sf /opt/thunderbird-0.5/bin/thunderbird /usr/bin/MozillaThunderbird
```

To enable multi-user operation, execute the following:

```
cd /opt/thunderbird-0.5/lib/mozilla-* &&  
export LD_LIBRARY_PATH="$PWD" &&  
export MOZILLA_FIVE_HOME="$PWD" &&  
./regxpcom &&  
./regchrome &&  
touch `find $PWD -name *.rdf`
```

Pan-0.14.2

Introduction to Pan

The Pan package contains a graphical newsreader. This is useful for reading and writing news, threading articles and replying via email.

Package information

- Download (HTTP): <http://pan.rebelbase.com/download/releases/0.14.2/SOURCE/pan-0.14.2.tar.bz2>
- Download (FTP):
- Download size: 1.8 MB
- Estimated Disk space required: 67.8 MB
- Estimated build time: 0.72 SBU

Pan dependencies

Required

GTK+-2.4.1[p.354], GNet-2.0.5[p.219], intltool-0.30[p.410] and libxml2-2.6.9[p.123]

Optional

gtkspell-2.0.4

Installation of Pan

Install Pan by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The Pan package contains **pan**.

Description

pan

pan is the graphical newsreader.

Balsa-2.0.15

Introduction to Balsa

The Balsa package contains a GNOME 2 based mail reader.

Package information

- Download (HTTP): <http://balsa.gnome.org/balsa-2.0.15.tar.bz2>
- Download (FTP):
- Download size: 2.7 MB
- Estimated Disk space required: 74.0 MB
- Estimated build time: 0.82 SBU

Balsa dependencies

Required

libgtkhtml-2.6.1[p.453], libgnomeprintui-2.6.1[p.450], OpenSSL-0.9.7d[p.115], aspell-0.50.5[p.132] and libesmtplib-1.0.2[p.131]

Optional

PCRE-4.5[p.117], GnuPG-1.2.4[p.80] using gpgme and OpenLDAP-2.1.30[p.302]

Installation of Balsa

Install Balsa by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib --with-ssl \
  --sysconfdir=/etc/gnome --with-ldap --with-gpgme &&
make &&
make install
```

Command explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

`--with-ssl`: Change the default of no ssl support.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--with-ldap`: Change the default to support LDAP if it is available.

`--with-gpgme`: Change the default to support GPG if 'GnuPG made easy' (GPGME) is installed.

Configuring Balsa

Configuration Information

All configuration of Balsa is done through the Balsa menu system, with mailbox configuration done with the Settings->Preferences menu.

Contents

The Balsa package contains **balsa**.

Description

balsa

balsa is the GNOME 2 based mail reader.

Part XII. Multimedia

Chapter 37. Multimedia Libraries and Drivers

Many multimedia programs require libraries and/or drivers in order to function properly. The packages in this section fall into this category. Generally you only need to install these if you are installing a program which has the library listed as either a requirement, or as an option to enable it to support certain functionality.

ALSA-1.0.4

The first question which people tend to ask about ALSA is why they should use it over the sound drivers included in the kernel - there are several reasons. First, the ALSA drivers support more sound cards than those in the kernel. Second, the OSS emulation is in some cases faster and better than the original OSS driver itself. And finally, there are some programs which can use ALSA's enhanced features to better drive the soundcard.

ALSA is also the future of Linux Sound (hence the name *Advanced Linux Sound Architecture*), the ALSA drivers were included into the main linux kernel during the 2.5 development series, and they are now the "standard" sound drivers in the 2.6 stable kernel.

The following six sections of the book deal with the six separate components of ALSA: the drivers, the libraries, the utilities, the tools, the firmware and the OSS compatibility libraries.

ALSA Driver-1.0.4

Introduction to ALSA Driver

The ALSA Driver package contains the ALSA sound drivers. These are the next generation of sound drivers for Linux.

Package information

- Download (HTTP): <http://www.alsa-project.org/alsa/ftp/driver/alsa-driver-1.0.4.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/driver/alsa-driver-1.0.4.tar.bz2>
- Download size: 1.7 MB
- Estimated Disk space required: 32 MB (for all drivers)
- Estimated build time: 1.26 SBU (for all drivers)

Installation of ALSA Driver

Before installing the ALSA drivers note that in your kernel configuration you should have **Sound Card Support (CONFIG_SOUND)** enabled but *nothing* else in the Sound menu (with the possible exception of TV Card Mixer support. In particular you should *not* have **OSS Sound Modules** enabled as this will cause problems when loading the ALSA driver modules.

Note

Because ALSA drivers are kernel modules, they must be compiled with the same compiler the kernel has used.

Install ALSA Driver using the following commands as a template:

```
CC=/opt/gcc-2.95.3/bin/gcc ./configure \
--with-mkdir=/lib/modules/`uname -r`/kernel/drivers/sound \
--with-kernel=/lib/modules/`uname -r`/build \
--with-sequencer=yes \
--with-oss=yes \
--with-isapnp=no \
--with-cards=all &&
make &&
make install
```

If this is the first time you have installed the ALSA drivers, you will need to create the /dev entries using the script provided in the ALSA Driver source tree:

```
./snddevices
```

Command explanations

--with-sequencer=yes: This tells the ALSA Driver package to build the sequencer modules for whichever soundcards for which you are building. Most people want them so you will usually want to leave it set to yes.

--with-oss=yes: This tells the package to build the OSS/Free emulation modules. Again, most people want this so it's probably best to stick with yes.

--with-isapnp=no: Most sound cards these days are PCI and so ISA Plug and Play support isn't needed. If you are using an ISA PnP soundcard, it's best to say yes here. If your card is ISA, but not PnP, it is safer to stay with 'no'.

--with-cards=all: You can tell the script just to build the drivers for your particular sound card here. For full information on which drivers are available see **./configure --help**. If you aren't sure which chipset your soundcard uses, have a look in CARDS-STATUS in the ALSA Driver source tree. The default specified here will build all drivers.

Configuring ALSA Driver

Config files

`/etc/modules.conf`

Configuration Information

To configure the ALSA drivers, you need to add some lines to `/etc/modules.conf`:

```
cat >> /etc/modules.conf << "EOF"
alias char-major-14 soundcore
alias char-major-116 snd

alias snd-card-0 snd-[soundcard-name]

alias sound-slot-0 snd-card-0

alias sound-service-0-0 snd-mixer-oss
alias sound-service-0-1 snd-seq-oss
alias sound-service-0-3 snd-pcm-oss
alias sound-service-0-8 snd-seq-midi
EOF
```

`[soundcard-name]` needs to be replaced with the driver relevant to your soundcard. If you have more than one soundcard, you can add additional sections by repeating the above but changing the first 0 to 1 and so on.

After editing `/etc/modules.conf` you need to run **depmod**. If the drivers you have compiled are for the version of the kernel you are currently running, simply run

```
depmod
```

If you are compiling drivers for a different kernel version than those you are running, you will need to use a line along the lines of:

```
depmod -a 2.4.22 -F /boot/System.map-2.4.22
```

Contents

The ALSA Driver package contains the ALSA sound card drivers and include files.

Description

ALSA sound card drivers

These are kernel modules which provide audio and MIDI functionality to the operating system.

include files

These are installed in `/usr/include/sound` and are required to compile certain packages such as ALSA Libraries.

ALSA Library-1.0.4

Introduction to ALSA Library

The ALSA Library package contains the ALSA library. This is used by programs (including ALSA Utilities) which wish to use the ALSA sound interface.

Package information

- Download (HTTP): <http://www.alsa-project.org/alsa/ftp/lib/alsa-lib-1.0.4.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/lib/alsa-lib-1.0.4.tar.bz2>
- Download size: 560 KB
- Estimated Disk space required: 24 MB
- Estimated build time: 0.41 SBU

ALSA Library dependencies

Required

ALSA Driver-1.0.4[p.533]

Installation of ALSA Library

Install ALSA Library by running the following commands:

```
./configure --enable-static &&
make &&
make install
```

Command explanations

--enable-static: We pass this switch to enable the building of static library because some programs try to link against it.

Configuring ALSA Library

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, `/sbin/ldconfig` should be run while logged in as root.

Contents

The ALSA Library package contains **aserver** and the `libasound` library.

Description

libasound (alsa library)

`libasound` provides ALSA functions for application programs.

ALSA Utilities-1.0.4

Introduction to ALSA Utilities

The ALSA Utilities package contains various utilities which are useful for controlling your sound card.

Package information

- Download (HTTP): <http://www.alsa-project.org/alsa/ftp/utils/alsa-utils-1.0.4.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/utils/alsa-utils-1.0.4.tar.bz2>
- Download size: 140 KB
- Estimated Disk space required: 3.2 MB
- Estimated build time: 0.08 SBU

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/alsa-utils-1.0.4-arecord-1.patch>

ALSA Utilities dependencies

Required

ALSA Library-1.0.4[p.535]

Installation of ALSA Utilities

Install ALSA Utilities by running the following commands:

```
patch -Np1 -i ../alsa-utils-1.0.4-arecord-1.patch &&
./configure &&
make &&
make install
```

Configuring ALSA Utilities

Config files

/etc/asound.state

Configuration Information

Probably the easiest way to store mixer levels is to set and retrieve them using a bootscript. It is possible to do this with a **post-install** line in /etc/modules.conf but this is left as an exercise for those readers who wish to do this.

The ALSA Driver package installs a script as /etc/rc.d/init.d/alsasound. While it is possible to use this script, it contains a lot of extraneous detail which isn't needed on an LFS system and so we install the init script /etc/rc.d/init.d/alsa included in the blfs-bootscripts-5.1[p.31] package.

```
make install-alsa
```

Note that all channels of your soundcard are muted by default. You can use the **alsamixer** program from ALSA Utilities (or any other OSS mixer) to change this.

Also, the first time the above script is run, it will complain that there is no state in /etc/asound.state. You can prevent this by running the following commands after installing ALSA Utilities:

```
touch /etc/asound.state &&
```

alsactl store

A final note is that the lines loading `sfxload` are commented out. They are there as an example of other things you may wish to do in the startup script. `sfxload` is a separate package of interest to SoundBlaster AWE and Live! users. It is designed for loading "sound-fonts" (which are used for MIDI output). You may wish to delete these lines and add your own or, if you have the relevant soundcard, install `sfxload` and uncomment them.

Contents

The ALSA Utilities package contains **aconnect**, **alsactl**, **alsamixer**, **amixer**, **aplay**, **arecord** and **aseqnet**.

Description

aconnect

aconnect is a utility for connecting and disconnecting two existing ports in the ALSA sequencer system.

alsactl

alsactl is used to control advanced settings for the ALSA soundcard drivers.

alsamixer

alsamixer is an ncurses-based mixer program for use with the ALSA soundcard drivers.

amixer

amixer allows command-line control of the mixers for the ALSA soundcard drivers.

aplay

aplay is a command-line soundfile player for the ALSA soundcard drivers.

arecord

arecord is a command-line soundfile recorder for the ALSA soundcard drivers.

aseqnet

aseqnet is an ALSA sequencer client which sends and receives event packets over a network.

ALSA Tools-1.0.4

Introduction to ALSA Tools

The ALSA Tools package contains advanced tools for certain soundcards.

Package information

- Download (HTTP): <http://www.alsa-project.org/alsa/ftp/tools/alsa-tools-1.0.4.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/tools/alsa-tools-1.0.4.tar.bz2>
- Download size: 716 KB
- Estimated Disk space required: 20 MB (to compile all tools)
- Estimated build time: 0.44 SBU (to compile all tools)

ALSA Tools dependencies

Required

ALSA Library-1.0.4[p.535]

Optional

GTK+-1.2.10[p.351] and FLTK

Installation of ALSA Tools

The ALSA Tools package is only needed by those with advanced requirements for their sound card. The tools are not all built together, instead you need to **cd** into the directory of each tool you wish to compile and run the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The tools available in this package are **ac3dec**, **as10k1**, **envy24control**, **sb16_csp** and **sbiload**.

Description

ac3dec

ac3dec is a free AC-3 stream decoder.

as10k1

as10k1 is an assembler for the emu10k1 DSP chip present in the Creative SB Live, PCI 512, and emu APS sound cards. It is used to make audio effects such as a flanger, chorus or reverb.

envy24control

envy24control is a control tool for Envy24 (ice1712) based soundcards

sb16_csp

sb16_csp is an SB16/AWE32 Creative Signal Processor (ASP/CSP) control program.

sbiload

sbiload is an OPL2/3 FM instrument loader for the ALSA sequencer.

ALSA Firmware-1.0.4

Introduction to ALSA Firmware

The ALSA Firmware package contains firmware for certain soundcards.

Package information

- Download (HTTP): <http://www.alsa-project.org/alsa/ftp/firmware/alsa-firmware-1.0.4.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/firmware/alsa-firmware-1.0.4.tar.bz2>
- Download size: 1007 KB
- Estimated Disk space required: 5.8 MB
- Estimated build time: 0.03 SBU

ALSA Firmware dependencies

Required

ALSA Tools-1.0.4[p.538]

Installation of ALSA Firmware

The ALSA Firmware package is only needed by those with advanced requirements for their sound card.

Install ALSA Firmware by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

ALSA OSS-1.0.4

Introduction to ALSA OSS

The ALSA OSS package contains the ALSA OSS compatibility library. This is used by programs which wish to use the ALSA OSS sound interface

Package information

- Download (HTTP): <http://www.alsa-project.org/alsa/ftp/oss-lib/alsa-oss-1.0.4.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/oss-lib/alsa-oss-1.0.4.tar.bz2>
- Download size: 156 KB
- Estimated Disk space required: 2.3 MB
- Estimated build time: 0.06 SBU

ALSA OSS dependencies

Required

ALSA Library-1.0.4[p.535]

Installation of ALSA OSS

Install ALSA OSS by running the following commands:

```
./configure &&  
make &&  
make install
```

Configuring ALSA OSS

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, `/sbin/ldconfig` should be run while logged in as root.

Contents

The ALSA OSS package contains **aoss** and the `libaoss` (ALSA OSS compatibility library) library.

aRts-1.2.2

The Analog Real-time Synthesizer (aRts) provides software that can simulate a complete "modular analog synthesizer" on your computer. It creates sounds and music using small modules like oscillators for creating waveforms, various filters, modules for playing data on your speakers, mixers, and faders. You can build a complete setup with the GUI of the system, using the modules - generators, effects and output - connected to each other.

aRts provides necessary libraries for KDE, however it can be installed as a standalone package. The installation instructions for aRts can be found in the aRts-1.2.2[p.372] portion of the KDE installation instructions.

Audio File-0.2.6

Introduction to Audio File

The Audio File package contains the audio file libraries and two sound file support programs. These are useful to support basic sound file formats.

Package information

- Download (HTTP): <http://www.68k.org/~michael/audiofile/audiofile-0.2.6.tar.gz>
- Download (FTP):
- Download size: 354 KB
- Estimated Disk space required: 9.5 MB
- Estimated build time: 0.27 SBU

Installation of Audio File

Install Audio File by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The Audio File package contains `libaudiofile` library, **audiofile-config**, **sfinfo** and **sfconvert**.

Description

libaudiofile library

The `libaudiofile` library is used by programs to support AIFF, AIFF-compressed, Sun/NeXT, WAV and BIC audio formats.

audiofile-config

The **audiofile-config** script is used during the compile process by programs linking to this library.

sfinfo

The **sfinfo** program displays the sound file format, audio encoding, sampling rate and duration for audio formats supported by this library.

sfconvert

The **sfconvert** program converts sound file formats where the original format and destination format are supported by this library.

Esound-0.2.34

Introduction to Esound

The Esound package contains Enlightened Sound Daemon. This is useful for mixing together several digitized audio streams for playback by a single device.

Package information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/esound/0.2/esound-0.2.34.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/esound/0.2/esound-0.2.34.tar.bz2>
- Download size: 312 KB
- Estimated Disk space required: 4.9 MB
- Estimated build time: 0.16 SBU

Esound dependencies

Required

Audio File-0.2.6[p.543]

Optional

ALSA-1.0.4[p.532], tcpwrappers-7.6[p.232] and docbook-utils

Installation of Esound

Install Esound by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install
```

Command explanations

`--sysconfdir=/etc`: This switch puts configuration files in `/etc` instead of `/usr/etc`.

Configuring Esound

Config files

`/etc/esd.conf`

Configuration Information

Instructions and information about the configuration file is located in the TIPS file in the Esound source directory.

Contents

The Esound package contains `esd`, `esdcat`, `esdctl`, `esdloop`, `esdmon`, `esdrec`, `esdsample` and `libesd` libraries.

Description

esd

`esd` is the Enlightened Sound Daemon.

esdcat

esdcat plays a RAW audio stream through the daemon.

esdctl

esdctl controls certain aspects of the sound daemon.

esdloop

esdloop is test scaffolding for sample cache, loop, and free.

esdmon

esdmon outputs the mixed stream from the daemon.

esdrec

esdrec outputs from the sound device's current input.

esdsample

esdsample is test scaffolding for sample cache, play back, and free.

esd libraries

`libesd` libraries contain the functions used by **esd**.

SDL-1.2.7

Introduction to SDL

The Simple DirectMedia Layer (SDL for short) is a cross-platform library designed to make it easy to write multimedia software, such as games and emulators.

Package information

- Download (HTTP): <http://www.libsdl.org/release/SDL-1.2.7.tar.gz>
- Download (FTP):
- Download size: 2.4 MB
- Estimated Disk space required: 46 MB
- Estimated build time: 0.99 SBU

SDL dependencies

Optional

ALSA-1.0.4[p.532], Esound-0.2.34[p.544], aRts-1.2.2[p.542], NAS-1.6[p.550], NASM-0.98.38[p.202], X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), AALib-1.4rc5[p.158], DirectFB-0.9.20[p.162] and SVGAlib-1.4.3[p.160]

Installation of SDL

Install SDL by running the following commands:

```
./configure --prefix=/usr --disable-debug &&  
make &&  
make install
```

Command explanations

--disable-debug: This switch configures SDL to build with aggressive optimizations.

--enable-video-aalib: This switch is required to build SDL with AALib video support.

Configuring SDL

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, `/sbin/ldconfig` should be run while logged in as root.

Contents

The SDL package contains the **Simple DirectMedia Layer**.

Description

Simple DirectMedia Layer

The Simple DirectMedia Layer is a generic API that provides low level access to audio, keyboard, mouse, joystick, 3D hardware via OpenGL, and 2D frame buffer across multiple platforms.

libao-0.8.5

Introduction to libao

The libao package contains a cross-platform audio library. This is useful to output audio on a wide variety of platforms. It currently supports WAV files, OSS (Open Sound System), ESD (Enlighten Sound Daemon) and ALSA (Advanced Linux Sound Architecture).

Package information

- Download (HTTP): <http://www.xiph.org/ao/src/libao-0.8.5.tar.gz>
- Download (FTP):
- Download size: 262 KB
- Estimated Disk space required: 2.7 MB
- Estimated build time: 0.10 SBU

libao dependencies

Optional

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), Esound-0.2.34[p.544], ALSA-1.0.4[p.532], aRts-1.2.2[p.542] and NAS-1.6[p.550]

Installation of libao

Install libao by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The libao package contains libao libraries.

Description

ao libraries

libao libraries provide functions for programs wishing to output sound over supported platforms.

libogg-1.1

Introduction to libogg

The libogg package contains the Ogg file structure. This is useful for creating (encoding) or playing (decoding) a single physical bit stream.

Package information

- Download (HTTP): <http://www.vorbis.com/files/1.0.1/unix/libogg-1.1.tar.gz>
- Download (FTP):
- Download size: 280 KB
- Estimated Disk space required: 2.3 MB
- Estimated build time: 0.03 SBU

Installation of libogg

Install libogg by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The libogg package contains libogg libraries.

Description

ogg libraries

libogg libraries provide the functions for programs wishing to read or write Ogg formatted bit streams.

libvorbis-1.0.1

Introduction to libvorbis

The libvorbis package contains a general purpose audio and music encoding format. This is useful for creating (encoding) and playing (decoding) sound in an open (patent free) format.

Package information

- Download (HTTP): <http://www.vorbis.com/files/1.0.1/unix/libvorbis-1.0.1.tar.gz>
- Download (FTP):
- Download size: 1.2 MB
- Estimated Disk space required: 37 MB
- Estimated build time: 0.57 SBU

libvorbis dependencies

Required

libogg-1.1[p.548]

Installation of libvorbis

Install libvorbis by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

libvorbis is known to cause compiler errors on certain machines. If you get errors, try these commands to install libvorbis:

```
./configure --prefix=/usr &&
cd lib &&
cp Makefile Makefile.bak &&
sed s/-mno-ieee-fp// Makefile.bak > Makefile &&
cd .. &&
make &&
make install
```

Contents

The libvorbis package contains libvorbis libraries.

Description

vorbis libraries

libvorbis libraries provide the functions to read and write sound files.

NAS-1.6

Introduction to NAS

The Network Audio System is a network transparent, client/server audio transport system. It can be described as the audio equivalent of an X server.

Package information

- Download (HTTP): <http://nas.codebrilliance.com/nas/nas-1.6.src.tar.gz>
- Download (FTP): <ftp://ftp.us.xemacs.org/pub/xemacs/aux/nas-1.6.src.tar.gz>
- Download size: 1.0 MB
- Estimated Disk space required: 13 MB
- Estimated build time: 0.30 SBU

Additional downloads

- Download (HTTP): <http://www.linuxfromscratch.org/patches/blfs/5.1/nas-1.6-bison-fix.patch>

NAS dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331])

Installation of NAS

Install NAS by running the following commands:

```
patch -Np1 -i ../nas-1.6-bison-fix.patch &&
xmkmf &&
make Makefiles &&
make includes &&
make depend &&
make &&
make install install.man
```

Command explanations

xmkmf...: These commands use the standard for compiling X based applications.

Configuring NAS

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, `/sbin/ldconfig` should be run while logged in as root.

Contents

The NAS package contains NAS utilities, headers and libraries.

libmpeg3-1.5.4

Introduction to libmpeg3

Libmpeg3 supports advanced editing and manipulation of MPEG streams.

Package information

- Download (HTTP): <http://aleron dl.sourceforge.net/sourceforge/heroines/libmpeg3-1.5.4-src.tar.bz2>
- Download (FTP): <ftp://gd.tuwien.ac.at/opsys/linux/sf/h/heroines/libmpeg3-1.5.4-src.tar.bz2>
- Download size: 612 KB
- Estimated Disk space required: 5.7 MB
- Estimated build time: 0.12 SBU

libmpeg3 dependencies

Required

NASM-0.98.38[p.202]

Installation of libmpeg3

Install libmpeg3 by running the following commands:

```
make &&
make install &&
cp i686/libmpeg3.a /usr/lib &&
cp {libmpeg3,mpeg3private,mpeg3protos}.h /usr/include
```

Command explanations

`cp i686/libmpeg3.a /usr/lib && cp {libmpeg3,mpeg3private,mpeg3protos}.h /usr/include`: Since make install doesn't copy the library and header files to proper locations, we have to do it manually.

Contents

The libmpeg3 package provides libmpeg3 library, **mpeg3cat**, **mpeg3dump** and **mpeg3toc** utilities.

Description

libmpeg3

libmpeg3 decodes several MPEG standards into uncompressed data suitable for editing and playback.

mpeg3cat

mpeg3cat concatenates elementary streams or demultiplexes a program stream (separates components of the stream).

mpeg3dump

mpeg3dump dumps information or extracts audio to a 24 bit PCM file.

mpeg3toc

mpeg3toc creates a table of contents for a DVD or MPEG stream.

libmad-0.15.1b

Introduction to libmad

libmad is a high-quality MPEG audio decoder capable of 24-bit output.

Package information

- Download (HTTP): <http://flow.dl.sourceforge.net/sourceforge/mad/libmad-0.15.1b.tar.gz>
- Download (FTP): <ftp://ftp.mars.org/pub/mpeg/libmad-0.15.1b.tar.gz>
- Download size: 494 KB
- Estimated Disk space required: 3.5 MB
- Estimated build time: 0.09 SBU

Installation of libmad

Install libmad by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

This package provides libmad library.

Description

libmad

libmad is a MPEG audio decoder library.

OpenQuicktime-1.0

Introduction to OpenQuicktime

OpenQuicktime is a small library that handles the Quicktime file format on most varieties of Unix. Audio and video decoding and encoding is provided using a plug-in mechanism.

Package information

- Download (HTTP): <http://flow.dl.sourceforge.net/sourceforge/openquicktime/openquicktime-1.0-src.tgz>
- Download (FTP):
- Download size: 313 KB
- Estimated Disk space required: 8.6 MB
- Estimated build time: 0.11 SBU

Additional downloads

- Optional CODEC: <http://www.openquicktime.org/codecs.php>

OpenQuicktime dependencies

Required

GLib-1.2.10[p.128]

Optional

libjpeg-6b[p.141]

Installation of OpenQuicktime

Install OpenQuicktime by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

This package provides `libopenquicktime` library and utilities that allow you to manipulate Quicktime files.

Description

`libopenquicktime`

This is the core library.

`dechunk`

`dechunk` extracts RGB frames from a movie and writes them as PPM images.

`make_streamable`

This program makes the Quicktime file streamable.

`qtdump`

qtdump dumps all tables in movie.

qtinfo

qtinfo reads all the information about the file.

recover

This program recovers JPEG and PCM audio from a corrupted movie.

libFAME-0.9.1

Introduction to libFAME

libFAME is a fast (real-time) MPEG-1 as well as MPEG-4 rectangular and arbitrary shaped video encoding library.

Package information

- Download (HTTP): <http://heanet.dl.sourceforge.net/sourceforge/fame/libfame-0.9.1.tar.gz>
- Download (FTP): <ftp://gd.tuwien.ac.at/opsys/linux/sourceforge/f/fame/libfame-0.9.1.tar.gz>
- Download size: 290 KB
- Estimated Disk space required: 4.9 MB
- Estimated build time: 0.19 SBU

Installation of libFAME

Install libFAME by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The libFAME package contains **libfame-config** and **libfame**.

Description

libfame-config

libfame-config provides configuration information for **libfame**.

libfame

libfame provides functions for the video encoding programs.

Speex-1.0.3

Introduction to Speex

Speex is an audio compression format designed especially for speech. It is well-adapted to Internet applications and provides useful features that are not present in most other CODECs.

Package information

- Download (HTTP): <http://www.speex.org/download/speex-1.0.3.tar.gz>
- Download (FTP):
- Download size: 392 KB
- Estimated Disk space required: 3.2 MB
- Estimated build time: 0.13 SBU

Speex dependencies

Recommended

libogg-1.1[p.548]

Installation of Speex

Install Speex by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The Speex package provides **speexdec**, **speexenc** and **libspeex**.

Description

speexdec

speexdec decodes a Speex file and produces a WAV or raw file.

speexenc

speexenc encodes a WAV or raw files using Speex.

libspeex

libspeex provides functions for the audio encoding/decoding programs.

id3lib-3.8.3

Introduction to id3lib

id3lib is a library for reading, writing and manipulating ID3v1 and ID3v2 tags.

Package information

- Download (HTTP): <http://flow.dl.sourceforge.net/sourceforge/id3lib/id3lib-3.8.3.tar.gz>
- Download (FTP): <ftp://gd.tuwien.ac.at/opsys/linux/sourceforge/i/id3lib/id3lib-3.8.3.tar.gz>
- Download size: 928 KB
- Estimated Disk space required: 39 MB
- Estimated build time: 1.01 SBU

Installation of id3lib

Install id3lib by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The id3lib package contains the `libid3` library and `id3convert`, `id3cp`, `id3info` and `id3tag`.

Description

libid3

`libid3` provides functions for the ID3v1/v2 tag editing programs.

id3convert

`id3convert` converts between ID3v1/v2 tagging formats.

id3cp

`id3cp` extracts ID3v1/v2 tags from digital audio files.

id3info

`id3info` prints ID3v1/v2 tag contents.

id3tag

`id3tag` is an utility for editing ID3v1/v2 tags.

FLAC-1.1.0

Introduction to FLAC

FLAC is an audio CODEC similar to MP3, but lossless, meaning that audio is compressed without throwing away any information.

Package information

- Download (HTTP): <http://switch.dl.sourceforge.net/sourceforge/flac/flac-1.1.0.tar.gz>
- Download (FTP):
- Download size: 1.2 MB
- Estimated Disk space required: 33 MB
- Estimated build time: 0.71 SBU

FLAC dependencies

Optional

libogg-1.1[p.548], XMMS-1.2.10[p.569], id3lib-3.8.3[p.557] and NASM-0.98.38[p.202]

Installation of FLAC

Install FLAC by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The FLAC package contains **flac**, **metaflac**, **libFLAC**, **libFLAC++**, **libOggFLAC**, **libOggFLAC++** and **libxmms-flac**.

Description

flac

flac is a command-line utility for encoding, decoding and converting FLAC files.

metaflac

metaflac is a program for listing, adding, removing, or editing metadata in one or more FLAC files.

libFLAC, libFLAC++, libOggFLAC and libOggFLAC++

These libraries provide native FLAC and Ogg FLAC C/C++ APIs for programs utilizing FLAC.

libxmms-flac

libxmms-flac is a plugin for XMMS.

libdvdcss-1.2.8

Introduction to libdvdcss

libdvdcss is a simple library designed for accessing DVDs like a block device without having to bother about the decryption.

Package information

- Download (HTTP): <http://www.videolan.org/pub/libdvdcss/1.2.8/libdvdcss-1.2.8.tar.bz2>
- Download (FTP): <ftp://ftp.us.sinuspl.net/pub/src/libdvdcss-1.2.8.tar.bz2>
- Download size: 205 KB
- Estimated Disk space required: 2.6 MB
- Estimated build time: 0.07 SBU

Installation of libdvdcss

Install libdvdcss by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The libdvdcss package contains the libdvdcss library.

Description

libdvdcss

libdvdcss provides the functionality that is required for transparent DVD access with CSS decryption.

libdvdread-0.9.4

Introduction to libdvdread

libdvdread is a library which provides a simple foundation for reading DVDs.

Package information

- Download (HTTP): <http://www.dtek.chalmers.se/groups/dvd/dist/libdvdread-0.9.4.tar.gz>
- Download (FTP):
- Download size: 251 KB
- Estimated Disk space required: 4.0 MB
- Estimated build time: 0.12 SBU

libdvdread dependencies

Optional

libdvdcss-1.2.8[p.559]

Installation of libdvdread

Install libdvdread by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Command explanations

`--with-libdvdcss`: This switch is needed if you want libdvdread to be able to read CSS encrypted DVDs.

Contents

The libdvdread package contains the `libdvdread` library.

Description

libdvdread

libdvdread provides the functionality that is required to access DVDs.

libdv-0.101

Introduction to libdv

libdv (Quasar DV) is a software CODEC for DV video, the encoding format used by most digital camcorders.

Package information

- Download (HTTP): <http://switch.dl.sourceforge.net/sourceforge/libdv/libdv-0.101.tar.gz>
- Download (FTP):
- Download size: 465 KB
- Estimated Disk space required: 8.5 MB
- Estimated build time: 0.21 SBU

libdv dependencies

Optional

popt-1.7[p.118], SDL-1.2.7[p.546], GTK+-1.2.10[p.351] and X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]).

Installation of libdv

Install libdv by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Note

The configure check for GTK+ is broken. If GTK+ is not installed also pass *--without-gtk* to the configure script.

Contents

The libdv package contains **dvconnect**, **encodedv**, **playdv** and **libdv**.

Description

dvconnect

dvconnect is a small utility to send or capture raw data from and to the camcorder.

encodedv

encodedv encodes a series of images to a digital video stream.

playdv

playdv displays digital video streams on the screen.

libdv

libdv provides functions for the programs manipulating with the Quasar DV CODEC.

liba52-0.7.4

Introduction to liba52

liba52 is a free library for decoding ATSC A/52 (also known as AC-3) streams. The A/52 standard is used in a variety of applications, including digital television and DVD.

Package information

- Download (HTTP): <http://liba52.sourceforge.net/files/a52dec-0.7.4.tar.gz>
- Download (FTP):
- Download size: 236 KB
- Estimated Disk space required: 2.8 MB
- Estimated build time: 0.07 SBU

Installation of liba52

Install liba52 by running the following commands:

```
./configure --prefix=/usr --enable-shared &&  
make &&  
make install
```

Contents

The liba52 package contains **a52dec**, **extract_a52** and **liba52**.

Description

a52dec

a52dec plays ATSC A/52 audio streams.

extract_a52

extract_a52 extracts ATSC A/52 audio from a MPEG stream.

liba52

liba52 provides functions for the programs dealing with ATSC A/52 streams.

XviD-1.0.0-rc4

Introduction to XviD

XviD is a MPEG-4 compliant video CODEC.

Package information

- Download (HTTP): <http://files.xvid.org/downloads/xvidcore-1.0.0-rc4.tar.bz2>
- Download (FTP):
- Download size: 524 KB
- Estimated Disk space required: 5.5 MB
- Estimated build time: 0.19 SBU

XviD dependencies

Optional

NASM-0.98.38[p.202]

Installation of XviD

Install XviD by running the following commands:

```
cd build/generic &&
./configure --prefix=/usr &&
make &&
make install &&
ln -sf libxvidcore.so.4.0 /usr/lib/libxvidcore.so.4 &&
ln -sf libxvidcore.so.4 /usr/lib/libxvidcore.so
```

Command explanations

ln -s libxvidcore.so.4 /usr/lib/libxvidcore.so: This command makes applications linked against `.so` in fact linked to `.so.MAJOR`. This ensures better binary compatibility as XviD developers take care not changing the *MAJOR* number until there is an incompatible ABI change.

Contents

The XviD core package contains the `libxvidcore` library.

Description

libxvidcore

`libxvidcore` provides functions to encode and decode most MPEG-4 video data.

xine Libraries-1-rc3a

Introduction to xine Libraries

The xine Libraries package contains xine libraries. These are useful for interfacing with external plug-ins that allow the flow of information from the source to the screen and speakers.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/xine/xine-lib-1-rc3a.tar.gz>
- Download (FTP):
- Download size: 5.9 MB
- Estimated Disk space required: 60 MB
- Estimated build time: 4.06 SBU

xine Libraries dependencies

Required

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]) and EsounD-0.2.34[p.544] or OSS or ALSA-1.0.4[p.532] or aRts-1.2.2[p.542]

Optional

AALib-1.4rc5[p.158], libmng-1.0.7[p.151], GNOME Virtual File System-2.6.1.1[p.415], SDL-1.2.7[p.546], DirectFB-0.9.20[p.162], FLAC-1.1.0[p.558], libFAME-0.9.1[p.555], libogg-1.1[p.548], libvorbis-1.0.1[p.549], Speex-1.0.3[p.556], Theora and LibSTK

Installation of xine Libraries

Install xine Libraries by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The xine Libraries package contains **xine-config**, **libxine** libraries and various input/output plugins.

Description

xine-config

xine-config provides information to programs trying to link with the xine libraries.

libxine libraries

libxine libraries provide the API for processing video files.

libmikmod-3.1.10

Introduction to libmikmod

libmikmod is a sound library capable of playing audio samples as well as tracker modules. Supported module formats include MOD, S3M, XM, IT, MED, MTM and 669.

Package information

- Download (HTTP): <http://www.ibiblio.org/pub/Linux/apps/sound/libs/libmikmod-3.1.10.tar.gz>
- Download (FTP): <ftp://ftp.ibiblio.org/pub/Linux/apps/sound/libs/libmikmod-3.1.10.tar.gz>
- Download size: 520 KB
- Estimated Disk space required: 11 MB
- Estimated build time: 0.31 SBU

libmikmod dependencies

Optional

EsounD-0.2.34[p.544]

Installation of libmikmod

Install libmikmod by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The libmikmod package contains **libmikmod-config** and the libmikmod library.

Description

libmikmod-config

libmikmod-config provides version information, compiler and linker flags to programs that utilize libmikmod.

libmikmod

libmikmod provides the functionality that is required to play various tracker module files.

Chapter 38. Audio utilities

This chapter contains programs involved with audio file manipulation; that is to say playing, recording, ripping and the other common things which people want to do. To use much of this software, you will require either the kernel sound drivers installed, or ALSA-1.0.4[p.532] installed. Note that in the 2.5 kernel development tree, the old drivers are being replaced with ALSA and so when the stable 2.6 series arrives; most people will be using it by default.

mpg123-0.59r

Introduction to mpg123

The mpg123 package contains a console-based MP3 player. It claims to be the fastest MP3 decoder for Unix.

Package information

- Download (HTTP): <http://www.mpg123.de/mpg123/mpg123-0.59r.tar.gz>
- Download (FTP): <ftp://alge.anart.no/pub/audio/mpg123-0.59r.tar.gz>
- Download size: 155 KB
- Estimated Disk space required: 1.3 MB
- Estimated build time: 0.08 SBU

mpg123 dependencies

Required

OSS or ALSA OSS-1.0.4[p.541]

Installation of mpg123

Install mpg123 by running the following commands:

```
make PREFIX=/usr linux &&
make PREFIX=/usr install
```

Contents

The mpg123 package contains **mpg123**.

Description

mpg123

mpg123 is used for playing MP3 files via the console.

Vorbis Tools-1.0.1

Introduction to Vorbis Tools

The Vorbis Tools package contains command-line tools for Ogg audio files. This is useful for encoding, playing or editing files using the Ogg CODEC.

Package information

- Download (HTTP): <http://www.vorbis.com/files/1.0.1/unix/vorbis-tools-1.0.1.tar.gz>
- Download (FTP): <ftp://ftp.jg555.com/pub/linux/mm/vorbis-tools-1.0.1.tar.gz>
- Download size: 701 KB
- Estimated Disk space required: 4.4 MB
- Estimated build time: 0.12 SBU

Vorbis Tools dependencies

Required

libvorbis-1.0.1[p.549]

Optional

cURL-7.11.2[p.215], libao-0.8.5[p.547], FLAC-1.1.0[p.558] and Speex-1.0.3[p.556]

Installation of Vorbis Tools

Install Vorbis Tools by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The Vorbis Tools package contains **oggdec**, **oggenc**, **ogg123** (requires cURL-7.11.2[p.215]), **vcut** and **vorbiscomment**.

Description

oggdec

oggdec is a simple decoder which converts Ogg Vorbis file into PCM audio files (WAV or raw).

oggenc

oggenc is the encoder that turns raw, WAV or AIFF files into an Ogg Vorbis stream.

ogg123

ogg123 is a command-line audio player for Ogg Vorbis streams.

ogginfo

ogginfo prints information stored in the audio file.

vcut

vcut will split a file into two files at a designated cut point.

vorbiscomment

vorbiscomment is an editor that changes information in the audio file metadata tags.

XMMS-1.2.10

Introduction to XMMS

XMMS is an audio player for the X Window System.

Package information

- Download (HTTP): <http://www.xmms.org/files/1.2.x/xmms-1.2.10.tar.bz2>
- Download (FTP): <ftp://ftp.xmms.org/pub/xmms/1.2.x/xmms-1.2.10.tar.bz2>
- Download size: 2.4 MB
- Estimated Disk space required: 55 MB
- Estimated build time: 0.84 SBU

XMMS dependencies

Required

GTK+-1.2.10[p.351]

Optional

ALSA-1.0.4[p.532], Esound-0.2.34[p.544], libogg-1.1[p.548], libvorbis-1.0.1[p.549], libmikmod-3.1.10[p.565], libxml-1.8.17[p.122], GNOME Libraries-1.4.2[p.489] and gnome-applets

Installation of XMMS

Install XMMS by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Configuring XMMS

Config files

~/.xmms/config

Configuration Information

When you start **xmms** for the first time, you can configure it with **CTRL+P**. Note that you can extend XMMS' functionality with plugins and skins. You can find these at <http://xmms.org>.

Contents

The XMMS package contains **xmms**, **xmms-config**, **gnomexmss** and **wmxmms**.

Description

xmms

XMMS, which stands for X MultiMedia System, is a program comparable in function with WinAMP. Its main function is playing audio files like WAV and MP3. It can be extended with plugins to play a number of other audio or video formats. Its look can be customized with WinAMP style skins.

xmms-config

This script is used by other programs which need to link with xmms to retrieve the library and include paths.

gnomexmms

This is an applet for the GNOME desktop environment that will dock into the GNOME panel. From the applet you can start and control **xmms**.

wmxmms

wmxmms is a dock applet for the Window Maker window manager. From the applet you can start and control **xmms**.

LAME-3.95.1

Introduction to LAME

The LAME package contains a MP3 encoder. This is useful for creating compressed audio files.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/lame/lame-3.95.1.tar.gz>
- Download (FTP):
- Download size: 1.2 MB
- Estimated Disk space required: 9.1 MB
- Estimated build time: 0.39 SBU

LAME dependencies

Optional

GTK+-1.2.10[p.351] and NASM-0.98.38[p.202]

Installation of LAME

Install LAME by running the following commands:

```
./configure --prefix=/usr --enable-mp3rtp &&
make &&
make install
```

Command explanations

--enable-mp3rtp: Builds the encode-to-RTP program.

--enable-nasm: Enables use of nasm.

Contents

The LAME package contains **lame** and **libmp3lame** libraries.

Description

lame

lame creates MP3 audio files.

mp3rtp

Encode to MP3 with RTP streaming of the output.

libmp3lame libraries

libmp3lame libraries provide the functions necessary to convert WAV files to MP3 files.

CDParanoia-III-9.8

Introduction to CDParanoia

The CDParanoia package contains a CD audio extraction tool. This is useful for extracting wave files from audio CD's. A CDDA capable CDROM drive is needed. Practically all drives supported by Linux can be used.

Package information

- Download (HTTP): <http://www.xiph.org/paranoia/download/cdparanoia-III-alpha9.8.src.tgz>
- Download (FTP): <ftp://ftp.yars.free.net/pub/software/unix/util/cd/cdparanoia-III-alpha9.8.src.tgz>
- Download size: 114 KB
- Estimated Disk space required: 1.3 MB
- Estimated build time: 0.12 SBU

Installation of CDParanoia

Install CDParanoia by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Configuring CDParanoia

Configuration Information

CDParanoia itself needs little configuration; information can be found from the man page.

As with most libraries, there is no configuration to do, save that the library directory i.e. `/opt/lib` or `/usr/local/lib` should appear in `/etc/ld.so.conf` so that **ldd** can find the shared libraries. After checking that this is the case, `/sbin/ldconfig` should be run while logged in as root.

Contents

The CDParanoia package contains **cdparanoia** and the `libcdca` libraries.

Description

cdparanoia

This is used for 'ripping' an audio-cd. Ripping is the process of digitally extracting music from an audio-cd.

libcdca library

No description is currently available.

Chapter 39. Video utilities

This chapter always seems to be the favorite chapter. It's probably because there is a lot of satisfaction in playing your first video when you have spent so much time getting to that point. All the libraries, all the configurations and your reward is that you get to watch a movie. Not to worry though, there is always one more CODEC to install.

FFmpeg-0.4.8

Introduction to FFmpeg

FFmpeg is a solution to record, convert and stream audio and video. Due to heavy development, not all of these functions will work.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/ffmpeg/ffmpeg-0.4.8.tar.gz>
- Download (FTP): <ftp://gd.tuwien.ac.at/opsys/linux/sf/f/ffmpeg/ffmpeg-0.4.8.tar.gz>
- Download size: 1.3 MB
- Estimated Disk space required: 31 MB
- Estimated build time: 0.89 SBU

FFmpeg dependencies

Optional

libvorbis-1.0.1[p.549], LAME-3.95.1[p.571], X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), SDL-1.2.7[p.546] and FreeType-2.1.7[p.154]

Installation of FFmpeg

Install FFmpeg by running the following commands:

Note

The package maintainers recommend compiling without any optimizations.

```
./configure --prefix=/usr --enable-shared &&
make &&
make install
```

Command explanations

- enable-shared: This switch is needed to build libavcodec and libavformat shared libraries.
- enable-mp3lame: Link against libmp3lame.
- enable-vorbis: Link against libvorbis.
- disable-ffplay: Only installs the server part. **ffplay** requires X for building.

Configuring FFmpeg

Config files

```
~/ffmpeg/ffserver-config
```

You'll find a sample `ffserver` configuration file at <http://ffmpeg.sourceforge.net/sample.html>

Contents

The FFmpeg package contains **ffmpeg**, **ffserver**, **ffplay**, `libavcodec` and `libavformat`.

Description

ffmpeg

ffmpeg is a command-line tool to convert video files, network streams and input from a TV card to several video formats.

ffserver

ffserver is a streaming server for everything that **ffmpeg** could use as input (files, streams, TV card input, webcam, etc.).

ffplay

ffplay is a very simple and portable media player using the `ffmpeg` libraries and the SDL library.

libavcodec/libavformat

`libavcodec` and `libavformat` are libraries for encoding/decoding video streams and putting them into files or network packets. Since they're well documented, you can easily include them in your software, like some other packages already do.

Avifile-0.7.38

Introduction to Avifile

The Avifile package contains an AVI video file player, tools and support libraries. This is useful for viewing and editing AVI files.

Package information

- Download (HTTP): <http://heanet.dl.sourceforge.net/sourceforge/avifile/avifile-0.7-0.7.38.tar.gz>
- Download (FTP):
- Download size: 2.8 MB
- Estimated Disk space required: 46.0 MB
- Estimated build time: 4.28 SBU

Additional downloads

- Required CODECs: <http://flow.dl.sourceforge.net/sourceforge/avifile/binaries-011002.tgz>

Avifile dependencies

Required

Qt-3.3.2[p.348] and SDL-1.2.7[p.546]

Optional

FFmpeg-0.4.8[p.573], XviD-1.0.0-rc4[p.563], libmad-0.15.1b[p.552], libvorbis-1.0.1[p.549] and LAME-3.95.1[p.571]

Installation of Avifile

Install Avifile by running the following commands:

```
install -d /usr/lib/avifile-0.7/win32 &&
tar xzvf ../binaries-011002.tgz -C /usr/lib/avifile-0.7 &&
./autogen.sh &&
./configure &&
make maintainer-clean &&
./autogen.sh &&
./configure --prefix=/usr \
    --with-win32-path=/usr/lib/avifile-0.7/win32 &&
make &&
make install
```

Command explanations

./autogen.sh && ./configure && make maintainer-clean && ./autogen.sh: The author of this package used the old autoconf which leads to problems like configure not being able to detect some libraries and compilation errors. We fix this by rebuilding the configuration scripts.

Contents

The Avifile package contains **aviplay**, **avibench**, **avifile-config**, **mmxnow-config**, **avirecompress**, **avicap**, **avirec**, **kv4lsetup**, **avicat**, **avitype** and **avimake**.

Description

aviplay

aviplay manages the input formats, the CODECs and the output formats to display AVI video files on your screen.

avibench

avibench performs a measurement of the AVI file support library's performance for a file.

avifile-config

avifile-config is run by configure for programs wishing to link to the Avifile library.

mmxnow-config

mmxnow-config is run by configure for programs wishing to link to the mmxnow library.

avirecompress

avirecompress is a widget that takes an input file of one CODEC type and converts it into a video file of another CODEC.

avicap

avicap is a widget that displays acquired video from a Video For Windows (vfw) compatible device, like a webcam or a TV-tuner.

avirec

avirec is a command-line video recording tool.

kv4lsetup

kv4lsetup is a small tool which tells video4linux about the current video mode

avicat

avicat takes a set of AVI files and combines them into a single file.

avitype

avitype will read and display AVI file header information.

avimake

avimake takes a set of JPG images and creates a movie.

MPlayer-1.0pre4

Introduction to MPlayer

The MPlayer package contains an audio/video player that is able to play almost every audio and video CODEC and can be controlled by command line or GUI.

Package information

- Download (HTTP): <http://www1.mplayerhq.hu/MPlayer/releases/MPlayer-1.0pre4.tar.bz2>
- Download (FTP): <ftp://ftp1.mplayerhq.hu/MPlayer/releases/MPlayer-1.0pre4.tar.bz2>
- Download size: 4.7 MB
- Estimated Disk space required: 51 MB
- Estimated build time: 1.80 SBU

Additional downloads

- Proprietary CODECs: <http://www1.mplayerhq.hu/MPlayer/releases/codecs/extralite.tar.bz2>
- Default GUI skin: <http://www1.mplayerhq.hu/MPlayer/Skin/default-1.8.tar.bz2>
- Prerendered fonts: <http://www1.mplayerhq.hu/MPlayer/releases/fonts/font-arial-iso-8859-1.tar.bz2>

Note

These are not required to build and use MPlayer. You can find many more CODECs, skins and fonts at MPlayer's homepage.

MPlayer dependencies

Optional

X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), libpng-1.2.5[p.143], libjpeg-6b[p.141], GTK+-1.2.10[p.351], DirectFB-0.9.20[p.162], SVGAlib-1.4.3[p.160], FreeType-2.1.7[p.154], Fontconfig-2.2.2[p.155], libungif-4.1.0b1[p.148], libogg-1.1[p.548] libvorbis-1.0.1[p.549], AALib-1.4rc5[p.158], SDL-1.2.7[p.546], Xvid-1.0.0-rc4[p.563], aRts-1.2.2[p.542], ALSA-1.0.4[p.532], Esound-0.2.34[p.544], LZO-1.08[p.137], libmad-0.15.1b[p.552], CDParanoia-III-9.8[p.572], libdv-0.101[p.561], libdvdread-0.9.4[p.560], NAS-1.6[p.550], Samba-3.0.4[p.305], LAME-3.95.1[p.571], XMMS-1.2.10[p.569], FLAC-1.1.0[p.558], libFAME-0.9.1[p.555], Theora, MP1E, FAAD2, GGI, FriBidi, unrarlib, LIRC, lircd and LIVE.COM Streaming Media

Installation of MPlayer

If you downloaded any proprietary CODECs, extract them at some system-wide location (like `/usr/lib/mplayer/codecs`) and add `--with-codecsdir=[location]` option to the configure script.

Note

The package maintainers recommend building without any optimizations.

Install MPlayer by running the following commands:

```
./configure --prefix=/usr --confdir=/etc/mplayer \
--enable-largefiles --enable-shared-pp &&
make &&
make install &&
make -C libavcodec/libpostproc install
```


You will need `codecs.conf` only if you want to change its properties, as the main binary contains an internal copy of it:

```
cp etc/codecs.conf /etc/mplayer
```

The GUI version of MPlayer requires a skin. Extract the default one at recommended location:

```
install -d /usr/share/mplayer/Skin &&
tar xjvf ../default-1.8.tar.bz2 -C /usr/share/mplayer/Skin
```

Installation for DVD playback

If you want DVD playback with MPlayer, you need to make a link from your DVD drive to `/dev/dvd`:

```
ln -s /dev/[dvd drive] /dev/dvd
```

Replace `[dvd drive]` with whatever device is appropriate, for example `/dev/hdc`. If you don't know which device to choose, type:

```
dmesg | grep DVD
```

It should result in an output like:

```
hdc: Pioneer DVD-ROM ATAPIModel DVD-114 0110,
ATAPI CD/DVD-ROM drive
```

If you have SCSI-Emulation activated for the drives, you'll need to get the right SCSI-device. Every CD/DVD-ROM drive is mapped in the same order as in IDE to the devices named `/dev/scd0`, `/dev/scd1` and so on.

Command explanations

`--enable-shared-pp`: This enables the building of a shared `libpostproc` (library for post processing, featuring filters like `sharpen`).

`--enable-gui`: This switch tells MPlayer to compile the GUI code (requires `GTK+-1.2.10`[p.351]).

`--enable-menu`: This switch enables the new menu support. It's like an OSD, but you can also run a shell with it.

Configuring MPlayer

Config files

```
/etc/mplayer/*, ~/.mplayer/*
```

Configuration Information

If you wish to utilize a FreeType font, you need to link a TTF file to your `~/.mplayer` directory. For example:

```
ln -sf /usr/X11R6/lib/X11/fonts/TTF/luxisri.ttf ~/.mplayer/subfont.ttf
```

otherwise

```
tar xjvf ../font-arial-iso-8859-1.tar.bz2 -C /usr/share/mplayer/font &&
cd /usr/share/mplayer/font &&
ln -sf font-arial-iso-8859-1/font-arial-[font size]-iso-8859-1/* .
```

You can choose your font size of 14, 18, 24 or 28.

Set the proper permissions for CODECs, skins and fonts:

```
chown -R root:root [CODECs location] &&
chown -R root:root /usr/share/mplayer
```

Optionally, set up the GUI with the following commands:

```
cat > /etc/mplayer/mplayer.conf << "EOF"
gui = yes
skin = default
EOF
```

The first line, **gui = yes**, will make MPlayer start in GUI mode automatically. If you want to decide whether to start in GUI mode or not, leave that line out and start **mplayer** with **-gui** or as **gmplayer** (e.g. when starting from a Window Manager menu or command prompt). Note that the main configuration file is called **config** if it is placed in the **~/ .mplayer** directory.

Contents

The MPlayer package contains **mplayer**, **gmplayer** and **mencoder**.

Description

mplayer

mplayer manages the input formats, the CODECs and the output formats to play video files, DVDs, (S)VCDs or network streams containing audio and/or video information on your system.

Examples:

```
mplayer -fs blfs.avi
mplayer -vo fbdev -fb /dev/fb0 dvd://1 -aid 128 -sub en -framedrop
mplayer -fs vcd://1      # works both for VCDs and SVCDs
mplayer http://www.students.uni-marburg.de/~Klossa/hapkidofight_lo.mpg
```

For further information, have a look at the very good documentation included in the package in the subdirectory **DOCS/**.

gmplayer

gmplayer is MPlayer with a graphical user interface.

mencoder

mencoder is used to encode any MPlayer playable movie to DivX4, XviD or any CODEC in libavcodec with PCM/MP3/VBRMP3 audio.

Example:

```
rm frameno.avi
mencoder -dvd 1 -aid 128 -ovc frameno -oac mp3lame \
-lameopts vbr=3 -o frameno.avi

# mencoder should output bitrates for average encodings
# now, choose one you like best! In the following lines,
# replace <bitrate> and <name.avi> with statements of your
# personal liking.

mencoder -dvd 1 -aid 128 -oac copy -ovc lavc \
-lavcopts vcodec=mpeg4:vpas=1:vhq:vbitrate=<bitrate> -o <name.avi>
mencoder -dvd 1 -aid 128 -oac copy -ovc lavc \
-lavcopts vcodec=mpeg4:vpas=2:vhq:vbitrate=<bitrate> -o <name.avi>
mencoder -forceidx <name.avi>
```

xine User Interface-0.9.23

Introduction to xine User Interface

The xine User Interface package contains a user interface for **xine**. This is useful for controlling the operations of your movie.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/xine/xine-ui-0.9.23.tar.gz>
- Download (FTP):
- Download size: 2.7 MB
- Estimated Disk space required: 16 MB
- Estimated build time: 0.74 SBU

Additional downloads

- Required patch (if utilizing cURL): <http://www.linuxfromscratch.org/patches/blfs/5.1/xine-ui-0.9.23-curl.patch>

xine User Interface dependencies

Required

xine Libraries-1-rc3a[p.564]

Optional

cURL-7.11.2[p.215], AALib-1.4rc5[p.158] and LIRC

Installation of xine User Interface

Apply the following patch if you have cURL installed and you wish to utilize it:

```
patch -Np1 -i ../xine-ui-0.9.23-curl.patch
```

Install xine User Interface by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Configuring xine User Interface

Config files

~/.xine/config

Configuration Information

The above file is created and maintainable through the **xine** setup dialog box. The documentation for the configuration settings is located at `/usr/share/doc/xine-ui/README.config_en`.

Contents

The xine User Interface package contains **aaxine**, **fbxine**, **xine**, **xine-bugreport**, **xine-check** and **xine-remote**.

Description

aaxine

aaxine is an AALib based frontend for xine Libraries.

xine

xine plays MPEG streams (audio and video), MPEG elementary streams (MP3), MPEG transport streams, Ogg files, AVI files, ASF files, some Quicktime files, VCD's and DVD's (non-encrypted).

xine-bugreport, xine-check

xine-check tests the xine video player installation for common problems. If run as **xine-bugreport**, it will produce a terse system description and guide you through the process of reporting a bug.

xine-remote

xine-remote is a tool to connect to a xine remote control server.

transcode-0.6.12

Introduction to transcode

transcode is a fast, versatile and command-line based audio/video everything to everything converter.

Package information

- Download (HTTP): <http://zebra.fh-weingarten.de/~transcode/pre/transcode-0.6.12.tar.bz2>
- Download (FTP):
- Download size: 2.8 MB
- Estimated Disk space required: 88 MB
- Estimated build time: 2.41 SBU

transcode dependencies

Optional

NASM-0.98.38[p.202], LAME-3.95.1[p.571], X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), MPlayer-1.0pre4[p.577], ImageMagick-5.5.7-16[p.168], libdv-0.101[p.561], libdvdread-0.9.4[p.560] mjpeg tools, SDL-1.2.7[p.546], Qt-3.3.2[p.348], Avifile-0.7.38[p.575], libFAME-0.9.1[p.555], libmpeg3-1.5.4[p.551], XviD-1.0.0-rc4[p.563], LZO-1.08[p.137], libxml2-2.6.9[p.123], liba52-0.7.4[p.562], FFmpeg-0.4.8[p.573], libmad-0.15.1b[p.552], cURL-7.11.2[p.215], libogg-1.1[p.548], libvorbis-1.0.1[p.549], Theora, libjpeg-6b[p.141], GLib-1.2.10[p.128], GTK+-1.2.10[p.351], FreeType-2.1.7[p.154], libmpeg3-1.5.4[p.551] and OpenQuicktime-1.0[p.553]

Installation of transcode

Install transcode by running the following commands:

```
./configure --prefix=/usr --without-x &&
make &&
make install
```

Command explanations

`--without-x`: Omit this switch if you have X Window System installed and you want to compile X11 dependent filter plugins.

Contents

The transcode package contains **transcode**, **tccat**, **tcdecode**, **tcdemux**, **tcextract**, **tcframe**, **tcmodinfo**, **tcmp3cut**, **tcplex**, **tcprobe**, **tcquant**, **tscan**, **tcxmlcheck**, **tcxpm2rgb**, **avicodec**, **avidump**, **avifix**, **aviindex**, **avimerge**, **avisplit**, **avisync** and input/filter/output modules.

Description

transcode

transcode is the encoder's user interface that handles the plugins and other programs, being the glue between the modules. There are several well documented usage examples on either the homepage or the documentation included in the package.

tccat

tccat concatenates input files using the input plugins of transcode.

tcdecode

tdecode is used to decode input files to raw video and PCM audio stream.

tcdemux

tcdemux demultiplexes (separates) audio/video input that contains multiple streams, e.g. VOB files.

tcextract

tcextract grabs single streams from a file containing multiple streams.

tcframe

tcframe processes single video frames for different color encodings (RGB >-< YUV or similar).

tcmoinfo

tcmoinfo loads a supplied transcode filter module and prints its parameters.

tcmp3cut

tcmp3cut is a tool which can cut MP3 streams at milliseconds positions.

tcprobe

tcprobe prints information about the input file format.

trequant

trequant is a tool which can requantize an MPEG-2 elementary stream.

tcscan

tcscan performs several measurements on the given input data.

tcxmlcheck

tcxmlcheck checks information in a SMIL input file.

avicodec

avicodec indicates or changes FOURCC CODEC flag in an AVI file.

avidump

avidump dumps audio or video stream of an given AVI file to stdout (for AVI conversion or extraction of audio streams).

avifix

avifix fixes the header of an AVI file.

aviindex

aviindex writes a text file describing the index of an AVI file.

avimerge

avimerge merges AVI files of the same format. Do not try to merge AVI files of different formats, it will most likely result in errors (and format means same bitrates, too!).

avisplit

avisplit splits AVI files into multiple files.

avisync

avisync can shift audio in AVI files for better synchronizing of audio and video data signal.

input/filter/output modules

Depending on the external libraries that are used, there are a great number of plugins to convert audio and video input to raw format, process raw video and audio and convert raw audio and video to other formats to be written into a file type of choice. Read the documentation.

Chapter 40. CD-Writing utilities

This chapter contains information on CD-writing in Linux. You will first have to configure your kernel for CD-writing. We start by discussing how to do this, then discuss installing the actual utilities.

Additional sources of information on CD-writing include:

- CD-Writing HOWTO
- CD-Recordable FAQ
- Handling CD-Images

Configuring your kernel for CD-Writing

In the kernel configuration, check your settings with those listed below for your CD-ROM interface type:

SCSI CD-writer:

```
SCSI support menu
SCSI support:          Y or M
SCSI CD-ROM support:   Y or M
SCSI generic support:  Y or M
Vendor-specific extensions: [1]
Also include the low-level driver for your SCSI card if
applicable.
```

IDE CD-writer:

```
ATA/IDE/MFM/RLL support menu
IDE/ATAPI CDRom support:  N
SCSI emulation support:  Y or M
SCSI support menu
SCSI support:          Y or M
SCSI CD-ROM support:   Y or M
SCSI generic support:  Y or M
Vendor-specific extensions: [1]
```

[1] Read the help to determine if this selection is applicable for your hardware.

If necessary, recompile the kernel with

```
make CC=/opt/gcc-2.95.3/bin/gcc dep &&
make CC=/opt/gcc-2.95.3/bin/gcc bzImage &&
make CC=/opt/gcc-2.95.3/bin/gcc modules &&
make CC=/opt/gcc-2.95.3/bin/gcc modules_install
```

Copy `/usr/src/linux/arch/i386/boot/bzImage` and `/usr/src/linux/System.map` to `/boot`. If you utilize LILO, edit `/etc/lilo.conf` appropriately and run **lilo**.

For more information about these settings and the drivers they install, read The Linux 2.4 SCSI subsystem HOWTO.

Cdrtools-2.00.3

Introduction to Cdrtools

The Cdrtools package contains CD recording utilities. These are useful for reading, creating or writing (burning) Compact Discs.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/utis/schilling/cdrtools/cdrtools-2.00.3.tar.gz>
- Download (FTP): <ftp://ftp.berlios.de/pub/cdrecord/cdrtools-2.00.3.tar.gz>
- Download size: 1.6 MB
- Estimated Disk space required: 19.1 MB
- Estimated build time: 0.44 SBU

Installation of Cdrtools

Install Cdrtools by running the following commands:

```
make INS_BASE=/usr DEFINSUSR=root DEFINSGRP=root &&
make INS_BASE=/usr DEFINSUSR=root DEFINSGRP=root install
```

Command explanations

INS_BASE=/usr: This command moves the install directory from */opt/schily* to */usr*.

DEFINSUSR=root DEFINSGRP=root: These commands install all programs with root.root ownership instead of the default bin:bin.

Contents

The Cdrtools package contains **cdrecord**, **cdda2wav**, **mkisofs**, **mkhybrid**, **readcd**, **scgcheck**, **isoinfo**, **isodump**, **isovfy**, **isodebug**, **devdump**, **rscsi** and support libraries.

Description

cdrecord

cdrecord records audio or data Compact Discs.

cdda2wav

cdda2wav dumps Compact Disc audio into WAV sound files.

mkisofs

mkisofs and **mkhybrid** generate an ISO9660/JOLIET/HFS hybrid file system.

readcd

readcd reads or writes Compact Discs.

scgcheck

scgcheck is used to check and verify the Application Binary Interface of **libscg**.

support utilities

isoinfo, **isodump**, **isovfy**, **isodebug** and **devdump** are utility programs for dumping and verifying ISO9660 images.

rscsi

rscsi is a remote SCSI manager.

support libraries

`libdeflt`, `libedc_ecc`, `libfile`, `libhfs`, `libparanoia`, `librscg`, `libscg`, `libschily` and `libunls` are the support libraries for this package.

Cdrdao-1.1.8

Introduction to Cdrdao

The Cdrdao package contains CD recording utilities. These are useful for burning a CD in disk-at-once mode.

Package information

- Download (HTTP): <http://umh.dl.sourceforge.net/sourceforge/cdrdao/cdrdao-1.1.8.tar.gz>
- Download (FTP):
- Download size: 1.5 MB
- Estimated Disk space required: 35 MB
- Estimated build time: 0.68 SBU

Cdrdao dependencies

Optional

LAME-3.95.1[p.571], pkgconfig-0.15.0[p.181], gtkmm and gnomemm

Installation of Cdrdao

Install Cdrdao by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

The Cdrdao package contains **cdrdao**, **cue2toc** and **toc2cue**.

Description

cdrdao

cdrdao records audio or data CD-Rs in disk-at-once (DAO) mode based on a textual description of the CD contents.

cue2toc, toc2cue

cue2toc and **toc2cue** convert CUE to TOC format (and vice versa) for audio CDs.

UDFtools-1.0.0b2

Introduction to UDFtools

The UDFtools package contains utilities for creating and mounting CD-RW disks with udf file systems for both reading and writing. UDF file systems are used on both CD-RW media and on DVD. For more details of the UDF file system standard see: <http://www.osta.org> and <http://www.ecma-international.org>.

Package information

- Download (HTTP): <http://aleron.dl.sourceforge.net/sourceforge/linux-udf/udfutils-1.0.0b2.tar.gz>
- Download (FTP):
- Download size: 236 Kb
- Estimated Disk space required: 2.7 MB
- Estimated build time:

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/linux-2.4.26-packet.patch>
- Patches for other kernel versions: <http://w1.894.telia.com/~u89404340/patches/packet/>

Installation of the kernel patch

Warning

Note that this patch can permanently damage your CD drive if it is from one of the few mentioned at <http://slashdot.org/article.pl?sid=03/10/25/1737244>. Do not apply the patch without first checking out the article.

Install the kernel patch by running the following commands from the kernel source directory:

```
patch -Np1 -i ../linux-2.4.26-packet.patch
```

In the kernel configuration, check your setting with those listed here:

```
Block devices
  Packet writing on CD/DVD media:      Y or M
File Systems
  UDF filesystems support (read only): Y
  UDF write support (DANGEROUS)      Y
```

If necessary, recompile the kernel with

```
make CC=/opt/gcc-2.95.3/bin/gcc dep &&
make CC=/opt/gcc-2.95.3/bin/gcc bzImage &&
make CC=/opt/gcc-2.95.3/bin/gcc modules &&
make CC=/opt/gcc-2.95.3/bin/gcc modules_install
```

Copy `/usr/src/linux/arch/i386/boot/bzImage` and `/usr/src/linux/System.map` to `/boot`. If you utilize LILO edit `/etc/lilo.conf` appropriately and run `lilo`.

If you build packet writer as a module, add the following to `/etc/modules.conf`:

```
alias block-major-97 pktcdvd
```

Finally, create the packet driver device nodes in `/dev`, add one node for every CD-RW drive you want to support:

```
mknod /dev/pktdvd0 b 97 0
mknod /dev/pktdvd1 b 97 1
```

Installation of UDFtools

Install UDFtools by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Contents

The UDFtools package contains **pktsetup**, **cdrwtool**, and **mkudffs**.

Description

pktsetup

pktsetup is used to establish and break down associations between the kernel packet driver and a physical drive.

Example:

```
pktsetup /dev/pktdvd0 /dev/scd0
mount /dev/pktdvd0 /mnt/cdrom -t udf -o rw,noatime
```

associates the physical device `/dev/scd0` with the kernel packet driver `/dev/pktdvd0`, then mounts a UDF formatted CD-RW for read/write access.

cdrwtool

cdrwtool provides facilities to manage CD-RW drives, including formatting new disks, setting the read and write speeds etc..

Example:

```
cdrwtool -d /dev/scd0 -q
```

prepares a new CD-RW for use and formats it with a UDF file system.

mkudffs

mkudffs is used to create new UDF file systems, it can be used on hard disks and CD-R as well as CD-RW.

Part XIII. Printing, Scanning and Typesetting

Chapter 41. Printing

This chapter contains spooling printer management systems and ghostscript applications to render PostScript for display on terminals or paper.

CUPS-1.1.20

Introduction to CUPS

The Common Unix Printing System (CUPS) is a print spooler and associated utilities. It is based on the "Internet Printing Protocol" and provides printing services to most PostScript and raster printers.

Package information

- Download (HTTP): <http://multivac.cwru.edu/mirror/packages/cups-1.1.20-source.tar.bz2>
- Download (FTP): <ftp://ftp.easysw.com/pub/cups/1.1.20/cups-1.1.20-source.tar.bz2>
- Download size: 3.7 MB
- Estimated Disk space required: 24 MB
- Estimated build time: 0.67 SBU

CUPS dependencies

Optional

libjpeg-6b[p.141], libpng-1.2.5[p.143], libtiff-3.6.1[p.145], OpenSSL-0.9.7d[p.115] or GnuTLS (which needs libgpg-error, libgcrypt and opencdk, in that order.), Linux-PAM-0.77[p.66], PHP-4.3.6[p.325] and Python-2.3.3[p.185]

Installation of CUPS

Install CUPS by running the following commands:

```
./configure &&  
make &&  
make install
```

Command explanations

The basic default behavior of the installation is appropriate for LFS systems. CUPS files are placed in `/usr/bin`, `/usr/sbin`, `/var` and `/etc/cups`.

Configuring CUPS

Configuration of CUPS is dependent on the type of printer and can be complex. Generally, PostScript printers are easier. For detailed instructions on configuration and use of CUPS, see <http://www.cups.org/documentation.php>. The Software Administrators Manual and Software Users Manual are particularly useful.

For non-PostScript printers to print with CUPS you need to install ESP Ghostscript-7.07.1[p.598] to convert PostScript to raster images and a driver (e.g. from Gimp-Print-4.2.6[p.600]) to convert the resulting raster images to a form that the printer understands. Foomatic drivers use Ghostscript to convert PostScript to a printable form directly, but this is considered to be a hack by CUPS developers.

During the install, CUPS created the startup file `/etc/rc.d/init.d/cups`. The file works, but you may want to change it to a more conventional LFS startup file by installing the script included in the `blfs-bootscripts-5.1`[p.31] package:

```
make install-cups
```

Contents

CUPS provides **accept**, **cupsaddsmb**, **cupsd**, **cupstestppd**, **lpadmin**, **lpc**, **lpinfo**, **lpmove**, **reject**, **cancel**, **cups-config**, **disable**, **enable**, **lp**, **lpoptions**, **lppasswd**, **lpq**, **lpr**, **lprm**, **lpstat**, **libcups**, **libcupsimage** and various scripts and filters.

lpc

lpc provides limited control over printer and class queues provided by CUPS .

cupsd

cupsd is the scheduler for the Common Unix Printing System.

accept

accept instructs the printing system to accept print jobs to the specified destinations.

reject

reject instructs the printing system to reject print jobs to the specified destinations.

cupsaddsmb

cupsaddsmb exports printers to the SAMBA software for use with Windows clients.

lpadmin

lpadmin configures printer and class queues provided by CUPS.

lpinfo

lpinfo lists the available devices or drivers known to the CUPS server.

lpmove

lpmove moves the specified job to a new destination.

cupstestppd

cupstestppd tests the conformance of PPD files.

lpq

lpq shows the current print queue status on the named printer.

lpr

lpr submits files for printing.

lprm

lprm cancels print jobs that have been queued for printing.

cancel

cancel cancels existing print jobs.

disable

disable stops the named printers or classes.

enable

enable starts the named printers or classes.

lp

lp submits files for printing or alters a pending job.

lpoptions

lpoptions displays or sets printer options and defaults.

lpstat

lpstat displays status information about the current classes, jobs, and printers.

lppasswd

lppasswd adds, changes or deletes passwords in the CUPS digest password file `passwd.md5`.

cups-config

cups-config is the CUPS program configuration utility.

LPRng-3.8.26

Introduction to LPRng

The LPRng package contains an enhanced, extended and portable implementation of the Berkeley Line Printer (LPR) print spooler. This is useful for queuing print jobs.

Package information

- Download (HTTP): <http://www.lprng.com/DISTRIB/LPRng/LPRng-3.8.26.tgz>
- Download (FTP): <ftp://ftp.lprng.com/pub/LPRng/LPRng/LPRng-3.8.26.tgz>
- Download size: 11 MB
- Estimated Disk space required: 54 MB
- Estimated build time: 0.35 SBU

LPRng dependencies

Optional

OpenSSL-0.9.7d[p.115], tcpwrappers-7.6[p.232] and krb4

Installation of LPRng

Install LPRng by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/sbin \
    --sysconfdir=/etc &&
make &&
make install
```

Configuring LPRng

Config files

/etc/printcap

Configuration Information

There is no generic `printcap` for all printers. A sample `printcap` is loaded into the `etc` directory which can be some help. Information is also available at <http://www.lprng.org> and <http://www.linuxprinting.org>.

The `init` script installed by LPRng is not consistent with other BLFS scripts; therefore, we will install `/etc/rc.d/init.d/lprng` `init` script included in the `blfs-bootscripts-5.1[p.31]` package.

```
make install-lprng
```

Contents

The LPRng package contains `cancel`, `checkpc`, `lp`, `lpc`, `lpd`, `lpq`, `lpr`, `lprm`, `lprng_certs`, `lprng_index_certs`, `lpstat` and `liblpr`.

Description

cancel

cancel sends cancel requests to an LPRng print service.

checkpc

checkpc checks out the printcap database.

lp

lp sends requests to an LPRng print service.

lpc

lpc is the control program for the daemon.

lpd

lpd is the daemon.

lpq

lpq is the status monitoring program.

lpr

lpr is the job spooler program.

lprm

lprm is the job removal program.

lprng_certs

lprng_certs is a program used to manage SSL certificates for the LPRng software.

lprng_index_certs

lprng_index_certs creates a set of index files in the LPRng signing certificate directory.

lpstat

lpstat is the job status program.

AFPL Ghostscript-8.14

Introduction to Ghostscript

Ghostscript is a versatile processor for PostScript data with the ability to render PostScript to different targets.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/ghostscript/ghostscript-8.14.tar.bz2>
- Download (FTP): <ftp://mirror.cs.wisc.edu/pub/mirrors/ghost/AFPL/g814/ghostscript-8.14.tar.bz2>
- Download size: 5.5 MB
- Estimated Disk space required: 37-49 MB (depends on if libgs.so is installed)
- Estimated build time: 1.16-2.26 SBU

Additional downloads

- Standard fonts: <ftp://mirror.cs.wisc.edu/pub/mirrors/ghost/fonts/ghostscript-fonts-std-8.11.tar.gz>
- Other fonts: <http://ftp.gnu.org/pub/gnu/ghostscript/gnu-gs-fonts-other-6.0.tar.gz>

Ghostscript dependencies

Optional

libjpeg-6b[p.141], libpng-1.2.5[p.143], GTK+-1.2.10[p.351] and X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331])

Conflicts

This version of Ghostscript does not work with CUPS due to missing generic "cups" raster image driver. The necessary support cannot be patched in due to incompatible licenses. Use ESP Ghostscript-7.07.1[p.598] instead if you have CUPS.

Installation of Ghostscript

Install Ghostscript by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

To install the shared library `libgs.so`, run the following commands additionally:

```
make so &&  
make soinstall
```

Note

The shared library depends on GTK+-1.2.10[p.351]. It is only used in external programs like GSview-4.6[p.?].

To finish the installation, unpack all fonts you've downloaded to `/usr/share/ghostscript`.

Contents

Ghostscript comes with a lot of filters to render PostScript/PDF files back and forth. Please refer to the HTML documentation or try `man gs`.

ESP Ghostscript-7.07.1

Introduction to Ghostscript

Ghostscript is a versatile processor for PostScript data with the ability to render PostScript to different targets. ESP Ghostscript is a customized version of GNU Ghostscript that includes an enhanced configuration script, the CUPS raster driver to support CUPS raster printer drivers, and additional patches and drivers from various Linux distributors.

Package information

- Download (HTTP): <http://heanet.dl.sourceforge.net/sourceforge/espgs/espgs-7.07.1-source.tar.bz2>
- Download (FTP): <ftp://gd.tuwien.ac.at/opsys/linux/sf/e/espgs/espgs-7.07.1-source.tar.bz2>
- Download size: 5.3 MB
- Estimated Disk space required: 116-140 MB (depends on if libgs.so is installed)
- Estimated build time: 1.65-3.20 SBU

Additional downloads

- Standard fonts: <ftp://mirror.cs.wisc.edu/pub/mirrors/ghost/fonts/ghostscript-fonts-std-8.11.tar.gz>
- Other fonts: <http://ftp.gnu.org/pub/gnu/ghostscript/gnu-gs-fonts-other-6.0.tar.gz>

Ghostscript dependencies

Optional

CUPS-1.1.20[p.592], libjpeg-6b[p.141], libpng-1.2.5[p.143], X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), GLib-1.2.10[p.128], GTK+-1.2.10[p.351] and Gimp-Print-4.2.6[p.600]

Installation of Ghostscript

Install Ghostscript by running the following commands:

```
./configure --prefix=/usr --without-gimp-print --without-omni &&  
make &&  
make install
```

To install the shared library `libgs.so` you will need `GTK+-1.2.10[p.351]`.

Proceed with the following commands:

```
make CFLAGS_SO='-fPIC $(ACDEFS)' so &&  
make soinstall
```

Note

The shared library is only used in external programs like `GSview-4.6[p.628]`.

To finish the installation, unpack all fonts you've downloaded to `/usr/share/ghostscript`.

Command explanations

`--without-gimp-print`: This switch disables the building of the GIMP print driver as a Ghostscript device since this is deprecated. This driver may be still accessible via IJS or CUPS, and this is the preferred way.

`--without-ijs`: This switch disables the IJS driver support.

Contents

Ghostscript comes with a lot of filters to render PostScript/PDF files back and forth. Please refer to the [HTML documentation](#) or try **man gs**. ESP Ghostscript provides pstoraster too.

Description

pstoraster

CUPS uses **pstoraster** filter to convert PostScript to a generic raster image format that is acceptable as an input to drivers for non-PostScript printers (e.g. from Gimp-Print-4.2.6[p.600]). It is built and installed only if CUPS-1.1.20[p.592] is found.

Gimp-Print-4.2.6

Introduction to Gimp-Print

The Gimp-Print package contains high quality drivers for Canon, Epson, Lexmark and PCL printers for use with ESP Ghostscript-7.07.1[p.598], CUPS-1.1.20[p.592], Foomatic, and the GIMP-2.0.0[p.508]. See the list of supported printers at http://gimp-print.sourceforge.net/p_Supported_Printers.php3.

Package information

- Download (HTTP): <http://umh.dl.sourceforge.net/sourceforge/gimp-print/gimp-print-4.2.6.tar.gz>
- Download (FTP):
- Download size: 4.9 MB
- Estimated Disk space required: 22 MB
- Estimated build time: 0.42 SBU

Gimp-Print dependencies

Optional

CUPS-1.1.20[p.592], Foomatic, IJS and readline-4.3[p.125]

Installation of Gimp-Print

Install Gimp-Print by running the following commands:

```
./configure --prefix=/usr &&
make &&
make install
```

Command explanations

`--with-translated-ppds=no`: When this switch is given, only US English PPD files for CUPS will be built. Useful if the PPD files are not yet translated into your native language and you want to save some space on unneeded translations.

`--enable-cups-level3-ps`: This option causes the build process to generate PostScript level 3 PPD files instead of level 2 ones.

Configuring Gimp-Print

Configuration Information

For CUPS to see newly installed PPD files, it has to be restarted:

```
/etc/rc.d/init.d/cups restart
```

Note

This command may take a very long time (up to 10 minutes) to complete. Don't panic while CUPS is rescanning the list of PPD files. The long delay will happen only once.

Then point your web browser to <http://127.0.0.1:631> to add a new printer to CUPS.

Contents

The Gimp-Print package contains `libgimpprint` libraries, **rastertoprinter** filter for CUPS that converts the output of **pstoraster** to a form understandable by printer, and a plugin that allows printing images from GIMP-1.2.5.

Chapter 42. Scanning

This chapter contains scanning applications which allow us to convert printed documents into formatted documents readable by other applications.

SANE-1.0.13

Introduction to SANE

SANE is short for Scanner Access Now Easy. Scanner access, however, is far from easy, since every vendor has their own protocols. The only known protocol that should bring some unity into this chaos is the TWAIN interface, but this is too imprecise to allow a stable scanning framework. Therefore, SANE comes with its own protocol, so the vendor drivers can't be used.

SANE is split into back ends and front ends. The back ends are drivers for the supported scanners. The front ends are user interfaces to access the backends.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/api/sane/sane-backends-1.0.13/sane-backends-1.0.13.tar.gz>
- Download (FTP): <ftp://ftp.mostang.com/pub/sane/sane-backends-1.0.13/sane-backends-1.0.13.tar.gz>
- Download size: 3.0 MB
- Estimated Disk space required: 41 MB
- Estimated build time: 1.38 SBU

Additional downloads

- Front ends: <ftp://ftp.mostang.com/pub/sane/sane-frontends-1.0.11/sane-frontends-1.0.11.tar.gz>

SANE dependencies

Optional

libusb-0.1.8[p.139], libieee1284, gPhoto2, X (XFree86-4.4.0[p.337] or X.org-6.7.0[p.331]), GTK+-1.2.10[p.351] and GIMP-2.0.0[p.508]

Installation of SANE

Preparing your system for scanner access

To access your scanner, you will probably need the related kernel drivers. A SCSI scanner will need SCSI drivers, a parallel port scanner needs parallel port support (you should use enhanced EPP modes) and an USB scanner will need the USB scanner module and a SCSI system for emulation. Be sure that you have got the necessary devices to access the drivers.

Installation of SANE backends

Install SANE backends by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install
```

Installation of SANE front ends

To install SANE front ends, use the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Installation command explanations

`--prefix=/usr`: This switch installs all software in directories relative to `/usr`.

`--sysconfdir=/etc`: This switch installs the configuration files in `/etc/sane.d` instead of `/usr/etc/sane.d`.

Contents

Back ends:

See <http://www.sane-project.org/sane-supported-devices.html> for a list of available backends.

Front ends:

scanimage: Command line interface for scanning.

xscanimage: Graphical user interface for scanning.

gimp-plugin: xscanimage as GIMP plugin.

XSane-0.93

Introduction to XSane

XSane is another front end for SANE-1.0.13[p.602]. It has additional features to improve the image quality and ease of use compared to **xscanimage**.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/hci/sane/xsane/xsane-0.93.tar.gz>
- Download (FTP):
- Download size: 2.5 MB
- Estimated Disk space required: 17 MB
- Estimated build time: 0.20 SBU

XSane dependencies

Required

SANE-1.0.13[p.602] (back ends) and GTK+-2.4.1[p.354]

Optional

libtiff-3.6.1[p.145], libjpeg-6b[p.141] and GIMP-2.0.0[p.508]

Installation of XSane

Install XSane by running the following commands:

```
./configure --prefix=/usr &&  
make &&  
make install
```

Contents

XSane comes with a graphical user interface, and (if GIMP-2.0.0[p.508] is available) a GIMP plugin with advanced features. Please refer to the documentation for further support.

Chapter 43. Standard Generalized Markup Language (SGML)

This chapter contains DocBook SGML document type definitions (DTDs), DocBook DSSSL Stylesheets and DocBook tools to validate, transform, format and publish DocBook documents.

SGML Common-0.6.3

Introduction to SGML Common

The SGML Common package contains **install-catalog**. This is useful for creating and maintaining centralized SGML catalogs.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/hci/kde/devel/docbook/SOURCES/sgml-common-0.6.3.tgz>
- Download (FTP): <ftp://sources.redhat.com/pub/docbook-tools/new-trials/SOURCES/sgml-common-0.6.3.tgz>
- Download size: 75 KB
- Estimated Disk space required: 648 KB
- Estimated build time: 0.00 SBU

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/sgml-common-0.6.3-manpage-1.patch>

Installation of SGML Common

First apply the patch

```
patch -Np1 -i ../sgml-common-0.6.3-manpage-1.patch
```

The autotools files included along with sgml-common are old. Use the following commands to regenerate the files.

```
aclocal &&
automake -acf &&
autoconf
```

Install SGML Common by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc &&
make &&
make install &&
install-catalog --add /etc/sgml/sgml-ent.cat \
  /usr/share/sgml/sgml-iso-entities-8879.1986/catalog &&
install-catalog --add /etc/sgml/sgml-docbook.cat \
  /etc/sgml/sgml-ent.cat
```

Update hint

Remove the above catalog items prior to upgrading with:

```
install-catalog --remove /etc/sgml/sgml-ent.cat \
  /usr/share/sgml/sgml-iso-entities-8879.1986/catalog &&
install-catalog --remove /etc/sgml/sgml-docbook.cat \
```

```
/etc/sgml/sgml-ent.cat
```

Configuring SGML-common

Config files

```
/etc/sgml/sgml.conf
```

Configuration Information

No change in this file is necessary.

Contents

The SGML Common package contains **install-catalog**, **sgmlwhich**, SGML entities files and XML entities files.

Description

install-catalog

install-catalog creates a centralized catalog that maintains references to catalogs scattered throughout the `/usr/share/sgml` directory tree.

sgmlwhich

sgmlwhich will print to standard output the name of the main configuration file.

SGML entities files

SGML entities files contain the basic character entities defined with `SDATA` entries.

XML entities files

XML entities files contain the basic character entities defined by a hexadecimal representation of the Unicode character number.

DocBook SGML DTD-3.1

Introduction to DocBook SGML DTD

The DocBook SGML DTD package contains document type definitions for verification of SGML data files against the DocBook rule set. These are useful for structuring books and software documentation to a standard allowing you to utilize transformations already written for that standard.

Package information

- Download (HTTP): <http://www.docbook.org/sgml/3.1/docbk31.zip>
- Download (FTP): <ftp://ftp.rutgers.edu/pub/kde/devel/docbook/SOURCES/docbk31.zip>
- Download size: 60 KB
- Estimated Disk space required: 336 KB
- Estimated build time: 0.01 SBU

DocBook SGML DTD dependencies

Required

SGML Common-0.6.3[p.606]

Installation of DocBook SGML DTD

Install DocBook SGML DTD by running the following commands:

```
cp docbook.cat docbook.cat.orig &&
sed -e '/ISO 8879/d' docbook.cat.orig > docbook.cat &&
cp docbook.cat docbook.cat.orig &&
sed -e '/gml/d' docbook.cat.orig > docbook.cat &&
cp docbook.cat docbook.cat.orig &&
sed -e 's|DTDDECL "-//OASIS//DTD DocBook V3.1//EN"|SGMLDECL|g' \
    docbook.cat.orig > docbook.cat &&
install -d /usr/share/sgml/docbook/sgml-dtd-3.1 &&
chown -R root:root . &&
chmod -R 755 . &&
install docbook.cat /usr/share/sgml/docbook/sgml-dtd-3.1/catalog &&
cp -af *.dtd *.mod *.dcl /usr/share/sgml/docbook/sgml-dtd-3.1 &&
install-catalog --add /etc/sgml/sgml-docbook-dtd-3.1.cat \
    /usr/share/sgml/docbook/sgml-dtd-3.1/catalog &&
install-catalog --add /etc/sgml/sgml-docbook-dtd-3.1.cat \
    /etc/sgml/sgml-docbook.cat
```

Command explanations

```
cp docbook.cat docbook.cat.orig
sed -e '/ISO 8879/d' docbook.cat.orig > docbook.cat
cp docbook.cat docbook.cat.orig
sed -e '/gml/d' docbook.cat.orig > docbook.cat
```

These commands remove the ENT definitions from the catalog file.

```
cp docbook.cat docbook.cat.orig
sed -e 's|DTDDECL "-//OASIS//DTD Docbook V3.1//EN"|SGMLDECL|g' \
    docbook.cat.orig > docbook.cat
```

This command replaces the DTDDECL catalog entry, which is not supported by Linux SGML tools, with the SGMLDECL catalog entry.

Configuring DocBook SGML DTD

Config files

/etc/sgml/catalog

Configuration Information

The above installation script updates the catalog.

Using only the most current 3.x version of DocBook SGML DTD requires the following:

```
cat >> /usr/share/sgml/docbook/sgml-dtd-3.1/catalog << "EOF"
-- Begin Single Major Version catalog changes --

PUBLIC "-//Davenport//DTD DocBook V3.0//EN" "docbook.dtd"

-- End Single Major Version catalog changes --
EOF
```

Contents

The DocBook SGML DTD package contains DTD files and MOD files.

Description

DTD files

DTD files contain a document type definition which defines the element types and the attribute lists that can be used in the corresponding SGML files.

MOD files

MOD files contain components of the document type definition that are sourced into the DTD files.

DocBook SGML DTD-4.3

Introduction to DocBook SGML DTD

The DocBook SGML DTD package contains document type definitions for verification of SGML data files against the DocBook rule set. These are useful for structuring books and software documentation to a standard allowing you to utilize transformations already written for that standard.

Package information

- Download (HTTP): <http://www.docbook.org/sgml/4.3/docbook-4.3.zip>
- Download (FTP): <ftp://ftp.ibiblio.org/pub/Linux/distributions/rootlinux/ports/x/docbook/docbook-4.3.zip>
- Download size: 76 KB
- Estimated Disk space required: 389 KB
- Estimated build time: 0.01 SBU

DocBook SGML DTD dependencies

Required

SGML Common-0.6.3[p.606]

Installation of DocBook SGML DTD

Install DocBook SGML DTD by running the following commands:

```
cp docbook.cat docbook.cat.orig &&
sed -e '/ISO 8879/d' docbook.cat.orig > docbook.cat &&
cp docbook.cat docbook.cat.orig &&
sed -e '/gml/d' docbook.cat.orig > docbook.cat &&
install -d /usr/share/sgml/docbook/sgml-dtd-4.3 &&
chown -R root:root . &&
chmod -R 755 . &&
install docbook.cat /usr/share/sgml/docbook/sgml-dtd-4.3/catalog &&
cp -af *.dtd *.mod *.dcl /usr/share/sgml/docbook/sgml-dtd-4.3 &&
install-catalog --add /etc/sgml/sgml-docbook-dtd-4.3.cat \
  /usr/share/sgml/docbook/sgml-dtd-4.3/catalog &&
install-catalog --add /etc/sgml/sgml-docbook-dtd-4.3.cat \
  /etc/sgml/sgml-docbook.cat
```

Command explanations

```
cp docbook.cat docbook.cat.orig
sed -e '/ISO 8879/d' docbook.cat.orig > docbook.cat
cp docbook.cat docbook.cat.orig
sed -e '/gml/d' docbook.cat.orig > docbook.cat
```

These commands remove the ENT definitions from the catalog file.

Configuring DocBook SGML DTD

Config files

/etc/sgml/catalog

Configuration Information

The above installation script updates the catalog.

Using only the most current 4.x version of DocBook SGML DTD requires the following:

```
cat >> /usr/share/sgml/docbook/sgml-dtd-4.3/catalog << "EOF"
-- Begin Single Major Version catalog changes --

PUBLIC "-//OASIS//DTD DocBook V4.2//EN" "docbook.dtd"
PUBLIC "-//OASIS//DTD DocBook V4.1//EN" "docbook.dtd"
PUBLIC "-//OASIS//DTD DocBook V4.0//EN" "docbook.dtd"

-- End Single Major Version catalog changes --
EOF
```

Contents

The DocBook SGML DTD package contains DTD files and MOD files.

Description

DTD files

DTD files contain a document type definition which defines the element types and the attribute lists that can be used in the corresponding SGML files.

MOD files

MOD files contain components of the document type definition that are sourced into the DTD files.

OpenSP-1.5.1

Introduction to OpenSP

The OpenSP package contains a C++ Library for using SGML/XML files. This is useful for validating, parsing and manipulating SGML and XML documents.

Package information

- Download (HTTP): <http://download.sourceforge.net/openjade/OpenSP-1.5.1.tar.gz>
- Download (FTP):
- Download size: 1.4 MB
- Estimated Disk space required: 37 MB
- Estimated build time: 1.50 SBU

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/OpenSP-1.5.1-LITLEN.patch>

OpenSP dependencies

Required

SGML Common-0.6.3[p.606]

Installation of OpenSP

This patch removes some annoying messages that can appear while running **openjade**:

```
patch -Np1 -i ../OpenSP-1.5.1-LITLEN.patch
```

Install OpenSP by running the following commands:

```
./configure --prefix=/usr --disable-static --enable-http \
  --enable-default-catalog=/etc/sgml/catalog \
  --enable-default-search-path=/usr/share/sgml &&
make pkgdatadir=/usr/share/sgml/OpenSP-1.5.1 &&
make pkgdatadir=/usr/share/sgml/OpenSP-1.5.1 install &&
ln -sf onsgmls /usr/bin/nsgmls &&
ln -sf onsgmlnorm /usr/bin/sgmlnorm &&
ln -sf ospam /usr/bin/spam &&
ln -sf ospcat /usr/bin/spcat &&
ln -sf ospent /usr/bin/spent &&
ln -sf osx /usr/bin/sx &&
ln -sf osx /usr/bin/sgml2xml &&
ln -sf libosp.so /usr/lib/libosp.so &&
install-catalog --add /etc/sgml/OpenSP-1.5.1.cat \
  /usr/share/sgml/OpenSP-1.5.1/catalog &&
install-catalog --add /etc/sgml/sgml-docbook.cat \
  /etc/sgml/OpenSP-1.5.1.cat
```

Update hint

Remove the above catalog items prior to upgrading with:

```
install-catalog --remove /etc/sgml/OpenSP-[version].cat \
  /usr/share/sgml/OpenSP-[version]/catalog &&
install-catalog --remove /etc/sgml/sgml-docbook.cat \
```

```
/etc/sgml/OpenSP-[version].cat
```

Command explanations

`--disable-static`: This switch prevents the building of the static library.

`--enable-http`: This switch adds support for HTTP.

`--enable-default-catalog=/etc/sgml/catalog`: This switch sets the path to our centralized catalog.

`--enable-default-search-path`: This switch sets the default value of `SGML_SEARCH_PATH`.

`--enable-xml-messages`: This switch adds support for XML Formatted Messages.

`make pkgdatadir=/usr/share/sgml/OpenSP-1.5.1`: This sets the `pkgdatadir` variable in the `Makefile` from `/usr/share/OpenSP` to `/usr/share/sgml/OpenSP-1.5`.

```
ln -sf onsgmls /usr/bin/nsgmls
ln -sf osgmlnorm /usr/bin/sgmlnorm
ln -sf ospam /usr/bin/spam
ln -sf ospcat /usr/bin/spcat
ln -sf ospent /usr/bin/spent
ln -sf osx /usr/bin/sx
ln -sf osx /usr/bin/sgml2xml
ln -sf libosp.so /usr/lib/libsp.so
```

These commands create the SP equivalents of OpenSP executables and libraries.

Contents

The OpenSP package contains **onsgmls**, **ospam**, **osx**, **ospcat** and **ospent**.

Description

onsgmls

onsgmls process SGML files.

ospam

ospam is a markup stream editor.

osx

osx is a SGML normalizer or a converter of SGML to XML.

ospcat

ospcat prints effective system identifiers found in the catalogs.

ospent

ospent provides access to OpenSP's entity manager.

OpenJade-1.3.2

Introduction to OpenJade

The OpenJade package contains a DSSSL engine. This is useful for SGML and XML transformations into RTF, TeX, SGML and XML.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/openjade/openjade-1.3.2.tar.gz>
- Download (FTP): <ftp://ftp.freestandards.org/pub/lsb/app-battery/packages/openjade-1.3.2.tar.gz>
- Download size: 880 KB
- Estimated Disk space required: 14.5 MB
- Estimated build time: 1.51 SBU

OpenJade dependencies

Required

OpenSP-1.5.1[p.612]

Installation of OpenJade

Install OpenJade by running the following commands:

```
./configure --prefix=/usr --enable-http --disable-static \
  --enable-default-catalog=/etc/sgml/catalog \
  --enable-default-search-path=/usr/share/sgml \
  --datadir=/usr/share/sgml/openjade-1.3.2 &&
make &&
make install &&
ln -sf openjade /usr/bin/jade &&
ln -sf libogrove.so /usr/lib/libogrove.so &&
ln -sf libospgrove.so /usr/lib/libospgrove.so &&
ln -sf libostyle.so /usr/lib/libostyle.so &&
install -m644 dsssl/catalog /usr/share/sgml/openjade-1.3.2/ &&
install -m644 dsssl/*.dtd dsssl/*.dsl dsssl/*.sgm \
  /usr/share/sgml/openjade-1.3.2 &&
install-catalog --add /etc/sgml/openjade-1.3.2.cat \
  /usr/share/sgml/openjade-1.3.2/catalog &&
install-catalog --add /etc/sgml/sgml-docbook.cat \
  /etc/sgml/openjade-1.3.2.cat
```

Command explanations

`--disable-static`: This switch prevents the building of the static library.

`--enable-http`: This switch adds support for HTTP.

`--enable-default-catalog=/etc/sgml/catalog`: This switch sets the path to our centralized catalog.

`--enable-default-search-path`: This switch sets the default value of `SGML_SEARCH_PATH`.

`--datadir=/usr/share/sgml/openjade-1.3.2`: This switch puts data files in `/usr/share/sgml/openjade-1.3.2` instead of `/usr/share`.

```
ln -sf openjade /usr/bin/jade
ln -sf libogrove.so /usr/lib/libogrove.so
```

```
ln -sf libospgrove.so /usr/lib/libspgrove.so
ln -sf libostyle.so /usr/lib/libstyle.so
```

These commands create the Jade equivalents of OpenJade executables and libraries.

Configuring OpenJade

Configuration Information

```
echo "SYSTEM \"http://www.oasis-open.org/docbook/xml/4.3/docbookx.dtd\" \" \
    \"/usr/share/xml/docbook/xml-dtd-4.3/docbookx.dtd\"" >> \
    /usr/share/sgml/openjade-1.3.2/catalog
```

This configuration is only necessary if you intend to use OpenJade to process the BLFS XML files through DSSSL Stylesheets.

Contents

The OpenJade package contains **openjade**.

Description

openjade

openjade is a DSSSL engine used for transformations.

DocBook DSSSL Stylesheets-1.78

Introduction to DocBook DSSSL Stylesheets

The DocBook DSSSL Stylesheets package contains DSSSL stylesheets. These are used by OpenJade or other tools to transform SGML and XML DocBook files.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/docbook/docbook-dsssl-1.78.tar.gz>
- Download (FTP):
- Download size: 384 KB
- Estimated Disk space required: 4 MB
- Estimated build time: 0.01 SBU

DocBook DSSSL Stylesheets dependencies

Required

SGML Common-0.6.3[p.606]

Installation of DocBook DSSSL Stylesheets

Install DocBook DSSSL Stylesheets by running the following commands:

```
mkdir -p /usr/share/sgml/docbook/dsssl-stylesheets-1.78/dtds/decls &&
mkdir -p /usr/share/sgml/docbook/dsssl-stylesheets-1.78/lib &&
mkdir -p /usr/share/sgml/docbook/dsssl-stylesheets-1.78/common &&
mkdir -p /usr/share/sgml/docbook/dsssl-stylesheets-1.78/html &&
mkdir -p /usr/share/sgml/docbook/dsssl-stylesheets-1.78/print &&
mkdir -p /usr/share/sgml/docbook/dsssl-stylesheets-1.78/test &&
mkdir -p /usr/share/sgml/docbook/dsssl-stylesheets-1.78/images &&
install bin/collateindex.pl /usr/bin &&
cp catalog VERSION /usr/share/sgml/docbook/dsssl-stylesheets-1.78 &&
cp dtds/decls/*.dcl \
  /usr/share/sgml/docbook/dsssl-stylesheets-1.78/dtds/decls &&
cp lib/dblib.dsl /usr/share/sgml/docbook/dsssl-stylesheets-1.78/lib &&
cp common/*.dsl /usr/share/sgml/docbook/dsssl-stylesheets-1.78/common &&
cp common/*.ent /usr/share/sgml/docbook/dsssl-stylesheets-1.78/common &&
cp html/*.dsl /usr/share/sgml/docbook/dsssl-stylesheets-1.78/html &&
cp lib/*.dsl /usr/share/sgml/docbook/dsssl-stylesheets-1.78/lib &&
cp print/*.dsl /usr/share/sgml/docbook/dsssl-stylesheets-1.78/print &&
cp images/*.gif /usr/share/sgml/docbook/dsssl-stylesheets-1.78/images &&
install-catalog --add /etc/sgml/dsssl-docbook-stylesheets.cat \
  /usr/share/sgml/docbook/dsssl-stylesheets-1.78/catalog &&
install-catalog --add /etc/sgml/sgml-docbook.cat \
  /etc/sgml/dsssl-docbook-stylesheets.cat
```

Command explanations

Above commands create a **make install** script for this package.

Configuring DocBook DSSSL Stylesheets

Configuration Information

The following configuration is necessary in order to utilize OpenJade to convert the BLFS Book from XML to HTML:

```
ln -sf [your home directory]/BLFS/BOOK/blfs.dsl \
/usr/share/sgml/docbook/dsssl-stylesheets-1.78/html/
```

Contents

The DocBook DSSSL Stylesheets package contains DSSSL stylesheets and **collateindex.pl**.

Description

collateindex.pl

collateindex.pl is a Perl script that creates a DocBook index from raw index data.

Chapter 44. Extensible Markup Language (XML)

This chapter contains the DocBook XML document type definition (DTD) and DocBook Stylesheets which are used to validate, transform, format and publish DocBook documents.

DocBook XML DTD-4.3

Introduction to DocBook XML DTD

The DocBook XML DTD-4.3 package contains document type definitions for verification of XML data files against the DocBook rule set. These are useful for structuring books and software documentation to a standard allowing you to utilize transformations already written for that standard.

Package information

- Download (HTTP): <http://www.docbook.org/xml/4.3/docbook-xml-4.3.zip>
- Download (FTP): <ftp://ftp.us.sinuspl.net/pub/src/docbook-xml-4.3.zip>
- Download size: 97 KB
- Estimated Disk space required: 482 KB
- Estimated build time: 0.01 SBU

DocBook XML DTD 4.3 dependencies

Required

libxml2-2.6.9[p.123]

Installation of DocBook XML DTD

Install DocBook XML DTD by running the following commands:

```
install -d /usr/share/xml/docbook/xml-dtd-4.3 &&
cp -af docbook.cat *.dtd ent/ *.mod /usr/share/xml/docbook/xml-dtd-4.3 &&
if [ ! -e /etc/xml/catalog ]; then mkdir -p /etc/xml; xmlcatalog --noout \
--create /etc/xml/catalog; fi &&
if [ ! -e /etc/xml/docbook ]; then xmlcatalog --noout --create \
/etc/xml/docbook; fi &&
xmlcatalog --noout --add "public" \
"-//OASIS//ELEMENTS DocBook XML Information Pool V4.3//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.3/dbpoolx.mod" \
/etc/xml/docbook &&
xmlcatalog --noout --add "public" \
"-//OASIS//DTD DocBook XML V4.3//EN" \
"http://www.oasis-open.org/docbook/xml/4.3/docbookx.dtd" \
/etc/xml/docbook &&
xmlcatalog --noout --add "public" \
"-//OASIS//ENTITIES DocBook XML Character Entities V4.3//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.3/dbcentx.mod" \
/etc/xml/docbook &&
xmlcatalog --noout --add "public" \
"-//OASIS//ENTITIES DocBook XML Notations V4.3//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.3/dbnotnx.mod" \
/etc/xml/docbook &&
xmlcatalog --noout --add "public" \
"-//OASIS//ENTITIES DocBook XML Additional General Entities V4.3//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.3/dbgenent.mod" \
```

```

/etc/xml/docbook &&
xmlcatalog --noout --add "public" \
  "-//OASIS//ELEMENTS DocBook XML Document Hierarchy V4.3//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.3/dbhierx.mod" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
  "-//OASIS//DTD XML Exchange Table Model 19990315//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.3/soextblx.dtd" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
  "-//OASIS//DTD DocBook XML CALS Table Model V4.3//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.3/calstblx.dtd" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "rewriteSystem" \
  "http://www.oasis-open.org/docbook/xml/4.3" \
  "file:///usr/share/xml/docbook/xml-dtd-4.3" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "rewriteURI" \
  "http://www.oasis-open.org/docbook/xml/4.3" \
  "file:///usr/share/xml/docbook/xml-dtd-4.3" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "delegatePublic" \
  "-//OASIS//ENTITIES DocBook XML" \
  "file:///etc/xml/docbook" /etc/xml/catalog &&
xmlcatalog --noout --add "delegatePublic" \
  "-//OASIS//DTD DocBook XML" \
  "file:///etc/xml/docbook" /etc/xml/catalog &&
xmlcatalog --noout --add "delegateSystem" \
  "http://www.oasis-open.org/docbook/" \
  "file:///etc/xml/docbook" /etc/xml/catalog &&
xmlcatalog --noout --add "delegateURI" \
  "http://www.oasis-open.org/docbook/" \
  "file:///etc/xml/docbook" /etc/xml/catalog

```

Configuring DocBook XML DTD

Config files

```
/etc/xml/catalog, /etc/xml/docbook
```

Configuration Information

The above installation script creates the files and updates the catalog. In order to install ScrollKeeper or to utilize DocBook XML DTD V4.3 when any version 4 is requested in the System Identifier, make the following entry:

```

xmlcatalog --noout --add "public" \
  "-//OASIS//DTD DocBook XML V4.1.2//EN" \
  "http://www.oasis-open.org/docbook/xml/4.1.2/docbookx.dtd" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "delegateSystem" \
  "http://www.oasis-open.org/docbook/xml/4.1.2/" \
  "file:///etc/xml/docbook" /etc/xml/catalog &&
xmlcatalog --noout --add "delegateURI" \
  "http://www.oasis-open.org/docbook/xml/4.1.2/" \
  "file:///etc/xml/docbook" /etc/xml/catalog &&
xmlcatalog --noout --add "rewriteSystem" \
  "http://www.oasis-open.org/docbook/xml/4.1.2" \
  "file:///usr/share/xml/docbook/xml-dtd-4.3" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "rewriteURI" \
  "http://www.oasis-open.org/docbook/xml/4.1.2" \
  "file:///usr/share/xml/docbook/xml-dtd-4.3" \

```

```
/etc/xml/docbook &&  
xmlcatalog --noout --add "rewriteURI" \  
  "http://www.oasis-open.org/docbook/xml/4.2" \  
  "file:///usr/share/xml/docbook/xml-dtd-4.3" \  
/etc/xml/docbook
```

Contents

The DocBook XML DTD package contains DTD files, MOD files and ENT files.

Description

DTD files

DTD files contain a document type definition which defines the element types and the attribute lists that can be used in the corresponding XML files.

MOD files

MOD files contain components of the document type definition that are sourced into the DTD files.

ENT files

ENT files contain lists of named character entities allowed in HTML.

DocBook XSL Stylesheets-1.65.1

Introduction to DocBook XSL Stylesheets

The DocBook XSL Stylesheets package contains XSL stylesheets. These are useful for performing transformations on XML DocBook files.

Package information

- Download (HTTP): <http://telia.dl.sourceforge.net/sourceforge/docbook/docbook-xsl-1.65.1.tar.gz>
- Download (FTP):
- Download size: 1.5 MB
- Estimated Disk space required: 13.1 MB
- Estimated build time: 0.01 SBU

DocBook XSL Stylesheets dependencies

Required

libxslt-1.1.6[p.124]

Installation of DocBook XSL Stylesheets

Install DocBook XSL Stylesheets by running the following commands:

```
install -d /usr/share/xml/docbook/xsl-stylesheets-1.65.1 &&
cp -af VERSION common extensions fo html htmlhelp images javahelp lib \
  manpages params profiling template tools xhtml \
  /usr/share/xml/docbook/xsl-stylesheets-1.65.1 &&
install -d /usr/share/doc/xml &&
cp -af doc/* /usr/share/doc/xml &&
if [ ! -f /etc/xml/catalog ]; then mkdir -p /etc/xml; xmlcatalog --noout \
  --create /etc/xml/catalog; fi &&
if [ ! -e /etc/xml/docbook ]; then xmlcatalog --noout --create \
  /etc/xml/docbook; fi &&
xmlcatalog --noout --add "rewriteSystem" \
  "http://docbook.sourceforge.net/release/xsl/1.65.1" \
  "/usr/share/xml/docbook/xsl-stylesheets-1.65.1" /etc/xml/catalog &&
xmlcatalog --noout --add "rewriteURI" \
  "http://docbook.sourceforge.net/release/xsl/1.65.1" \
  "/usr/share/xml/docbook/xsl-stylesheets-1.65.1" /etc/xml/catalog &&
xmlcatalog --noout --add "rewriteSystem" \
  "http://docbook.sourceforge.net/release/xsl/current" \
  "/usr/share/xml/docbook/xsl-stylesheets-1.65.1" /etc/xml/catalog &&
xmlcatalog --noout --add "rewriteURI" \
  "http://docbook.sourceforge.net/release/xsl/current" \
  "/usr/share/xml/docbook/xsl-stylesheets-1.65.1" /etc/xml/catalog &&
xmlcatalog --noout --add "delegateSystem" \
  "http://docbook.sourceforge.net/release/xsl/" \
  "file:///etc/xml/docbook" /etc/xml/catalog &&
xmlcatalog --noout --add "delegateURI" \
  "http://docbook.sourceforge.net/release/xsl/" \
  "file:///etc/xml/docbook" /etc/xml/catalog
```

Configuring DocBook XSL Stylesheets

Config files

/etc/xml/catalog

Configuration Information

The above installation script creates the files and updates the catalog.

Contents

The DocBook XSL Stylesheets package contains XSL style sheets for HTML and FO.

Chapter 45. PostScript

This chapter includes applications that create, manipulate or view PostScript files and view Portable Document Format PDF files.

a2ps-4.13b

Introduction to a2ps

a2ps is a filter utilized mainly in the background and primarily by printing scripts to convert almost every input format into PostScript output. The application's name expands appropriately to "all to PostScript".

Package information

- Download (HTTP): <http://ftp.gnu.org/gnu/a2ps/a2ps-4.13b.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/a2ps/a2ps-4.13b.tar.gz>
- Download size: 1.9 MB
- Estimated Disk space required: 19.2 MB
- Estimated build time: 0.26 SBU

Additional downloads

- International fonts: <ftp://ftp.enst.fr/pub/unix/a2ps/i18n-fonts-0.1.tar.gz>

a2ps dependencies

Optional

PSUtils-p17[p.626] and AFPL Ghostscript-8.14[p.597] or ESP Ghostscript-7.07.1[p.598]

Installation of a2ps

Install a2ps by running the following commands:

```
cd contrib &&
cp Makefile.in Makefile.in.orig &&
sed -e "s:emacs::" Makefile.in.orig > Makefile.in &&
cd .. &&
cp configure{,.orig} &&
sed -e 's|/usr/local/share/ghostscript|/usr/share/ghostscript|g' \
    configure.orig > configure &&
./configure --prefix=/usr \
    --sysconfdir=/etc/a2ps --localstatedir=/var \
    --with-medium=letter &&
make &&
make install
```

Command explanations

```
cd contrib &&
cp Makefile.in Makefile.in.orig &&
sed -e "s:emacs::" Makefile.in.orig > Makefile.in &&
cd .. &&
```

These commands eliminate the compiling and installing of the Emacs script files. If you have substituted Emacs for Vi as your primary editor, you would want to skip these instructions.

```
cp configure{,.orig} &&
sed -e 's|/usr/local/share/ghostscript|/usr/share/ghostscript|g' \
    configure.orig > configure
```

This command modifies the configure script to search for Ghostscript fonts at the location where they were installed by the BLFS instructions.

--sysconfdir=/etc/a2ps: Configuration data goes to */etc/a2ps* instead of */usr/etc*.

--with-medium=letter: This switch changes the default paper format of A4 to letter. Installations that utilize A4 would eliminate this switch.

Configuring a2ps

Config files

/etc/a2ps/a2ps.cfg, */etc/a2ps/a2ps-site.cfg*

Configuration Information

Information about configuring a2ps can be found in the comments contained in the above files, and also by running **info a2ps**.

Contents

The a2ps package contains **a2ps** and filter data.

Description

a2ps

a2ps is a filter, utilized primarily by printing scripts, that converts standard input or supported files to PostScript.

enscript-1.6.1

Introduction to enscript

Enscript converts ASCII files to PostScript.

Package information

- Download (HTTP): <http://ftp.gnu.org/gnu/enscript/enscript-1.6.1.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/enscript/enscript-1.6.1.tar.gz>
- Download size: 631 KB
- Estimated Disk space required: 6.8 MB
- Estimated build time: 0.10 SBU

Installation of enscript

Install enscript by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc/enscript \
    --localstatedir=/var --with-media=Letter &&
make &&
make install
```

Installation command explanations

--sysconfdir=/etc/enscript: This switch puts configuration data in */etc/enscript* instead of */usr/etc*.

--localstatedir=/var: This switch sets the directory for runtime data to */var* instead of */usr/var*.

--with-media=Letter: This switch sets the medium format to letter.

Contents

The enscript package contains **enscript** and filter data.

Description

enscript

enscript is a filter, used primarily by printing scripts, that converts ASCII files to PostScript.

PSUtils-p17

Introduction to PSUtils

PSUtils is a set of utilities to manipulate PostScript files.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/publishing/tex/tex-utils/psutils/psutils-p17.tar.gz>
- Download (FTP): <ftp://ftp.knackered.org/pub/psutils/psutils-p17.tar.gz>
- Download size: 68 KB
- Estimated Disk space required: 740 KB
- Estimated build time: 0.01 SBU

Installation of PSUtils

Install PSUtils by running the following commands:

```
cat Makefile.unix | sed -e 's/\usr/local/\usr/g' > Makefile &&
make &&
make install
```

Installation command explanations

`cat ... | sed ...`: This command creates a `Makefile` that installs the program to the `/usr` prefix instead of the `/usr/local` prefix.

Contents

The PSUtils package contains **psbook**, **psselect**, **pstops**, **psnup**, **psresize**, **epsffit**, **getafm**, **showchar**, **fixdlsrps**, **fixfmpps**, **fixmacps**, **fixpsditps**, **fixpspps**, **fixscribeps**, **fixtpps**, **fixwfwps**, **fixwpps**, **fixwwps**, **extractres**, **includeres**, **psmerge**.

Sometimes **psnup** and other utilities from this package produce PostScript files that don't conform to Adobe's DSC standard. CUPS may print them incorrectly. On the other hand, CUPS has builtin replacements for most commands from this package. For example, to print a document 2-up, you will issue this command:

```
lp -o number-up=2 [filename]
```

Description

psbook

psbook rearranges pages into signatures.

psselect

psselect selects pages and page ranges.

pstops

pstops performs general page rearrangements and selection.

psnup

psnup puts multiple pages per physical sheet of paper

psresize

psresize alters the document paper size.

epsffit

epsffit fits an EPSF file to a given bounding box

scripts

The remaining commands are scripts that perform specific functions described in their respective man pages.

GSview-4.6

Introduction to GSview

GSview is a viewer for PostScript and PDF using X.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/publishing/ghostscript/ghostgum/gsview-4.6.tar.gz>
- Download (FTP): <ftp://mirror.cs.wisc.edu/pub/mirrors/ghost/ghostgum/gsview-4.6.tar.gz>
- Download size: 895 KB
- Estimated Disk space required: 19 MB
- Estimated build time: 0.19 SBU

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/gsview-4.6-pstotext.patch>
- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/gsview-4.6-lang.patch>

GSview dependencies

Required

GTK+-1.2.10[p.351] and AFPL Ghostscript-8.14[p.597] or ESP Ghostscript-7.07.1[p.598] (with libgs.so installed)

Installation of GSview

GSview uses **netscape** to browse through the online help. BLFS does not install Netscape, but has other browsers from which to choose. Simply edit `srcunx/gvxreg.c` using the following sed script with your browser's executable file name substituting for `[browser]`:

```
sed -i s/netscape/[browser]/ srcunx/gvxreg.c
```

Install GSview by running the following commands:

```
sed 's|GSVIEW_ROOT=/usr/local|GSVIEW_ROOT=/usr|' \
  srcunx/unx.mak > Makefile &&
patch -Np1 -i ../gsview-4.6-pstotext.patch &&
patch -Np1 -i ../gsview-4.6-lang.patch &&
make &&
make install
```

Command explanations

`sed 's|GSVIEW_ROOT=/usr/local|GSVIEW_ROOT=/usr|'`: This command changes the default installation directory to `/usr`.

Configuring GSview

Config files

`/etc/gsview/*`

Contents

The GSview package contains **epstool**, **gsview** and **gsview-help**.

Description

epstool

epstool is a tool for extracting preview bitmaps in EPS files.

gsview

gsview is a viewer for PostScript (PS) and PDF files.

gsview-help

gsview-help is a script for displaying help files in your chosen browser.

Xpdf-3.00

Introduction to Xpdf

Xpdf is a viewer for Adobe's free Portable Document Format (PDF) which is both fast and small and comes with some useful command-line utilities.

Package information

- Download (HTTP): <http://gd.tuwien.ac.at/publishing/xpdf/xpdf-3.00.tar.gz>
- Download (FTP): <ftp://ftp.foolabs.com/pub/xpdf/xpdf-3.00.tar.gz>
- Download size: 490 KB
- Estimated Disk space required: 21 MB
- Estimated build time: 0.41 SBU

Additional downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/5.1/xpdf-3.00-freetype-2.1.7-hack.patch>

Xpdf dependencies

Required

LessTif-0.93.94[p.355]

Optional

t1lib and AFPL Ghostscript-8.14[p.597] or ESP Ghostscript-7.07.1[p.598]

Installation of Xpdf

Install Xpdf by running the following commands:

```
patch -Np1 -i ../xpdf-3.00-freetype-3.1.7-hack.patch &&
./configure --prefix=/usr --sysconfdir=/etc \
--with-freetype2-includes=/usr/include/freetype2 &&
make &&
make install
```

Installation command explanations

`--enable-a4-paper`: This switch must be added to set DIN A4 as the standard paper format.

Configuring Xpdf

Config files

`/etc/xpdfrc, ~/.xpdfrc`

Configuration Information

In the `etc` directory you will find a sample `xpdfrc` that can be either copied to `~/.xpdfrc` or taken as example to write your own configuration file.

```
# Example .xpdfrc
displayFontT1 Times-Roman          /usr/share/ghostscript/fonts/n0210031.pfb
displayFontT1 Times-Italic         /usr/share/ghostscript/fonts/n0210231.pfb
```

```
displayFontT1 Times-Bold /usr/share/ghostscript/fonts/n0210041.pfb
displayFontT1 Times-BoldItalic /usr/share/ghostscript/fonts/n0210241.pfb
displayFontT1 Helvetica /usr/share/ghostscript/fonts/n0190031.pfb
displayFontT1 Helvetica-Oblique /usr/share/ghostscript/fonts/n0190231.pfb
displayFontT1 Helvetica-Bold /usr/share/ghostscript/fonts/n0190041.pfb
displayFontT1 Helvetica-BoldOblique /usr/share/ghostscript/fonts/n0190241.pfb
displayFontT1 Courier /usr/share/ghostscript/fonts/n0220031.pfb
displayFontT1 Courier-Oblique /usr/share/ghostscript/fonts/n0220231.pfb
displayFontT1 Courier-Bold /usr/share/ghostscript/fonts/n0220041.pfb
displayFontT1 Courier-BoldOblique /usr/share/ghostscript/fonts/n0220241.pfb
displayFontT1 Symbol /usr/share/ghostscript/fonts/s0500001.pfb
displayFontT1 ZapfDingbats /usr/share/ghostscript/fonts/d0500001.pfb

fontDir /usr/X11R6/lib/X11/fonts/TTF

psFile "|lpr"
psPaperSize letter
textEOL unix

enableT1lib yes
enableFreeType yes
antialias yes

urlCommand "links -g %s"
```

Contents

The Xpdf package contains **xpdf**, **pdftops**, **pdftotext**, **pdftoppm**, **pdf fonts**, **pdfimages** and **pdfinfo**.

Description

xpdf

xpdf displays files in PDF format.

pdftops

pdftops converts PDF files to PS format.

pdftotext

pdftotext parses ASCII text from PDF files.

pdftoppm

pdftoppm converts PDF files to PBM, PGM, PPM formats.

pdf fonts

pdf fonts lists the fonts used in a PDF file along with various information for each font.

pdfimages

pdfimages saves images from a PDF file as PPM, PBM, or JPEG files.

pdfinfo

pdfinfo prints the contents of the 'Info' dictionary (plus some other useful information) from a PDF file.

Other PostScript programs

KGhostview is a Qt based PostScript/PDF viewer from kdegraphics-3.2.2[p.387].

Chapter 46. Typesetting

This chapter includes applications that create output equivalent to typesetting.

TeX-2.0.2

Introduction to TeX

TeX is a typesetting package, able to create documents in a variety of formats. The optional texmfsrc TAR ball contains source code for packages that are contained in the texmf TAR ball, including the docstrip sources.

Package information

- Download (FTP): <ftp://tug.ctan.org/tex-archive/systems/unix/teTeX/current/distrib/tetex-src-2.0.2.tar.gz>
- Download (FTP): <ftp://tug.ctan.org/tex-archive/systems/unix/teTeX/current/distrib/tetex-texmf-2.0.2.tar.gz>
- Optional Download (FTP): <ftp://tug.ctan.org/tex-archive/systems/unix/teTeX/current/distrib/tetex-texmfsrc-2.0.2.tar.gz>
- Download size: 52 MB
- Estimated Disk space required: 175 MB
- Estimated build time: 2.97 SBU

Installation of TeX

TeX is installed from the source directory (usually `/usr/src`) and untarring instructions are included below instead of the usual assumption that you have already untarred the package. The source directory should contain the two required packages and the optional package, if desired.

Install TeX by running the following commands:

```
mkdir -p /usr/share/texmf &&
tar zxvf tetex-src-2.0.2.tar.gz &&
cd tetex-src-2.0.2 &&
gzip -dc ../tetex-texmf-2.0.2.tar.gz \
| (umask 0; cd /usr/share/texmf; tar xvf -)
```

If the optional texmf source code TAR ball was downloaded, untar it now:

```
gzip -dc ../tetex-texmfsrc-2.0.2.tar.gz \
| (umask 0; cd /usr/share/texmf; tar xvf -)
```

```
./configure --with-x=no --prefix=/usr \
--without-texinfo --with-system-ncurses --with-system-zlib \
--exec-prefix=/usr --bindir=/usr/bin &&
make world &&
texconfig dvips paper letter &&
texconfig font rw
```

Note

The paper size may be changed to a4, as is used in most countries.

Installation command explanations

```
gzip -dc ../tetex-texmf-2.0.2.tar.gz \
| (umask 0; cd /usr/share/texmf; tar xvf -)
```


Untar the TeX fonts and macro libraries.

`--with-x=no`: This switch will avoid any XFree86 dependencies. TeX can be compiled with XFree86 support, notably for **xdvi**. If this is desired, remove this configure option.

`--exec-prefix=/usr --bindir=/usr/bin`: This switch will insure that TeX binaries will be installed in `/usr/bin`.

`--without-texinfo`: A default LFS installation already has the texinfo package installed; we will avoid overwriting it with the included texinfo package.

`--with-system-ncurses`: This switch specifies using the already installed `libncurses` library.

`--with-system-zlib`: LFS Systems starting with version 4.0 have `zlib` installed as part of the base operating system; we can avoid building it here.

texconfig dvips paper letter: This command sets the default paper size for TeX.

texconfig font rw: This command specifies writable fonts.

Contents

The TeX package contains 125 separate binaries. Please refer to `file:///usr/share/texmf/doc/index.html` for details, as well as a tour of the expansive TeX documentation.

Glossary

Acronyms

669	UNIS/Composer 669 Module
ABI	Application Binary Interface
ADSL	Asymmetric Digital Subscriber Line
AFS	Andrew File System
AIFF	Audio Interchange File Format
ALSA	Advanced Linux Sound Architecture
API	Application Programming Interface
ASCII	American Standard Code for Information Interchange
ASF	Advanced Streaming Format
ATA	AT-Attached
ATSC	Advanced Television Systems Committee
ATK	Accessibility ToolKit
AVI	Audio Video Interleave
BICS	Berkeley/IRCAM/CARL
BIND	Berkeley Internet Name Domain
BIOS	Basic Input/Output System
BLFS	Beyond Linux From Scratch
BMP	Bit MaP
CD	Compact Disk
CDDA	Compact Disc Digital Audio
CIFS	Common Internet File System

	See Also SMB.
CODEC	COmpression/DECompression module
CORBA	Common Object Request Broker Architecture
CRD	Color Rendering Dictionary
CSA	Color Space Array
CSS (on DVD)	Contents Scrambling System
CSS	Cascading Style Sheets
CUPS	Common Unix Printing System
CVS	Concurrent Versions System
DES	Data Encryption Standard
DHCP	Dynamic Host Configuration Protocol
DIN	German Industrial Norm
DNS	Domain Name Service
DOS	Disk Operating System
DSC	Document Structuring Conventions
DSO	Dynamic Shared Objects
DSSSL	Document Style Semantics and Specification Language
DVI	DeVice Independent
EPP	Enhanced Parallel Port
EPS	Encapsulated PostScript
ESD	Enlighten Sound Daemon
ESMTP	Extended Simple Mail Transfer Protocol
FAM	File Alteration Monitor
FAME	Fast Assembly Mpeg Encoder

FAQ	Frequently Asked Questions
FAX	Facsimile
FB	Frame Buffer
FHS	File Hierarchy Standard
FLAC	Free Lossless Audio CODEC
FO	Formatted Objects
FOURCC	FOUR Character Code
FTP	File Transfer Protocol
GCC	GNU Compiler Collection
GDBM	GNU DataBase Manager
GDK	GTK+ Drawing Kit
GDM	GNOME Display Manager
GID	Group IDentity
GIF	Graphics Interchange Format
GMP	GNU Multiple Precision Arithmetic
GNAT	GNU NYU Ada 9x Translator
GNOME	GNU Network Object Model Environment
GNU	GNU's Not Unix
GPL	General Public License
GPM	General Purpose Mouse
GTK	GIMP ToolKit
GUI	Graphical User Interface
HFS	Hierarchical File System
HTML	

	HyperText Markup Language
HTTP	HyperText Transfer Protocol
HTTPS	HyperText Transfer Protocol Secured
HUP	Hang UP
ICC	International Color Consortium
ICMP	Internet Control Message Protocol
IDE	Integrated Drive Electronics Integrated Development Environment
IDL	Interface Definition Language
IJS	Ink Jet Systems
ILS	Internet Location Server
IMAP	Internet Message Access Protocol
IMON	Inode MONitor
IP	Internet Protocol See Also TCP.
IPX	Internetwork Packet eXchange
IRC	Internet Relay Chat
IrDA	Infrared Data Association
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
IT	ImpulseTracker Module
JAR	Java ARchive
JDK	Java Development Kit
JFIF	JPEG File Interchange Format
JPEG	

	Joint Photographic Experts Group
KDC	Key Distribution Center
KDE	K Desktop Environment
LAME	Lame Ain't an MP3 Encoder
LAN	Local Area Network
LDAP	Lightweight Directory Access Protocol
LDIF	Lightweight Data Interchange Format
LFS	Linux From Scratch
LGPL	Library General Public License
LPR	Line PRinter
LZO	Lemple-Ziv-Oberhumer
MCU	Multipoint Control Unit
MD	Message-Digest
MDA	Mail Delivery Agent
MED	MED/OctaMED Module
MIDI	Musical Instrument Digital Interface
MIME	Multipurpose Internet Mail Extensions
MIT	Massachusetts Institute of Technology
MNG	Multiple-image Network Graphics
MOD	ProTracker Module
MP3	MPEG-1 audio layer 3
MPEG	Moving Picture Experts Group
MTA	Mail Transport Agent
MTM	

	MultiTracker Module
MUA	Mail User Agent
NASM	Netwide ASseMbler
NNTP	Network News Transfer Protocol
NFS	Network File System
NTP	Network Time Protocol
OAF	Object Activation Framework
OMF	Open Metadata Framework
ORB	Object Request Broker See Also CORBA.
ORDBMS	Object Relational Database Management System
OSS	Open Sound System
PAM	Pluggable authentication Modules
PBM	Portable BitMap
PCI	Peripheral Component Interconnect
PCL	Printer Control Language
PDC	Primary Domain Controller
PDF	Portable Document Format
PIM	Personal Information Manager
PGM	Portable Grey Map
PHP	PHP Hypertext Preprocessor
PGP	Pretty Good Privacy
PNG	Portable Network Graphics
PO	Portable Object

POP	Post Office Protocol
PPD	PostScript Printer Description
PPM	Portable Pixel Map
PPP	Point to Point Protocol
PPPoE	Point to Point Protocol over Ethernet
PS	PostScript
RAM	Random Access Memory
RCS	Revision Control System
RFC	Request For Comments
RGB	Red Green Blue
RGBA	Red Green Blue Alpha
ROM	Read-Only Memory
RP	Roaring Penguin
RPC	Remote Procedure Call
RTP	Real Time Protocol
S3M	ScreamTracker Version 3 Module
S/MIME	Secure/MIME
SANE	Scanner Access Now Easy
SASL	Simple Authentication and Security Layer
SBU	Static Binutils Units
SCCS	Source Code Control System
SCSI	Small Computer System Interface
SDK	Software Development Kit
SGML	

	Standard Generalized Markup Language
SMB	Server Message Block
SMIL	Synchronized Multimedia Integration Language
SMTP	Simple Mail Transfer Protocol
SOAP	Simple Object Access Protocol
SQL	Structured Query Language
SSH	Secure SHell
SSL	Secure Sockets Layer
SUID	Set User IDentity
SVG	Scalable Vector Graphics
SVGA	Super Video Graphics Array
TCL	Tool Command Language
TCP	Transmission Control Protocol
TGT	Ticket-Granting Ticket
TIFF	Tag(ged) Image File Format
TLS	Transport Layer Security
TTF	TrueType Font
TTS	Text To Speech
UCS	Universal Character Set
UDF	Universal Disk Format
UID	User IDentity
UDP	User Datagram Protocol
UI	User Interface
UML	

	Unified Modelling Language
URL	Uniform Resource Locator
USB	Universal Serial Bus
USR	Upstream Ready
UTF	UCS Transformation Format
UUCP	Unix-to-Unix Copy Protocol
VCD	Video Compact Disk
VESA	Video Electronics Standards Association
VGA	Video Graphics Array
VNC	Virtual Network Computer
VOB	Video OBject
VOIP	Voice Over IP
W3C	World Wide Web Consortium
WAV	Waveform Audio
WWW	World Wide Web
XDMCP	X Display Manager Control Protocol
XM	FastTracker Module
XML	eXtensible Markup Language
XSL	eXtensible Style Language
XSLT	eXtensible Style Language Transformation
XSM	X/Open System Management
XMMS	X MultiMedia System
YUV	Luminance-Bandwidth-Chrominance